THE GOOD, THE BAD AND THE UNEXPECTED:

The user and the future of
information and communication technologies

A transdisciplinary conference organised by

COST Action 298
"Participation in the Broadband Society"

Moscow, Russian Federation
23rd - 25th May 2007

Conference proceedings

Volume I

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Call for Papers

Introduction

The main objective of the conference is to create new knowledge about users' creativity and facilitate their empowerment in a broadband information society. This knowledge is crucial in order to strengthen the European Research Area. Moreover, this requires an examination of the factors that can both constrain and enhance users' abilities to shape and use ICTs.

From our perspective, the 'broadband society' refers to a possible, but not inevitable, substantial transformation of our experience of telecommunications based on these technologies allowing information and communication technologies to be used everywhere, all the time and by everybody. Given the widespread aspirations of Governments and companies to achieve this goal, the extent to which any such transformation has occurred needs, of course, to be evaluated in a balanced manner.

Broadband technologies have resulted mainly from technological and institutional imperatives. To what extent have potential users managed to find ways in which such technologies can be useful, worthwhile and attractive? We certainly know from previous research this can require those users to be creative in terms of fitting ICTs into their activities or using them to find solutions to the everyday problems that they already encounter. But how much is being demanded of those users, what considerations have a bearing upon whether these technologies actually find a place in their lives and what new issues, of indeed problems, can these ICTs themselves create, especially if they really are 'disruptive technologies'? Ultimately, we also need to acknowledge that users may well decide that their existing solutions suffice, in which case these new technological options may find only a modest place in their lives. Indeed, they may even be resisted or ignored. Whatever strategies users employ for assessing and dealing with such innovations, we need to learn more about these social processes, including strategies for dealing with the up and coming generation of new information and communication products and services. Only by so doing can we hope to empower them further in their relationships to technology and through this hope to increase the quality of their lives.

In this conference, the organisers - COST Action 298 - invite technology and product developers, designers, social scientists, policy makers, community representatives and others who are interested in the conference topics, to join our attempt to develop this discussion on a common, shared and transdisciplinary ground. We ask participants to

1) strive to present their topic from a human-centric point of view as opposed to a technology-, product- or business-centric one, and to

2) present their topic in a language that attempts to transcend disciplinary boundaries, a language that non-experts can also understand, and to

3) not only report on their work, but also to engage in the conference debate which aims to develop ways to understand the interests of people and society, to evaluate developments against such an evolving understanding, and to chart interesting and desirable future directions.

The emphasis of this event will be on networking and promoting a dialogue with colleagues from around Europe and the rest of the world.

We look forward to seeing you in Moscow for a conference designed to be exciting, thought-provoking and challenging.

Organizers

This conference is organised by the COST 298 network 'Participation in the Broadband Society', the successor to COST actions 269 and 248. The conference is a follow up to the conference The Good, the Bad and the Irrelevant held in Helsinki in September 2003. COST 298 is an action in the domain 'Information and Communication Technologies' of COST, an intergovernmental framework for European Co-operation in the field of Scientific and Technical Research. In COST 298 European scientists from telecommunication research departments, universities and operators together with independent consultants collaborate in cross-disciplinary

groups to analyse the social dimensions of people's relationships to information and communication technologies.

Additional sessions (about online politics) are co-organized by COST Action A30, which is concerned with establishing a new media research agenda for East and Central Europe and by COST Action 294 (MAUSE: Towards the MAturation of Information Technology USability Evaluation).

Programme

The conference will be organised around four strands. Besides these, three sessions and two panels are devoted to special themes:

1. Users as innovators

Within the changing techno-economic paradigm, the user is increasingly seen as the origin of innovation. This refers to strategic roles like 'lead users' or 'pro-am' in technology design. At the same time powerful Web 2.0 tools (blogging, social software, folksonomies, etc) enable an affluence of 'user generated content' (UGC) based on the 'networked individualism' of people. However the user as innovator also refers to more tactical roles. Users of ICTs have often used technologies in very creative, sometimes unanticipated, ways. This refers to ways in which ICTs either enable or constrain users' ability to develop innovatory social practices, linked to technology design and content creation. What factors lead to creativity in the use of ICTs? In addition, how people make choices is a key issue. While choice behaviour asks for active informed decision-making, people in practice are often not interested in making such active choices. Therefore, what enablers and constraints play a role in this process? How useful are theoretical frameworks in explaining such choices?

This strand will look at patterns of behaviour during diffusion, users' innovation, technology design, the ways users make choices to use or not use broadband technology, taking note of the fact that at a certain moment in time any innovation is simply less 'innovative'. When, if ever, will broadband become the 'norm' and does it really matter for users? How long does it take before an innovation is regarded as being domesticated and what does this mean in practice? Finally we also welcome contributions on methodological innovation for investigating users as strategic and tactical innovators. This includes methods that enable understanding and interpretation of users' creativity in everyday life, like ethnography, persona development or research in living lab settings.

2. Humans as eActors

This strand welcomes theoretical, methodological and empirical contributions to the following areas:

The electronic portrait of individuals as human actors

What type of electronic information do people deal with and how? Given that humans use, produce, store, disseminate and retrieve information, these particular processes have to be studied in order to understand the production of the electronic self and its social consequences. This portrait should also address the evolution of human self-determination, autonomy and reflexivity regarding more pervasive (or invasive) information and communication systems.

The convergence of social and technological processes around the human body

This area involves analysis and studies of the convergence of several social and technological processes around the human body. What are the relevant debates about this development and what are the social representations of the human body in a broadband society?

An anthropocentric perspective in developing interfaces that are user pulled rather than technology pushed

Any anthropocentric perspective requires us to reflect upon the end user as being main target, beneficiary and 'raison d'être' of ICTs, including the ones mentioned in visions of the broadband society.

Migrants and their social integration and cohesion in the European broadband space.

During the last few years there has been a lot of turbulance in the European scene. The European union was confronted with a great number of new members, discussions take place of how large the EU may or cannot be, what does 'European' mean when thinking about spacial and cultural boundaries. The French and Dutch 'no' to the European constitution were for a large part the result of this discussion. In the public opinion migrants are often looked upon as at least 'problematic'. ICT's could play an important role in the integration both politically and socially of migrants in their new surroundings. On the other hand ICTs are means to keep in touch with the native country or region from which they emigrated.

This area involves any theoretical and empirical discourses on the social and political integration of diasporas in their new country involving the use of ICTs. It also addresses the question of the ways in which the use of ICTs supports cultural and social relations within diaspora communities.

3. The multiple cultures of the Information Society

Although there are now a limited number of cross-cultural comparisons of the experiences of ICT use, it is quite clear that there are complex issues involved in making sense of international differences, as well as differences within national cultures. While we welcome papers at the conference that focus specifically on cross-cultural issues we want to encourage a wider engagement in this issue. This strand invites people conducting national research on ICT adoption and use to report on that work. But we would like them to add what they think might be cultural or national influences shaping these developments in their country. For example, if studies focus on gender or age groups (such as youth, the elderly) we would ask researchers to consider how people's experiences are influenced by national or regional circumstances (educational, legal, employment, financial, time structures, domestic division of labour etc.) or particular meanings and values in that culture. There is a workgroup within COST 298 that is looking at this whole area of cross-cultural comparisons. We hope to build on the reflections from the papers in this strand and develop our thinking with a view to producing a coherent publication based on these contributions.

4. Future directions

Both the technological environment and wider society are evolving through a process of mutual interaction. Even if we accept that the results and acceptance of technological developments in society cannot be reliably predicted, it is also clear that vast investments are being made in the intentional development of technologies, including broadband technologies, with certain aims and strategies. These are inevitably based on certain sets of assumptions about the future. In fact, all such future-oriented action is based on some kind of a vision about the future, whether it is explicitly articulated or not. These intentions and assumptions have a great influence upon the whole development agenda, the specific development processes, and the results of these endeavours.

This strand will explore the process of this kind of vision-creation and aims to intentionally, and indeed proactively, contribute to this envisioning process in society. This is important for the way in which any information society develops, as well as for achieving better efficiency in technology investment.

5. Special sessions and panels:

- Politics Online: Comparative Perspectives, Theories & Methodological Innovations (co-organized by COST A30 & COST 298)
- Accessibility for all to services and terminals (co-organized by COST 219ter & COST 298)
- Semantic multimodal analysis of digital media (co-organized by COST 292 & COST 298)
- ICTs and China
- Gender in a broadband society

Venue

The conference will be hosted by the Academy of National Economy under the Government of the Russian Federation. The local organizer of the conference is the Institute of the Information Society (Moscow, Russian Federation).

Table of Contents

Volume I

Users as innovators

Humans as eActors

Volume II

The multiple cultures of the information society

Future directions

Politics online: comparative perspectives, theories and methodological innovations

Users as innovators

Africa's Rural Communities as Knowledge Prospecting Domains for emerging e-Business Models

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Abstract

The research reported in this paper is part of a longitudinal study on the concept of Knowledge Prospect Domains (KPD). It is an attempt to discern its applicability to characterize African rural communities (ARC) in an e-Business environment, thereby depicting them as a structured entity from where knowledge could be extracted for emerging e-Business models. By describing African Rural Communities as KPD, and seeking alignment to *emerging technologies*, *adaptive technologies,* convergent with *proprietary technologies,* will be created that could lead to the discovery of new e-Business models. The literature promotes the notion that a business environment characterized by rapid, radical and discontinuous change requires *adaptive technologies*, *human creativity* and *sense making* to work hand in hand in *creating new reality* and subsequently new business models. It will be argued that rural communities with its own set of complexities could be realized as a rich source from which knowledge could be appropriated for the innovation of novel business models. Most e-Business systems that are developed on traditional scientific, engineering and business principles - to serve a well defined set of processes and information flows required by modern business systems - are sometimes in complete cognitive dissonance with human social reasoning processes and needs. Pertaining to these perceptions some use will be made of social construction theories, like *technological determinism*, *social construction of technology (SCOT)* and *social shaping of technology (SST)*.

From the research, descriptors will be proposed to profile African rural communities, focussing on their derived needs, matching them to available/emergent technologies and investigating the e-Business interface. The research shows that despite the perception of tranquillity, stagnation and fossilization, attributed to rural societies, they find themselves in the KPD of Boisot's I-Space and are therefore compliant with so-called Schumpeterian-Learning (S-Learning) as compared to Neo-classical-Learning (N-Learning).

The hypothesis predicated in this paper is that, if African rural societies are constructed as KPD, then valuable knowledge will be extracted that can be utilized for the innovation of sustainable e-Business models.

The pretext for constructing KPD is for business model innovation (BMI).

Key words: *knowledge prospect domains, African rural societies, mobile technologies, emergent technologies, disruptive technologies, e-Business models, socio-informatics, pecuniary dynamics and cyber money*

Introduction

The double influence of the spirit of commerce and the gospel of Christ has given an impulse to the circulation of men, ideas and commodities over the face of the earth, and the discovery of the gold regions has given enhanced rapidity to commerce in other countries and the diffusion of knowledge. But what for Africa? God will do something else for it. Something just as wonderful and unexpected as the discovery of gold. David Livingstone [c. 1853]

When researching the extant literature and current publications on the bush-fire like spread of mobile telephony into Africa one gets the perception that this might be the unexpected *discovery of gold* that Africa has been waiting for. Headlines such as *Rural Africa new frontier for mobile phone boom; Demand rages among rural folk; Mobile operators scrambling to gain foothold in Africa; Africa's cell phone boom creates a base for low-cost banking;* and commitments like *MTN budgets R700m for rural telecoms; MTN is rolling out more than 300 3G base-stations; Over 5 years, each cellular operator is obliged to distribute 2.5 million SIM card packages and provide 125 000 cell-phones……;* present sufficient evidence to support this perception. At the same time an abundance of new ways to do business, new ways to offer community services and new ways to inject economic-agrarian sustainability are discovered. Most of these novel ways of doing things are based on specific knowledge extracted from which could be called *ill-prospected* African rural communities.

The working hypothesis that will be followed in this research is that, if African Rural Communities (ARC) are constructed as Knowledge Prospect Domains (KPD)[1], then valuable knowledge will be extracted that could be utilized for the innovation of sustainable e-Business models.

The research report is part of a longitudinal study[2]. It will be an extension of previously published research by the author on the concept of *Knowledge Prospect Domains* (KPD).
It will furthermore attempt to demonstrate the *praxis* of the concept/construct KPD in ARC.

Re-Visiting The Concept Of KPD

In previously published work Knowledge Prospect Domains (KPD) was proposed as: *those areas where embedded/embodied knowledge, not yet being exploited/extracted by conventional technological means from e-business systems like data processing and data mining, could be extracted by sense making, communities of practice and intervention techniques (creative abrasion) integrating human and machine intelligence in a prospecting rather than mining mode; a domain where experimentation, scanning the edge of chaos, using creative-destructive-learning and system integration will lead to anticipated surprise; where prospecting for mineral wealth – knowledge discovery – precedes mining for gold – knowledge utilization.*

The pretext/context in which this was formulated was that of the immediate operating area of e-Business systems where convergence between *proprietary* and *emergent* technologies became visible and *dominant designs[3]* predicated future business and technological developments. This argument held for developed urban societies and mature business processes. It will be argued that this conceptualization could also be transposed onto African rural communities (ARC) where convergence of mobile technologies and the emergence of new business models are being significantly reported in the extant literature. To support this reasoning, the concept of KPD will be adapted from the generic to the specific in order to embrace ARC as KPD, albeit from a different paradigm. It is proposed that the notion of

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[1] Botha, Daniel F. 2006. 37-43.
[2] Botha, Daniel F. 2007
[3] Weick, K. 36

communities of practice in the ARC context be considered to include *user communities* as knowledge prospects regardless if these communities are constituted formally or informally.

The next section will attempt to utilize social construction theory as a broad framework for positioning ARC in context of emerging technologies. This will be followed by two sections, one focussing on establishing relevant African social descriptors and the second on the relationship with mobile telephony and associated technologies. Subsequently a brief overview of the concept of e–Business models will be given followed by the proposal of constructing ARC as KPD. Finally a multi-factor regression equation for an empirical research model for future research is proposed.

Some Social Construction Theories

A brief discussion of social construction theories – specific emphasis on technology - will be presented, with the aim of using it as a broad framework for constructing ARC as KPD. *Social constructionism* can be defined as, *analysis of knowledge or reality, or both, as contingent upon social relations, and is made out of continuing human practices……..the analysis of the structure of the common-sense world of everyday life.*[4] Three mainstream theories on linking social construction to technology, namely, *technology determinism*, *social construction of technology* (SCOT), and *social shaping of technology* (SST) are discussed.

Technology determinism[5] is a reductionist doctrine that a society's technology determines its cultural values, social structure, or history. Technological determinism has been summarized as; 'the belief in technology as a key governing force in society' (Merritt Roe Smith[6]); 'the belief that social progress is driven by technological innovation' (Michael L. Smith); 'the belief that technical forces determine social and cultural changes' (Thomas P. Hughes); and 'the idea that technological development determines social change' (Bruce Bimber). Most interpretations of technological determinism share two general ideas:

- That development of technology itself *follows a path* largely beyond cultural or political influence, and

- That technology in turn has *effects* on societies that are inherent, rather than socially conditioned

To some extent this theory holds for ARC. Mobile technologies as such, from a pure technical viewpoint, did not emanate from these communities. But is this conclusive?

Technological determinism stands in opposition to the theory of *social construction of technology* (SCOT). Leading adherents of social construction of technology like Wiebe Bijker[7] and Trevor Pinch[8] argue that technology does not determine human action, but rather, human action shapes technology. They also argue that the ways in which a technology is used cannot be understood without understanding how that technology is embedded in its social context. It holds that both the path of innovation and the consequences of technology for humans are strongly, if not entirely shaped by society itself, through the influence of culture, politics, economic arrangements, and the like. SCOT is a response to *technological determinism*. If it is argued that e-Business models are *the methods, theory, and practices*

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[4] Honderich, T. 829
[5] Staudenmeier, S.J., & John M. 134-148.
[6] Smith, Merritt Roe, & Leo Marx, eds.
[7] Bijker, Wiebe E., Thomas P. Hughes, & Trevor J. Pinch, eds.
[8] Pinch, Trevor J. & Wiebe E. Bijker. 347-360.

governing such applications [9] and that these models came about because of, and not despite of, ARC then the theory of SCOT holds for ARC – *the path of innovation shaped by society.*

Yet another view is that of *Social Shaping of Technology* (SST)[10] where the central concept is that there are choices – though not necessarily conscious choices – inherent in both the design of individual artefacts and systems, and in the direction or trajectory of innovation programs. If technology does not emerge from the unfolding of a predetermined logic or a single determinate, then innovation is a 'garden of forking paths'. *Different routes are available,* potentially leading to *different technological outcomes.* Significantly, these choices could have differing implications for society and for particular social groups. SST both agrees and conflicts with elements of other theories that tie sociology and technology together such as SCOT and Technological Determination (TD). SST is concerned to explore the material consequences of different technical choices, but criticises TD, on its argument that technology follows its own developmental path, outside of human influence, and in turn, influences society. From the evidence gathered it will become clear that SST is applicable to ARC contrasted against other communities like urbanized societies – *different routes available,* *different technological outcomes* and *differing choices.*

African Rural Communities Descriptors

It is now deemed necessary to present some grounded framework against which ARC structures could justifiably be described. For this purpose the globally recognized DARE[11] program was found to be a credible choice from which the following definitions, in the context of ARC, was found to be of significance[12]:

- *De-agrarianisation* is defined as a long-term process of occupational adjustment, income-earning reorientation, social identification and spatial relocation of rural dwellers away from strictly agricultural-based modes of livelihood.
- *Depeasantisation* represents a specific form of de-agrarianisation in which peasantries lose their economic capacity and social coherence, and demographically shrink in size. They literally unravel as communities.
- The new *Sustainable Rural Livelihoods[13]* (SRL) approach is a response to the complexity of rural livelihoods and their growing non-agricultural character

There has been a reluctance to consider how neo-liberal policies impact on African rural social structures. Rather the tendency has been to see African social institutions, especially those associated with rural peasant societies, as *constraints* to the implementation of economic policies, inferring that vested interests and traditional conservatism cannot rise to the market challenge. DARE argues the opposite – African peasant societies have been extremely responsive to neo-liberalism with as yet unclear implications for the social and economic fabric of African countries. The examples of mobile and related technology adoption in ARC, that will be used as research data, provides further support to the arguments of DARE; arguments which is predicated for this paper.

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[9] One of the definitions of *Technology* from Collins concise dictionary.
[10] Williams & Edge. http://www.rcss.ed.ac.uk/technology/SSTRP.html
[11] DARE – De-agrarianisation and Rural Employment research program at the African Studies Centre, University of Leiden, funded by the Dutch Ministry of Foreign Affairs (DGIS)
[12] Bryceson, D. F. 2000, 12
[13] Bryceson, D. F. 1999

Rural restructuring factors[14] characterized by: peasant's deteriorating commercial agriculture; rising cash needs; increasing income diversification (the upsurge in non-agricultural income diversification represents large-scale agrarian labour displacement within an accelerated process of depeasantization); proliferation of income earners within the rural household; decreasing rural isolation; diversification and class differentiation are robust descriptors for the complexity, uncertainty and diversity in ARC. This makes ARC according to Boisot[15] a *regime bordering on chaos* (a chaotic regime) and therefore fertile for purposes of knowledge discovery (new insights), one of the conditions to satisfy the definition of KPD. In this regime, *scanning* (one of the six phases in Boisot's I-Space[16]), for new business models becomes paramount. It is predicted that this evidence be used in the attempt to qualify ARC as KPD.

Furthermore in coping with uncertainty, specific *tensions within African peasantries* could also be cited to bear on the argument that ARC can be considered KPD. Four tensions identified by DARE[17] are appropriated:

- Securing economic survival: market experimentation versus subsistence fallback
- Marshalling resources and social networks: household solidarity versus individual autonomy
- An unacknowledged identity crisis: agrarian conservatism versus sceptic otherness
- Strengthening or weakening the economic foundation of rural livelihoods? Linkages between non-agricultural activities and agriculture

If it is accepted that uncertainty should be confronted with capability, it should also be acknowledged that the future of African rural dwellers lies increasingly in labour force participation outside of rural agriculture. It signifies that some other commercial cash-generating activities should be realized. This is where mobile technologies can make a significant difference. The need is for literacy, numericy, knowledge of the national language, and various occupational and computer skills that will provide the means to command sufficient income for themselves and their families, as well as to raise the overall level of productivity in their respective countries. Confronting uncertainty with capability presents *a capacity to act* and therefore, an abundance of e-Business model opportunities. Capability enhancement through human capital investment is therefore vital.

The upsurge in non-agricultural income diversification which has taken place on the African continent during the last fifteen years represents large-scale agrarian labour displacement within an accelerated process of depeasantization[18]. One way to combat this trend is to accelerate the cash flow into these peasant communities; this could be called *the pecuniary dynamics of ARC as KPD* in which mobile technologies are already playing a multiplier role.

The following extracts from publications highlight the pecuniary descriptors of ARC: *Mobile phones have the ability to make a dramatic change to village life in Africa; One of the most exciting areas is in making social transfers to the very poorest in society; The mobile phone is creating niches that Africa's poor entrepreneurs are able to exploit in new ways; When ever an opportunity appears, however obscure, someone will move to exploit it within days; Mobile payments can also facilitate transactions in remote areas and can even improve security by removing cash from the business process altogether; Several studies show that, once the*

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[14] Bryceson, Deborah. 2000, 3
[15] Boisot, M. 39
[16] Boisot, M. 41
[17] Bryceson, Deborah. 2000, 7
[18] Bryceson, D. F. 1999

inertia of cash has been taken away, an economy will start taking off and accelerating; With over 3 million transactions a month in the DRC alone, Celpay recognises the need for leading mobile banking solutions in emerging cash-based economies; additional features and functionality for customers, including inter-bank transfers and enhanced airtime vending; Most operators sell airtime in tiny denominations for people who live from hand to mouth; Celpay Zambia upgrades technology to directly answer African population requirements; and *The venture hopes to build on the rapid spread of pre-paid cell phones to create a whole new banking system, one designed for low income users that have been under-served or ignored by traditional banks.* These are but some of the cases that can be reported on where rural Africa has some unique requirements for the use of *cyber-money*.

From the cases that was perused it can be credibly proposed that the following *cash flows streams* (X_{cfs}) characterizes ARC: Money transfers from *urban to rural* areas where relatives are the beneficiaries (X_{u2r}); income from non-agricultural peasant-like industry (X_{nai}); income from sustenance and small scale commercial farming (X_{scf}); income from state social funds (X_{ssf}); and, income from international and non-governmental organizations aid funds (X_{aid}). These factors are the independent variables to describe the dependent variable X_{cfs} which will be used as some of the indicators to describe ARC as a PPD.

Mobile And Associated Technologies In The African Context

Once a powerful technology exists and is known to exist, a productively powerful society without much of a market also becomes possible. Whether it then inevitably engenders a hidden market (the double economy), or networks of reciprocity, is an interesting question[19].

Mobile phones are the very first technology in history where there are more now being used in the *developing world* than in the *developed world*[20]. Mobile phones have the ability to make a dramatic change to village life in Africa. One of the most exciting areas is in making social transfers to the very poorest in society

Most of the World's *Developed Communities* migrated from the large screen of the PC to the smaller screens of the laptop/notebook and PDA and lately to the still smaller screen of the mobile phone whilst over the same time-line computing power (memory and micro-processor speed) tracked the migration, i.e. recent mobile phone computing power is now virtually equal to that of earlier/legacy PCs. It is of significance to note that some *Developing Communities,* of which Africa is the most prominent, did not follow this migration but are taking a technology leap, closing the digital divide, and having their novel digital world experience directly on the small screen; if the mobile is going to become Africa's PC this calls for a serious new way of thinking about business models and *pecuniary dynamics.* Add to this, *mobile internet access, NFC technology,* and *smart-* and *scratch-card* applications, you have the *requisite variety[21]* that could evoke a multitude of business models and opportunities.

Various *contact-less* payment systems rely on technology called *near-field communication* (NFC), short exchange of data, when machine induces an electrical circuit in the NFC device. This technology is embedded in *contact-less plastic cards[22]* – both in and out of phones making it easier to use for small payments.

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[19] Gellner, Ernest.
[20] Economist.com. March 5th 2007.
[21] Weick 89
[22] Economist.com. Feb 15th 2007.

The well known *scratch-card*, mainly used in the lottery business, found a new application in the African context; the simplicity of this novel business model design speaks of elegance. You simply buy a $5 scratch card, scratch of the panel to get the voucher number and then text that number to your counterparty. Compare this to using a UK internet bank account to send 5 pounds from your account in London to a friend in Edinburgh: if you are lucky it will take three days and it may take four.[23] A number of mobile operators in Africa have developed electronic versions of this mechanism - the *scratch-card solution* – by allowing the direct transfer of airtime from one person to another, thus hugely improving liquidity of this 'currency'. There are initiatives in countries such as Kenya and South Africa working to capitalize on this gap in the market by providing payment services matched to the needs of the poor and un-banked. Phone-to-phone (P2P) transfers[24]

Connectivity could become a kind of currency as we move forward in the on-line world. Mobile phone minutes are just another currency[25] Air-minutes like air-miles are becoming redeemable currency.

From this it could be inferred that ARC have a significant potential of adopting emerging technologies (X_{aet}) into their rural livelihoods which leads to the innovation of unique sustainable e-Business models (X_{seb}). These business models subsequently affect the sustainability of these livelihoods (X_{srl}).

e-Business Models

Developers and business analysts who build complex structures or systems have been creating models of what they build. The term *model* could be defined as an abstract representation (*cognitive simplification*[26]) of the real world that reduces complexity and represents only the details necessary for a specific purpose.

From the literature[27] three types of definitions for *business models* could be identified:
- Business model definitions that concern themselves with the *participants in a joint business venture*; models that specify the relationships between different participants in a commercial venture
- Business model definitions that concern themselves with the *process and structure of a business organization* that should be in place to operationalize the strategy of the business.
- Business model definitions that concern themselves with how business models are *seen from the perspective of the market place.*

Researching the literature for a single definition on the concepts of *e-Business* and *e-Business models* proved rather daunting. The use of the letter "*e*", supposedly denoting *electronic,* could be largely the cause of the confusion. Although their seems to be some converging consensus on the term, *e-Business systems,* denoting business application architecture running on generic IT-infrastructure, many authors still regards e-Business as being exclusively *Internet based* and mostly B2B. The latest publications on the subject by noted authors such as Laudon & Traver[28], O'Brien[29], and Papazoglou & Ribbers[30], to name but a few, recognize that non-

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[23] Birch, David.
[24] Birch, David.
[25] Birch, David.
[26] Boisot, M.
[27] Papazoglou, M.P. & Ribbers, M.A.
[28] Laudon, K. & Traver, M.

internet-based emerging technologies, when integratable with internet-based proprietary technologies be acknowledged as part of e-Business systems and therefore e-Business models. This line of reasoning will be followed in this paper, as previously argued by Botha[31]. Business models emanating from the KPD of ARC satisfy the definition of the 3rd kind above namely, *from the perspective of the market place*, and will be considered to be internet- and non-internet-based stand-alones and hybrids.

Constructing ARC As A KPD

Superimposing the evidence presented above on the definition of KPD and by seeking a comparative goodness-of-fit with key phrases/constructs of the definition the following deductive inferences can be supported/made:

- *Knowledge not yet been extracted by conventional technologies*: Knowledge-based technologies, such as data-mining, are conventionally used to extract new knowledge from e-Business system operations. The knowledge that led to the advent of emerging disruptive technologies and their accompanying simplistic business models came from *sense-making*[32] (scanning, cue extraction, interpretation, enactment) and communities of practice/users, integrating human intelligence with machine capability in a prospecting – exploring *requisite variety* - mode.
- *Creative-destructive learning*: It could be argued that statements in the literature on the application of emergent technologies in ARC such as: 'Bank branches and post offices are these days as *redundant to financial systems* as copper wire and telegraph poles to telephony'[33]; 'But, the new systems could prove to be a *disruptive technology*. Banks could be *disintermediated*'[34]; and, 'Never mind the *$100 laptop* the mobile phone is already Africa's PC, and is having significant socio-economic effects'[35], supports this concept.
- *Communities of practice/users*: Mobile phones have the ability to make a dramatic change to village life. Mobile phones are the very first technology in history where there are more now being used in the *developing world* than in the *developed world*[36].
- *Creative abrasion*: 'Celpay[37] is a truly innovative company which saw the issues that customers had with banking access and implemented solutions, a number of years ago, that directly answers the requirements of the population.' 'The key point to note is that the average cost per transaction significantly lowers as volumes increase with an electronic system.'
- *Sense-making*: 'Celpay is a truly innovative company which saw the issues that customers had with banking access and implemented solutions, a number of years ago, that directly answers the requirements of the population. 'We know from our experience in other countries that mobile phones are ideal tools for transacting, and we also know that transaction volumes will grow rapidly once adoption starts. Mobile payments can also facilitate transactions in remote areas and can even improve security by removing cash from the business process altogether'[38]

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[29] O'Brien, J. & Marakas, G.M.
[30] Papazoglou, M.P. & Ribbers, M.A.
[31] Botha, D.F. 2007.
[32] Weick 49-55
[33] Economist.com. March 5th 2007.
[34] Economist.com. Feb 15th 2007.
[35] Birch, David.
[36] Economist.com. March 5th 2007.
[37] *FUNDAMO-On-line News letter.*
[38] *FUNDAMO Newsletter.*

- *Integrating human and machine intelligence*: The rapid adoption of mobile technology into village life created, *occasions for sense-making*[39] that led to new business models never conceived before as viable in urban communities. 'The mobile phone is creating niches that Africa's poor entrepreneurs are able to exploit in new ways; When ever an opportunity appears, however obscure, someone will move to exploit it within days'[40] is but one example that supports this perception.

It is proposed that the salient factors/cases as described above are sufficient evidence to construct ARC as KPD. It is furthermore predicated that SRL – the dependent variable factor - will be directly proportional to sustainable e-Business models (SEB) and sustainable social services (SSS). SEB in turn will be dependent on cash flow streams (CFS), technology development (TDV) and rate of adoption of emergent technologies (AET) – the latter three then being the independent variables or indicators.

Proposed Research Model

The hypothesis supported by the evidence presented above can now be described by the following multiple regression equation: (This equation describes the KPD for ARC)

$$\mathbf{Y_{srl}} = \boldsymbol{a} + \boldsymbol{b_1}\mathbf{X_{seb}} + \boldsymbol{b_2}\mathbf{X_{sss}} + \boldsymbol{e}$$

Where:
Y_{srl} = variance in sustainable rural livelihoods (SRL)
X_{seb} = variance in sustainable e-Business models (SEB)
$\quad = c_1 X_{cfs} + c_2 X_{tdv} + c_3 X_{aet} + e_1$
X_{sss} = variance in sustainable social services (SSS-health, education & infrastructure)
X_{cfs} = variance in cash flow streams (CFS)
X_{tdv} = variance in technological development (TDV)
X_{aet} = variance in adoption of emergent technologies (AET)

b_1, b_2, c_1, c_2, and c_3 are the regression coefficients of variables Y and X, a the constant for the null-hypothesis, and $e = e_1 + e_2$, the constants of random error.

Furthermore X_{cfs} can be described by:

$$X_{cfs} = d_1 X_{u2r} + d_2 X_{nai} + d_3 X_{scf} + d_4 X_{ssf} + d_5 X_{aid} + e_2$$

Where X_{u2r} = variance in money flow from urban to rural
X_{nai} = variance in non-agrarian income
X_{scf} = variance in subsistence and commercial farming income
X_{ssf} = variance in state social funds flow
X_{aid} = variance in income from international and non-governmental organizations aid funds
 Where d_1, d_2, d_3, d_4, and d_5 are the respective regression coefficients.

The model is based on the pretext/assumption that it could also be argued that SSS, TDV, and AET are possible significant factors to measure SRL. The contribution that these independent

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[39] Weick 83
[40] Birch, David.

variables make was not fully researched and argued for the purposes of this paper, but they are recognized as possible salient descriptors of SRL. The primary investigation focussed on SRL dependence on SEB.

Conclusion

The research indicates that ARC as KPD are a rich source of knowledge and by mindfully *prospecting* this knowledge through sense-making, could lead to SRL. This will be dependent on *pecuniary dynamics* which entails a steady flow of *cyber cash/money* into these livelihoods, providing the means to the village people to enhance their quality of life by exercising their own choices (empowerment) on how to spend this money. The pecuniary dynamic is made possible through e-Business models based on *emerging*, sometimes *destructing*, but mostly *adaptive*, mobile and associated technologies. Furthermore, the ARC described as KPD, provides a fertile environment where existing banking and telecommunications companies, through technology applications, communities of users, and new business models converge. This emerging pattern of community enrichment could lead to the upliftment of rural livelihoods which in turn could diminish the phenomena of *depeasantisation* and *de-agragarianisation*. Another spin-off from these new ways of doing business, based on the KPD of ARC, is that it provides a new insight that can be exploited on existing business models and proprietary technologies, developed for rural areas and the developed world. Finally a conceptual theoretical model induced from the literature research is proposed. The model, in the format of a multiple regression factor equation, describing the KPD of ARC, is proposed for further empirical research.

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The Innovators in the New Media Landscape:
User Trends and Challenges in the Broadband Society

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Abstract

Broadband distribution and digital multimedia content devices transform the user into a content creator, blurring the border between creators and consumers, between audience and actors. This paper suggests however, that it is in particular young, heavy users of Internet that use the web to create and share content. The lack of non-professional users in general indicates a need for web-applications targeting several user groups. However, demand for the knowledge is great and to a large extent unmet at present. This paper describe state-of-the-art on users as active participants or innovators in the new broadband society and what typical trends and challenges that characterize this new media landscape, this by investigating recent reports on user behaviour and theories trying to describe the new social dynamics in the broadband society. This literature investigation aim is to provide new knowledge on user behaviour and a basis to understand the new emergent media landscape and a starting point for identifying changes in patterns of media use and user needs that is significant for the broadband society.

Introduction

The use of information and communication technologies is now thoroughly ingrained in several parts of the western society, but the complexity of their role is constantly changing and deepening. New media and the Internet is expected to change how people communicate, how they work, and how they leisure, it may also involve new forms of communities and participation. Evidences suggests that we live in a media world where these technologies are integrated into the routines and practice of everyday life (Haddon, 2003; Silverstone & Haddon,1996). The Internet is used at work, in schools, in universities, and hospitals. It is used for a wide variety of purposes and interests, such as surfing for information, playing online games, and chatting (Quan-Haase et al., 2002). Thus, the most profound and latest change in the broadband society is how the users are taking a more active role in the media chain. The users, and in particular younger, are to a greater extent using new interactive media technologies and combinations of new media technologies, from mobile phones, computers and wireless technology in new creative ways (Heim and Brandtzæg, 2007).

This paper investigate the state-of-the-art on user as content-producers, active participants or innovators in the new broadband society and what typical trends characterize this new media landscape. User as innovators is in this paper understood as users that are using new media in new and productive ways. The paper gives an insight on how and which users that is identified as active producers or innovators in the new media landscape of today. In more detail it will also describe how the new media landscape is changing and the new challenges this arise:

- From user being passive consumers to users becoming active participants and content producers
- From user consuming mainstream professional content to consuming non-professional content.
- From text heavy applications to rich, audio/visual media (multimedia).
- From single use design to community design
- From local to more global online services.
- From a traditional one-to-many model (mass media) to a many-to-some model (The Long tail theory).
- From digital divide to a digital production divide

This literature investigation will try to provide new knowledge on actual user behaviour and a basis to understand the new emergent media landscape. This will hopefully serve as a basis for identifying changes in patterns of media use and user needs, and which current challenges that is significant for the broadband society.

From Consumer to Producer
In the EU (2005) position paper on future competitiveness in ICT it is stated that "people [will] interact with their surroundings and with each other in totally new ways." NEM and the Strategic Research Agenda (2006 pp. 19), put it this way: "Enabling individual and consumers to create personal applications is seen to be of extreme importance for the future landscape".
Nowhere is this more clearly illustrated than in evolving new social dynamics based on the eagerness of media users to be producers of media content and to engage in networks with multiple users. This trend is seen both within Internet and broadcasting where an increasing number of users produce and share content and engage in different types of social participation and community formation. This implies a shift away from mainstream markets with centralized content provision, towards individuality and fragmentation by citizens taking an active role in the media chain. This, triggered by the widespread availability of digital recording devices as well as display and rendering devices, end-users will be both the largest content producer and -consumer of the future. In general, there seems to have been a shift from passive media consumption of mainstream media content, towards active media participation, content creation and sharing, as illustrated in Figure 1.

Figure 1. Digital society: From passive consumers towards active participation and content production (Brandtzæg et al., 2005).
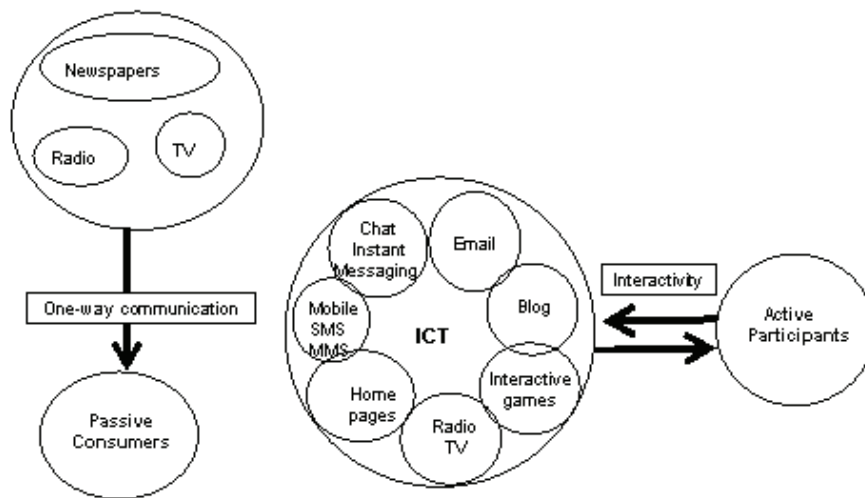
This trend is also driven by increasing Internet and broadband penetration in Europe and the whole world. According to IST (2006), the take-up of broadband Internet access has risen fast, with growth rates of around 70 percent in EU. Rapid technological advances In UK for example the household usage and adoption of communications services continues to accelerate. According to the OFCOM Communications Market Report (2006) the number of households with broadband connections increased by 60 percent between 2004 and 2005, to a total of 9 million and the number of households with digital television also increased by 18 percent between March 2005 and March 2006, to a total of 18.3 million.

The OFCOM (2006) report reveals evidence that a new "networked generation", mainly among the younger population, is turning away from old media such as television, radio and newspapers in favour of online services, including downloadable content – used on multiple devices such as iPods and mobile phones – and participation in online communities. Old media consumption, such as television is of declining importance to many 16-24 year olds; on average they watch television for one hour less per day compared to the average television viewer. Instead, the Internet plays an increasing central role in daily life; more than 70 percent of 16-24 year old Internet users use social networking websites (compared those 41 percent of all UK Internet users) and 37 percent of 18-24 year olds have contributed to a blog or website message board (compared to 14 percent of all UK Internet users). Similar findings are done in the survey UK Kids Go Online from 2004, but only among the youngster between 9-19 years that uses Internet on a daily basis. Daily users of the Internet are more likely, compared to weekly users, to use Internet for making web pages, for political participation, for exam revision and for interactive engagement. They also meet online friends and reveal personal information online to a larger extent than less frequent users (Livingstone & Bober, 2003).
It is in particular social networking and community web sites that have changed the way people use new media, in creating personal profiles, sharing photos, videos, blogs and user generated content in general. The two most popular social networking web sites that took off seriously in 2006, is MySpace.com and YouTube.com. MySpace with a music profile targeting the young crowd, have more than 100 million member's world wide. YouTube, with opportunities for uploading and video sharing has also been increasingly popular entertainment site during 2006. According to Nielsen//Netrating (2006) in October YouTube has over 20 million unique users every day, uploading 70 000 movies every day. The percent

growth of YouTube was incredible 297 percent monthly in the period between January 2006 and June 2006 (Nielsen Netrating, 2006). Both YouTube and MySpace are among the top ten web sites in popularity among users world wide according to measures done by Alexa Web Information Service in December 7th 2006. MySpace are ranked as number five, and YouTube as number seven (Alexa, 2006).

Another report from Nielsen//NetRatings (October 11, 2006) have similar findings, and explains that over a three-year period, the top sites among teens 12-17 have shifted from those offering a selection of instant messaging buddy icons to those providing assistance with social networking profiles and content creation. In September 2003, the number 1 site among teens was Originalicons.com. In September 2006, sites offering tools to improve social networking profiles with song lyrics, pictures, quotes and layout designs won out with those ages between 12-17 years. PLyrics.com is ranked as number 1 among teens, who made up 68.4 percent of its unique audience. According to the report, nine out of the top 10 teen sites either offered content or tools for social networking site profiles, or were social networking sites themselves. The report shows that a wide array of social supporting websites has developed in conjunction with bigger, more well-known web destination such as MySpace and YouTube.

Similar findings are suggested by the research team at Universal McCann (Nathan et al., 2006) in a recently published study "The New 'Digital Divide', How the New Generation of Digital Consumers are Transforming Mass Communication." They present how young consumers are increasingly relying on Web2.0 platforms for entertainment, news, social interactions, shopping, and other daily activities. Note that this study is not representative for the age group presented below. The research conducted is only among people in the 16-49 age group who are frequent users of the Internet (accessed Internet 11+ times in past 7 days)

- The age group 16-34 (frequent users of the Internet) is 25 percent more likely than ages 35-49 (frequent users of the Internet) to use instant messenger, with over 75 percent of ages 16-34 currently using at least one service.
- About 40 percent aged between 16-34 years (frequent users of the Internet) belong to a social network site; this is twice the percentage of 35-49 year olds (frequent users of the Internet).
- Among the top Internet services used is the social networking site Myspace.com with 43 percent of 16-34's (frequent users of the Internet) being current users. In comparison, only 16 percent of people aged 35-49's that are using MySpace.

Other findings include:
- 71 percent of the 16-34 year olds have participated in a blogging activity.
- The 16-34's are three times more likely (25%) than those 35-49 to manage and/or write their own blog.
- While personal and family/friend are the most common types of blogs among the younger group of frequent users of Internet, more than 40 percent are developing photo and pop culture (music/film) blogs as well.
- One third of frequent users of Internet between the ages of 16-34's have participated in peer-to-peer file sharing compared to just 12 percent of those 35-49.

The report suggests a major shift from the world of passive receptivity users to active engaged users, if we look at the frequent users of the Internet, which represent 31 % of the total U.S population. Thus, social networking is clearly popular mostly among the younger heavy users

segments. The report suggests however that a considerable part of the heavy Internet users are interested in creating, sharing and consuming user generated content.

From Single Producing to Peer Production

This new fast growing trend of Internet communities is hard to explain, but Jeff Jarvis (2006) try to explain this in his blog Buzzmachine, "Who wants to own content?" Distribution is not king. Content is not king. Conversation is the kingdom, does he state. He does like several others (e.g. Tapscott, 1999; Tapscott et al., 2000; Tapscott & Williams, in press; Nathan et al., 2006) describe the importance of interaction and co-creation in the new media landscape. This is also pin pointed in an article by Brandtzæg et al (2003 pp 61) about enjoyment in new media: "The sharing of experiences, feelings and information is considered to be rewarding, pleasant and enjoyable". Studies show that young people are likely to use the computer for playing games together, rather than playing in isolation (Wartella et al., 2000). These findings may be explained by the social facilitation effect (Brandtzæg, et al., 2003); it is easier, and more rewarding and motivating to do things in the presence of others, because mere presence of others is arousing (Zajonc, 1965). Children play more enthusiastically if a playmate is near by, even if only engaged in parallel play. According to Brandtzæg et al (2003) this may, in addition to social facilitation, also be explained by the theory of social cohesion and social identity, a social expression of being part of or attracted to a community. It seems to be that a socially rewarding environment is necessary and essential for all humans, also when it comes to media activities.

These social dynamics of co-creation in new media is described by Jeff Jarvis (2006) in the following way: "you don't want to own the content or the pipe that delivers it. You want to participate in what people want to do on their own. You don't want to extract value. You want to add value. You don't want to build walls or fences or gardens to keep people from doing what they want to do without you. You want to enable them to do it. You want to join in".
A similar view is proposed by Don Tapscott and Williams (2007) in their upcoming book Wikinomics – How Mass Collaboration Changes Everything. The term "Wikinomics" refer to the new economic and new culture related to the wiki – a type of website that allows the users themselves to easily add, remove, and otherwise to edit and change content. This ease of interaction and operation makes a wiki an effective tool for collaborative authoring. Tapscott and Williams suggest that we are entering a new age where people participate in the economy like never before. This new participation has reached a tipping point where new forms of mass collaboration are changing the way services are invented, produces and distributed on a global basis. This participation is driven by the opportunity people have today to link up in loose networks of peers to produce goods and services. The growing accessibility to ICT puts the tools required for collaboration and creation among users. The name of this new mode of innovation and creation is peer production or peering, when masses of people drive the innovation and production, this because people can contribute to the "digital commons" at very little cost by themselves, which make collective action much more attractive. Tapscott and Williams call this structural opportunity for collaboration the "weapons of mass collaboration": New low-cost collaborative infrastructures – from free Internet telephony to open-source software to global outscoring platforms.

These aspects of co-creation or the "kingdom of conversation", may be some of the explanation on why the millions of people from all over the world have engaged themselves in these social media creation activities (e.g Wikipedia, MySpace, YouTube, Second Life) that were previously reserved to elite of professional content producers. Some valuable

products have already come out of this collective knowledge. Generalized broadband access, increased mobility, availability of richer media formats and contents, as well as new home networks and communications platforms will probably drive this development further.

From "one-to-many" to "many-to-some" - The Long Tail

Another theory that also is a relevant explanation of the new social dynamics on the web is "The Long Tail". The theory of The Long Tail was first developed by Chris Anderson in an October 2004 Wired magazine article, and later elaborated in his book "The Long Tail: Why the Future of Business is Selling Less of More" (Anderson, 2006). The theory explains how mass adoption of new technologies like the Internet is changing our culture and economy. The major change is that the culture and economy are increasingly shifting away from a focus on a relatively small number of mainstream products and markets at the head of the demand curve and toward a huge number of niches in the tail, targeting several and smaller marketing segments. The long tail is primarily an economical model that explains how consumption and customer behaviour is moving from a one-to-many mass media model (a lot of people watching the same content provided by broadcasters or listening to the top seller record), to a many-to-some model (people sharing personal content with their friends and relatives or buying specialized or hard-to-find books) as shown in Figure 2.
Anderson (2006) describes 3 ascendant forces that are creating The Long Tail phenomena:

The first is *democratizing the tools of production*. Many homes are equipped with computers that enable the production of photos, videos, print or text virtually possible to everyone. The second is *democratizing the tools of distribution*. The personal computer made the people become producers, while the internet made people become distributors. The cost of distribution, especially on media products, radically decreased due to the web. The third force is the *connection of supply and demand*. The users demand has to be connected to the supply and can be called the Long Tail filters. That can be for example recommendation engines due to your profile or search engines on the website.

FIGURE 2. The Long Tail - Broadband distribution and multimedia content devices transform the user into a content creator, blurring the border between creators and consumers, between audience and actors
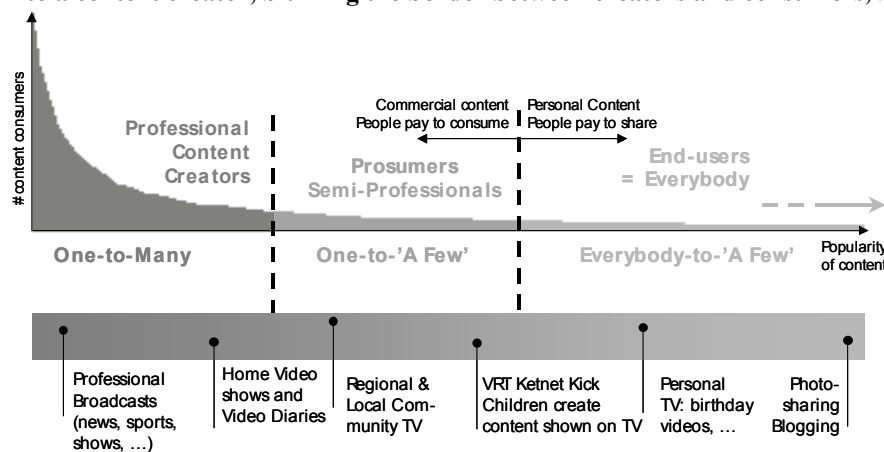
A classic long tail example is how we listen to music in 2006 compared to how we did it in1960 or longer back. In the era of gramophone people had to make an effort to listen to music. Both the consumption costs and the connection to music in general contributed to a less varied music experience. People picked often their favourite music pieces for listening. When technology allowed users to music listening in several contexts, from radios and cassettes in cars, and walkmans – new and different contexts for consuming music allowed

users to diverge and expand the longer tail of music choice. The introduction of mp3 players such as iPod, made it possible to listen to a random list of songs rather than a whole album and the long tail music repertoire expanded once again. Some of the most successful Internet businesses have leveraged the Long Tail as part of their businesses. Examples include eBay (auctions), Yahoo! and Google (web search), and Amazon (retail) amongst the majors along with smaller Internet companies like Audible (audio books) and Netflix (video rental).

In this new media landscape, users are not only finding their way to more specialized content, but are also turning the consumer into content creators, creating and sharing user-generated media content. Recent years have seen the rise of so-called 'prosumers', or semi-professional users in a one-to-some context. The new content creators however are non-professional users, publishing content in small communities for a limited audience. Blogging, wikipedia, flickr, MySpace and YouTube are typical Internet services and applications that all are examples of this kind of user generated activity. New personal digital productions tools (e.g. camera phones) and broadband distribution combined with multimedia content devices transform the user into a content creator, blurring the border between creators and consumers, between audience and actors.

Another driving force of the Long Tail is also said to be Web 2.0 with more than 14 million citations in Google. But there's still a huge amount of disagreement about just what Web 2.0 means, with some people decrying it as a meaningless marketing buzzword. However: Wikipedia (2006) is explaining the following: "Web 2.0, a phrase coined by O'Reilly Media in 2004, refers to a supposed second generation of Internet-based services - such as social networking sites, wikis, communication tools, and folksonomies - that emphasize online collaboration and sharing among users.

According to Wikipedia (2006) the Web 2.0 shows some basic characteristics. These might include:

- "Network as platform" - delivering (and allowing users to use) applications entirely through a browser.
- Users owning the data on the site and exercising control over that data
- An architecture of participation and democracy that encourages users to add value to the application as they use it.
- A rich, interactive, user-friendly interface based on Ajax or similar frameworks.
- Some social-networking aspects.

According to Bart Decrem (2005) the Internet has resembled a library in some ways and a shopping mall in others over the past ten years. These days, however, the web is becoming more of an events-based place of interaction and participation, because of the Web 2.0. This is in line with what Jeff Jarvis (2006) explains as "conversation is kingdom" and Tapscott and Williams (in press) refer to as "peer production". However, there exists some criticism related to the term "Web 2.0". For example, many of the ideas of Web 2.0 were already featured on networked systems well before the term "Web 2.0" emerged. Amazon.com, for instance, has allowed users to write reviews and consumer guides since its beginning, in a form of self-publishing. Anyway, NEM (2006) report that it is estimated that the biggest impact of Web 2.0 is the improved dynamics and management of service communities.

Thus, new media are beginning to catch up the Long Tail opportunities and the benefits that interaction and user generated content can bring to their offerings in terms of audience engagement and loyalty, but yet the mainstream still has some way to go in understanding the

user and the user needs in the new media landscape (Skrebowski, 2004). It is a question of how to design for co-creation in networked media.

From Single use Design to Community Design

So far web-design have been focusing up on the single user, while the design for co-creation and community still is rather weak. Ann Light (2004a) explains that a traditional media perspective is a one-producer-to-many-recipients model, with a little focus on user participation. By contrast, a range of activities is open to users of networked media. The question, according to Ann Light (2004a), is how these two models of behaviour can be combined to design systems, including trust and commitment to encourage co-creation and co-activity? This question was also given six British online information producers. Some successfully tactics for designing co-creation were reported:
- Display user generated material as an integral part of the website.
- Linking together people with common goals.
- Provide material for users to customize and incorporate into their joint activities.
- Conduct consultation exercises on the web, aimed at groups of users with a view to developing policy.

The focus on the users needs to create content to develop a social identity in networked media is also suggested (Light, 2004a). To give the user a feeling of being part of a group, through social cohesion or social identity is as well recommended by Brandtzæg et al (2003).
NEM (2006) or Networked Electronic Media do also stress the importance of communities and social interaction in networked media. NEM state in their Strategic Research Agenda the following topics to be addressed for facilitating communication in communities :
- Management of communities (social networks). Several different communities exist; a group management mechanism should therefore keep knowledge of all group characteristics.
- Providing group awareness via group context. Context awareness can facilitate the social interactions and decision making processes in communities.
- Privacy of personal information in communities: The privacy of personal data is a fundamental user requirement. Mechanisms must be deployed that enable users to decide what private information is revealed.

A conclusion is that future co-created networked applications should aim to focus on the social aspects and relationships among users, because co-creation is dependent up on involvement, trust and identification. The users are not just happy with their opportunities to create meaning and content in networked applications, they do also want to create identity. This could be either a kind of personal virtual identity, but also an identity to a specific community or a social identity. According to Ann Light (2004b) the users request for group identity in a fragmenting world and in a fragmenting media landscape, a focus on social identity to in online communities may therefore be a key to make successful networked applications for the future.

From Text to Rich Media

The NEM-initiative addresses all aspects of the media life cycle, and is focusing on the shift from professional content creation to increasingly involve individual citizens. This is in line with the "The Long Tail" theory (Anderson, 2006), Wikinomics (Tapscott & Williamsen, in

press) and the perspective of Bart Decrem (2005) of Web.2.0 as participation platform on the Internet.

However, according to NEM, a key goal will be to support end-users with content creation process and personal content management in rich media. The winners in the market of new media will deploy rich media online experiences – interfaces that seamlessly integrate images, video and audio to create an immersive user experience. To day, most users cannot create, manage and share multimedia digital content as easily as they can manipulate text, for example in chat rooms, email and word. This challenge is also formulated by Visser and Visser (2006); they state that one of the main goals of HCI (Human-Computer Interaction) in the next few years will be to make systems "easy to develop" and empowering non-professional users to develop and adapt systems themselves. Users are becoming active co-creators of their media, commerce, entertainment, and communication experiences.

The first and second generation of websites have focused on making the services usable. With the new possibilities of rich media over high speed connections, a new era of usefulness, conveying a whole new dimension of information. The bulk of user generated applications of today are mainly allowing users to publish and share lean bandwidth content – typically text and pictures. The current frontier of user generated applications is the development and market introduction of applications that allow rich user generated media content. Rich Media is defined as: - images, streaming video, voice audio, music, 3D and animation. Also content will be made accessible to a broader range of user terminals and interfaces, including mobile devices.

In this new multimedia media landscape there is also a trend towards letting end users edit and share content from newspapers, encyclopaedias, public archives, and broadcasting stations. Both video and audio content are increasingly more accessible for novice consumer group. According to Shafer (2006) creative Commons licenses, and general licensing deals will make content easier to find, and audiences will have more freedom to reinterpret content For example, in the UK, BBC has licensed 1,000 hours of content to its audience to allow it to rip, reconfigure and share it, in the expectation that user creativity will produce novel services or programmes. In other European countries and the USA similar initiatives are underway, typically seeking to identify the advances in audio-visual systems and applications that will lead to a broad take up in the market. The same trend is visible with basic web applications such as flickr and jusspress where the user originates content and the network application compiles or collates it.

Existing user generated applications started as relatively simple tools with fairly high immediate usability and learnability, making it easy for the users to get started using the applications. Subsequent development of additional tools and features as well as multimedia dimension within the framework of existing user generated applications – as e.g. that represented by the Norwegian network community underskog.no – has lead to the once simple user interfaces has become more complex and less intuitive. It is a key challenge for the businesses in this market to be able to keep these applications usable and also to introduce more complex features and media as video and audio in an ongoing development.

The number of file formats has increased dramatically, after the web in generally has moved from text to multimedia. Browsers acquire the ability to display media in various formats through the use of plug-ins. Underskog.no for example will not allow the user to have a satisfying experience with the browser Internet Explorer, but ask the user to rather shift to the browser Firefox. Adding multimedia to a web application is more difficult than creating a simple page of text (Heller & Martin, 1999). Multimedia creation tools are sophisticated from

the average users point of view. Flash movies and Dreamweaver offer ease of use for professionals but not for the average citizen.

Therefore, there is a need to provide more intuitive end-user applications for these new forms of multimedia collaborative content creation. To that aim it is also a key to identify which successful multimedia applications and features users want to use, and inspire citizens to communicate, share and produce content and thus extending the applications for multimedia content.

These challenges raise the important questions:
- What kind of multimedia content do users want to produce and share – and in what way?
- Whom do they want to share multimedia content with?
- Where and when, in what context, do they want to produce and share multimedia content?

In terms of the complexity and convergence among end-user technology products and applications an important aim will be to generate knowledge to enable the user in keeping pace with their new multimedia applications and features. For future applications targeting user generated multimedia content this requires a significant focus, not just on ease of use, but also more knowledge on who the European user of such applications is, and what are the future users of these applications as well as their user needs.

From Local to Global services

Internet is starting to get entry into every corner of the globe, and products and services that were one local have become global (Bojko et al 2005). Now that more and more applications are used globally, international cultural differences can become apparent. As Tapscott and Williams (in press pp 10) points it: "In the past, collaboration was mostly small scale. I was something that took place among relatives, friends, and associates in households, communities, and workplaces." Now this is changing in to be a mass collaboration in global networks.

However, patterns of users' behaviour and needs will still appear and it's important to take into account possible cultural differences when designing user experiences. There aren't that many products or interactive systems that are really used by "everybody". Targeting "everybody" with an interactive system is not easy, nor cheap. User requirement analysis can contribute to defining precise target audiences that are more likely to use it. However, large-scale, multi-user communities such as MySpace and YouTube are both services that are going beyond national communities and operate on global basis. According to Bojok et al (2005) an obvious requirement is to have usability testing with local practitioners, to ensure that local user needs will be taken in to account. User studies and requirements studies in the different countries where target groups for the application lives would also be useful. Thus, to day there exist only a limited number of cross-cultural comparisons of the experiences of ICT uses (Livingstone and Bovill, 2001). There is a need for both country specific and more cross-cultural research on ICT adoption and use.

From Digital Divide to Digital Production Divide

The escalating importance of Internet and other forms of ICT in work, education and daily life is incontrovertible. The development of a social dynamics and on the Internet do also put a greater demand up on the user to be active and productive (Brandtzæg et al, 2005) in new

media by contributing in new online communities with their own user generated content. This may indicate a new notion of the digital divide, a divide between those who consume and those who produce or a "digital production divide ". Tapscott and Williams (in press) claims that only the connected will survive in this new world. And citizens who fail to grasp the collaborative opportunities will be isolated from the networks for sharing, adapting, and updating knowledge are the new value. A similar view is suggested in the report "The New Digital Divide – How The New Generation of Digital Consumers are Transforming Mass Communication" by Nathan et al (2006).

The digital divide has traditionally been conceptualised as the split between the "haves" and "have nots" of new media. However as the usage and technology development has been changing the debate around the digital divide has progressed. A central focus of most recent research on the digital divide has been a question of "digital literacy" rather than of access (O'Connor & al., 2004), centred on "quality of use" (Livingstone & Bober, 2003). According to OFCOM (the independent regulatory body for the UK communications industry), digital literacy is the ability to "access, understand and create" communication in a variety of contexts (Buckingham & Others, 2005; Livingstone, Van Couvering, & Thumim, 2005). The level and development of these skills are believed to have major implications for the individual, the education system and society in general.

According to Jacob Nielsen's (2006) Alertbox for the 9th of October 2006, the majority of users don't participate very much in communities and online social networks that rely on user generated content, but rather lurk in the background. There is a participation divide. According to Nielsen user participation often more or less follows a 90-9-1 rule: There are in online communities 90 percent lurkers who never contribute but read or observe. 9 percent of users contribute a little, but other priorities dominate their time. 1 percent of users account for almost all the content production. This means a tiny minority of users' accounts for most content and the system activity in general. One example is Wikipedia, where more than 99 percent of users don't contribute, but consume. Wikipedia has 68,000 active contributors, which is 0.2 percent of the 32 million unique visitors it has in the U.S. alone. The same number we will find on the YouTube, that almost have 20 million users, but only 70 000 contributors that upload their own videos. Another example from Nilsen (2006) is that among the 1.1 billion Internet users, only 55 million users (5%) have weblogs, and that only 0.1 percent of users post daily.

This type of participation inequality or divide was first studied in depth by Hill et al (1992). Nielsen (1996) does also refer to another study of more than 2 million messages on Usenet (Whittaker et al, 1998). They found that 27 percent of the posting activities were from people who posted only a single message. 3 percent of the posters contributed for 25 percent of the messages. Nielsen (2006) suggests therefore that the big-picture statistics of online communities often give a biased understanding of the level of participation. A lot of the statistics do not take in to account the differentiated level of participation and the many differences that exist between users who are active creators and post a lot and those who are inactive and post a little. The problem is, as Nielsen concludes, that we will never hear from the silent majority of lurkers in these online communities. But, as Nielsen point out, participation inequality is not necessarily unfair. If some users don't want to contribute, they are allowed to do so. The problem is that the overall community is not representative for the majority of the users. On the other hand the problem could be more serious if it is like Tapscott and Williams (in press) suggests that citizens who not make use of the collaborative opportunities will be isolated in the new economy. The challenge for the future online

community is therefore to re-shape the 90-9-1 distribution to achieve a more equitable distribution.

It should therefore be mad more easy for the average user to generate their own content.
But, who are this 1 percent contributing in online communities? As shown in the previous text these are people are mainly early adaptors and teens. The report from Nielsen//NetRatings (October 11, 2006) showed how web sites with social networking profiles and content is the number 1 site among teens. But, even among teens there are differences in use. The big-picture statistics might persuade that the digital divide is bridged. According to the report done by Nathan et al (2006) just 14 % of the heavy Internet users maintain their own blog. These figures are small if you actually look at the percentages that actually use technologies. The fact is that there is just a small proportion of the general population that use ICT for active content creation and participation. Similar findings are also to be found in other studies on media use among children and young people (Livingstone & Bovill, 2001; Heim et al, 2007; Brandtzæg et al., 2005; Heim & Brandtzæg, 2007). Nathan et al (2006) suggest anyway that a small number of active Internet users not is insignificant, and hat these consumers are quite influential. Additional, the report concludes that this number of user innovators is on the rise, and that content creation will become the norm.

However, these figures may suggest a new face of the digital divide related to the new social dynamics in new media in combination with a rich media landscape might appear. Higher involvement in terms of co-creation and content production will be difficult to master for certain citizens, with no or low digital media experience. A new digital divide may come into view, between those that only consume media, and those which also produce. This divide might be described in the following terms:
   1. **Digital Consumer Divide**, inequality in access and user skills to every potential consumer of new media.
   2. **Digital Production Divide**, inequality in access and user skills among every potential producers or co-creator in new media.

Conclusion

This paper investigates the literature that describes the new popularity of co-creation or content production among users and the social dynamics in the new media landscape. The paper gives an overview over recent reports to describe who the users as innovators is, as well as new trends that characterise the new media landscape and the new challenges that will arise to design new applications targeting all user groups.

So far, the new media landscape in terms of rich media and user generated content, put a greater demand up on the non-professional user, since the users needs to turn from being passive to being active or from a passive consumer of content towards and active role in the media chain. In conclusion, ICT participation differs to much among users, and the Internet connection and broadband connections are also still to low in several countries in Europe. Therefore, a new digital divide may come into view, between those who have inequality in access and user skills to be a potential consumer of new media, and those who have inequality in access and user skills to be a producers or co-creator in new media. This is also exemplified in the 90-9-1 rule described by Jacob Nielsen (2006), suggesting that just 1 percent actually contribute actively in online communities. In short, the new media landscape is turning more complex in regard to digital literacy.

In more detail the new media landscape is changing, and it changing fast:
- From consumer to producer
- From text to rich media
- From local to global services
- From one to many, to many to many
- From single usage to community usage

The investigation in the literature may provide substantial new knowledge on actual user behaviour and a basis for the development of user and context requirements for collaborative networked media experiences in the broadband society.

This review may provide a basis for identifying changes in patterns of media usage and user needs. There was still a lack in the present literature on relevant user studies addressing real user needs for the co-created future networked applications, such ass A/V – community2.0 applications.. Several reports suggested however that the innovators of user generated content applications so far, mainly are younger users and heavily users of the Internet or so-called early adaptors/lead users.

Finally, a result from the literature investigation was that future co-created networked applications should aim to focus on the social aspects and relationships among users, because co-creation is dependent up on involvement, trust and identification. A solid focus on the interactions among users and their opportunities for building social identity in online communities may therefore be a key to make successful and digital inclusive networked applications for the future.

Acknowledgment

Author

Petter Bae Brandtzæg received the Master's degree in Social Psychology from the Norwegian University of Technical Science in 2000. He joined SINTEF ICT and the Human-Computer Interaction group in 2000. His expertise is in analysing user trends and patterns of use of new digital media, digital literacy and evaluations of user experience of ICT systems. Brandtzæg holds more than 20 publications and done a number of talks. He is at present manager for WP 1 in the CITIZEN MEDIA project (IP – FP6 – 2006-2009 - www.ist-citizenmedia.org -) and researching for a PhD on patterns of media use in online communities.

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Inside The Circle: Using Broadcast Sms In A Sports Club

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Abstract

With over 100% penetration, the mobile phone has become a normalised part of everyday communications in Ireland. This paper examines the use of the mobile phone within two Irish sporting clubs and finds that in both the regular practice of communication has been transformed by the use of broadcast SMS text messages sent using the 'distribution list' facility on handsets or through the web. The SMS are sent by club administrators for information distribution and as reminders for gatherings, causing an increased cohesiveness within the group.

For the administrators, broadcast SMS offers a convenience in what is a voluntary job, communicating information on fixtures, matches and training, essential for the smooth running of the club. For the club members who receive the SMS, the distribution of such information through their mobile phone has saved time and minimised travel, while strengthening their ties to the club. Both groups are enthusiastic and quote instances of how it provides new opportunities to them and how they can plan their lives around this new way of working.

Introduction and Background

The growth of mobile phones in Europe has been well documented (Dunnewijk & Hulten, 2006), and Ireland is no exception. Although the fixed line telephone was never as ubiquitous as in other European countries (Flynn & Preston, 1999), when the mobile phone became widely used for social interaction in the late 1990s, the Irish population were quick to adopt. Penetration has now reached 111%, (March 2007 figures) (ComReg, 2007). Irish mobile phone users are also avid users of the SMS service, sending on average 117 text messages per subscription per month. This reflects the "maturity of the Irish SMS market and popularity of SMS amongst young people" (Gilligan & Heinzmann, 2004:9).

Once with an economy firmly based in agriculture, Ireland owes it recent economic success to the information industry, and has a consequent growth in urban development, particularly along the east cost around the capital, Dublin. However, much of the rest of the country still reflects a widely distributed population, in particular the west (the location of this study) where 58% of the population live in small villages or open countryside linked by a few main routeways and many small roads, and with a poor public transport infrastructure. (CSO, 2003) [1] For this population, the necessity for a mobile phone takes on different meanings to those which have been described in many of the urban-based studies of young people .

The sports clubs explored in this paper comprise geographically located communities, people who live within perhaps 10 kilometres of each other, and who regularly meet to follow their common interest in the traditional Irish sports of hurling and Gaelic football. The members of these groups were meeting and communicating long before the mobile phone was available,

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[1] In the West, only 41.8% of the population live in towns of 1,500 people or more. The population density in this area is approximately 32 per km^2.

and so the technology per se is not enabling them to come together (as might be considered with Internet communities), but rather providing a new tool to enhance their repertoire of correspondence. The clubs have integrated the use of the mobile into their everyday patterns of communication in order to keep members informed and minimise the work and travel involved in bringing people together.

In many western countries, studies have described the decline of local communities and the consequent loss of social capital (Putnam, 2000), and this has been mirrored by Irish research (NESF, 2003)[2]. However, much as Irish people may not be linking to their neighbours or volunteering for local ventures in the numbers they once did, evidence shows that sports activities are still well supported (Delaney&Fahey, 2005), and that both active and passive participation is high. This is particularly true for the traditional Irish sports, which are administered by the Gaelic Athletic Association (GAA) and are strong at a local level throughout the country.

The GAA is the largest sports body in Ireland, with more than 2,500 clubs on the island. These are run as voluntary, community-based initiatives which usually draw their membership from the local district, and are particularly strong in rural areas. The emphasis on community is stated in the aims of the organisation:

> *"The GAA club should ... [be] one that provides leisure and social activities for all ages and genders in its community. The Association and its clubs should also become involved in non-team based activities, by supporting local developments, promoting cultural activities, ... supporting schools and contributing to community infrastructure." (GAA, 2002)*

There are two main games played, hurling and Gaelic football, and competitions are organised between clubs in each of the 32 counties, with progression to a country-wide competition. Each county also fields a team, with members drawn from the clubs within it. The level of interest in inter-county competitions is very high and provides a talking point for the whole country at competition peak times. The sports are also encouraged through a number of active schools competitions, and most clubs field a number of children's teams Considering that this is a non-professional game, the levels of commitment put in by players often matches those of their semi-pro peers in other sports. The organisation is centrally administered by a paid staff in the Dublin headquarters, located in a state-of-the art stadium, but clubs retain autonomy over their activities, and all club work is voluntary.

The game plan: Research outline

This research is based on interviews with 22 club members and supporters, exploring their use of the mobile phone for social and organisational interaction. It is backed by a survey (n = 40) gathered at local games. Players, supporters and management from two clubs participated – a hurling club (male players) located in a rural area in the West of Ireland, and a ladies' football club in Galway city, the largest conurbation (72,500 people) on the Atlantic seaboard (CSO, 2007). The research objective is to examine how mobile phone use is altering

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2 The Irish government have consulted with Putnam and actively speak about the importance of 'social capital' which could be lost by the increase of individualisation and commoditisation. They have set up a number of task forces to promote civic participation throughout the country. See http://www.activecitizen.ie/.

personal communication patterns among those with existing close ties. Focusing this within the GAA clubs gives access to community groups who exist within a local geographic area, and whose main communication lines have historically been with face-to-face communication. It might be assumed that the mobile phone would offer new opportunities to extend and develop these existing relationships.

During the main playing season, April through to September, teams play at least once per week, and clubs need to have regular communications with their players on activities such as fixtures, training and results. Since the nature of the sport is that people are away from their home base while participating, mobile phones are the main form of communication being used for social interaction by all concerned. They are used in a number of scenarios within the club: by administrators for their management and for intra-club communication, and by the players and supporters to stay in touch with both the club and each other. Mobile phone ownership is a given for this cohort - all of the interviewees have their own phones, and when asked they could not name anyone of their friends or acquaintances who did not carry one.

Creating our own match strategy: Club administration

Each GAA club has a formal committee who are responsible for the day-to-day running of the club and its premises (clubroom, social centre and pitches). Communication on match arrangements (fixtures and training) would originally have been done by face-to-face contacts – calling at houses, passing messages through others, or having an announcement made in the local church. In more recent years, the fixed line telephone may have reduced the amount of work this engendered, but burdened the secretary with many calls in order to ensure everyone was informed. This work has largely been replaced by the use of broadcast SMS messages sent to mobile phones.

The ability to broadcast SMS messages is the "killer application" for both GAA clubs. Sending an SMS message to a group of people can be done either through web-to-phone access, or using the 'Distribution List' facility found within the software of (some) handsets. All of the Irish mobile phone service providers offer a limited number of free texts per month (up to 300) and the facility through their websites to send texts, in a single transaction, to all members of a pre-specified group.

For the clubs, broadcast SMS enables contacting a pre-specified group of members with a single message, a facility that is not available on land-line telephones, and provides a speedy option for distributing information on matches and training. It also ensures that everyone gets the same information, and because of its asynchronous aspect, the receiver doesn't have to be present to accept a call. The club administration staff use broadcast SMS messages for a variety of reasons – organising meetings, reminders for training, and providing information on game fixtures.

One of the duties of the club secretary is to convene meetings, which usually take place on a monthly basis. To ensure maximum attendance, the secretaries of both clubs have taken it upon themselves to send reminders to the committee of the upcoming meeting. The secretary of the ladies club explains:

> *"You would always have been able to contact people, so text replaced*
> *phone calls. ... Now it's just handier to make a distribution list and the*
> *one text and send it to everybody." (female, club secretary, aged 35-45)*

Each adult team within the clubs has its own manager, and these managers also use broadcast SMS to remind their players of upcoming training and matches. This would originally have been done by announcing details of the next meeting to all gathered in the dressing room after a game or training session, and in that busy space, players frequently did not register what was being said. Getting an SMS message means not only do they receive the message, but they also don't have to recall all details as these are stored in the phone's 'inbox'; in effect they carry the reminder with them wherever they go. As one player remarked:

> *"It's easier to have a message on your phone, whereas, if you get it by post, you'll just leave it on the [kitchen] counter and forget about it."* *(male, player, aged 25-35)*

Using broadcast SMS not only ensures the members won't forget a meeting; it also gives flexibility to the organisers around arrangements. In the past, changes such as training at a different location, or new timing for a match would have meant trying to contact a large number of people in a short time, and calling off a session in the case of, say, poor weather, was not undertaken lightly. This new flexibility means that everyone can be informed of any changes directly and quickly

The managers and committee members are all very enthusiastic about the new affordance provided by broadcast SMS. Talking about her use of the technology, one manager says:

> *"I do that a few times a week. I find it very, very good. To do it by land line you'd have to hang up the phone, and lift it again, and dial every number ... [and] ...engage in conversation, and sometimes the person wouldn't be there, and you'd have to go back and try that number again later. At least with a text message it's gone. And whether they read it there and then, or read it the next day, it will deliver eventually... It is fantastic."* *(female, manager, aged 45-55)*

The club members who receive the SMS are passive in this transaction – they only reply if they can't make the session. However, they too are very positive about its use. They appreciate the timeliness and speed of the information they receive, with one member describing how previously a decision on fixtures taken by a county committee on Monday evening might then have been communicated by post. This entailed the secretary writing postcards on Tuesday, and players waiting until these arrived before having confirmed arrangements:

> *"... at one time you wouldn't know until Thursday or Friday. Now, with the phone you know Tuesday morning."* *(male, player, aged 25-35)*

Getting speedy updates on changes to venues or cancellation of a match due to weather conditions also eliminates unnecessary travel, an important factor especially for rural dwellers.

Interestingly, the one exception to sending group texts in each club was when wanting to send a message to underage players. The managers explained that either because the players didn't have mobiles themselves, or perhaps that the message should go to the parents who would be bringing them to matches or training session, it was often better to use another approach. In

one instance, the players were all attending the same local school, and during term time that was a point of contact where a message could be delivered to the group as a whole. Only in the summer months did the manager need to call, and that was to the home rather than to the individual.

Normally club information SMS messages are sent out to everyone only by the management. However, sometimes texts are also sent as a 'daisy-chain' from player to player, not using a distribution list but rather as a 'pass it on' type message. One player described how he had got a text a few days earlier which had been 'doing the rounds':

> "Tomorrow evening now we have the underage [players] receiving medals, and the older members of our club say 'Please show up, because they love to see you coming, they look up to the older lads.' And everybody got a text… I got it two or three times, off different people, so I'll definitely go up tomorrow night." (*male, player, aged 25-35*)

The team effect: Changing attitudes since group text

Club members are an already close social group who all live within the same area, may have gone to school together, are often related, and have a shared background and history. They also meet regularly face-to-face, seeing each other a few times a week to play football or hurling. Overall, the mobile phone communications serve to strengthen these (already strong) ties. Among themselves, members use text messages frequently, often to arrange face-to-face meetings, something which can be difficult for rural dwellers who do not live in easy proximity:

> *"It's very handy when you can just text all your friends and meet up, like. And I suppose the relationship is stronger, the more we see of each other." (male, player, aged 25-35)*

A number of members remarked on the bonding effect of increased personal phone communication:

> *"…[with the mobile] …you would be closer to the friends you've had for years." (male, player, aged 25-35)*

When asked about the changing patterns of communication within the club brought about by mobile phone use, all of the interviewees mentioned the broadcast SMS sent by the administrators, usually referring to them as "group texts". They described how being included in the team panel or committee who receive group texts created a sense of integration into club affairs:

> *"… makes you feel inside the circle, like." (male, player, aged 18-25)*

This point was more pertinent for younger or newer members than for others whose role was assured due to their long-term team membership or local renown as successful athletes. This feeling of inclusion has been found in other studies of group text systems, such as that of Farnham and Keyani who implemented a group text message system among a number of socially active friends. (Farnham & Keyani, 2006) In their analysis, members reported a strong sense of connection to the group, even for those who did not themselves ever broadcast messages. In a study of the impact of computer networking on community,

Kavanaugh surveyed parents who were sent information through email by a school board, which in effect is the computer equivalent of a group text (Kavanaugh, 1999). In this case, 91% of respondents reported that having school issues communicated to them through the list had made them feel more involved in school issues. Being included in an information ring appears to automatically bind members to a group.

The effects of inclusion generated by the broadcast texts has also had ramifications for the social capital of the group. Social capital has been defined as:

> *"the degree to which a group ... uses mechanisms such as social networks, trust, reciprocity and shared norms and values to facilitate collaboration and cooperation." (Ling, 2004a)*

It is a topic which has engaged the Irish government in recent years, as they are concerned that Ireland's new-found wealth has lead to a decline in how citizens might contribute to civic engagement and volunteer to support a healthy society. The role of ICTs in social capital formation has been explored in several studies (Pigg & Crank, 2004; Ling et al., 2003; Ling, 2004a; van Bavel et al., 2003; Wellman et al.,2001; Quann-Hasse & Wellman, 2002; Anderson, 2004)

Social capital is commonly considered to take two forms. These can be "bonding", which suffices to keep a group closely connected, and "bridging", which forges links across disparate groups (Ling, 2004a). In ways participating in a GAA club can act feed both forms. It bridges society as it is recognised in bringing together people of different politics, professions, and income groups[3]; and it bonds them in a way that they consider those outside the club (or in other clubs) as a distinct "other", at least for the day of the match, and in the case of long-term rivals, as a permanent target of difference, as exposed by the colours one wears. By their very membership of the club, and the voluntary nature of their contribution, players and club administrators are engaged in generating social capital. When broadcast SMS is used to remind and encourage others to participate, it is acting to maintain (and strengthen) the existing cohesion of the group as a whole, or bonding social capital. Since the broadcast SMS are sent within the club only, they do not in any way contribute to the bridging aspects of social capital

The group texts also engendered feelings of egalitarianism within the club. Since everyone receives the same message, from the same source, at the same time, no others in the group have extra or 'insider' knowledge. As one club player put it:

> *"It is good because everyone gets the same texts. There is no one better than anybody else, everyone is kept in the same loop, and you can't say you didn't get it." (female, player, aged 25-35).*

Similar results have been reported by Weare et al. in their examination of the use of email for inter-group communication in voluntary community organisations. They reported that the

> *"... broadcast capability of the internet may allow information to be shared throughout a group efficiently, and thus reassure members that*

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[3] "The GAA … has a wide social class spread in its membership: while 40 per cent of its members are from either the skilled or semi-skilled manual classes, 33 per cent are from the higher or lower professional classes." (Delaney & Fahey, 2005)

they are on an equal footing where information access is concerned."
(Weare et al., 2005)

Even the club committee members who sent the SMS were aware that they were creating important feelings of inclusion, and the delicate diplomacy ensuing:

> *"... people feel left out if they aren't informed of something, whereas if quite a few people are informed, and you are the one who is not, you'd wonder why, ...they expect it." (male, treasurer, aged 35-45)*

Although using a centralised form of distribution, group texts are thus seen to disseminate power (in the form of knowledge) through spreading information.

Although no club members referred to them in this way, one could also consider these texts to be a form of control. The content of texts are directive, and while they remind players of events, they also set an expectation as to their behaviour in attending them. There has been much written on the role of mobile phones as an 'electronic leash' whereby parents keep tabs of their offspring and children 'kickback' to subvert this (Ling & Yttri, 2005). On a more macro level, broadcast SMS in particular has been used as a form of control in political contexts (Linchuan Qui, 2007). In future, club administrators may need to be careful that they do not over-use the broadcast SMS facility otherwise they may be viewed as monitoring rather than reminding members of their obligations. They may also need to be careful of the style in which the text is written. In fact, one player admitted that she sometimes ignored the group texts, which she recognised as being a generic message due to how they were worded:

> *"I would say that group texts are very impersonal. Say for example I get a text 'We definitely have training this evening at 7 o clock', people might ignore it, and say 'That's a group text'. Whereas if it was sent directly, 'Hi Sandra, make sure you train this evening', you'd probably pay more heed to it." (female, player, aged 25-35)*

The group text is in this case having the effect of distancing her rather than bringing her close.

While welcoming the club group texts, club members did not have a positive attitude to information texts such as those provided as a paid service (usually referred to as 'text alerts'). Only two were subscribers, both receiving sports information. In fact several respondents quoted negative experiences, either their own or a friend's, where they had signed up for such alerts, but found the service expensive as they received more than they expected, and subsequently had difficulty signing off the service. The positive attitudes towards incoming club texts was due to the fact that they know the incoming club texts are going to be directly relevant to their chosen leisure time activity and help to plan their week. The texts received from the club are also free to receive. However, one might speculate that even these might possibly be unwelcome if they were too frequent or extended beyond what is deemed necessary information.

Lessons from the sideline: Analysis

Broadcast SMS is a feature offered by both handset manufacturers and service providers, so it is not surprising that the club administrators might use it to communicate with their members.

What is perhaps unexpected is that the wholesale adoption of this 'way of using' the mobile phone has had a fairly radical change in the overall patterns of club communication and has caused the clubs to shape their work practices around it. Also significant is how its enthusiastic acceptance by club members has had a positive affect on the dynamics of the group as a whole, a fact which makes its presence now a necessary part of club interaction.

There are many instances of users shaping telephone technologies in ways that their designers did not anticipate. In the early 1900s farmers in rural parts of the United States created their own 'barbed wire' networks (Fischer, 1992); it was kin-keeping telephone calls made by women which led to the acceptance and eventual dominance of telephones for social use (Moyal, 1995); and more recently the use of texting as a cheap means of staying in touch by teenagers established SMS as a new mode of communication (Ling, 2004b). In each instance, everyday patterns of contact were made easier by users adapting the available technology to suit their own needs. This is what is happening in the sports clubs.

The incorporation of broadcast SMS into club work patterns is an example of user innovation not by technologically skilled or elite users, but by everyday end users. Club members are not even particularly enthusiastic about their mobile phones, and in interview have described its role in their lives as a functional tool, not as a fashion object or technical gadget:

> *"It's not that it's important to me in my life, obviously, like, it's something*
> *that's very, very handy." (male, player, aged 18-25)*

Haddon describes such creative use as:
 "daily acts of 'innovativeness', routine ways in which users actively manage their technologies." (Haddon, 2005)

The use of group texts in both clubs, which are geographically distant and not linked in any way, might suggest that this is a somewhat natural development of use which has evolved independently in both places, rather than being a novelty application which has spread through club connections.

Although a key technology in this case, SMS is generally not considered to be suitable for administration work. In one of the few studies on this topic, Svendsen et al. compare the use of SMS and email in office environments in a Scandinavian town (Svendsen et al., 2006). The authors conclude that SMS as a tool does not align with work practices in the way that email does, citing the fact that most people carry only their personal mobile phone, and prefer to use fixed line phones (paid for by their employer) rather than take on the added cost on their own mobile account. In the GAA clubs, administrators are regular club members who volunteer their time and energy to the club, taking on their post usually for one year. When doing this voluntary work, they do not use a club-provided handset, but in effect also volunteer the use of their own mobile phone, and personally pick up any costs that might accrue through sending the messages. Although they may have purchased their phone for social (recreational) use, they are actually adopting it as a work tool. In interview, no-one mentioned the added cost of keeping in touch with club members, probably because currently broadcast SMS is offered as a cheap feature (multiple sends for a single price, or with free access through the internet).

Using broadcast SMS has limitations as an effective work tool. To use the free group texts facility through a website, the phone owner must first log on using their own account details

to set up a user profile. When they enter the names to be included in the group text, they set up a group which is only accessible through this profile – unique to their account. Thus, if a manager sets up the names of 20 players onto a list entitled, say, 'senior players', and then resigns their voluntary post at the end of the year, they cannot easily pass on the details to the next manager - all numbers must be entered again. Similarly, if they use the operating system of their own handset to set up a distribution list, they cannot easily move this to the handset of an incoming manager when they resign. As a work practice, the use of personal mobile phones in this way means that the data is 'owned' by the phone user, not by the entity on whose behalf they are doing the work.

The ease of using broadcast SMS and its popularity with recipients would suggest that it will in future become a normalised and expected part of club interaction. For administrators without a computer to hand (or for use 'in the field'), it is most convenient if they have a facility on their handset to send a group text, and club administrators did state that it was an attribute they would look for when purchasing a new handset. However, not all handsets offer distribution lists as part of their operating systems. Consumer choice will certainly steer club members away from these.

Writings on the use of internet communications to connect communities of place agree that the success of ICTs in maintaining strong social networks is partly due to the fact that individuals can contribute to the community by their on-line activity (Farnham et al., 2004; Norris, 2004; Weare et al., 2005; Wellman et al. 2003) This is the same pattern that is evolving with social networking software and other web 2.0 platforms – participants contribute content to the fora, which strengthens their links to the network and adds to the synergy of the network as a whole. The networked model does not apply to using broadcast SMS in the sports clubs. The direction of communication is simplex - administrators alone send the messages, and the member recipients are inactive (unless to report a problem, and then they interact only with the administrator). Even though every member could send texts to all the others, none choose to do so, making this a centralised, top-down pattern of communication.

Despite not following the flatter, multi-stranded network model, members have reported that they believe the broadcast SMS do strengthen their group. This could be so if we consider that the texts are simply a mechanism for information sharing or coordination which, when effective, brings people together to develop the deeper exchanges which will bind them. In their examination of the potential of ICTs to build social capital, Pigg and Crank distinguish between the use of technologies to deliver *communication* and *information*, the former being expressive and the latter instrumental (Pigg & Crank, 2004). Within the clubs, the initial delivery of instrumental information by broadcast SMS is leading to face-to-face meetings which then build on communication and enhance the richer and deeper personal links which build a basis for the trust and reciprocity of social capital.

Conclusion

The mobile phone is becoming normalised in Irish society, and its use is widespread in the sports clubs included in this study. The club administrators who use broadcast SMS have a very practical attitude to its role in their lives, and yet their ways of using the device have had an important impact on the overall bonding of members to their sports club. Receiving group texts has not only saved members time and travel, but it has also strengthened ties and reinforced feelings of inclusion. This feature may need delicate handling, as over time,

building the SMS into the routine of club matters will create expectations of the level of information available throughout the group, and perhaps an increased dependency on being reminded of events and kept up-to-date with club affairs. On the other hand, if overused, it may make recipients ignore the messages sent. The patterns of communications created here are contrary to the networked pattern and content subscription model evoked by most recent technologies. However, since the sender is doing a voluntary job, and one which may be taken on by any of the recipients in the future, the hierarchical direction of communication is not seen negatively. It is viewed more as providing an aide-mémoire than an order.

The club administrators who send the SMS are by no means lead users; they are simply exploiting a cheap aid to do their voluntary work. And although SMS are not normally considered a work tool, using a distribution list as a simple database in this way markedly eases the burden of communication in the club. In effect, it keeps everyone 'inside the circle'.

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The Challenge Of User- And QoE-Centric Research And Product Development In Today's ICT-Environment

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Abstract

Within today's ICT environment, trends like a growing convergence and increasing competition, have led to a fast-changing market with an increasing speed of innovation development and shortening product life cycles. Because of the skipping of research stadia, the lack of insight in the end-user expectations, needs, experiences, and of suitable methodologies … the number of failing innovations has increased remarkably. On the other hand, the boom on the supply-side led to an enormeous empowerment of the consumer. Influenced by these trends, a clear evolution towards a more user-centric, 'pull'-driven mentality started to manifest itself from the early nineties on. In this respect, the concept of '*Quality of Experience*'(QoE) started to acquire a central place in today's innovation and technology development literature, as the success of innovations has become highly dependent on the *experience* of the user. This paper focuses on two major challenges 1) '*What is QoE?*': to date, there still exists a lot of inconsistency and confusion about the interpretation and definition of QoE. In order to tackle this challenge a conceptual model of QoE is presented. The second challenge is related to the question 2) '*How should QoE be measured?*' In this respect, an overview of the most important problems is given and a new approach for more user-centric QoE-measurement is proposed.

Contextualisation: '*How come it goes so slowly when it goes so fast*?'

Within today's ICT-environment, technology provides content creators and consumers with a myriad of coding, security, access and distribution possibilities. At the same time, broadband and wireless communication enable access to information and multimedia services from almost anywhere at anytime. From a consumer's point-of-view, the ICT- and multimedia market is characterized by a growing 'convergence' (Servaes & Heinderyckx, 2002, p. 92; Van Cuilenburg, 1998, p. 12; Van Dijk, 1999, p. 9) and an overload of multi-featured devices and applications. From a suppliers' point-of-view, ICT innovation seems to be a paradox. Lennstrand (1998) describes it by the question '*How come it goes so slowly when it goes so fast?*'. On the one hand, liberisation and growing convergence resulted in a hypercompetitive, fast changing ICT environment, characterized by an increasing speed of innovation development and shortening product life cycles (Dogson, 2000, p. 19; Gaines, 1998, p. 7;

Haddon, 2004, p. 1; Marsden & Verhulst, 1999, p. 1; Van Riel, Lemmink, & Ouwersloot, 2004, p. 348). Poiesz and Van Raaij (2002, p. 32) are using the concept of an '*innovation spiral*' to illustrate this: due to the increasing competition, all competitors feel a stronger need to innovate, resulting in more innovation attempts. In this proliferation of innovations, it has become more difficult to distinguish innovations from each other, as suppliers move swiftly to the next innovation.

On the other hand, this environment is typified by a certain slowness: despite the promising prophecies innovations are introduced with, the number of failing innovations increases. As it becomes so difficult to distinguish oneself from the many competitors, more and more innovations get stuck in the chasm between innovators and some early adopters, and the rest of the market. Explanations are often sought in the lack of accurate insight into the end user's expectations, needs and wants at the early development stages, the absence of suitable methodologies, and the skipping of research stadia in the product development process because of time pressure (De Marez, 2006, pp. 142-165; De Marez & Verleye, 2004, pp. 33-34).

Both from a theoretical as well as from a market perspective, the above mentioned trends caused a clear evolution towards a more user-centric mentality or a shift from a 'push' towards a more 'pull'-driven mentality since the early nineties. The success of new products and technologies has become highly dependent on the experience of the user and his perception of the quality of this experience. As we will see further in this paper, concepts like '*Quality of Experience*' (Drogseth, 2005, p. 1; Enterprise Managament Associates, 2002, p. 1) and '*user experience*' (Forlizzi, 2003, p. 1; Forlizzi & Ford, 2000, p. 419; Hassenzahl & Tractinsky, 2006, p. 91; Wright & McCarthy, 2003, p. 1), which can be framed within this more user-centric mentality, have started to acquire a central place in today's innovation and technology development literature. From a theoretical point of view, the evolution towards a more consumer-oriented paradigm has undoubtedly also been pushed forward by 'untraditional' approaches as Von Hippel's 'Lead User' theory, stating that lead users can serve as a kind of '*need-forecasting laboratory for marketing research*' (Von Hippel, 1986, p. 791).

To date however, most concrete efforts to anticipate for a good user experience remain limited to the 'big players'. Dell installed its 'Customer Experience council' in 1998, in order to scrutinize every aspect of how Dell interacts with its customers (Kirsner, 1999, p. 1). Other examples like Microsoft, providing Xbox 360-'lead users' with developer kits, or Philips - using a community of 'lead users' for betatesting in its leaduser.nl initatiative - illustrate this growing importance of the user's opinion and experience within the development process. Unfortunately, these initiatives remain rather fragmented: users are often not imbedded in a continuous user-centric process. In most cases, they are only involved in one single stage (e.g. usability testing) or only in the final stages of the process (e.g. evaluating) (Haddon et al., 2005, p. 10). As both scholars and practitioners are confronted with the methodological challenge of more accurate user research in order to stimulate real user-centric product development, some important issues need to be tackled.

Within this paper, we will elaborate on the fact that Quality of Experience and its measurement became crucial aspects in today's competitive ICT enviroment. More specifically, we will focus on two major issues: As there exists much confusion and inconsistency about the definition and interpretation of this concept, we will first focus on the question '*What is Quality of Experience?*' The second challenge we try to tackle relates to the

question '*How should QoE be measured?*': we will give an overview of today's problems with regard to QoE-measurement and instigate a new approach.

Changed ICT-environment: changed role for the user?

With the growth of technology development, the use of technological devices (for instance ICTs) became widespread. As a result, consumers were faced with an increased opportunity of choice, as more and more innovations were 'fired' at the market. This boom on the supply-side led to an enormous empowerment of the consumer, who became a demanding, critical and self-conscious stakeholder. This changing 'user role' did not pass unnoticed within the HCI-tradition. During the '70-'80s, the emphasis was on efficiency and functionality: developers and designers concentrated on the way people thought and processed information (Geerts, 2006; Tuomi, 2005, p. 21). Users' expectations or subjective experiences were no part of the focus. From the late 80's/early 90's onwards however, people were seen as social actors and development/design teams started to recognize the importance of social aspects and dimensions (cfr. origin of participatory design, contextual design, …) (Geerts, 2006). Since the late 90's, we find ourselves in a situation where computers and technology in general are ubiquitous, and more importance is attached to the home-environment of people, to the influence of culture, emotions, experience, … (Geerts, 2006).

This gradual 'rise of the consumer' must be framed within the broader context of some global views on technology adoption, development and management. On the level of theories on technology adoption, the diffusionistic paradigm dominated since the early 60's (Rogers, 1995, p. 2003). Due to an increasing number of failing innovations (that could not be explained by the theory) and a lack of attention for the end-user, this technologically deterministic paradigm was countered by user-centered paradigms as the 'social shaping of technologies' and domestication-perspective since the early 90's (Lievrouw, 2002, p. 185; Mackay, 1995, p. 42; Punie, 2000; Silverstone & Haddon, 1992). Recently, more and more authors adopt the 'middle course' of 'interactionism' (Boczowski, 2004; Trott, 2003): a perspective in which the success of technology adoption and diffusion is explained as a continuous synergy between technological and user/societal forces.
On the level of technology development and introduction, as we have seen, there was an identical shift from a more R&D-driven 'push'-oriented mentality towards a more (marketing driven) 'pull'-oriented mentality in which the user became the starting point of the technology development (Rickards, 2003, p. 1095; Trott, 2003, p. 836). But also here, more and more authors are convinced that reality is somewhere in between: in an interaction of push- as well as pull-forces (Bouwman, Van Dijk, Van Den Hooff, & Van De Wijgaert, 2002, p. 45; Crawford & Di Benedetto, 2000, p. 51).

Whereas Quality of Service and technical performance metrics received a lot of attention in the past, *Quality of Experience* is now the new 'magical word'. The increasing importance of the 'user experience' is without a doubt closely related to the above mentioned change to a more consumer-oriented mentality. Kumar (2005, p. 39) illustrates this sharply when he says: '*The consumer is king – and needs high QoE*'. Quality of Experience should not be a goal in itself, but it does have important implications: if you provide your customers with a high QoE, they will be happy and satisfied (Nokia, 2004, p. 3), but if you don't, you will create a '*customer experience gap*' between what they want and what they get (Good, 2001, p. 4). These gaps are usually caused by a lack of insight in the totality of dimensions of a customer's experience. Too often, developers, designers or managers are aware of the importance of the customer's experience, but their approach remains too narrow (in an

instrumental way, in terms of optimizing QoS, …). As a result there often remains an 'experience gap', although the product or service was intended to increase the customer's Quality of Experience.

In order to anticipate what the user expects and experiences, he should be involved in the development process. As mentioned earlier , some big players or industries (e.g. gaming industry) already involve users in certain stages of the development process of a new technology or application. But there still remain lot of difficulties concerning the role of the users, the timing (at what stage of the process?), the actual process of involving the users (what Limonard & de Koning (2005, p. 176) call '*the dilemma of user involvement*'), the type of users that should be involved, etc. (Haddon et al., 2005, pp. 9-10). In this respect we can refer to Von Hippel again: *when it comes to market research for novel products, it is the specific category of 'lead users' that is best suited, since their needs represent the future needs of the whole market* (Von Hippel, 1986, p. 791). Von Hippel's theory is only one example of involving the user in the NPD process. But in order to measure the user's expectations and Quality of Experience as well as involving him in the development process from the early stages onwards, we first need to tackle the methodological and conceptual challenges that Quality of Experience brings along.

Rise of the user and his '*Quality of Experience*'

Following Pine and Gilmore's 'Experience Economy' (1999), experience has become a USP or '*competitive battleground*' (Kirsner, 1999, p. 1). There has been a shift in value from 'products' to 'experiences' as the customer wants to see his needs fulfilled (Lawer, 2006). In the changed, highly competitive ICT-enviroment, the consumer has risen as a powerful stakeholder: he became more demanding as the intense competition between the many suppliers of a same functionality allows him to. He can easily switch from one supplier to another when he has a bad experience. His purchase decisions are now mainly based upon his (perceived) Quality of Experience, while the QoS concern of the end consumer has actually become a non-issue (Van Moorsel, 2001, p. 8). In this respect, Jain (2004, pp. 96-97) points out the difference between on the one hand 'innovators' and 'early adopters' and on the other hand the 'mass market': the former will base their purchase or adoption mainly on the technology, functionality and QoS of the product, while '*normal users care more about the problem the product solves and their experience while using it*'.

But Quality of Experience is not only important for adoption purposes, it's at least so important for loyalty purposes: good experiences will also promote customer satisfaction and customer loyalty (Kumar, 2005: 37). At the same time, satisfied customers will lead to a positive market perception and will prevent market dilution. All these elements can help the company to create a relative advantage and maintain its competitive edge (Nokia, 2004, p. 3). Munnecke & Van der Lugt (2006, p. 8) take it one step further when they say that user values and experiences are the '*dominant key values in future markets*'. values that should be at '*the very centre of the innovation process*'. Which brings us to one of the main problems: it is clear that delivering good experiences should be a top priority, but how should this be done? And how can it be done in a way that users are closely involved? Or put differently: '*How do we go beyond the simple platitude "focus on the user" and build our products and services in ways that lead to great experiences*?' (Miller, 2005, p. 90). Drogseth (2005, p. 61) describes the problem in terms of cognitive dissonance between what the priorities of technology managers are (QoE, user-centric approach) and what they actually do (QoS, technology-centric approach). According to Mulder and Steen (2005) '*many projects aim to put end-users central and aim to combine multiple perspectives, but very often this ambition is not*

completely realised. For example: end-users may be invited to react to prototypes only after they are finished.'

Two of the main reasons for not being able to succeed in going beyond this 'platitude' is the lack of a concrete definition and clear conceptualization of the QoE-concept and the lack of a good QoE-measurement approach.

Two challenges

Within the scope of this paper, our first aim is to propose the conceptual model of QoE, that was developed during an ongoing IBBT[1]- project[2] on End-to-end Quality of Experience. This model is intended to serve as a base for a new and approved QoE-measurement approach. A first step towards the construction of the model consisted of an exploration (desk research, literature study) of the current definitions of QoE and the confusion and diversity in today's approach. At the same time, we made an appeal to a panel of 12 national and international experts on QoE, In order to compose the panel, we used both literature, seminars and conferences. As an expert were considered those that recently published on the QoE topic, or practictioners involved in researching and managing QoE. The panel was consulted by means of an online survey on QoE definitions and statements.

In an attempt to tackle the second challenge, we examined how QoE-measurement should be best dealt with in order to make new product development processes more user-centric. To date, this is still not done well enough. Despite big companies doing efforts to involve 'innovators' in different stages of the process, QoE measurement often remains a fragmented and unsufficient effort because of the lack of the necessary insight into the QoE-concept to create a comprehensive measurement approach. An approach in which innovators certainly have an important role to play, on the condition that this is part of an overall process of synergetically combining methods to involve the user.

Challenge 1: QoE conceptualisation, today's problem for QoE measurement

The central question to be answered here is '*What is Quality of Experience exactly*'? And what makes it so different from other related concepts? Compared to the concept of 'Quality of Service', the QoE-concept is of a more recent date. Whether on the application, network, server or device level, QoS has a rich tradition in engineering and developing environments. The 'semantic variant' Quality of Experience only emerged since the late 90's, when the user, his experience and user-centric design became more important (cfr. supra). For a long time the 'quality'-concept (when related to ICT-projects and services) had a very narrow interpretation in terms of technical parameters and performance metrics in other words, and only recently the 'quality for the user (and of his experience)' became more important. In the definition of this more user-centric quality concept of QoE, the narrow technological interpretation often stays dominant however: Kumar (2005, p. 37) for example defines it as '… *the qualitative measure of the daily experience the customer gets when he uses the services he is subscribed to – including experiences such as outages, quality of picture, speed of the high-speed internet service, latency and delay, customer service, etc*, …'. Other authors as O'Neill (2002, p. 1) or Van Ewijk, De Vriendt, & Finizola (2006, p. 1) define QoE in a similar, rather narrow and QoS-alike way.

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[1] Interdisciplinary Institute for BroadBand Technology (Founded by the Flemish Governement: www.ibbt.be)
[2] More info on the E2E QoE-project can be found on the project website: https://projects.ibbt.be/qoe/

Parallel with the rise of the user and traditions like HCI, also the increasing popularity of the usability concept found its translation into QoE-definitions (e.g. Nokia's vision on QoE in the context of 'mobile data services' (Nokia, 2004) or Alben (1996)).

Obviously, QoS and usability are key dimensions for a definition of Quality of Experience; but they can not be the only ones. Several authors emphasize the 'multidimensional' character of QoE (Drogseth, 2005, p. 61; Forlizzi & Batterbee, 2004; Gaggioli, Bassi, & Delle Fave, 2003, p. 121; Hassenzahl & Tractinsky, 2006, p. 91; Kirsner, 1999, p. 1). Some stress the importance of the user's '*emotions, expectations, and the relationship to other people and the context of use*' (Arhippainen, 2003, p. 1), while others describe it as a '*subjective and holistic phenomenon, where users construct the eventual experience within the settings afforded by the environment*' (Vyas & Van Der Veer, 2005, p. 1).

Conclusions from the desk research were legio: QoE definitions are often 'too narrow' in terms of QoS and usability, most authors agree on the multidimensional character of the QoE-concept, but there remains much inconsistency about the very (sub)-dimensions QoE is based on. Literature learns that QoE-definitions should also account for dimensions like context, expectations and perceptions, next to the more technologically-inspired QoS dimensions.

An echo of this was found in our expert panel[3]. Among the QoE-definitions of the 12 experts in our panel, we noticed a broad diversity and the same dimensions recurred: multidimensionality, technical QoS-metrics, subjectivity/perceptions, meeting expectations, context and usability.

Returning to the question: how QoE should be approached, it is clear that QoE is more than just the 'instrumental QoS- and technical inspired' concept it often is regarded as (Hassenzahl & Tractinsky, 2006, pp. 92-93; McNamara & Kirakowski, 2005, p. 201). With input from both the desk research as the expert panel, we tried to build a conceptual model, covering the most important QoE dimensions and integrating the formerly too much seperated visions (which was lacking (Wright, McCarthy, 2003, p.1), with the aim of enabling better measurement and understanding of the QoE-concept.. Starting from a model in which all the elements provided by the literature and the different experts were integrated, we ended up with a model consisting of five main building blocks (the conceptual model with all its subdimensions can be found on the next page):

(1) Quality of Effectiveness (~QoS)

This dimension represents the traditional 'Quality of Service' approach on QoE. QoS doesn't equal QoE, but a performant technology or service is in most cases a first prerequisite to achieve it. Therefore, this 'building block' is all about the accuracy and technological performance, at four levels: a) application/service, b) server, c) netwerk, d) device/handset.

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[3] The first question in the online survey was an open question in which the experts were asked to define QoE. Next, after the list of statements and the reactions on these statements was completed, the experts had the opportunity to adjust their initial definition.

(2) Usability

The second dimension, usability, is already integrated in many QoE-definitions. In most cases it is however approached in terms of 'behavioural usability': focused on the ease of working, user friendliness, the man-machine interaction (Argogroup, 2006; Nokia, 2004, p. 3; Velthausz, 2005). Often neglected here is the 'emotional usability': the emotions and feelings of the user when using the device or technology (e.g. '*is the technology user friendly enough for the user to have a good feeling*?'(Gaggioli et al., 2003, p. 127).

(3) Quality of Efficiency

This dimension is meant to cover the subjective character of Quality of Experience. A certain type of interface will be very clear for one user, while it remains very complex for another. Central question here is: '*is the technology working good enough for the user*?' For this dimension, we distinguish between three levels: a) device/handset, b) network and c) application/service. In technical terms, a technology may be performing very well, but at the same time this may not be efficient enough to satisfy the user or meet the user's expectations. In this respect, Jarvenpaa & Lang, (2005, p. 7) point out the fact that '*users' experiences with technology are often paradoxical*'.

(4) Expectations

This fourth dimension is included in the conceptual model to enable the measurement of the previous subjective dimension (Quality of Efficiency) in an adequate way. Only when you have an insight in the user's expectations, conclusions can be made about whether a technology is working well or sufficient enough for that user. The degree up to which the expectations are met, will then determine the Quality of Efficiency.

(5) Context

For a comprehensive approach of Quality of Experience, it is also necessary to consider experience in its broader context. Also for this context variable, it is necessary to distinguish between several sublevels. We distinguish between five types of context: a) environmental, b) personal/social, c) cultural, d) technological and e) organisational. The expectations users have, can depend on the context they find themselves in.

With these 5 dimensions, we tried to be complete the model on the level of 'main building blocks', but referring to the fact that QoE is really a subjective and 'open-ended' matter (Drogseth, 2005, p. 64) it's important to stress that the conceptual model cannot be considered as exhaustive on the level of sudimensions. Summarizing, this proposed model was constructed with the intention to cover not only what the technology does (QoS, performance measurement), but also what people (can) do with the technology, what people want/think to do with it and expect from it, in what context people (intend to) use it, and up to what degree it is meeting their expectations and resulting in an 'end-user happiness'.

Having this conceptual model as a starting point for better QoE measurement, we can move on to the the second question '*How to measure Quality of Experience?*

QoS

Experience limited to the specific technology/device & its working

Application/Service
- Functional effectiveness
- Content effectiveness (e.g. supporting multiple formats)
- Quality of Sound / Image / …
- Reliability

Server
- Availability
- Reliability

Network
- Connectivity / Accessibility
- Reliability
- Packet Loss
- Jitter (variation delay, response time)
- Latency

Device/Handset
- Number of features
- CPU Usage
- Memory Usage; …

Quality of Effectiveness
~Does it work ?

MEASR : metrics
~performance indicators
~accuracy

Usability

MEASR : Usability methods

Device/Handset
- CPU
- Memory / Memory errors
- Battery lifetime / Energy consumption
- Screen / Display related issues
- Interface,
- Personalisation

- Speed
- Ease of Access / Availability (anytime, anywhere, anyone)
- Security / Fidelity / Protection from oneself and others
- Adaptivity & reconfigurability & interoperability,…

Network

Application/Service
- Response Time
- Content Personalisation / Customization
- Security: User authentification
- Navigational efficiency / Complexity
- Content efficiency / Attractiveness
- Security: Protection from oneself,…

Quality of Efficiency
~Does it work well enough for the user?

MEASR : QoEffect x Expectat

Expectations

????

Environmental Context
- Private / Public Environment
- Mobility
- Seamless handover
- Usage Context
- Solo / Simultaneous
- Other hosts in reach
- T fluctuations
- Indoor / Outdoor
- …

Personal & Social Context
- Personal social unit / Network Externalities
- Identity Creation / Group Feeling
- In group / Out group communication
- Empowerment / Enslavement, dependence / Independence
- Self efficacy, Competence / Incompetence
- Visibility, demonstrability
- Enjoyment, fun, feelings & emotions when using
- Prior experience

Cultural Context
- Age
- Continental / Regional differences
- Values
- …

Technological Context
- Simultaneous use over multiple devices / One or more users
- Aesthetics / Tangibles
- Compatibility with already existing devices and networks
- Usage intensity & variety
- Trust, brand image / Reliability
- Billing, Cost
- Organizational support, (e.g. help desk)

Organisational Context

Context

Experience in broader context

QoE
From user-point of view

De MaeZ, De Moor: 2006
Conceptual Model QoE

- 47 -

QoE-measurement: today's problem

According to Vyas & Van Der Veer (2005, p. 1) the '*era of user experience*' and the rise of Quality of Experience have challenged designers and developers '*to understand human experiences and apply them into the design process*'. Also others emphazise the importance of gaining insight in the user's experiences and expectations during the NPD-process (Arhippainen, 2003, p. 2; Von Hippel, 1986, p. 791; Vuckovic & Stefanovic, 2006, p. 207), but its practical implementation still shows a lot of shortcomings due to ignorance, questioned credibility and value, market evolutions (cfr. supra), … (Anderson, 2004, pp. 2-3).

To date, a major issue is the technological determinism in the practical approach of Quality of Experience. This can been seen as one of the main reasons for the lack of user involvement. The technological sky is the limit, and there are no concerns about what users want. Developers often wrongly assume that new applications and so called technical optimizations will self-evidently lead to a better experience (Jarvenpaa & Lang, 2005, p. 7). Quality of Experience is usually measured in terms of technical metrics (~QoS), ignoring the fact that the ultimate goal should not be to deliver applications with the most advanced features, but to deliver products that will ensure a good Quality of Experience (Coninx, Luyten, & et al, 2003, p. 17; Empirix, 2001). In today's ICT environment however '*it is no longer sufficient to just deliver products which have technical excellence*'(Bevan, 1999, p. 89). Users should be involved throughout the whole development process (not only in the evaluation phases), and insight in the user's expectations and requirements should even serve as a starting point for the development of a new product or application. We already mentioned the efforts of some of the big players within the ICT environment to involve (lead) users or innovators in the NPD-process in this respect, but once again, we would like to stress that these are rather exceptional cases where users are involved in parts of the process.
Secondly, as Quality of Experience often gets a narrow, technical and QoS-alike interpretation, it is mainly measured in terms of technical metrics. Many authors criticize this approach when stressing the multidimensional character of the concept of 'user experience' (Arhippainen, 2003, p. 3; Buchenau & Fulton Suri, 2000, p. 1; Forlizzi & Ford, 2000, p. 424; Gaggioli et al., 2003, p. 121; Jain, 2004, p. 96). Measuring the subjective dimensions of experience is often skipped or neglected because of the shorter product life cycles, time pressure, budgettary reasons, … (McNamara & Kirakowski, 2005, p. 201), or simply because of ignorance.

This brings us to the problem regarding today's QoE-measurement practices: no consensus about the methods to measure QoE and a lack of knowledge of the existing methods (which (sub)dimensions do they measure? when can they be applied?). For the dimensions that are not measured in the current approach, a reorientation of existing methods and methodological renewal is required. According to Kort, Steen, de Poot, ter Hofte, & Mulder (2005, p. 1) the existing methods are not suited for the intended insights: '*They are too focused on task performance and usability issues, while research interests have changed and broadened to include context and user experience ...*'. Indeed, the main measurement-challenge is to go broader then just the performance and QoS-aspects: it's about gaining insight into what the user really experiences, from his own perspective (Arhippainen & Tähti, 2003, p. 27; Ehr, 2003, p. 1).
The identification of the most important problems and issues concerning the measurement of Quality of Experience, brings us to the crucial question: how should QoE be measured?

QoE-measurement: how it should be done?

From the discussion of the conceptual model, we have seen that QoE is a multidimensional concept: five major building blocks were introduced. This means that measuring only one or two dimensions (QoS and usability) is not sufficient: '*Experience does not exist in a vacuum but in dynamic relationship with other people, places and objects. Furthermore, the quality of human's experiences changes over time because different contextual factors influence on it*' (Buchenau & Fulton Suri, 2000, p. 1). Consequently, QoE should be measured in all its dimensions!

Equally important, is the stage in which these measurements occur: the measurement of QoS and QoE traditionally happens 'ex post', after the user has experienced a finished product. More stress should however be put on the expectations 'ex ante'. What is needed is a so-called '*predictive approach*', that focuses on the user and his QoE from the first phases of the NPD-process onwards (Ishibashi & Tsykin, 2004, p. 135). Arhippainen & Tähti (2003, p. 27) attach a similar value to user research in these early development phases. They see it as necessary condition to gather information about the end-user, his expectations and needs. In this respect, it's also worth mentioning Raina (2006, p. 2), who looks at QoE from a market perspective: in his 'Customer Happiness Mantra', he explicitly underlines the importance of knowing what the user expects (Expectation of Quality, or EoQ). This 'Customer Hapiness Mantra' is *EoQ=QoE*, or in other words, when the expectations equal the experience, your customer will be happy and satisfied. A problem that may arise with these early expectation measurements however, relates to what Limonard and de Koning (2005, p. 176) call the '*dilemma of user involvement*': users cannot always articulate their expectations or predict what they expect to do with certain devices or applications. Innovators and 'lead users' (cfr. Von Hippel) might be very useful user categories here to overcome the familiarity and involvement problems concerning users in the early phases of the development process.

We have seen that the existing measurement approaches and efforts to involve the user, are too fragmented and not well integrated in the whole development process. From the literature and our expert panel, we learned that QoE-measurement can only be successful when it regards an integrated, continuous flow: '*QoE is a journey rather than a destination*' (Enterprise Management Associates, 2002, p. 3). Needs and expectations are influenced by several factors, so what is needed is a continuous, synergetic process. The overall process should consist of several interaction moments with users. This interaction idea is supported by several authors (Arhippainen & Tähti, 2003, p. 27; Corrie, Wong, Zimmerman, & et al, 2003, p. 1; Forlizzi & Ford, 2000, p. 419), as by the majority of the experts we consulted. The general flow is divided into several stages, as each step of the process raises other questions and requires other methods to gain the necessary insights. Inspired by other authors who opted for a phased approach (Lindgaard, Dillon, Trbovich, & al, 2006, p. 48; Mahadevan, Braun, & Chaczko, 2004, p. 3; Velthausz, 2005, p. 48), we chose to work with the three phases of the new product development-process: 1. prior-to-development and prior-to-launch, 2. post-development and prior-to-launch, 3. post-development and post-launch. Combined with the main dimensions of QoE, taken from the conceptual model of QoE, we propose a more user- and QoE- driven flow in these three phases, measuring five building blocks: Quality of Effectiveness, Usability, Quality of Efficiency, Expectations and Context.

Today's methodologies: suited for the flow?

In order to be able to propose an 'optimal measurement flow' for Quality of Experience at some point, a first and crucial step consisted of a critical screening of the existing methods for QoE-measurement, and other methods from several disciplines that could be useful for this purpose. Within the scope of the IBBT-project on QoE, this 'screening exercise' resulted in a list of over 60 multidisciplinary methods, both quantitative and qualitative. The following and ongoing step includes the integration of these methods in a QoE- measurement 3x5-matrix, which is made up of the three phases from the NPD-process and the five main QoE-building blocks that were identified previously (cfr. supra). For the plotting of the methods in the matrix, they are judged on their suitedness to measure a specific QoE-dimension and to be applied in a particular phase of the development process.

In first instance this judgement, is based on literature and the consultation of a 'methodological expert panel'. Unlike the expert panel that was consulted in the conceptual phase, the people in the second panel are not necessarily having an expertise in QoE: they are experts in a particular (methodological) field (e.g. working with lead users, usability, participatory design, foresight …). In second instance, the judgment of methodologies is based on empirical findings: in the context of our QoE project, a number of methods to involve users in the process are tested in different case studies (e.g. Playstation 3-case, translation workshops, VoD-case, Videoconferencing-case,…).

Final aim is to come up with optimal solutions for the methodological challenge that QoE is entailing, and to point out those cells where there exists a hiatus, or confusion about how and when a certain method can be used and eventually, to propose a toolset for a user-centric approach to QoE-measurement.

Completing the flow…

In our interpretation of the flow-idea, every decision that has to be taken during the user-centric development process (eg. when to involve users, what type of users should be included, the scope and objectives of every user-centric excercise, the choice of suited methods…) will depend upon the very stage of the development process. In each stage of the process, other Quality of Experience-dimensions (and subdimensions) will namely be emphasized. For instance, during the *prior-to-development and prior-to-launch phase*, involving the user is in many cases considered as unnecessary, or simply skipped because of time pressure or ignorance. Yet as we have seen, a good Quality of Experience equals a match between the actual experience and the expectations before launch. So involving the user in this phase and getting insight in his *expectations* and requirements with regard to the the technology or device, is crucial! Another important dimension here is *context*: how will the environmental, technical, personal & social, cultural… context influence the user's expectations and experiences?
For the second phase (*post-development and prior-to-launch*), it is clear that more stress will be on usability testings on the prototype(s), on the Quality of Effectiveness (the technical aspects of the demo(s) or prototype(s) of the technology, device or application) and to a lesser degree also on the Quality of Efficiency (does the prototype/demo work well enough for the user?). In the third phase we mainly situate the traditional *post-measurements*: in this stage, the actual user experience can be measured in all its dimensions (both on a objective and a subjective level).

The ongoing process of integrating the methods into the QoE-matrix is organised as follows: every method is judged on her suitedness to measure one or more subdimensions of QoE and

the degree to which she is usable for one or more phases of the development process. Next, the different cells in the matrix, are given a colour: *a green cell* indicates that a suited method was found to measure a particular (sub)dimension at a specific stage of the process (eg. prior-to-launch). An *orange cell* means that the proposed method could be suited, allthough it still implies some problems (methodological issues, disadvantages from the literature, experiences from own user reseach, …). And finally the *red cells*, represent those QoE-dimensions, for which no solution has been found yet (for that particular stage of the process): a red cell is in other words a hiatus in the methodological 'store' for user-centric product development.

As mentioned above, with our own empirical research, we try to evaluate several methods on their suitedness to involve users in the development process and to measure certain QoE-dimensions. Within the QoE-project, the case-studies are organised around four common scenarios: VoD, Videoconferencing, 3D-Gaming and networked videosensors.

Case-study Playstation 3 (3D-gaming scenario)

With the release of Sony's newest game console in Europe[4], we invited two groups of users to participate to a qualitative 'game-experience study' in three phases. The first group consists of 5 innovators or 'lead users'[5]. The second group (N=5) consists of more moderate gamers (early adopters – early majority): the participants from this second group all possess a number of game consoles and are very interested in (the launch of) Sony's newest game console, but nevertheless they are not interested in purchasing it right away.

Both groups were invited for a PRE-measurement workshop (prior-to-launch) at the beginning of March: with this, we intended to measure their 'expectations' towards the new console *ex ante* and to find out more about their current game-experiences. Within these workshops, a combination of methods and tools was used: brainstorming and free listing, focus group method, prioritising, expectancy value forecasting and image gap. In addition, the first group was invited to participate to a diary study: they were asked to fill in a 'game-experience form' every time they played a game on one of their game-consoles. The second group[6] was invited to come over to test the Playstation 3 in our own test-space.

Both groups will be invited once again for a POST-measurement workshop (which will take place in April), to tell us about their experiences with the Playstation 3 console. At these sessions, the user's initial expectations (before launch) and their actual experiences will be compared. We will look for possible 'experience gaps', for differences between the two user groups, assess the experiences from the diaries …and by doing this make an evaluation of all the methods that were used in this case-study.[7]

Conclusion

The outline of the changed ICT-environment led us to the evolution towards a more consumer- and user-centric, 'pull'-driven mentality from the early nineties on. In this respect, the concept of '*Quality of Experience*' acquired a central place in the literature, as the succes or failure of new technologies has become highly dependent on the user's experience. As a result, gaining insight in this 'Quality of Experience' can be seen as a necessary condition for delivering good experiences.

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[4] The European release of the Playstation 3 console took place at March 23, 2007.
[5] We defined 'innovators' or 'lead users' here as people who had already ordered the console well in advance and who usually buy a new game console right ahead after its launch.
[6] This was the group that didn't intend to purchase the Playstation at or immediately after the release.
[7] Results of this study will be available at the time of the conference.

We identified two major challenges with regard to QoE. As there exists a lot of inconsistency and confusion about the definition of the QoE-concept in the literature, the first challenge was related to the question:*'What is QoE'?* In order to tackle this challenge, a conceptual model for QoE - consisting of five major building blocks and many subdimensions - was presented. With this model, we aimed to stress the multidimensional and subjective character of the QoE-concept and propose the base for an improved measurement approach for QoE.

Another important observation (i.e. the lack of a good measurement-approach) served as the base for our second challenge: to instigate *a new user-centric approach for QoE-measurement*. In this respect, the most important problems were listed and a number of suggestions for a new approach were made: QoE should be measured in all its dimensions, it should regard an continuous, synergetic process, that consists of several interaction moments with users. Only if users are involved throughout the whole development process, their expectations, needs, experiences…can be anticipated, leading to an optimal end-user experience. As we have seen, some big players have already made their first attempts to valorize the above mentioned mentality-shift. From these initiatives, it is clear that innovators and lead users can have an important role to play. They are however still too fragmented, limited to a certain type of users, not well integrated into a whole, continuous user-centric development process…

Good measurement also implies choosing the right methods and gaining insight in the strenghts and weaknesses of these methods: we gave an overview of our ongoing methodological research for QoE-measurement, and the integration of methods into a QoE-measurement matrix. As we saw, the judging of the suitedness of methods is based upon literature, a methodological expert panel and our own empirical findings. Final aim here is to come up with optimal solutions for the methodological challenge that QoE is entailing.

It is clear that the product development process in the context of the changed ICT-environment would benefit tremendously from a *real* user- and QoE- centric approach. Doing this means that the user and his experience are placed at the heart of the innovation and development process. Question is now, who dares to take up *this* challenge?

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Dealing With User Generated Content: Adjusting Information Managers' Source Selection And Information Quality Assessment

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1. Abstract

The development of online content creation tools and social software has a significant impact on corporate environment. For a long time, the internet has been seen as a challenging workspace for Corporate Communication and Information Management purposes. It enables a growing number of people to publish, share and relay information (facts, opinions or contacts) on any subject they see fit. A number of authors have studied the way Information Managers face new opportunities and risks created by those new flows of information, especially as regards sources selection and information processing. The recent emergence of user-friendly content creation tools and networking facilities, consubstantial with Web 2.0, has increased that phenomenon, opening the discussion to a new range of information sources: the ordinary user/client/consumer.

This paper aims to present a theoretical confrontation of usual information evaluation criteria - arranged in a checklist of 76 sub-criteria- (Cooke, 2001) to 5 formats of information sources, considered as specific to the recent transformation of informational landscape (Kolbitsch & Maurer, 2006): weblogs, wikis, podcasts, file sharing and social networks platforms. The confrontation consist in a rating of each sub-criteria as *less* (-1), *even a*s (0) or *more* (1) *important than before.*

Our results show a significant impact of technical changes on the information evaluation process, balanced by growing concerns regarding authority. A detailed reading of criteria indicates lots of changes, even though a broader analysis highlights a relative status quo. This suggests that the evaluation process remains globally the same, but that it mostly needs to be rethought and reorganized to better cope with the new reality of new types of sources.

2. Introduction

Assessing information quality and providing resources to improve sources selection has always been a subject of intense attention in the field of Information Sciences. On the practitioners as well as on the academics side, those issues remain crucial for all kinds of "audience". For years, information has been identified as a major asset which enables people or organizations to reduce their environment uncertainty and help them in optimising their decision processes (O'Reilly, 1982; Hardy, 1982, Culnan, 1983; Schultz & Leidner, 2002). The characteristics of the channels used to convey information have an impact on the information selection and evaluation processes. Its form and its content reflect methodological and editorial processes that the user must take into account. Is the information reviewed? Who is the initial source? For what purposes was it generated? These questions are neither new, nor even recent. For every new means of communication which is adopted by a significant number of people or groups, information evaluators need to adapt their analysis methods to cope with the new channel and the resulting new situation. This can be observed in the recent evolution of Information and Communication Technologies (ICTs) and especially the content creation tools supported by the Internet as a global platform.

Authors usually agree that "the need to filter and select the most appropriate source and manage information requirements effectively is compounded due to the exponential rate of growth of literature via diverse media, resulting in information overload, and the lack of knowledge and skills on the part of managers to maximize the available resources" (de Alwis & al., 2006).

This paper aims to cover this phenomenon from particular theoretical and contextual points of view. Today, the informational landscape has become more complex and difficult to categorize than ever. Sources of information are multiple and vary in their design and content characteristics. Consequently, proposing a practical or stable typology for them is virtually impossible. Every attempt needs to adopt the most effective point of view to reach its objective, the consequence thereof being a limited vision of the observed environment. This paper focuses on that particular issue and should be read and understood as such.

2.1 Scope of research

From a theoretical point of view, the scope of research will be limited to organizational information management, i.e. on how companies, institutions or organized groups deal with the information related to or coming from their environment. This systemic position is proposed in order to simplify the global understanding of the phenomenon. There are obviously other relevant epistemological postures, but this article purports to refer to very different fields of knowledge such as Information Sciences, Internet Studies, Media Studies, Knowledge Management, Corporate Management, etc.

In this article, we will underline the difference between paper and electronic forms of information channels, and disregard the interpersonal exchanges of information. Following these choices, special emphasis will then be given to the specific electronic context of information channels. Source selection and information quality evaluation are once again challenged by the evolution of information channels as they appear mainly on the Internet, which will be our main focus, even though similar changes can be seen in non-electronic means of information (books, printed newspapers, academic journals, etc.). As they have existed for a long time, it is believed that the process of their selection and quality evaluation has remained unchallenged by the evolution presented in this research. Yet the underlying assumption is not that the assessment of that content is a perfectly mastered process. With the corporate posture taken here, special attention will be paid to the Information Management processes (IM). The IM concept may be defined in different ways. Previous studies have led us to assume that there could be as many definitions of IM as people to define it. Therefore, we have built our own formulation of the concept, based on review of the literature. Information managers with an interest in this paper are professionals whose main assignment consists in managing information, where IM is:

> *Individual or collective set of actions aiming at grasping information coming from its environment, in order to anticipate a given situation or a broader trend, at a given time, and to react to take benefits of it, after an appropriate processing and relay. Those actions are realized by information mediation (gathering, processing, distribution, etc.) and differ from their main goal: threats and opportunities detection, help on the decision-making process and influence actions.*

The main objective of this research is to observe, analyse and understand how channels of communication which have appeared on the Internet (and especially web-based content creation tools) affect the way organizational IM teams select their sources and evaluate the quality of information.

2.2 Context of research

With the development of the World Wide Web (WWW) within professional and private spheres, as information provider and communication channel, organizations have taken up the challenge of dealing with new kinds of content produced by sources not necessarily known or assessed (Marsden & al., 2002). And this simple observation does not refer to recent years but is older than a decade. Scholars and professionals have been dealing with that phenomenon and have rethought the way information quality could be evaluated. Within organizations, Information management systems have been developed to cope with the progress of digital communication devices and networked computers. Following that trend, a number of authors have proposed methods in order to help practitioners and developers (Lazonder & Biemans, 2000). These methods are multiple, ranging from theoretical frameworks (DeLone, Mc Lean, 1992), to guide books (Alexandre & Tate, 1999; Cooke, 2001) or even actual automated tools (ISI rankings for example). The general trend described here has been accelerated in recent years by the fast growing phenomenon known as 'Web 2.0'. Authors suggest a scale shift with the Internet, following much ancient research (Huber, 1990; Auster & Choo, 1994, Graef, 1995; Graef, 1996): "anybody can express and publish its content" and make it available. If such statement could be made in the nineties, then surely the phenomenon addressed in this paper is not new. Yet we intend to "renew" it.

Kolbitsch and Maurer (2006) summarize their view by claiming that the traditional model is challenged by community-driven services which weaken the usually clear distinction between information providers and consumers. They argue that it is not driven by technology *per se* but by a mind shift that encourages individuals to take part into the development and creation of new structures and new content. Users become innovators.

It is not the purpose of this paper to discuss the extent to which Kolbitsch & Maurer are correct. A literature review (on terms such as Web2.0, Internet, blogs, wikis, trackbacks, etc.) shows a growing interest in academic circles for Web 2.0-related phenomena. Until a few months ago, it was difficult to consider them from a scholarly point of view. But this situation is about to change. Web 2.0 is currently becoming a concept, supported by empirical findings, and will soon be defined by scholars, losing some of its weaknesses in the process, i.e. its marketing buzzword use, its origins, the fact that it was firstly based on nothing more than "ideas", etc. (Hoegg & al., 2006).

Web 2.0, or whatever the trend may be called, is characterized by technical features which are relevant to our purpose. Tools such as blogs, wikis, social networks, etc. are nothing else than content generation tools enabling any individual to become an author on the web, easily and cheaply, and to contribute to the overall flow of information. Businesses can illustrate the potential impact on organisational IM. Consumers and clients are now able to share their opinions, positive or negative, about a product with others, users or not. Today, mainstream media (i.e. traditional channels of information such as television, newspapers, radio, etc.) often disseminate information first and foremost on the ground that it is new (or even unusual) content. This implies that information managers have to adapt the way they watch their sources, but also how they select, assess and process the information coming from these media. (Kolbitsch & Maurer, 2006). One characteristic which may be observed in parallel to the Web 2.0 trend is the improvement in media richness thanks to technical development. In addition to text and links, a large variety of file sharing platforms has appeared: sounds, films, pictures, etc. (Kolbitsch & Maurer, 2006). This media richness has been demonstrated by several studies (de Alwis & al., 2006) as a factor influencing information seeking preferences (Daft & Lengel, 1986). These authors highlighted four aspects in the process: facilitating rapid feedback, handling multiple cues simultaneously, establishing a personal

focus and language variety that can convey understanding. At the time of their research, Daft and Lengel discussed face-to-face communication as the preferred source of information, and one can speculate that the media richness of Web 2.0 uses the same success factors. In addition, some authors go further by describing in a very simple and clear way the context of the informational landscape shift due to ICT's evolution and Internet activities development. They indicate that the specific task of information validation is no longer the prerogative of professional information mediators. It is the average user who is now responsible for his or her own evaluation process (Serres, 2005), which is what this research purports to show.

3. IM and the Web challenges

As this paper focuses on sources selection and information quality evaluation, we will reduce the scope of IM to the information seeking process. It offers an effective "keyword" for achieving searches and refers precisely to the object of the study.

It is broadly accepted that ICT have an impact on the organizational workplace (Kallinikos, 2005; Merono-Cerdan & Soto-Acosta, 2007). de Alwis & al. (2006) published in 2006 a high quality literature review of the transformation in information managers' seeking behaviours. They justified their work by the fact that "the increasingly technology-based workspace offers managers a dynamic and interactively digital environment facilitating constant and instant connectivity via networked personal computers". More than the choice of new information, it is also a vast range of information sources and channels and the concept of information "anytime - anywhere" which are observed. Managers are under scrutiny because of the lack of coverage they have been subjected to. Similarly, this observation may be extended to all IM people in an organization as the definition of the concept given by the authors is: "a person in charge of a formal organization or its subunits". Furthermore, information seeking behaviour is considered in their review as "the behavioural approach to seeking and handling information at work."

de Alwis & al. also argue that information seeking reflects a relationship between work settings and information environment. Information is required at two levels, i.e. an immediate one to achieve operational decision-making and a broader one used for long-term strategic planning. The authors' review shows that managers (and information managers) have preferences for certain information sources (personal face to face, internal documentation, etc.) with a particular interest for Intranet/Internet based sources. Some studies have shown that web-based tools are mostly used to seek information, read on-line news and participate in discussion lists with a tendency to return to trusted and familiar web sites. More recent work has stabilized the assumption that ICT have revolutionized the workspace with "ready access to a vast array of information sources and channels at the touch of a button via networked PCs." When reviewing studies of the new millennium, de Alwis & al. (2006) identified the growing interest of scholars for new kinds of sources of information such as the web or corporate portals, a point we will expand on later in this article. What is important at this stage is to understand that the impact of information channel characteristics has always been considered as a potential influence on IM information seeking behaviour.

In the specific context of Information Management, authors have considered the impact of the Internet on the information seeking process (Auster & Choo, 1994, Graef, 1995, Graef, 1996; Cronin & McKim, 1996; Kassler, 1997; etc.). Teo & Choo (2001) published an article specifically related to the impact of the Internet on Competitive Intelligence (CI). They define CI as "the process of knowing what the competition is up to and staying one step ahead of it, by gathering information about competitors and ideally, applying this information in short- and long-term strategic planning." The concept of CI may be considered as a part of the

concept of IM, and the general analysis of Teo & Choo has proved to be applicable to the whole definition given above. They indicate, supported by different authors, that the information richness and hypermedia capabilities of the Internet have led CI professionals to exploit it for different purposes: monitoring other players in their environment, tracking customers' views on products, broadening their reflection by gathering files, reports and studies from different types of sources, etc.

Their studies present the links between the Internet and the quality of CI information. More precisely, they introduce three hypotheses related to the use of the Internet: research, internal and external use. Results suggest that the use of the Internet is strongly related to the quality of the Internet, which is itself, as previously shown, related to strategic advantages improvement. The study supports the Internet as an Information gathering tool. The hypothesis of internal use of the Internet was not supported but external use has a significant impact on CI information quality, specifically for dissemination of information, collaboration, etc. the conclusion of Teo & Choo (2001) is explicit, in that companies have to call attention to the Internet in order to understand how it has changed its intelligence landscape.

Earlier, Choo, Detlor and Turnbull published a now seminal book entitled *Web Work-Information seeking and Knowledge Work on the World Wide Web*. It offers both theoretical and empirical findings on the subject. It compiles most of the major studies on the subject of information seeking and concludes with an empirical study of the use of the web by knowledge workers. It indicates, among other findings, that the WWW is the second-most preferred type of external source but also the second-most highly-rated source in terms of relevance and reliability. It is obvious that the Internet as a channel of information flows is part of IM professionals' daily work (Pikas, 2005).

4. Information evaluation criteria confronted to new type of online sources

Articles and books offer considerable help to evaluate sources and information quality. Website and education courses are available, often freely, and take part into an overall trend in users' training. These guidelines aim to help and raise the attention and vigilance of users (professionals or not) to the traps and the tricks specific to online sources (Serres, 2005). Two kinds of content have been found during our literature review: theoretical approaches on information seeking behaviours, sources selection and information quality criteria and practical books or web pages. On the one hand, academic articles often present empirical surveys on the information seeking process, testing it fully (Alfirevic & Racic, 2004) or partly (Lazonder & Biemans, 2000; Jaques & al., 2004), focusing on specific types of workers (Hirsh & Dinkelacker , 2004) or industries (Leckie & al., 1996; Liao & Hu, 2007). On the other hand, practical guides generally take the form of checklists, compiling questions to ask when evaluating a source of information. They aim to raise the attention of the evaluator to either the formal aspects or the content characteristics. These checklists are rarely used as such. They may, at first, guide and train to sources and information evaluations, then provide experience to the evaluator so as to work more efficiently.

By comparing both kinds of resources on the subject of information evaluation, it has been noticed that practical resources could be used as an acceptable summary. Therefore, two books have been chosen to broadly represent the usual criteria of information quality. In order to cope with the subject of this article, these criteria directly refer to online content and sources of the World Wide Web. Written in 1999 and 2001, the checklists were originally designed to help newcomers to assess sources on the Internet. The authors (Alexander & Tate, 1999 and Cooke, 2001) appear to have built their lists upon scholarly-valid research.

Moreover, when comparing themes to the lists of criteria proposed in theoretical articles all categories may be found in both or at least one of the chosen books. That leads us to consider them as an acceptable starting point to work on Information evaluation criteria.

4.1 Methodology

The theoretical analysis of this article consists in confronting a checklist as complete as possible to new types of sources in order to determine whether their importance has grown, decreased or remained equal. A global table was then built, compiling 8 criteria and 76 sub criteria. The criteria are generally found in academic literature and are purpose, coverage, authority, accuracy, accessibility, presentation and arrangement, and ease of use (Cooke, 2001). The author presented them in 2001 in the form of a checklist. Sub criteria, taking the form of precise questions, are listed to help information evaluator to determine the evaluation of criteria more efficiently. In doing so, she offered more operational material than the theoretical literature because of the exhaustiveness and precision of the checklist.

Each criterion has been confronted to new types of sources that have recently emerged and changed the informational landscape. As the article of Kolbitsch and Maurer (2006) offers acceptable validated background, its framework of technological systems will be reused to give a typology of « new types of sources » in our study, that is to say weblogs, wikis, podcasts, file sharing systems (e.g. you tube, flickr, slideshare, etc.) and social networks (e.g. Linked-in, Friendster, Ziki, del.icio.us, etc.).

The confrontation consisted in answering one question, for each 76 sub criteria: is this less (<), just as (=) or more (>) important when applied to these new types of sources than to the types that originally existed in 2001? In a synthetic table, the answers to that question were encoded with the following scale: -1 (less important), 0 (just as important) or 1 (more important). Afterwards, the scores were summed for all types of sources, on a scale ranging from "-5" to "+5" and sorted in decreasing order of value. In doing so, we tried to highlight the criteria which have become more important in today's informational landscape. Finally, some charts were built upon transversal analysis of scores, average scores, and ranking. This aimed to support the overall reading and analysis of findings. According to this model, the more a format tends to "5" to more important the criterion has become. In addition, the more a format tends to a ranking of "-5", the less important the criterion has become. Rankings close to "0" mean that the new format of "the criterion is about as important as it was originally".

The scorings are based on our own judgement, regardless of any empirical validation. It is not meant to prove anything but, rather, to be thought-provoking. The theoretical approach chosen here is the first step of a broader research on Information Managers sources selection and information quality evaluation processes. To partly guide and support our rating of criteria, a checklist created specifically for Weblogs in the context of libraries was used (Clyde, 2004). Further details about it will be given later. It is our contention that findings deserve to be shared in the sense that they highlight important trends and guidelines useful for further investigations.

4.2 Results

Our analysis shows that new formats, inspired by Kolbitsch & Maurer, emphasize the importance of Cooke's information assessment criteria: 44% of sub criteria (all types of sources included in a general pie chart, see fig.1) have grown in importance when applied to a new type of online source. 30% have lost in importance and 26% of the sub-criteria remain the same. Within the 44 % of growing importance criteria, a majority (33%) has the highest

ranking (5). Within the decreasing importance criteria, the majority (39%) has the highest ranking (-5). Even though, in both categories, the rates close to "0" still have a significant proportion (more than 30% when combining "1 and 2" and "-1, -2 ratings). This means that the overall growing importance suggested by the general pie chart at first (44%) has to be nuanced as many of criteria remain close to the importance they had in 2001. This suggests that new format of online sources will not necessarily create new kinds of highly important criteria. On the contrary, the criteria comprised in the decreasing part are more nuanced (30% for "-1" and 39% for "-5"), which means that those that decrease in importance are more likely to be neglected or avoided in the current processes. Another interesting observation may be found when considering the proportion of each ranking of criteria from 5 to -5. As expected, the majority of occurrence is held by the 0 ranking (26%). The ranking "5" is the most recurrent (14% of the criteria). An important finding, suggested by this general overview of rankings, is that there is a gap when analysing the results globally or precisely. This will be observed in the following analysis.

Fig. 1 : Occurrence of rates: global and detailed
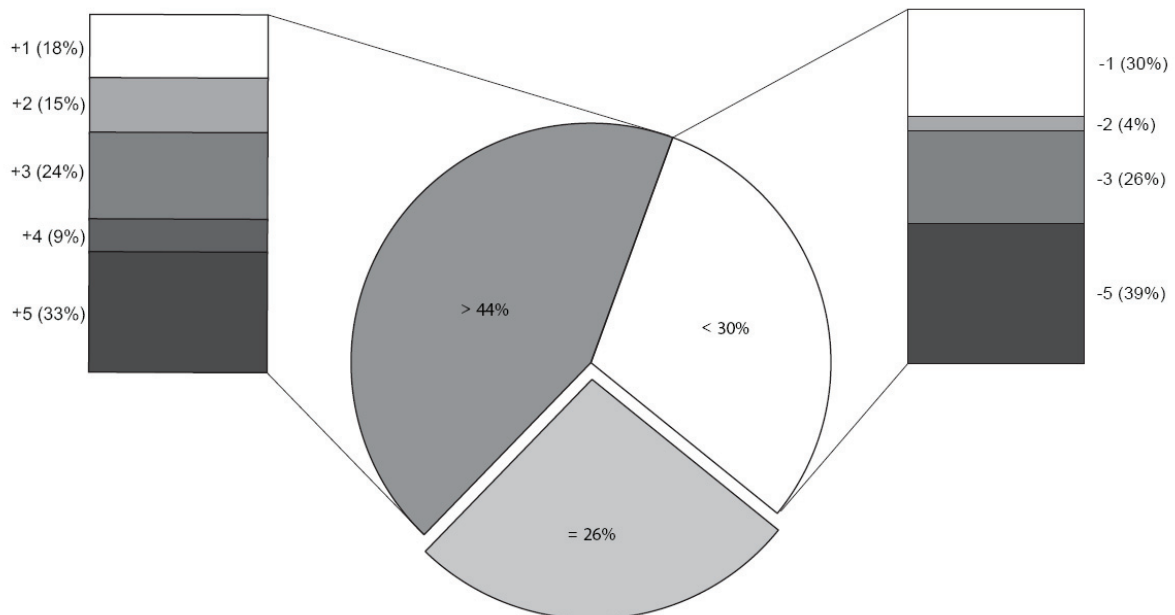
Several charts have been drawn in order to analyse the confrontation of criteria with each of Kolbitsch and Maurer's specific new types of sources. The aim is to observe the proportion of the general scale (>=<) in each type of source. It is interesting to individually observe the new types of sources and to visualize the extent to which the format of sources impacts on usual criteria of information evaluation. Each format is analyzed here according to the answers given to 76 sub-criteria taken from the checklist used, which is then the total related to the results of occurrence of each scale. In this particular case, global criteria (see above) such as authority, coverage, accuracy, etc. are not taken into account.

The bar charts (see fig.2) shows that blogs and podcasts are formats which are characterized by the highest level of "=" (49 and 46/76). A second group is formed by wikis, file sharing and social network, which have a lowest rating of "=" (24, 20 and 25/76). Interestingly enough, this suggests that blogs and podcasts do not differ substantially from traditional sources on the Internet in spite of the huge amount of communication made on those formats as Internet "revolution drivers". Typically, those formats may be compared to advanced

forms of self-publishing channels. In this case, the high level of "=" occurrence suggests that they are not the most challenging format for information managers. This observation will be nuanced when criteria are analysed more precisely below. The fact that the other group has a low level of "=" occurrence indicates that they are those which bring the highest degree of innovation and changes in information and sources assessment processes.

Fig. 2 : Occurrence of rates by format
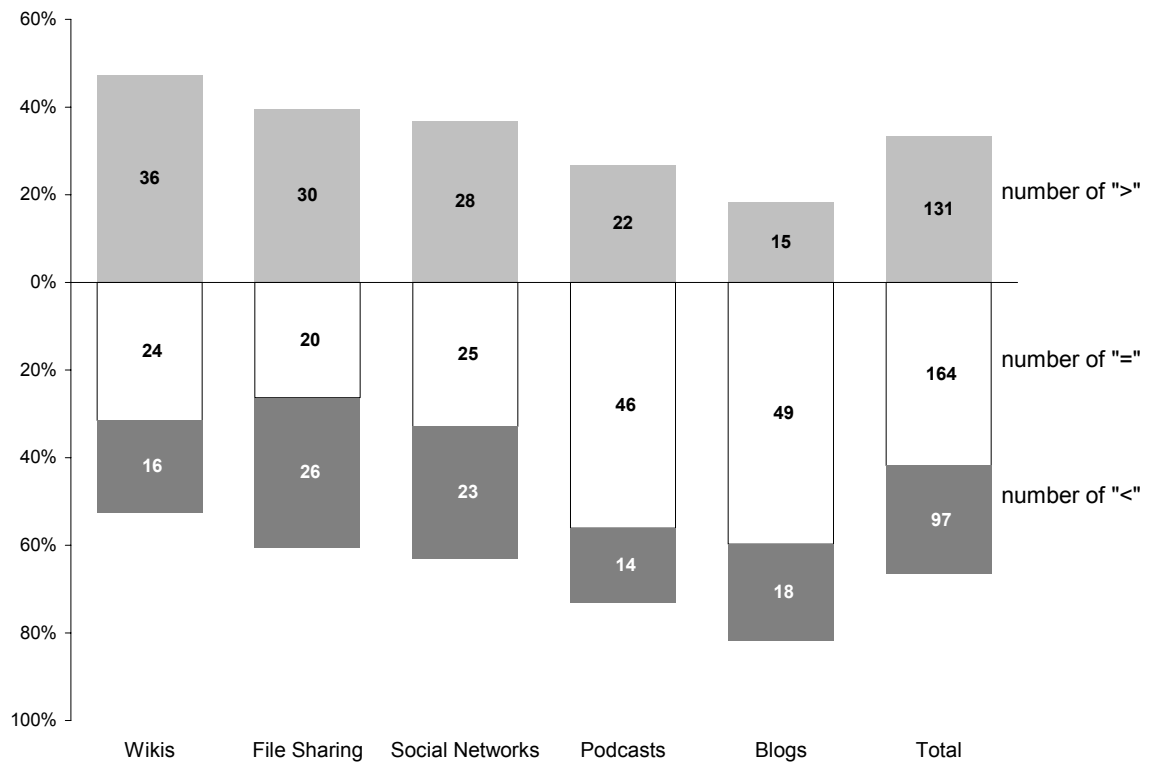
The occurrence of ">" (more important) of those formats needs to be confronted, with wikis, file sharing and social network being the three highest-rated types of sources on that level of importance. Wikis have an occurrence of 36/76 and may be considered in our study as the most challenging format for information managers practices. The groups, suggested in the analysis of "=" level, are blurred when analyzed at the ">" level. If file-sharing and social network keep high scores of ">" (30 and 28/76), podcasts keep close with a rating of 22. Blogs confirm their position of less challenging format with a score of 15/76 ">"level. It has to be kept in mind that even though this score is the lowest, the comparison and ranking proposed here are relative. Indeed, the score of "15" means that 15 sub criteria have become more important when used to assess the quality of a blog format source, which does not mean that blogs *don't change the way information managers evaluate information sources*. This point will be discussed later in this paper. Coming back to the ">" results, it may be observed that podcasts have a higher score than blogs and that file-sharing and social network surpass podcasts. This trend may be explained by the extent to which a format differs from those for which the sub-criteria were designed originally. Wikis are an exception because they are a form of textual publishing. The way they are managed and produced plays the role of challenging factors. Podcasts (22/76 ">") are still a form of content publishing but that content takes the form of sound or motion and is augmented by a RSS feed. That difference has an impact on some sub-criteria which gave podcasts a more relative challenging position, even if that format could be only seen roughly as an audio version of a weblog. Social

networks (with a score of 28/76 ">") and file-sharing platforms (30/76 ">") go further in the difference from traditional types of Internet sources of 2001. They are technically different from types such as newsgroups or mailing lists and generate contents different from blogs or podcasts. This could explain that more sub-criteria are ">" rated.

The occurrences of "<" tagged sub-criteria offers nuances to our analysis because they indicate a group of sub-criteria which have become less important when assessing new formats of sources. Two groups of format appear from that point of view. File-sharing (26/76) and social networks (23/76) are those which have the most rated relative "<" level. Blogs (18/76), Wikis (16/76) and Podcasts (14/76) have less occurrence of it. Again, it is a relative reading of results, which means that this group of formats still has less important sub-criteria. In the case of the first group, it must be noted that the "<" rated criteria are almost as high as the "<" rated ones. This seems to confirm the idea according to which the differences in technical and content aspects impact on the way information managers assess them (more or less important). Wikis, podcasts and weblogs have the same level of "<" ratings, but wikis and podcasts are characterized by a majority of "=" ratings, while wikis have a majority of ">" levels. This is why it is necessary to take all results into account at once. In doing so, it seems that our results suggest on the one hand a similarity between blogs and podcasts and between file sharing and social network platforms on the other hand. As shown in the bar charts, Wikis are unique and are the most challenging format for source assessment.

The 76 sub-criteria were originally designed by Cooke in order to guide the information evaluator through the assessment of more global criteria. As a reminder, they are authority and reputation, currency, coverage, accuracy, accessibility, presentation and arrangement, purpose and ease of use. Because it was not possible to directly rate each of those criteria, an average has been calculated on the basis of the ratings of sub-criteria relevant for each of them. This choice is consistent with the logic of the checklist, which is to use more operational sub-criteria allowing a global assessment afterwards. In doing so, the scale used to evaluate each criterion is then comprised between -1 and 1. The closer the average rating is to -1, the less important the criterion has become. And the closer the average rating is to 1, the more important the criterion has become. Ratings close to 0 indicate global status quo between former and new types of information sources.

In weblog format, criteria's averages are all close to 0. Criteria that keep as much importance as earlier are authority and reputation, accuracy, ease of use, purpose and coverage. Presentation, accessibility and currency have averages below 0. According to the averages, accessibility and presentation are criteria which have lost most of their importance. Indeed, technical support of online contents has been dramatically improved by weblogs softwares. Content management systems such as these offer easy, almost free and fast means to publish content without requiring advanced technical skills (HTML, CSS, FTP, PHP, etc.). For instance, each blog post is automatically created along with a permanent link, a date and hour of publication, search facilities, etc. With traditional online sources, content creators had to personally take the initiative to add those elements on their web pages, which was then an indicator of seriousness, competence and trustworthiness. By the time all those elements are automatically created, these criteria have lost part of their relevance in assessing a weblog as a quality information source. Weblogs results show that the majority of ">" rated sub-criteria are related to reputation, experience, quality control processes, biases, available reviews, etc. This can be explained by the "smoothing effect" resulting from the use of average values. Weblogs remain a format which is the least challenging compared to the other types of sources studied here.

Podcast format has an almost identical range of results. No criterion has an average of less than 0. This may be explained by the highest occurrence of ">" rating noted earlier. It means that averages show no real increase in criteria importance. This has to be balanced by a closer look to sub-criteria. It appears that sub-criteria rated ">" are globally the same as weblog format but some of them are specific to podcasts. Those sub-criteria are mainly related to accessibility, coverage and presentation, reflecting the challenges of a new kind of content form.

Wiki format is different from all the other ones. All criteria are rated above 0. The highest scores are coverage (0.8), currency and presentation (0.6) and authority and reputation (0.4). It appears from those results that even if some sub-criteria could be "<" rated, most of them were "=" or ">", which keeps the average above "0". This confirms our previous analysis stating that wikis are the most challenging type of information sources.

File-sharing platforms and social networks have surprising average results. As shown on the bar charts of the absolute occurrence of ratings, they have the second and third highest rank of ">" rates. As it was added because they also have the highest rank of "=" and ">", the averages dropped down to 0. This means that broadly speaking, their challenging property is not confirmed. Further details are then needed. Accessibility, coverage, presentation and currency have an average close to -1 (-0.9). Relatively, purpose, authority and ease of use keep such importance to assess the quality of information coming from such formats.

A combined view of different criteria is shown on the radar chart (see fig.3) featuring the average value for each criterion per format. The chart should be read as follows: the more displays in a circular shape, the more uniform the values for all criteria. Rough edges indicate various scores among criteria. The chart shows that the most uniform format, and then stable rankings, are wikis and podcasts. Weblogs follow the same line as podcasts for authority and reputation, accuracy, ease of use, coverage and purposes but differ from the accessibility, currency and presentation. Again, it seems that technical aspects of podcasts tend to increase the importance for those criteria. File-sharing and social network analysis takes benefits from that type of charts. Indeed, it highlights the great relative inequity of criteria's averages. In this case, it shows that criteria such as currency, presentation, coverage and, to a certain extent, accessibility have lost most of their importance and relevance when assessing information generated by these types of information.

Fig. 3 : Averages of criteria by format
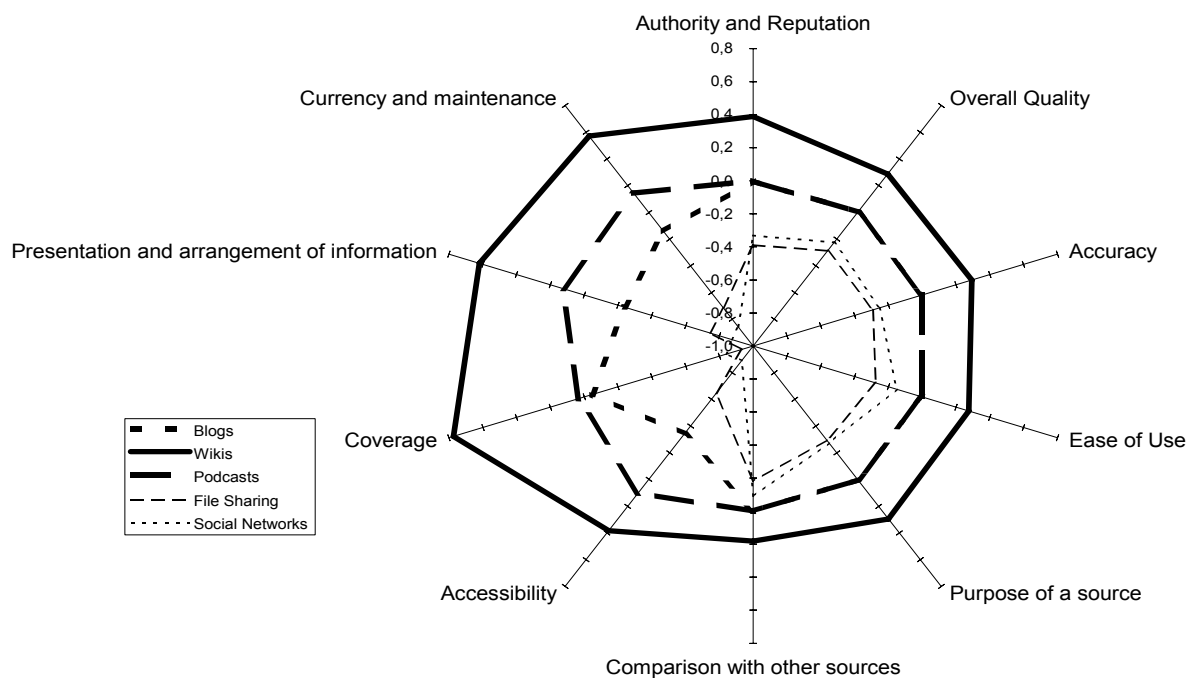
4.3 Further criteria

The criteria analyzed so far come from a checklist published in 2001, which was also an adaptation of an older list to the types of sources at the time. In creating it, Cooke took great care to understand the needs of the moment. A similar effort is needed today when we are trying to adapt the checklist to our situation. If any criteria increase in importance, many of them remain important and some decrease in importance. It may be expected that criteria or even sub-criteria should be added to cope with the new reality. Clyde (2004) proposed an interesting checklist, logically inspired by traditional ones but adding new criteria, coping with current formats and standards found on the Web.

Here again, the author lists criteria which are supported by more operational sub-criteria. Authority, purpose, coverage, reliability, currency, format, appearance, navigation, links, technical aspects, etc. may be found. We used Clyde's work to guide the rating of Cooke's checklist. If the global criteria differ in their wording, the content of sub-criteria covers Cooke's work. It becomes really helpful when accessing the last part of the list entitled "Criteria related specifically to blogs". Beyond sub-criteria related to technical aspects and look and feel, two things may be noticed and emphasized and enlarged to all new types of formats: interactivity and features. These criteria are really important and specific to new types of format. Even though Clyde only discusses blogs, these criteria are valid for all formats, i.e. podcasts, wikis, file-sharing platforms and social networks. Interactivity may be assessed on the basis of its availability but also its effective use (is the source full of comments?) and the content of the interactivity (relevant corrections, discussions, spamming, who posts comments? etc.) This is also very important in self-organized and maintained format such as wikis. Again, the more shared files are rated and commented by users, the more they become visible, which is the case in social networks (Guenter, 2005). Features consist in the availability, effectiveness and inter-operability of pieces of tools, links and extra-source communication. The presence of RSS feed has now become an important criterion for sources selection, especially on platforms of file-sharing, wikis, etc. Widgets (small computer programmes providing gadgets and accessories to the users) increase the

ability of people to consume information (information managers are concerned) and enhance content production capabilities. Therefore, these criteria cannot be ignored and need to be further investigated.

5. Conclusion

5.1 Discussion

Although our observations are not empirically validated, they point to findings which can help us understand the impact of new types of sources on information management. Sources and information evaluation processes are not dramatically changed by the shift towards Web 2.0 or whatever we call it. New types of sources force some evolution of the traditional criteria used by information evaluators. Generally speaking, checklists do not change a lot. They mostly need to be rethought and reorganized to better cope with the new reality of new types of sources. The awareness of that situation is the first step of the adaptation process, and a review of recent literature shows an increasing interest for that matter. The format of information sources presented by Kolbitsch and Maurer has acquired some critical mass in many fields and industries, which means that it is time to go a step further. Our paper is an attempt in that direction.

Our observations indicate that the sources selection and information quality evaluation process are not fully disturbed and drastically changed. There is not a sudden break between two "states of the information management art," which is suggested by the fact that many criteria and sub-criteria do not increase nor decrease in importance, no matter what can be read in some "Web 2.0 emphatic literature".

The detailed examination of the results shows that the more globally one looks at information criteria, the less one will notice changes. It means that there is no shift in terms of process but, rather, in the way it is concretely achieved. The blurring limit between information consumers and producers impacts the way information is assessed but not the fact that information has to be assessed. And when considering different types of formats, specific sub-criteria vary regarding technical aspect and effective use. If this statement is challenging for IM professionals, it is also encouraging to understand that the shift in the informational landscape, sometimes presented as a revolution, is not likely to upset their trade.

The most important factor impacting on evaluating sub-criteria is the technical characteristics of new formats. The ones that differ significantly from older types of sources on the Internet are those which seem to impact IM the most. In a sense, this may be confirmed and taken into account but has to be nuanced. The observation of the global table of sub-criteria ratings often shows that technical aspects lead to minimize or maximize the importance of most of the formats. What could be certain is that they are not neutral in the evolution of information assessment process. Yet it seems a bit reductive to think that technical aspects are the principal drivers of changes in the valuation process.

On the basis of our results, a relative ranking of challenging formats can be built. From the most to the least challenging formats, this study suggests the following order: wikis, social networks, file-sharing platforms, podcasts and finally weblogs. It is important to keep in mind that is still relative and that each format has sub-criteria which are ">" rated. Some sub-criteria have a "5" rate, which means that for each format, they have become more important. Among them, we can notice reputation and experience of the source, the existence or not of a quality-control process, the likely biases and motivations, user-friendliness, etc. This is noteworthy as that observation was blurred in the overall results. It emphasizes our awareness

that sub-criteria of checklists do not have the same weight among them even if results are calculated as if they are equal.

5.2 Future work

The purpose of this study was to draw attention to the fact that Information managers face challenges due to the transformation of their informational landscape. As this statement has been documented and sustained by a literature review, further investigation was undertaken to theoretically question the sources selection and the evaluation processes of Information Management. Our study aimed to offer a deep insight into the criteria which guide the evaluator to assess the quality of sources of information. If many observations have led to interesting findings, the method used needs to be empirically validated.

Firstly, it seems important to confront the theoretical findings of this paper to the ground of information managers. A first step will then consist in the creation of case studies to validate, improve and nuance our model on the professional field. This will also offer the opportunity to assess the weight of criteria and sub-criteria between them. As it was suggested in the discussion, the method used here does not reflect reality, e.g. sub-criteria as the existence of a quality control process is supposed in our study to have the same weight as the existence of a site map. This will need to be resolved to really cope with reality.

The second step will take Clyde's (2004) work further by questioning the specific sub-criteria that new formats involve. To follow in Cooke's steps (2001), it is time to take into account the new reality of the informational landscape in order to adapt practices. This study will require a detailed exploration of information managers' practices.

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Online Roleplaying Games As An Instrument For Humanitarian Researches And Experiments

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Abstract

Massive Multiplayer Online Roleplaying Games (MMORPG) are in the state of the rapid growth throughout the world. They attract millions of users. Some of the MMORPGs are reflecting the real world, including the realistic social and economy models, e.g. the Second Life (USA), the Territory (Russia). Those MMORPGs are already used by the real life companies in their business, in most cases for advertisement and marketing purposes.

In this paper the possibility to use those MMRPG universes for humanitarian experiments and researches is discussed. The possible courses and ways of such researches and experiments are briefly outlined, as their advantages and drawbacks. The conditions for using the MMORPGs in the humanitarian researches are described.

The paper's goal is to stimulate the discussion and, eventually, the development of the ways and means for virtual human-testing of social, politic, HR and PR technologies.

Massive Multiplayer Online Roleplaying Games (MMORPG) are one of the most aggressively developing business areas in the world. Latest hits in this area count many millions of users (or, more precisely, addicts).

The MMORPGs can be roughly divided into several categories, according to the nature of the game's universe and the gameplay:

- violence based: the single goal is to kill all the enemies (rescue hostages, save the World form aliens, and so on):

- strategy based: the goal is established by the setting of the game and may widely vary, the players have to conceive a plan, to gather artifacts and/or allies, and to choose their way through the game universe to their objective;

- experience based: the goal is to raise an experience and skills of the player's character as high as possible; the gameplay can vary from primitive one-to-one fighting of characters to a very complicated quest involving social activities (e.g., gathering and controlling a group of characters to make them to cooperate);

- society based: the goal is to build some quasy-life for the character, and to lead the character to some form of prosperity.

Many games, though, combine those principles and can not be associated with any single category for sure. Anyway many of them involve 1) some fighting and 2) some economy.

Although many of the MMORPG projects offer their users some escapist-oriented fantasy background, very distant from the real life, there exist some of them which, on the contrary, model a life very close to the common everyday life. One of the brightest examples of those is the famous Second Life. Russia also has such gaming universe named Territory.

Now some of MMORPGs gathered multimillion audience. For example, the World of Warcraft accounts for 8,5 million subscribers, the Second Life has now about 5.9 million "residents", and even the Territory has already attracted over two million users, a sheer

number for the country with as little as 26 Millions (22% of population) 6-months Internet audience.

So the games become places with high concentration of potential consumers or electorate. It is not strange that they are now regarded as a very attractive field for advertising, PR, political technologies, etc. For example, many companies already have invested in virtual offices and advertisements in the Second Life, expecting no less clients than they obtain from an office or an ad campaign in the first. Even in Russia, with the country's very short experience in modern marketing and advertisement, there are some good examples of product promotion via MMORPG (e.g., some years ago there was an agreement between the Izh automotive plant and the Territory, and then all the cars in the game were of the Izh model).

It is quite obvious that the MMORPG users, although they come into the game action to escape from the reality and to play someone other than themselves, in fact still are humans and act as humans. Their psychology, social behaviour and reactions do not differ from those of ordinary 'offline' people, at least from the people they are pretending to be in the game.

Having that in mind, MMORPGs are very interesting for humanitarian researches, modeling and experiments.

This idea is stated here to open the discussion on the possibilities, advantages and drawbacks of using the gaming universe populated with gaming people, as a means of simulating real life behaviour. It is very interesting to review the potential directions of such researches, their procedures and means, as well as conditions necessary for them, too. The idea is not based on any specific sociological or political theory, it concerns rather the methodology than the theoretical grounds. In principle, any of the theories can be (or be not) proved by those experimental researches.

The obvious advantages of this idea are:
- Cost: any action is in the digital form, influences all selected actors at a time, and their reactions are collected in the real time in the digital form too, via communication channels. No field researches, no hundreds of human researches going form door to door, no individual phone calls, etc.
- Very little latency from the impact to the response.
- Possibility to conduct even provocative or ethically questionable experiments without real damage.
- Precise recording of the response across all affected "population", not just a sample of it.
- Total tracking of all details of each experiment, even at the very low individual level.

The similarly obvious drawbacks are:
- Bias: the population of a MMORPG is usually very different from the population of a country in terms of sex, age, occupation, social status, psychology, etc. It is biased to younger males with much free time, with better than average computer knowledge and skills, and so on. From the psychological side they often tend to be introverts with escapist tendencies. So the researchers have to take into account that the sample will never be quite representative.
- The gaming universe is never as much complicated and multifaceted as the real world. Moreover, it is not quite realistic – or even not realistic at all. This, too, would require developing of some specific research procedures and methods.

(The above considerations were made on the base of an overall situation with the Internet audience and may require adjustment according to the goals and environment of each specific research.)

Nevertheless, there are areas where the results of a research or an experiment in the game can be used for conclusions valid for the real world. Here goes the list of some of those areas with some explanations.

1. Political PR. Finding and exploration of the new and advanced methods for influencing on the consciousness of masses. Finding and exploration of the methods to oppose it.

2. Corporate PR. Testing of new and advanced methods to improve a corporate image, direct testing of specific techniques or even documents formulae.

3. Marketing. Development and testing of new and advanced ways to promote products and services.

4. HR. New cost efficient methods for testing the personnel: for example, a potential employee is given an account in an appropriate MMORPG and a task where they can show their abilities and skills. This will work very well for managers that have to control and coordinate other people, for salespersons, for other employees that are supposed to contact people (clients managers, servicemen, etc.). The records of each step of the tested person is essential.

5. Psychology. Exploration of human behaviour in various conditions and situations applying similar setup to thousands of people and recording every subtle detail.

6. Sociology. Experimental research on, for example, processes of community building or roles distribution in workgroups, with unlimited ability to reproduce the input conditions and unprecedented level of documentation of the process.

There can obviously be invented many other fields where this methodology could work and give valuable results. In general, it brings precise instrumental modeling methods into human sciences.

The researchers that are going to use some gaming universe for their studies have to take into account the following.

The best conditions for such a research appear to be when the researcher has an agreement with the owner/operator of the game. In this way the researcher can have an access to the logs of the game, without which the main advantage of the methodology: precise documentation of the processes – will be lost.

In some circumstances there could be even reasonable to organize a special gaming environment dedicated to some kind of researches, e.g. in a university or a college.

There is a possibility to create an external logging system, but it is limited to the cases where examined people are the only objects to watch; it would not be possible to record events and conditions of the game in all their spectre.

It is clear that, as far as it is possible, the gamers should not be aware that their universe is used for the research, at least of its details, to avoid the influence to their behaviour.

Gathering statistical data or some other kinds of information from the game does not necessarily involve gathering the personal data of specific men and women, especially in the gaming environment where people usually take nicknames and do not use their real world data. In those cases where the personal data is essential for the research, the person(s) involved should be of course warned in a due course.

Conclusion

The idea to use the MMORPG universes for researches in human sciences is attractive because many advantages that it offers. This methodology can reduce costs and raise the efficiency of those researches. But to obtain relevant results the researchers have to consider the specifics of the MMORPG users community (for each concrete community they plan to use) and to adapt their methods accordingly. The very much desirable condition for such researches is an agreement with the owner or operator of the MMORPG.

Users In The 'Golden' Age Of The Information Society

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Abstract

In the Web 2.0 era it no longer holds to think of users as 'end-users', as they have moved to the heart of the value chain. They have become important actors in virtually all elements of online services. In this paper we shall explore these innovative roles of users and reflect on the future impacts of this shift. To support our claims about the innovative roles of users, we have analyzed 150 Web 2.0 services into more detail. In this paper we shall argue that Web 2.0 may be understood as a first sign of what Perez has labelled 'societal re-engineering' and 'creative destruction'. However, as we are still at the beginning of what Perez describes as a potential golden age of the information society, there are also still major uncertainties about the future of the web and the potential impacts this may have. At this point in time it is far from sure whether we are indeed approaching a 'golden age' of technological development. To explore the *future* roles of users, in the final part of the paper we shall therefore also highlight some future aspects from the perspective of changing user-producer relations.

1. Introduction

In 2004, O'Reilly Media popularized the phrase 'Web 2.0' for describing a new and potentially disruptive stage in the development of the Internet. The Web 2.0 concept has since become hugely popular - if not hyped - and has thus created as much confusion as consensus about what Web 2.0 really means. There has never been a coherent definition of the term; it has been more of a conceptual set of principles and practices (Madden and Fox, 2006). The concept originated from the observation that the Internet was far from dead after the burst of the dot.com bubble at the turn of the 21st century. Although the Internet crisis caused a substantial shakeout of Internet firms, it also marked a turning point for the web: since then we have seen a whole range of successful new applications coming up. Most remarkable and perhaps incomparable is the *exponential growth* of this new generation of applications, both in terms of number of applications and number of users. According to Gantz et al. (2007), in 2006 the amount of content created, captured and replicated on the Internet was about 3 million times larger than the information in all the books ever written. Their prognosis is that this will keep on growing the coming years. And by 2010, 70 percent of the content on the Internet will be created by individuals (Gantz et al., 2007: 2).

According to O'Reilly, behind the success of many Web 2.0 applications are smart ways of using the web as a platform for data management, particularly by exploiting the connectivity and collective intelligence of the *users*. Web 2.0 services exploit connections between users, as these connections provide manifold opportunities to create added value. Not only are users actively consuming content, users also take on distribution roles in peer-to-peer (P2P) file sharing, and content creation roles in the case of user-generated content. Users actively rate

and tag content (a phenomenon known as folksonomy), download content, comment on it, and communicate about it with their peers. Users furthermore share agendas, locations, bookmarks, documents, photos, videos and even friends, all online and on a large scale (Slot, 2007a). These user roles, combined with the scope and speed of the Internet, provide many opportunities for businesses to design new and innovative services. O'Reilly concludes about Web 2.0 services: *"Network effects from user contributions are the key to market dominance in the Web 2.0 era"*[1].

Thus, it is fair to state that one of the crucial features of this second stage of the web is the empowerment of the user. In the Web 2.0 era it no longer holds to conceive of users as 'end-users', as they have moved into the heart of the value chain. They have become important actors in virtually all elements of online services. In this paper we shall explore these innovative roles of users and reflect on the future impacts of this shift. This exercise will enhance the understanding of the concept of Web 2.0 and subsequently the roles users take on in this development.

1.1 Outline

First we shall describe in more detail how new user roles are represented in Web 2.0 developments. To support our claims about the innovative roles of users, we have analyzed 150 Web 2.0 services in more detail. We shall argue that Web 2.0 developments mark the beginning of what Carlota Perez has labelled the 'deployment period' of a technological innovation. This period is not only characterized by high deployment of a technology, but also by what Perez calls 'societal re-engineering' and 'creative destruction'. Technological revolutions involve complex processes of social assimilation, which encompass radical changes in traditional patterns of production, consumption, organization, management, communication, etcetera, leading ultimately to a different 'way of life' and possibly a 'golden age' (Perez, 2002: 153). We will explain what these concepts mean and they will be used as guiding principles in our analysis.

In this paper we shall argue that Web 2.0 may be understood as a first sign of societal re-engineering (represented by the shift towards user empowerment) and of creative destruction (represented by new business models underlying Web 2.0 services). However, as we are still at the beginning of what Perez sees as the second (and 'golden') period of technological development – the deployment period – there are also still major uncertainties about the future of the web and the potential impacts this may have. At this point in time it is far from sure whether we are indeed approaching a 'golden age' of technological development. To explore the *future* roles of users, in the final part of the paper we shall therefore also highlight some future aspects from the perspective of changing user-producer relations.

1.2 Methodology

In March 2007, 150 Web 2.0 services were analyzed. These services were selected from the Seth Godin *Web 2.0 Traffic Watch List*.[2] To construct this list, Godin employs the Alexa service. This online service measures Internet traffic by storing traffic data provided by users who have installed the Alexa toolbar. Godin uses this data to construct a Web 2.0 traffic watchlist, compiled of 952 services. These services are selected and ranked according to generated traffic. The list starts with well-known websites like YouTube, MySpace, Orkut

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[1] http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html?page=2
[2] http://www.statsaholic.com/sethgodin

and Wikipedia, but also lists less famous services with interesting names like Drupal, Esnips, Meetup, Reddit, Feedblitz and Imeem.

The first 150 services on the list were selected for analysis. Upon closer examination, eleven services were not taken into account. Either they did not exist anymore, or they were not directed at private users but at businesses. The final case sample consisted of 139 Web 2.0 services. In the case sample, multiple variables were analyzed. These variables described mainly possible user roles in the services and the way these services generated an income. Although this research will be carried on in more depth in the future, in this paper we will present the first outcomes of the analysis.

2. User roles and socio-technical change

The now widely-used term Web 2.0 implies that users take on many active roles in the value creation process. They supposedly have become the key drivers of technological change. Many have embraced the idea of Web 2.0 – others have labelled the term a hype. If we use Carlota Perez' comparative analysis of technological transformations, we may consider the fast rise of Web 2.0 as the beginning of 'period 2.0' – or the deployment period of the Internet.

This point of view may be taken if we follow Perez' influential analysis in *'Technological Revolutions and Financial Capital. The Dynamics of Bubbles and Golden Ages'* (2002). In this book she argues that it takes several decades before the full fruits of a great technological revolution can be reaped. According to Perez each technological upsurge of the last centuries shows a similar pattern of subsequent stages of growth. First, there is a period of explosive growth, great turbulence and even frenzy, followed by a short period of crisis. In this first stage there is a mismatch between the belief in the promises of the new technology on the one hand (expressed in high investments of venture capital) and the socio-economic environment on the other hand, which is still dominated by 'old' institutions. The first 'installation period' therefore often ends in a crisis, or burst of the 'bubble', as we have seen with the dot.com crisis at the beginning of the twenty-first century. After this crisis follows a period of more harmonious and sustainable growth, characterised by high deployment and a better fit between the 'new' technology and the socio-economic context in which it is deployed and embedded. High deployment creates the conditions for 'a real golden age of a technological revolution'.

Perez' analysis is particularly useful for an analysis of the development of the Internet: in her terms we are now at the threshold of the second stage of this particular technological revolution. Characteristic for this stage is not only the high degree of deployment of technology, but also what she calls 'creative institutional destruction' and 'societal re-engineering', which are the necessary conditions for this more stable and harmonious stage of technological development. We have used Perez' thinking here in a rather broad sense for our assessment of Web 2.0 developments. In the following account of our analysis of 150 web services, we will focus on (1) the deployment of Web 2.0 services, (2) 'Societal re-engineering' and (3) 'Creative destruction'.

The concept of <u>deployment</u> is used to describe to what extent and in what way Web 2.0 services are deployed (or used). Firstly, to assess the level of deployment of Web 2.0 services, we need to have indications about the extent of use of these services. A first indication can be found more generally in other research about the uptake and impact of

Internet technology. Specifically for our case sample we have taken into account figures about the use of these services. Even though it is difficult to obtain reliable figures which indicate use (often these are measured in many different ways) we will attempt to shed some light on that issue. Another indication can be found in the data from Alexa providing Internet traffic figures. Secondly we need to assess the nature of these Web 2.0 services. Based on an analysis of our case sample we made a classification of Web 2.0 services.

Societal re-engineering is represented in our analysis by new or innovative user roles. These roles reflect the potential of the technology to adapt to and be embedded in real societal needs. This study focuses on users at home who are active on the Internet in their leisure time. User roles do not need to be completely 'new' in the sense that they have never been taken up by users before. Users for example still are *consuming* content online in more or less conventional ways. Following Tuomi, innovation can also be understood as a process where user communities "develop new uses for existing technological artifacts, at the same time changing both characteristics of these technologies and their own practices" (Tuomi 2002, p.23). Compared to the roles users had in relation to more traditional media like newspapers and television - mainly as consumers and interpreters of content - the roles that users have taken up when using internet, have certainly changed significantly. As has been clarified in our introduction, users have become co-producers of virtually all elements of the service delivered, creating value in many stages of the value creation process. They are taking up roles that previously had been taken up primarily by business parties. And even the traditional roles, like consuming content, are now much more diverse in nature.

To explore these new roles more closely, for this study we have defined five categories of user roles based on observational data; consuming, creating, sharing, facilitating and communicating. These categories are subdivided into more diversified roles, see Table **1**.

Table 1: Role classification

General role category	Sub-role
Consume	Read
	View
	Listen
	Download
	Buy
	Play (game
	Search
Create	Customize/ personalize
	Create/ produce content
	Contribute
Share	Publish
	Upload
	Send to others
Facilitate	Tag
	Recommend
	Filter
	Subscribe (RSS)
	Channel
Communicate	Send message to other user
	Comment
	Rate
	Chat

Creative destruction is represented in our analysis by new business models underlying these services. When traditional ways of doing business are being replaced by new and innovative ones, it can be argued that significant changes are taking place. With the concept of 'businesses' (or producers) we want to indicate the parties that are most directly connected to

the users as the producers/facilitators of the services. In our analysis, the concept of a business model does not only comprise the revenue model of a service, but also the way the service is technologically defined (is it open or closed), the way businesses are taking up their position within the field (are they cooperating with others for example) and the value they offer to their users (e.g. Timmer, 1998; Osterwalder, 2004). These four business model domains will be used as informal guiding principles in our analysis. For a graphical representation; see Figure 1. We will use these general business model levels as exploratory, heuristic concepts.

Figure 1 General business model levels
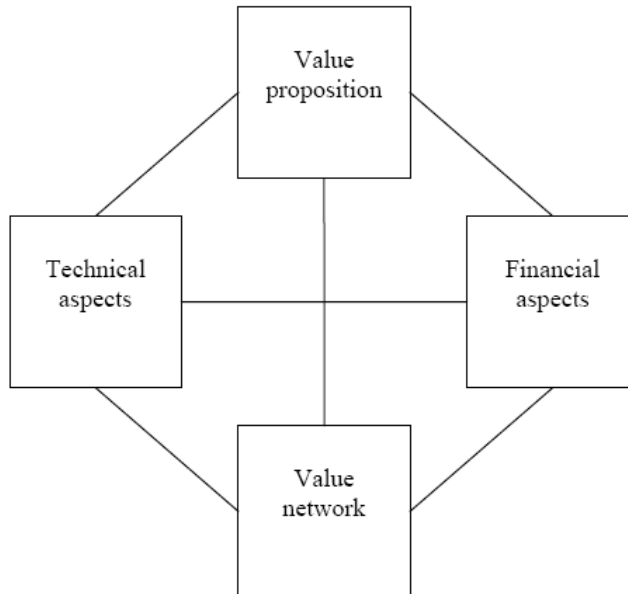
3. The deployment of Web 2.0 services

To what extent are Web 2.0 services used? As has been described in the introduction, Gantz et al. stated in a white paper that already in 2006, more information was available on the Internet than in all the books in the world. This indicates that the Internet has become a huge database of information. However, it doesn't give any hints about to what extent this technology and this information is actually used. Many research institutions, for example the Social and Cultural Planning Agency (SCP) in the Netherlands and Pew Internet and American Life Project in the United States are researching the uptake and use of the Internet. All research results show a drastic growth of Internet use the past few years. In the Netherlands, the SCP has investigated that almost 80 percent of the population now has access to the Internet, compared to 28 percent in 1998 and 74 percent in 2004 (SCP, 2004). For example Pew shows that in the United States, between 2001 and 2005, the number of American adults that used the Internet to develop or display photos rose from 23 million to 49 million (respectively 20 percent and 34 percent of the Internet population these years) (Madden & Fox, 2007: 3). And the market share of an application like Wikipedia has risen from 3 percent in august 2005 to 21 percent one year later.

These data are very convincing and do provide a strong indication that the uptake of Web 2.0 services is really taking off. However, little efforts have been made to systematically assess the impact of the Internet and Web 2.0 services in all its depth. Pascu et al. (2007) have

started to provide insights in this area. They made an assessment of the development of new Internet technologies. Their study primarily investigated the socio-economic impact of these new Internet technologies. Pascu et al. state that the past three years have clearly shown a 'dramatic growth in take-up' of Internet technologies. To underline their arguments, Pascu et al. use both formal and informal sources; for example the rise of the number of blog entries, revenue of services like eBay, the rising number of authors providing content on Wikipedia and the number of broadband subscribers. Overall, first results of research being done in this field show that Web 2.0 services are being deployed on a large scale.

3.2 The uptake of Web 2.0 services

Looking in more detail at our case sample of 139 Web 2.0 services, we can try to be more specific. How often are these services used or visited? Accurate information about number of visitors or users is hard to obtain. Some services indicate the number of members or visitors themselves, but it needs to be underlined that the way these figures are measured is often obscure. Use figures provided by the services themselves differ from 30 billion page views a month (Facebook) to 100 million visitors a month (eBay), to 200 (9rules). These figures do not provide any reliable information about the uptake of the Web 2.0 services in our sample. We can also look at the number of members the services have. A quarter of all services give an indication of the number of registered users/ members. This figure differs from 100 million members in the case of for example MySpace and Skype, until 30.000 members in the case of Ning (a website where users can create their own communities). On average, the services have almost 12 million members each. Because of the large differences between services, a more accurate measure may be the median, which is 2 million.

Figure 2 Daily reach of Web 2.0 services in case sample
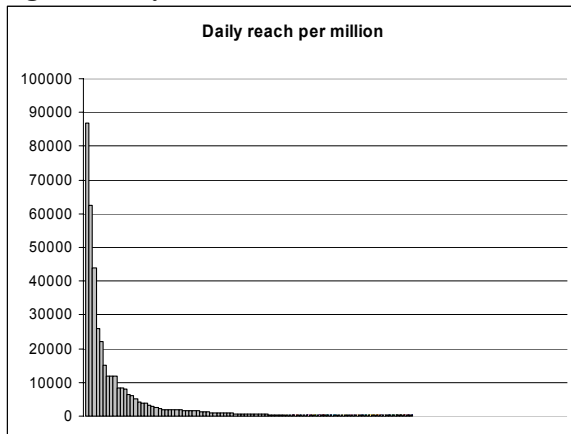
A more structured indication of web traffic is provided by Alexa. This service (used by Godin to construct his Web 2.0 Traffic Watch list) gives an indication of web traffic per day. It measures how many of 1 million users visit the service on an arbitrary day (daily reach per million). The traffic generated by the Web 2.0 services in the sample varies from 87.000 for a service like YouTube until 25 for B2evolution – a free blogging tool (see for an overview of all services

Figure **2**). Considering that there are more than 1 billion internet users, even 25 still is a large number of people. The average traffic for the services in the sample is almost 3000, but also here; the median is much lower and accounts for 280. To illustrate the fast rise of Web 2.0 services, Figure 3 shows the rapid uptake of YouTube since 2005.

Figure 3 Overview of YouTube's daily reach (source: Alexa)
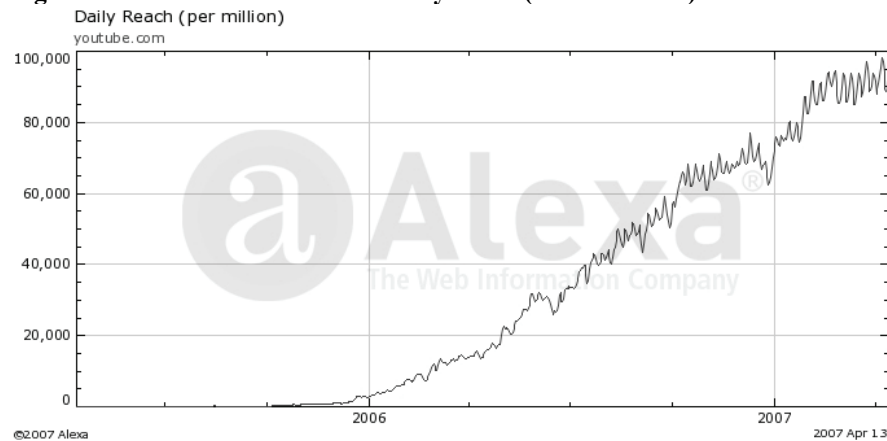
Comparing these services with Web 1.0 services – cnn.com has a traffic figure of 11.000, the website of the British Encyclopaedia Britannica has a traffic figure of 350, while Wikipedia counts 62.500. The Washington Post is measured for a daily reach of 2200, which is as much as the daily reach of Bloglines – a news feed aggregator. Kodak gallery has a daily reach of 600 – compared to the traffic generated by Flickr: 12.000. Looking at these figures, it can be stated that Web 2.0 services are generating a lot of traffic, often even more than Web 1.0 services do.

3.3 The nature of Web 2.0 services

Table 2 Classification of Web 2.0 services (N=139)
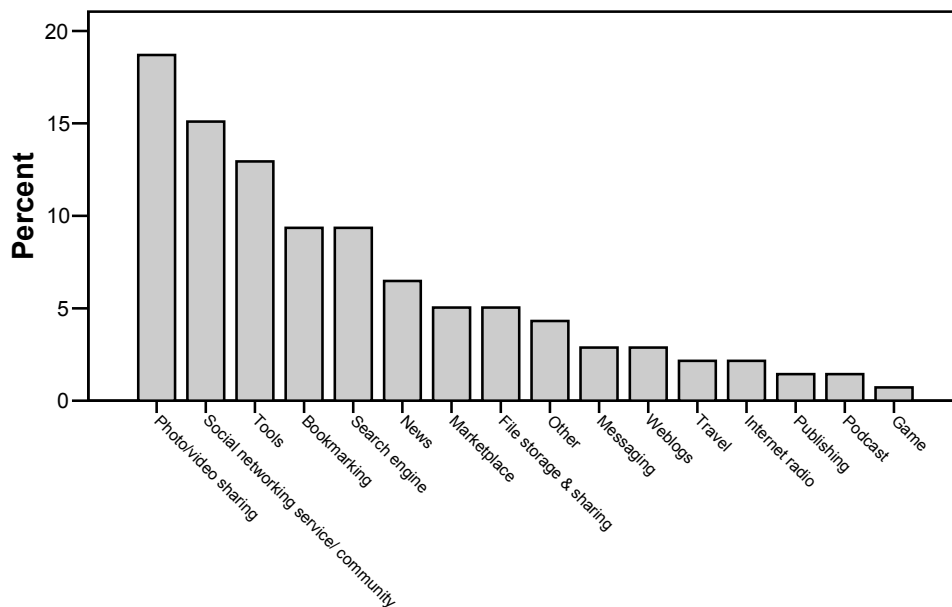
Besides estimating the uptake of these Web 2.0 services, it is also of importance to indicate the nature of the services we have been studying. **Error! Reference source not found.**

presents a classification of the Web 2.0 services in our case sample. Most services provide users with the opportunity to store and share content like photos and videos. These websites are primarily directed at user-generated content. Social networking and community websites are also clearly present in the Web 2.0 domain. Besides MySpace, Orkut and Friendster, many other social networking services have come into being. For example Meetup, which provides people with the same interest a platform to find like-minded individuals in their neighbourhood. They meet up in real life. The service intends to vitalize local community. Other communities have different goals, but they all focus on connecting people with similar interests. Also the services that provide user tools are often focussed on social aspects. Ning is a tool that lets users create their own social networks. Users can make easy personal pages with Peanutbutter, personalize their start page with Netvibes or Pageflakes and collaborate with others through the Basecamp tool.

3.4 Summarizing

To sum up, looking at various research outcomes, most evidence underlines that the new generation of web services in general are taken up very rapidly. There has been an exponential growth of the uptake and use of services with Web 2.0 characteristics. Specifically services that focus on sharing and storing content (like YouTube and Flickr) and social networking communities (like MySPace, Orkut and Friendster) are very popular among users. Sharing, finding, saving, connecting and communicating seem to be the key aspects of the services in our case sample.

4. Societal re-engineering

Figure 4 Classification of user roles in Web 2.0 services
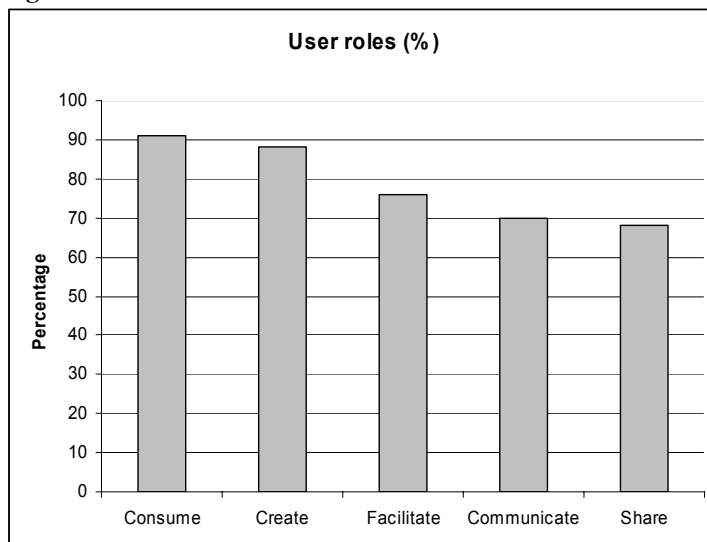
In the introduction to this paper, we have stated that active users are the linchpin of Web 2.0 services, as they thrive on active interactions between and connectivity of users. To support and refine this statement, we analyzed this 'user activity' by focusing on the kind of roles users were allowed to play. The roles were categorized as consuming roles, creating roles, sharing roles, facilitating roles and communicating roles. Figure 4 shows the classification of user roles in the Web 2.0 services of the case sample. All user roles are frequently enabled by the services – which indeed indicates strong user activity.

Looking at 139 services, it becomes clear that these roles are rather diversified. For example consumption not only consists of reading, viewing and listening. Users are also enabled to search, download, buy or play. Below, per user role the outcomes of the analysis will be discussed. We shall pay attention to the way these roles are divided into sub-roles and what users do most.

4.1 Consuming

Consuming content is the most passive role for users, for it is the stage in the value chain where the value of a certain product is transferred to the user. This is the case when a user buys a product, or uses a product, for example by reading or viewing content. If websites offered the user the opportunity to find and consume the content, this was labelled consumption. Consuming still is the main activity of users online; 91 percent of the Web 2.0 services offer some kind of content to be consumed. Many services, 78 percent, also allow users to search their website or database. Some services fully focus on searching functionalities, for example personalized search engines. Finding things online is very important. 66 percent of all services offer their users material to view audiovisual content on their website – for example photos or video. In 31 percent of all cases – videos are directly streamed on the websites. Only in 19 percent of all cases, users can download movies. 32 percent of all services in the case sample were offering their users reading material – for example news messages or weblogs online. In 16 percent of all services, users were offered to buy things online. 14 percent of the services provided audio content and only 4 percent let the users play a game.

4.2 Creating

Opposed to traditional web services, users are more and more offered the opportunity to create their own content. In 88 percent of all cases users were in one way or another creating their own content. But content creation can be measured at different levels. In 43 percent of all services, users can create and upload their own content – for example movie clips or photos. Users also often are enabled to write their own weblog. Customization is a different form of user generated content. This is a more limited form of content creation, because users are only allowed to *adapt* a service, existing content or products as they please. This adaptation is only allowed to take place within given limits, pre-ordered by the service. In 35 percent of the services, users were enabled to customize something in the services. Often, users are allowed to customize their own personal profile – change colours, add pictures etcetera. One quarter of all services allows users to contribute. They can add something to a website – for example a review or their own story.

4.3 Sharing

Web 2.0 services also enable users to share content and thoughts on a large scale. 68 percent of the services have a sharing functionality. Half of all services allow users to publish their own work – audio, video or text. Users can upload their work on these services in 47 percent of all cases. Almost one third of all services allow users to send their content or a link to their content directly. However, there are only a few services that use a P2P network to allow users to share content. This indicates that these services are only semi-open. They enable users to take on many different roles, but the way the services are operated do not change the hierarchical organisation of the service.

4.4 Facilitate

In 76 percent of the online Web 2.0 services, users take on facilitating roles as well. They not only facilitate their own activities, but also help others. By adding keywords (tags) to content, users make searching content more easy for others. Almost half of all services (48 percent) allow users to tag content. Some services offer tagclouds. These are "clouds" with keywords, such as in the example (
Figure **5**) below, where the most popular tags are shown that are applied to photos at Flickr.

Figure 5 Tag Cloud on Flickr (Flickr.com)

The more often a certain keyword is used, the larger this word shows in the cloud. The tagcloud shown in
Figure **5** shows that more people have uploaded photos about their family and London than photos with the keyword honeymoon. By tagging, users make searching more easy. In 45 percent of all services, users can subscribe to each others content – or the content of the service. Often RSS feeds are used to accomplish this. Some services even let users burn feeds themselves. 25 percent of the services allow users to filter or channel. They either can decide for themselves which users can view their content, or users can categorize their content into channels. Users can also recommend content to others. This is the case in 22 percent of all services.

These facilitating user roles are exemplary for the developments in the online domain. Social bookmarking has become very important. Instead of traditional taxonomies (central classifications of content) users are creating these classifications themselves. This activity has come to be known as folksonomy. Because users themselves create metadata and help others to find relevant content, they have become information brokers themselves. This guiding and gate keeping task traditionally was taken up first and foremost by business parties. Examples are Google in the online domain and traditional creative industry firms like record companies in the offline domain. These powerful gate keepers determined to a large extent which music would be sold in the stores and played on the radio.

4.5 Communicating

Communicating is another important feature of Web 2.0 services. Almost 70 percent has some sort of communication functionality. More than half of the Web 2.0 services allow users to comment on others. In 42 percent of all services, users can directly send a message to other users. Marking content is another activity users can take on in these services. In 35

percent of all services, users can give ratings; they can judge content – and even other users. Direct chatting is not as popular. Only 15 services, 11 percent, offer users the possibility to directly chat with one another.

4.6 Summarizing

Societal re-engineering is indicated by the shift from top down to bottom-up dynamics, characterized by new user roles in Web 2.0 services. Traditionally, users were mainly consumers of content. But on the Internet, they are enabled to take on many different roles – which they have done on a large scale and which in turn has influenced the innovation dynamics underlying the rise of the new generation of web services. These user roles have been illustrated above. Users have started creating content on a large scale. They share this content and thoughts with each other through the Internet. Furthermore, hierarchically defined taxonomies are more and more supplemented and possibly replaced by folksonomies based on collective intelligence.

These developments are in line with various researchers that have pointed out that users are increasingly important. Toffler (1980) already indicated that users were increasingly combining their consuming role with producing tasks, for which he has introduced the famous phrase "prosumers". Some years later, Leadbeater (2004) coined the term pro-ams, referring to amateur users who where more and more professionalizing their activities. According to Leadbeater, innovations where often not diffused through a pipeline, but initiated more bottom-up (swarms of innovation). Furthermore, Von Hippel (2005) has written extensively about the impact of users (lead users) on the innovation process in his book *Democratizing Innovation*.

5. Creative institutional destruction

According to Perez, the 'golden age' of a new technology is also characterised by creative institutional destruction. One hint that things are changing are the rise of innovative user roles as explained above. But it takes more for a society to develop in 'newly engineered' ways. Do new and innovative user roles make a difference or are they merely incorporated into more traditional ways of organizing business as usual? A sign of creative destruction may be that new business models are beginning to develop, expressing shifts in 'patterns of production, consumption, organization, management etcetera' (Perez, 2002:153). Therefore, in our analysis we have made an attempt to unravel some of the features of the underlying business models for Web 2.0 services.

We will discuss two important basic features of this conceptual model. Firstly, the revenue models of Web 2.0 services will pass in review. Changing revenue models are an important indicator of the destruction of old business models. But as we have explained, a business model is more than only a revenue model. We use a conceptual framework building on four layers that all add something to the companies' value offering, as is shown in Figure 1. Therefore, next to the revenue model, we will also pay attention to technological aspects of the Web 2.0 services – more concrete – the openness of these services for change. The value proposition of the services has already been subject of this paper in the above section about societal re-engineering. Therefore this part of the business model will be taken together with the value network concept. These two concepts will be illustrated by an example.

5.1 Revenue models

More than half of the services (67 percent) make money by placing advertisements on their websites (see Figure 6). Most services use Google Adsense, which arranges for the advertisements to be adapted to the content of the service. This is basically no different revenue model than more traditional forms of media have. But there are also other and often complementary revenue streams for Web 2.0 services. 20 percent of the services in the case sample had some sort of subscription service. Users were offered extra functionalities or for example extra storage capacity for a monthly fee. Other services (19 percent) offer their users actual products on their website. A smaller selection of services (7 percent) use premium services, add-on services users have to pay for, or charge users per X use (6 percent). Most websites that are offered by individuals or are part of open source projects ask their users for voluntarily donations; these websites often do not contain any advertisements and count for 7 percent of all services in the sample.

Figure 6 Revenue of Web 2.0 services
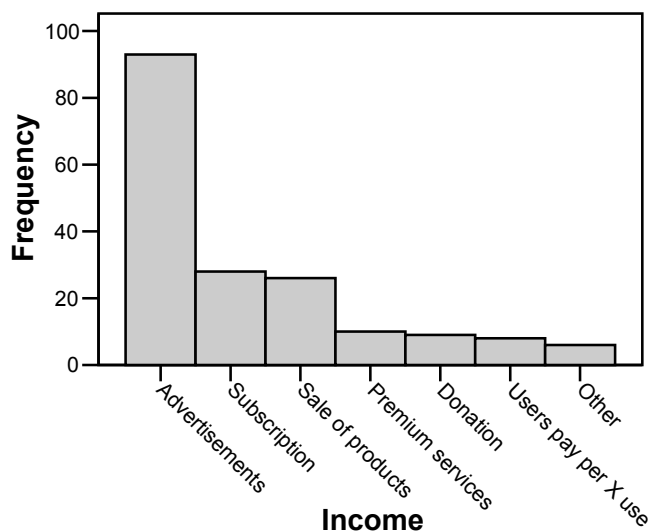
From the case analysis, one striking characteristic is that 17 percent of all services share income with their users. This is a much larger percentage than we had anticipated before the analysis. And it is a very interesting new aspect of Web 2.0 services. In what ways do services share revenues with their users? Services that share revenues most often are photo and video sharing websites (35 percent), news services (17 percent), social communities (17 percent) and marketplace websites (13 percent). In most of the cases, services share their advertising revenue with their users. This is not surprising – considering this is the main source of income for most Web 2.0 services. But there are also other possibilities.

There are several services, for example iStockphoto, or Fotolia that allow users to display their own photos as 'royalty free' images. Other users or business parties can buy these photographs at different prices and the user will receive an incentive per photo sold. AssociatedContent, a news website, screens all content that has been send in by its users. They will buy content they find interesting enough to attract other users. The service itself makes money out of the advertisements shown on the website. Another news website,

Nowpublic, enables users to write their own news stories online. They do not apply a strict selection. Other users who find the stories of one particular user interesting, can make a voluntarily donation. Squidoo, a bookmarking and recommendation site, not only shares advertisement revenues, but also affiliate revenues when a user recommends a product from a commerce partner (for example Amazon or eBay). At IMVU, a 3D chat application, users can earn money by making content (for example objects or environments) when they have obtained a pro developer status. Sometimes, the revenue share grows when a user has build a solid reputation online.

How popular are these services among users? According to the Alexa service, these services on average generate traffic measured at 605 per day. This is below average, but the median is 400, which is above the general case sample median. Subsequently other services (for example YouTube) that have not yet taken this step of letting users share in revenues are exploring this option as well.

5.2 Open or closed technology

Most services are relatively open. Almost all services, 94 percent, offer their basic functionalities free of charge. They are very accessible and often have a user-friendly interface. The services are mainly web-based – 85 percent of all services can be used without installing software. This lowers the threshold for participation.

But it needs to be underlined that services are not completely open. Users do need to log-in to make use of the main functionalities. Technology is often deployed to enable users to navigate easily the website functionalities. As has been shown in the previous section of this paper, users are relatively free in Web 2.0 services to create content themselves, add things and personalize the services they use. The analysis of the case sample also shows that many services offer users the possibility to combine different services. I can for example upload my Flickr photos on my social community network, or automatically bookmark certain services on my del.icio.us account. These characteristics imply that most Web 2.0 services truly use technology in an open way.

But looking more closely, this statement deserves some modification. If services would be truly open, users would also be enabled to tinker with the technological framework of the service, as is the case with open software projects. Or users would be enabled to control the data sharing themselves, as is the case in P2P file sharing networks. Our analysis shows that only 7 percent of the Web 2.0 services is actually based on open source software. Furthermore, only 1 percent uses P2P technology for file exchange. Nonetheless, if you compare these Web 2.0 services with 'Web 1.0 services', users do have many more opportunities to interact than before. Therefore, the way businesses position themselves on the Internet can be classified as semi-open.

5.3 Value network and value proposition

Many services strongly rely upon their users for value. Therefore, attracting enough users is extremely important. A social networking site without users can not provide a lot of value. A video website without users uploading videos is of no use either. How do businesses optimally exploit connectivity and the new user roles that have been explained earlier in this paper? As has become clear looking at the technical specificities, services provide users a low threshold for participating. They often do not have to pay for basic functionalities and the

services can be used from any location without users need to download software. Services also often position themselves as cooperating with other services. At least one third of the services in the Web 2.0 case sample were explicitly offering functionalities linked to other services. Many weblog and social community services enable users to incorporate their Flickr photos or YouTube movies directly into their account. Photos can be placed on location maps ("Google mashups") or websites can be automatically added to bookmarking accounts. These features enhance the value for users.

The more users participate in these services, the higher the network effects are. One example of a service that heavily relies on these network effects is Couchsurfing (couchsurfing.com). This hospitality service connects users that are travelling abroad in real life. The service provides travel information and offers users contact addresses in the countries they are going to visit. This service makes travel agencies and even hotels obsolete. Users offer each other a place to stay. To provide an extra safety measure, the site uses an extensive status system (vouching and verification) to make as sure as possible that the users are reliable.

Another example of a service that tries to maximalize user value is iStockphoto. As has been described, many services try to keep the threshold for participating as low as possible. They try to obtain as much users as possible. But iStockphoto employs a different strategy. Every user that wants to upload photos to their website is screened. The quality of the photos must match certain pre-defined criteria. If users are allowed to participate, they may upload photos and share revenue with the service when their photos are sold. By being selective, iStockphoto tries to improve its value for others.

5.4 Summarizing

Summarizing, changing revenue models of Web 2.0 service point to some first signs of creative institutional destruction. Users are increasingly incorporated into the revenue model of services. Not only as paying actors, but also sharing revenue with business parties. Looking at other elements of the business model of Web 2.0 services like the value proposition and the way services are cooperating, it becomes clear that services are creatively employing their users' activities. Many websites of more traditional media services like newspapers and television stations are also increasingly incorporating Web 2.0 characteristics into their services. On the BBC website for example, users are invited to send in their own photos or comment on news messages. Most Web 2.0 services try to be as open as possible to attract many users and optimally create value. On the other hand, figures about open source projects and P2P file sharing indicate that truly open in technological sense are only a few. We may therefore conclude that up until now, only 'relative' creative destruction can be discerned.

6. Future directions

As has been outlined in the previous section of this paper, Internet characteristics, combined with user activities push, and at the same time enable companies to reorganize their businesses. Business models are changing. New parties enter the field. Businesses have also started to incorporate user roles into their business models. But the developments still raise many questions. One of the uncertainties coupled with user roles, concerns the further development of the Internet – will it remain a relatively open environment where users can freely move around, or will it develop into a more closed environment. A second uncertainty concerns the way revenue models are going to develop. Will services remain free of charge or

will users increasingly need to pay for online services and content when these services have become a natural part of everyday life? Will the characteristic of users sharing in the revenue of the services further develop? How will services organize their business in the future, and what consequences will this have for user roles? These uncertainties can be further analyzed by conducting a scenario exercise.

Figure 7 Scenario quadrants (Source: Slot, 2007b: V)

In the context of the B@Home project (a Dutch research project focusing on the future of broadband multimedia services in the home), a scenario exercise was conducted that analyzed these uncertainties (Slot, 2007b). Four scenarios where constructed for 2015 along two axes: free content/ services for users versus users pay for content/ services, and an open and free online environment versus a closed and protected online environment.

Looking at the axes, four scenarios are defined (see
Figure **7**). Scenario one is called *Grassroots Hobbyists*. This scenario (free content/ services in an open and free environment) is characterized by bottom-up developments. Users are active participants, creators, producers and distributors. Firms have no clear revenue models. Because users have taken the lead, they play a small part in the innovation process. Scenario two, *Marketplace M@rvels*, (users pay for content/services in an open and free environment) has the same characteristic as scenario one, considering the open and free online environment. But in contrast to scenario one, where business parties were not making any money, new revenue models have been developed that allow content and service providers (sometimes also users themselves) to earn money. The third scenario is called *Webworld Billboards*. In this scenario (free content/ services for users in a closed and protected environment) user communities are exploited as marketing machines. Users act as gatekeepers and rate and tag content. Innovation is a continuous process and businesses act as facilitators and content providers. In *Bandits & Cashcows*, the last scenario (users pay for content in a closed and protected environment) the main characteristic is the utilization of strict copyright protection. Businesses are very scared of copyright infringement, and users fear for their privacy. Users and businesses are strictly separated and innovation is hampered by harsh copyright protection.

We will not discuss these scenarios in great detail in this paper.[3] But it might be interesting to highlight some of the main issues presented in the scenarios.

6.1 Main scenario issues

The four scenarios enable different user roles. In two scenarios, the online environment remains relatively open. The Grassroots Hobbyists scenario as well as the Marketplace M@rvels scenario enables users to take on many active roles. In the latter scenario, users even earn money with their activities on a large scale. If the Internet develops into a more closed and controlled online environment, user roles will be much more constrained. The Webworld Billboards scenario still permits users a limited form of freedom. They can still be active in online communities (this is also stimulated by businesses), and can also actively share things with each other. But still, Internet has changed. Users have to register more extensively and user identity is coupled to mobile phones. Content can only be shared in streaming format. Most limitations are present in the Bandits & Cashcows scenario.

The level of openness not only influences the way users can behave, but also the possible interaction between users and businesses. The more freedom for the users, the more two-way interaction will develop in the future. In the Grassroots Hobbyists scenario, the users enjoy great freedom. They can take on many roles and can use services and content for free. In this scenario, the roles for traditional business parties are declining. Businesses will have great difficulty developing viable business models. Users will not represent monetary value for businesses online – they will primarily take the users as a source for the offline product development.

On the other side of the spectrum, in the Bandits & Cashcows scenario, we see a different development. The more closed the network and the more often users have to pay for online content and services, the more limited user roles become. Internet is characterized by one-way traffic. Large multimedia corporations will create walled gardens. Users are seen mainly as consumers. They only have access to controlled and approved websites. Users are severely restricted in putting content online themselves. They need to go through an authentication process before they can enter the Internet. This is more of a top-down model.

Scenarios two and three steer a middle course. The dynamics between users and business are characterized by top-down as well as bottom-up interaction. Users need businesses for their experiences and facilities like servers. Businesses are providing the outlines and edit content to make it more attractive for the users. They facilitate users technically and editorially. Because the threshold between users and businesses is extremely low, they can constantly interact to improve the services they offer. Businesses need users for their input, user base and information. The market has splintered into thousands of niches, and companies need users to make sense of this. Because many similar services are online, competition is fierce. Internet is an open environment and users demand the right to use their content in many different ways and access their content on different platforms.

Thus, even if Perez' model of deployment is applicable to the Internet development, the way this uptake is going to take shape in the coming years, depends on many decisions. We should be aware that decisions about the character of the network are affecting user roles and the interaction between users and businesses. There still are a lot of uncertainties in the online

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[3] For more information about this project, visit http://www.userproducer.nl/future-users.html

domain. These uncertainties are not going to be solved here. But it needs to be underlined that ongoing research about the online developments and the roles of users is crucial in understanding ongoing developments.

7. Concluding

We have started this paper by stating that users were crucial for the development of the 'golden age' of the information society. Taking Perez' concepts that mark a period of more stable growth, we have first analyzed the deployment of Web 2.0 services. Various researchers have shown that the Internet in general is taken up very rapidly and on a large scale. There has been an exponential growth of the uptake and use of services with Web 2.0 characteristics. Our analysis has shown that particularly services that focus on sharing and storing content (like YouTube and Flickr) and social networking and communities (Like MySPace, Orkut and Friendster) are very popular among users. Sharing, finding, saving, connecting and communicating seem to be very important aspects of the services in our case sample. Thus it is fair to conclude that the stage at which we are now, can indeed be described as a phase of high (and still growing) deployment. However, there are more characteristics that should be taken into account.

According to Perez, a key characteristic of the deployment period is societal re-engineering. To make an assessment of this concept, we analyzed new or innovative user roles. We have shown that Web 2.0 services enable users to take on many different roles, which reflects the active involvement of users in the appropriation process of these services. Traditionally, these were often reserved for business parties. Users have started creating content on a large scale. They share this content and thoughts with each other through the Internet. Furthermore, hierarchically defined taxonomies are more and more replaced by folksonomies based on collective intelligence. The empowerment of the user is an indicator for this process of social assimilation.

A third concept we have studied to complete our analysis, was the level of creative institutional destruction. Creative destruction could be indicated by new business models underlying Web 2.0 services. The results show that most businesses still rely on advertisements as their main source of income, just like traditional media companies have done for years. This does not indicate any changes. But our analysis or revenue models of Web 2.0 service indicates that hints of creative institutional destruction can also be detected. Users are increasingly incorporated into the revenue model of services. Not only as paying actors, but also to have a share in the revenue. Looking at other elements of the business model of Web 2.0 services, like value proposition and the way services are cooperating, it becomes clear that services are creatively employing their users' activities. But it also needs to be underlined that the openness of these services can be questioned. Figures about open source projects and P2P file sharing indicate that only a few services are truly open in technological sense. We may therefore conclude that up until now we can only see indications of 'relative' creative destruction. Although substantial changes in the organization of business models, are noticeable, there still are no strong indications that traditional hierarchical relations are fundamentally changing.

We think that Internet developments indeed have taken us to a second stage of sustainable growth, characterised by high deployment and a better match between the 'new' technology and the socio-economic context in which it is deployed and embedded. Since we are at the very beginning of this period, we still have some doubts about the classification of this age as

a "golden age". Still, a lot of uncertainties exist. These have been highlighted in the section of this paper about the possible future.

7.1 Research note

Although our analysis of Web 2.0 services does shed some light on the nature and use of Web 2.0 services, it needs to be underlined that we are still at the beginning of this exploration. The data that we have used still needs to be further supplemented and refined. Furthermore, to enhance the analysis, more data should be collected that shed light on traditional user roles and business models. Our explorative approach also could benefit from some conceptual refinement and more data should be collected. Nonetheless, this exercise has proven to be a first step in a very interesting direction.

7.2 Follow-up

A lot of interesting questions remain unanswered. There are many questions that concern policy implications. As Pascu et al. have already stated, "The development of Internet 2 applications also opens a wealth of policy-related research questions". For example how countries are going to approach global Internet issues, or the way we are going to deal with intellectual property rights. These questions will prove a true challenge to policy makers.

But also in terms of social and economic impact, user roles still need to be further investigated. What is driving users to take on this variety of roles and how are they going to behave in the future? These issues are inextricably linked with business-related questions. Will the market stabilize and will businesses be able to structure user behaviour or make a decent living out of their Internet activities? These questions seem relevant from scholarly as well as market point of view. Since we are only at the beginning of the period of high deployment, the online domain will be a continuing source of research material. We need to collect more and reliable data on online services and user behaviour. This paper is a first small step in this endeavour.

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Kairos – Tomorrow's Communication and Reachability Management: Applying User-Centred-Design-Practise To Create Innovation Driven By Contextual User Needs.

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Abstract

This paper describes results of an explored application field in the ICT based on a user-centric-concept and shows insights of a practical design-approach focussing on the identifying and creation of service innovations in the core field of telecommunication –communication and rechability management. Based on qualitative user-interaction, emphatic observances as well as contextual inquiries and creative focus groups with experts need structures have been identified, transferred into service-concepts and the relevance of the future benefit potential was demonstrated.

Key words: Reachability management, communication and reachability context, user-centered-design, digital service innovation, contextual need analysis, service creation, kairos;

From the perspective of the telecommunications sector, the focus for the past five years has been on technical transportation systems – such as GSM WAP, GPRS, WiMax, Bluethooth UMTS, Edge etc. – in connection with downloadable multimedia content. Little innovative attention has been devoted to the revenue classic of voice communication as focus tended more towards offering voice customers additional portal and data content applications in order to realise the incorrectly high revenue prognoses with data applications and traffic after all.
In most cases however, the "real" needs of communication customers have been given little attention. The data content portal strategy was only marginally successful as regards its return on investment. New potential areas for sales are being sought – particularly when presented with increasing competition among IT and TC companies in the converging IP market.

With the upcoming personal, fixed-mobile synchronous and asynchronous communication user faces new challenges in convergent dealing with his communication management.
Since the invention of the telephone we have witnessed a revolution in the development of communication opportunities. In the beginning, reaching users was dependent on the user being close to a fixed telephone with a set telephone number at the end of a line. Today users are faced with a large number of different communication channels and end devices with different telephone numbers and addresses: e.g. fixed phone, fax, e-mail, cell phone, short and multimedia messaging services, voicemails, internet chats, instant messaging like Skype, ICQ, twitter etc. Now users are confronted with a new challenge, that of being able to manage their personal reachability and communication needs across different forms of media in an accomplished way.

The current trend in the emerging IP world of communication involves taking a step

backwards and focussing attention on the user, encouraged by the new applications of Internet 2.0 where IP users reinvent digital applications for their respective needs and characterise them with their own personal content, communication and network community relations. „The bigger the city, the more likely it is that a user will be able to find just the right clique because the overall supply of social groups and watering holes is so vast." (Ziv, Mulloth, 2006) Even if the first successful business models of Web 2.0 applications in the areas of User-Generated Content and Mobile Social Software could be termed overestimated and less than consistent, significant need structures and principles have however become apparent. These indicate an innovative and intensified desire for participation and communication on the part of users. Internet and wireless are no longer individually useful but are rather merged into technology and used in a collective, entertaining, context-interactive and interchangeable manner. User-creative is what this trend of Mobile Web Convergence 2.0 could be called. Mobile Web 2.0 is focused on the user as the creator and consumer of content ‚at the point of inspiration' and the mobile device as the means to harness collective intelligence. (s. Joakar et. al. 2006)

But this turnaround is not in fact as new or surprising as currently suggested. The exchange, networking, customer-generated content and collective distribution of communication have always been valid and strong need structures throughout history.

The content of classic telecommunication services has always been "empty transport channels" filled with "user-created" content. Even carrier pigeons at the time of Pharaoh Djoser in 2600 BC were out and about with individual messages (s. Dauk, 2004). Seen against this background, synchronous "voice" applications or asynchronous services such as SMS or e-mail communication have always been "2.0", i.e. they were created and used by the user or subscriber and thereby strongly aligned towards the needs of the respective communication user. Since the era of Graham Bell 1876, the telecommunication sector has been offering channels for transmitting user-created content which the user fills and then uses. Use is sometimes as planned and intended yet entirely unexpected to date. The history of SMS (short text messages) is only one such example. Users have displayed astounding creativity over the years in the application of "reachability" in particular, e.g. in how they have invented, established and exploited a variety of new communication opportunities in the form of ring tones or mini news snippets. Nevertheless, the telephone is still a "blaring madcap which unexpectedly interrupts the recipient of the call" (s. Flusser, 2004 – translated by author).

The mobile and social-interactive context of users will be of interest in the future. Users see the merging of previously technically diverse transport channels as permitting communication options to be used in parallel (i.e. synchronously). Convergent and multimodal communication and reachability management is becoming possible, i.e. a proactive decision as to how, when, using what channel and preferably at a certain time contact is established. Other new design options are in the area of "knowing who is where and what he is doing at a given time". This type of presence and near-realtime know-how about people, situations or events applies as a new quality and increase in efficiency in communication, particularly in communities.

Kairos, the Greek god of the right or opportune moment, can be regarded as a guiding figure for future improvements in context-related communication interaction. The aim is to apply all forms of communication in a sensible and targeted manner as well as adequately adapted to the current context. However, with its various technical transmission channels and standards, communication technology has some considerable catching up to do in this regard. Reachability and the professional management of various communication variations available are therefore long-running issues. Especially against the backdrop of the new and future possibilities arising from telco-convergence and the variation opportunities offered by IP

communication, an immense uncharted area of development emerges for services, applications and the design of new business models.

The aim of this paper is to analyse the experience of three different development projects from innovative practice and research to analyse, derive and systematically depict the relevant and particularly manifest parameters for designing future reachability solutions. Derivation focuses on the actual user who formed an active component of the analysis and development phases in each of the three projects. The condensed results are presented on a structural, practical and theoretical level – giving insights and working out the relevance of the field communication and rechability management for future service creation in telco-convergence.

What is Communication and Reachability Management?

Management of communication and reachability in the ICT are difficult to record and are subject to definition. The semantic area of the term of reachability is: Accessibility, availability, roaming, ubiquity. Most of the terms describe a technical context of being reached and furthermore these terms describe the possibilities of communication "connectivity". Nowadays nearly in all regions in most of the developed nations there are accessible mobile infrastructures which support the concept of always being connected (Salkintzis, 2004). So reachability is mostly used in backgrounds of technical research and coding context of networks. As early as 10 years ago, the challenges and opportunities of the issue of reachability management were depicted in technical research projects. Back then however, the focus was on the issue of multilateral security and protection. One research project in Germany examined the potentials of a reachability management service intended to filter out unwanted callers. Furthermore, recipients were also able to individually adjust and manage various role profiles (s. Reichenbach et. al. 1997, Rannenberg, 2000).

Up to now the topic is not examined and defined straight from the users' point of view and with focus in the converging technologies and innovations. Reachability in the context of the analysis presented is defined as follows:

Optimising the design and creation of reachability has the objective of the persons involved actively influencing and utilising an optimum channel and time within the framework of planned or intending communication interaction.

Within this paper the focus is on the users point of views. The need to reach or be reached by someone or something is the basic requirement of any type of communication. Reachability management basically enables personal communication.

Customers can select the incoming and outgoing digital communication channels as well as steer them and individually adjust personal reachability in accordance with their current context and change it using the multiple possibilities available. Reachability concerns both the classical model of sender and recipient of communication interactions according to the communication model of Shannon and Weaver (s. Nöth, 2000, p. 244). Knowledge of the current status of reachability is essential if communication is to be successful. The range of possibilities for contacting and communicating is vast. Depending on the context knowledge availed of by the recipient, selection of the communication channel is shifted to the sender.

Communication is the most central requirement of society. In the past migration levels of information and communication technology, the management of multiple communication possibilities was given little attention. Developments concentrate on portal access and content management although it is obvious that the potential is currently being increased.

Reachability principles and parameters from the user's point of view

The principles of reachability basically have to do with the sender/actor and receiver of the communication interaction. In addition to that the following aspects are playing a major role for the integrated communication in future.

Figure 1: Identified interaction principles of reachability from the user's point of view
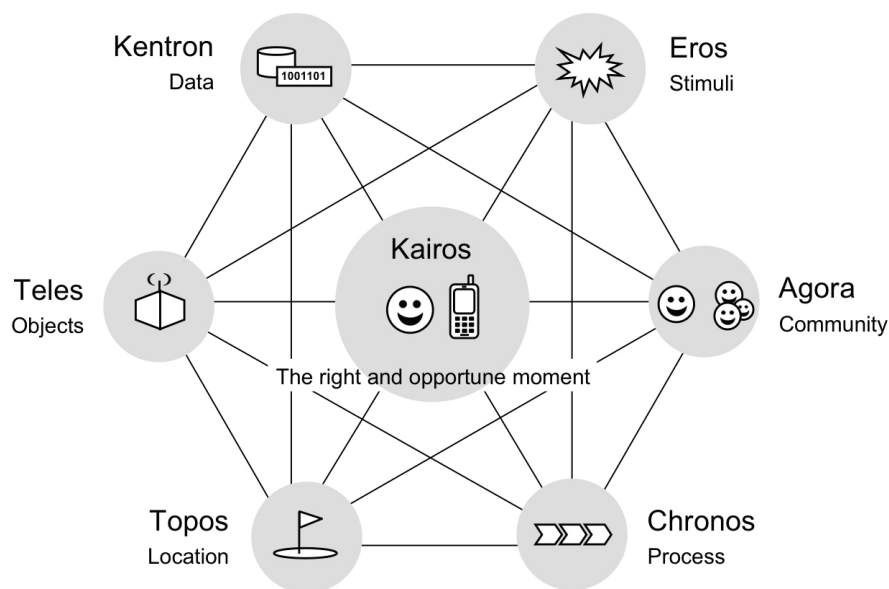
„Kairos"	Knowing the right or opportune moment for communication and the best channel.
„Kentron"	The central data port or web based interactions.
„Eros"	The intention of prompt interaction and the stimuli of communication. Optional a situation or location based initiation of communication activities.
„Agora"	The principle of a market place for sharing information and communication within a defined community.
„Chronos"	The remaining time, planning and coordinating of process based managements
„Topos"	The location and environmental relation, furthermore the deposition of items.
„Teles"	The remote interaction with and to things, distance steering and control.

Reachability, availability and connectivity are the requisite trinity for ensuring that communication takes place in accordance with the expectations of the communication participants, whereby managing reachability or optimising communication as regards. Reachability Management describes the same objective, i.e. perceiving the context of reachability as being capable of design in an active and passive sense and utilising it to optimise existing forms of communication. At the same time, individual development of new forms of communication is possible.

Figure 2: The seven basic parameters of contextual reachability management
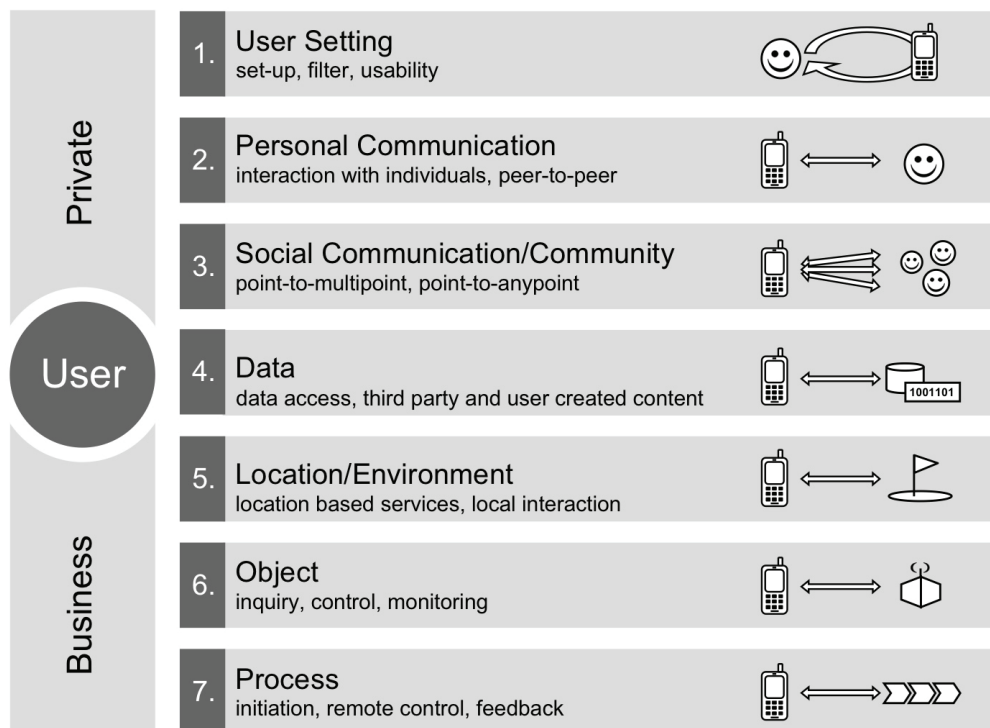
On closer examination the topic reachability management can be differentiated in the following seven basic parameters. These possess a strong validity from the users point of view both in business and private usage context. The parameter will help for a further segmentation and systematic analysis of the examination field. The following characteristics can be defined:

- 1. User Settings: set-up, filter, usability, device/system/service interaction
- 2. Personal Communication: interaction with individuals, peer-to-peer
- 3. Social Communication/Community: point-to-multipoint, point-to-anypoint
- 4. Data: data access; third party & user created content
- 5. Location/Environment: location based services, local interaction
- 6. Object: inquiry, control & monitoring, objects around, machines,
- 7. Process: tele remote, process warning signal, tele-observation

The combination of the presented parameters is the next step for further systematic analysis of the complex and wide spread examination field of reachability management. To develop simple and understandable abstract patterns and principles in which reachability can dissected is the generally accepted fundament for the focused user-centric design approach.

Reachability context

The identified area of potential in the "customer-oriented telco-convergence innovations" of the future concerns design of the "reachability context". In the migrating IP convergence world of the future, a variety of IT and telecommunications applications will merge. What's more, new possibilities will arise and technical realisation of a wide variety of types of communication will no longer be the key problem with focus centring on adequate and customer-friendly preparation, depiction and increase in quality of the possibilities in the

context of reachability. The existing and future possibilities associated with interacting and communicating with people, items, places and processes at all times and everywhere via a wide variety of possibilities will require innovative management and uncomplicated customer communication of future offer portfolios in this area. The basic issues for future application designs are:

- What types of communication are available? How popular are they among users?
- How can the diversity of offered possibilities be comprehensibly made accessible to a wide base of users?
- How can communication and interaction be simplified?
- How can reachability be optimised as regards individual participants and situations?
- How can times and the type of communication application be optimised?
- How can existing channels be enriched?
- What choice of communication is the right one for what purpose as well as being promising for a certain time?
- Are there any potentials for new types of communication? Needs that have as yet remained undetected?
- Can a "Communication Richness Theory" already be defined today from the customer's point of view? (s. Daft, Lengel, 1986)

The fundamental goal is to improve competence and the successful and targeted application of multiple communication options on the part of the user. The success and quality rate of a type of communication should be increased – either technically or in terms of acceptance.

The reachability context is defined as the "active and/or passive context in which all possibilities and requirements of digital technology can be designed in terms of IT and telecommunication from the user's perspective". The context definition includes the prerequisite, intention and planning as well as implementation and follow-up of a digital communication activity which involves one or more sending or receiving participants interacting in various ways (synchronous or asynchronous transfer channels).

Figure 3: Reachability context along the general communication/interaction process
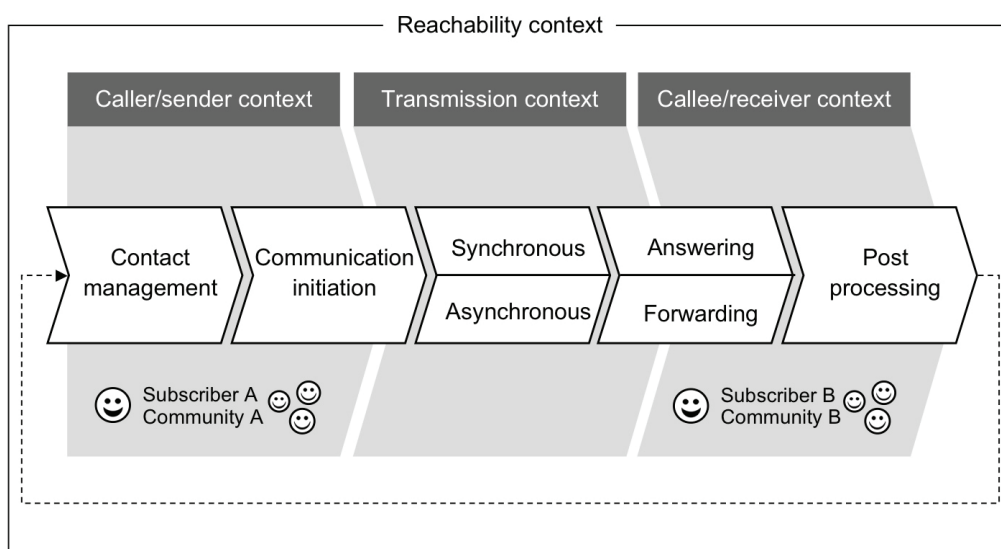
The following individual issues are of relevance in this communication process:
- Updating and managing contact data

- Context specific list of fitting interaction partners based to the user's intention
- Preselected list of possible communication channels
- Adjusting role definitions for persons or contextual situations
- Analysis of current context parameter with automatically definition of fitting reachability rules based on the user's behaviour in the past
- Intention sample for communication activities
- Selection of communication options (communication channel or medium)
- Time- and context-related influential factors in the success or failure of reachability
- Statistical documentation of communication structures, samples and networks
- Individual saving and structured storage of messages and interaction events like voice call, instant messaging, chat etc.

Key position in these definition of communication and interaction process are the respective usage contexts and environmental parameters the user are in. Here results some important factors and requirements for optimising the communication process on the shown steps.

The analysis approach

The convergence potential was examined methodically and creatively in various analysis steps, whereby the aim was to validate the persistence of the future relevance of the area over the medium term. The second step involved performing qualitative user observations and focus interviews supplemented by expert ideas and opinions in order to outline the potential specifically in rough concepts.

The focus of this publication involves an insight into the selected results of observation and interview interactions. The emphatic analysis approach was deployed over a period of six weeks with a total of eighteen coached observers in three selected everyday contexts. Prioritised contexts are:

- the family (at home and out and about)
- job-holders (during their working day, at the office and on business trips)
- and as a cross-section area for the user groups observed in a recreational context.

The observers were sensitised in advance to the issue to be examined in order to document user requirements and typical or conspicuously different behaviour. The basis for the contextual introduction was a definition and delineation of the issue of "reachability and communication" from the user's perspective.
The observers were given a type of diary and orientation guidelines to document the discoveries observed and experienced by them. Particular importance was given to the description of individual situations and statements of individual users. Furthermore, the results were continuously evaluated within the framework of individual discussions with the observers every two weeks.

Results from the private/family context

The results of individual analysis contexts are summarised below as examples. Within the framework of this article, results were compressed and reduced to the "major" phenomena. For the purposes of improved comprehensibility, additional core statements by observers and users observed by them are depicted and described as well as some detailed behavioural situations.

Core statements by the observer:

- "The telephone rang three times in a row at a friend's house and each time it was a pre-recorded automatic prize-game announcement."
- "When I get home in the evening and listen to my answering machine, three or more automatic prize-game calls are on it some days."
- "A bouncer for calls to my mobile"
- „To know the cause why the caller ringing is a strong need identified at all observed people. There are no exception to the different situation contexts of the callee."
- „New communication channels are wanted – something shorter than SMS only for one stop information – no interaction."
- "Stay in contact, check daily organization tasks and take care on each other is need of families. Existent communication tools are not perfect for realizing this. Means all time interaction – silent watch is not possible."
- "The user don't want to forget important dates and communications as well as seeing who is next on calling list."

It was then possible to derive and prioritise the following needs and requirements concerning reachability and Communication Management using convincing observations and statements by users in private contexts:

- Owners of land-line answering machines at home do not always use them as designated, i.e. they are not only used as answering machines taking calls in their absence but rather for listening in to incoming calls. "Listening in" on calls as a basis for deciding whether to take such calls or not was a phenomenon which was regularly observed.
- Automatic selection of the nearest and most convenient communication device and/or easy and flexible change from one end device to another was derived as a requirement. At home, the persons under observation preferred their land lines over their mobile phones.
- Another aspect in connection with incoming calls is control and/or use of intelligent voice spam / spit filters. This request is increasingly perceived by observers against the background of a steady increase in undesired advertising and prize-game calls.
- There is a distinct desire for preliminary information on incoming calls. In all call contexts observed, incoming call numbers are always scrutinised on the display first. Unknown or hidden numbers are not even accepted in half of all cases.
- Presence information for the sender. In small informal groups in particular, there is a definite request for "invisible" control and security. For example, in many cases persons use an agreed ring tone to let each other know that they've arrived home safely or that everything is ok.
- In the younger "kids" scene, coded ring tones are used to indicate to someone, for example, that the user can now be reached via another communication channel such as Instant Messaging (ICQ). This behaviour can simultaneously be seen as an indication of the requirement for new communication channels somewhere between calls and SMS/MMS.
- Communication and contact management were identified as a neglected or unpopular issue in private contexts in particular. When questioned about the topicality of their telephone book entries, more than two-thirds of those interviewed told the observer that a third of all the numbers stored were almost certainly no longer in existence. The time-consuming task of regular updating is annoying especially owing to the lack of synchronicity between land lines, PCs and mobile phones.

Results from the business context

The observers deployed in the "job" context had the task of observing themselves, their colleagues and others in their daily dealings with communication and reachability. A selection of documented core statements and observations reveals some indications for innovative applications or improvements in the reachability context of working lives:

- "Knowing how, when and where the person I wish to contact is best reached would save me a lot of time and bother every day."
- "When I wish to let someone know something important, I try to reach them on all channels, one at a time: land line, followed by mobile or even e-mail."
- "There's nothing worse than sitting on a train talking to an important client on the phone and the connection suddenly disappears as you enter a tunnel."
- "Meanwhile, I know my standard train routes inside out and know exactly when I need to end a phone call prematurely."
- "Sometimes you keep missing each other's calls – leaving three or four messages on each other's voice boxes."
- "I don't use reachability profiles – the settings are far too complicated."

The following needs and user requirements could be identified and derived from the documented and reported observations and statements by the observer. These results vary depending on whether they represent the sender's or recipient's perspective.

- Callers desire transparent preliminary insight into their communication partner's reachability at a given time with a display of the communication channels available. This knowledge facilitates the process of choosing the "right" communication channel.
- Certainty as regards important information/news being delivered: everyday working situations involve urgent news often being left as multiple messages and on various recipient media. Accordingly, when the recipient is not reached, a message is left on his land-line answering machine first, followed by his mobile phone voice box and finally an e-mail is sent along for good measure.
- Comprehensive presentation and management and/or editing options as regards messages/calls left on voice boxes: targeted access to individual messages is demanded as a function just as much as the possibility to swiftly skip or ignore messages.
- Preview of own network availability/reachability particularly in mobile contexts with restricted reception quality, e.g. on trains.
- Specific indication of good reachability of individual persons or defined groups of persons: some of the persons under observation have solved this requirement by means of agreed coded ring tones. Allowing business mobiles to ring twice indicates a good time for a call, for example.
- In meeting contexts, a requirement on the part of recipients was derived as regards individual reactions to incoming calls, e.g. selection of direct brief feedback at the touch of a button. Consciously rejecting calls or cutting them off is still regarded as an impolite gesture to be avoided.
- Recipients criticise the lack of possibilities to steer and control all communication centrally on a single platform. Common administration of land lines and mobile phones, e.g. in the form of a "common" voice box or contact/address book, is one request.

Need orientation – function principle – case study

From the shown results prioritised needs have been translated into over 100 detailed usage scenarios. Furthermore general accepted function principles were defined overall the examination contexts. These principles offer potential generic development approaches for application design in the field of reachability management. They can be positioned to three steps of the communication process defined in the beginning (s. figure 3).

- Communication transfer and enrichment: using a new communication channel with individual multimedia information.
- Communication initiation and reachability preview: focused on the informed communication channel selection.
- Contact management: user generated address book with easy synchronising functionalities.

The described principles were used to design and define exemplary reachability services. In the following three concrete application are demonstrated as case study. Within these examples the estimated potential of reachability services can be proofed.

Case study I: Pre-com-enrichment – additional information during call setup

"Pre-com-enrichment" applications denote a new previously unutilised communication area in the call process, i.e. incoming calls, where to date only so-called Call Line Identifiers are communicated with the result that the caller's number is displayed on the recipient's end device display. The basic principle of enriched calls utilises the extended technical possibility of transferring additional information caller-initiated/controlled at the same time as the recipient's call is set up. This process taps an innovative multimedia communication channel in the call process.

The application offers callers the opportunity to dispatch additional information as the call is being set up with the recipient (B). This additional information can be preconfigured in terms of the application or user or even content individually created by the user.

Personal design and active dispatch of pushed information parallel to call setup offers user-wide enrichment of the call context. The recipient (B) receives additional information along with the incoming call, e.g. information on the caller, call content or other content compiled and selected by the sender (A). The additional transparency and preliminary information gained optimise the typical call process, attributing it an entirely new quality.

Figure 4: Case study pre-com-enrichment
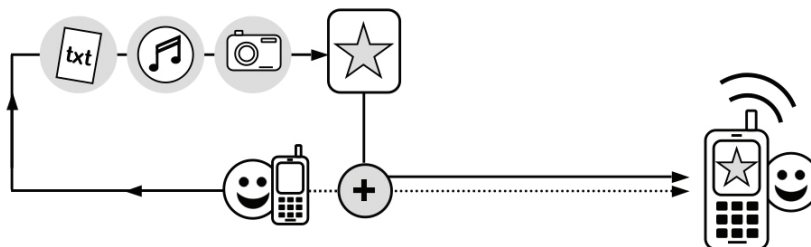
Case study II: Presence context checker – preliminary insight into recipient reachability context

The application developed offers the caller or sender a type of communication centre in which all of the recipient's possible communication channels can be viewed at a single level, i.e. voice, SMS, MMS, IM, voice box / mail box etc. A simple icon system, e.g. a type of traffic light system, indicates the current quality or appropriateness of reachability on the various channels with the result that upon selecting the desired communication partner from an address or telephone book, the sender gains an insight into the communication channels available depending on the selected communication partner's current status or presence settings.

The process allowing a preview of the communication channels available is based on the principle that the user has released his current reachability settings for a defined group of people.

The current presence settings are either automatically set and released via predefined regulations or actively by the recipient depending on the given situation. A decisive factor for the process is that all of the communication channels available to the user are steered and managed in a synchronised manner via a presence or status profile.

The preview permits the sender or caller to select the most appropriate communication channel for his respective situation – in a targeted and knowledgeable manner. Unnecessary and superfluous communication is thus avoided.

Figure 5: Case study presence context checker
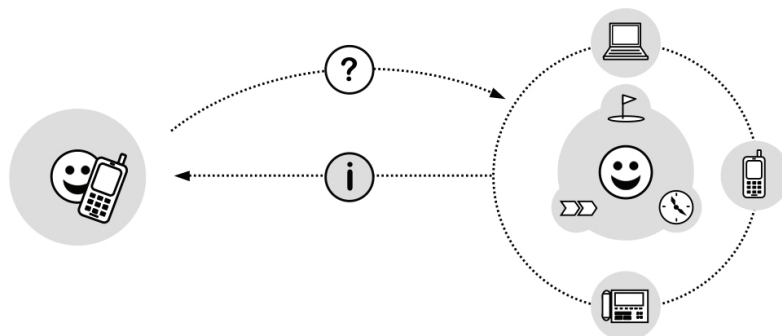
Case study III: Contact generator

The contact generator is a community created and administrated phone book – relating to the contextual communication and rechability possibilities of single users or user groups. Although it offers the technical solutions for all of these problems and the (basic) requirements on the part of users as regards the "telephone book" system can be clearly defined, no application has yet managed to fully satisfy this requirement (s. Skalsky, 2007).

- Why are directory inquiries (e.g. 11833 in Germany) still required for finding telephone numbers or addresses although a single online query is possible at any time, even from mobile phones?
- Why is it not possible for contacts to be simply adopted from old mobile phones when users buy new ones?

- How much of the contact data in personal telephone books is actually up to date?
- Why must each user manage information on numerous other users in his telephone book?
- Why do some telephone participants still try to reach others on their old numbers?
- Why doesn't the telephone book know before active calls are made whether the recipient's line is currently busy or his mobile phone is switched off?

The contact generator represents a type of mobile, user-generated telephone book. Users have the opportunity to enter and manage their own personal data and release it in a differentiated manner to other users within the platform. This also gives the user the possibility to link his contacts in the telephone book with the current profiles for the contacts recorded in the contact generator. The old static telephone book is replaced with a new fully-dynamic service which provides up-to-date contact data at any time on the basis of content managed by the users. Apart from the contact data, blog content, photos and videos in individual profiles can also be published. Furthermore, the service is intended to take consideration of the current location (e.g. downtown Moscow), current activity (e.g. meeting) as well as the reachability options on the part of the recipient (e.g. business telephone, e-mail, instant messaging) by analysing the mobile context simply by searching the telephone book. An extended search function utilises various filters to permit searches of all registered and approved contact data replacing the function offered by telephone directory inquiries. The aim is to create a standardised service for contacts which can be deployed independent of devices and platforms.

Figure 6: Case study contact generator
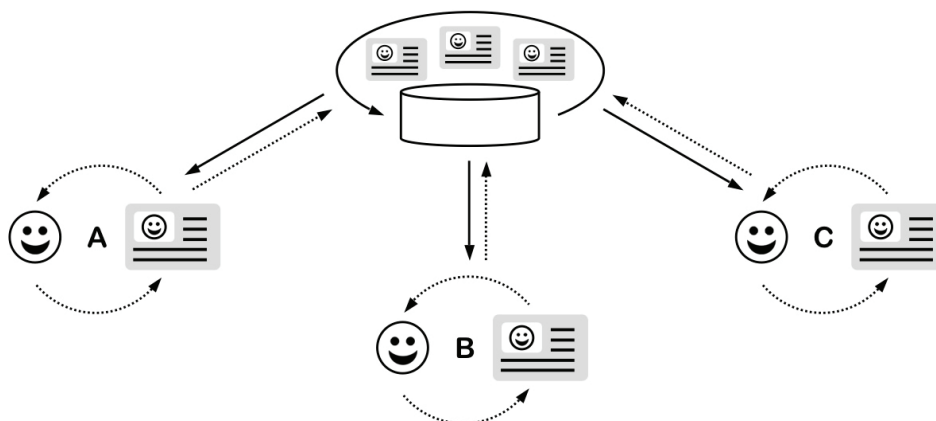
The three case studies above improve the possibility of further reachability services with a real demand on the users' side. The shown case studies have been evaluated in focus groups using mock-ups and click dummies (s. Gerstheimer, Lupp, 2003, 2004). The exemplary use cases depend on generic function principles. Based on these principles a wide range of similar services can be realized – highly customized to the needs of different target groups.

Conclusion

The management of reachability is the true and "bumping" heart of communication and interaction – in the past and especially in future converging markets.
The classic communication channel, like voice has always been used from the very first by user-created-content. Kairos, the greek god of the right or opportune moment is the guiding

figure for future success of novelty and innovation in communication and reachability management. Having pre-views to the intentional receiving context of communication is one important application field driven by presence functions and role management. Optimizing the handling and gathering of phone book data, or more open formulated – user created contact data bases – is a second important field for reachability services. In both application fields the new "thinking in appliance" is necessary. In the future a broad range of communication possibilities are possible on the same usability level of selection and intending interaction. Relating to the reachability status and near real-time or presence interaction in between the communication parties will be optimized. Selecting the right and contextual interacting communication channel means having detailed knowledge of the reachability status of the receiver`s (group) context.

This contextual "televiewing" into the wished reachability status enhances the quality of communication and interaction between the communication parties – independently of a synchronous or asynchronous communication channel. Therefore many of new challenges are coming up in the fields of security, integrity and authentification.

The innovation field "rechability context" has many revenue relating service opportunities. Pre-viewing, one-time-numbers, blind-calls, VIP-filter, VSMS (very short message service) and many more identified need based applications for IP-based convergence in telecommunication- and IT-communication-fields.

Showing up the relevant reachability context for service creation and selected insight of detected need structures has been presented. Based on observer input and qualitative focus groups relevant interaction structures where focussed into the creation of over 100 typical usage-scenarios. Theses have been clustered in creative expert groups into three different and for the telco-convergence important application concepts. The service creation was guided by the integration of users into the design process.

The daily communication and reachability habits of users have shown significant and diverse amount of optimization potential for new and existing service innovation. Reachability management and media convergence aspects represent a field of application for innovative ICT developments that has been largely neglected until now. The small "inconveniences" with which users have to struggle in their daily use of communication represents an area that has a high validated benefit potential for users and provider of services in the field of communication and reachability management.

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Users As Developers In Information System Projects

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Abstract

Users have been described as necessary experts in information system developments. This research introduces a viewpoint that the users are the main actors in development projects and the other participants only give their experience for the use of the actual developers.

In addition to the strong involvement of users, our research emphasises the special nature of the information system project with earlier-made specifications. This article suggests that in order to achieve a successful output, a reflective and flexible working process is needed. This suggestion is valid especially in a case that is out of the line of common approaches that are described in the literature.

The research approach in this study was qualitative and the empirical material was gathered from a case study. The approach was subjective and it necessitated interpretation when analysing the results. The case included an information system development that was carried out to produce an inter-organisational information system to support certain functionality between organisations. Despite the output was an information system, we argue that the approach with active users is also applicable in the development of any other artefact.

Introduction

This paper discusses the role of users in an information system project where the future users participated in the development work. User participation has already been noted in information systems development and its significance is notified. However, the approach is generally that of the information systems developer. We aim to reflect the users' point of view instead of the implementer's approach. We note the importance to keep users involved even in situations that they feel not important or when they perceive the technical issues too difficult to be understood.

Our case comes from a case where an inter-organisational information system was developed to support officials when they managed specific functionality between their organisations. The officials were experienced in their affairs but not in information system technology or information system development. In addition, acting in a project was not their common way to work. Besides by officials, the information system would be used by thousands of other users. However, the other users would only use the system to apply for permission and the main functionality was planned to support the officials. Therefore, only the officials were represented in the development work. Despite the feedback received from the other users was mainly shining, the users were left out of the scope of this research.

Literature recognises users as an important key factor. The role of user participation in information system developments has been under discussion already for decades (Markus 1983, Kensing & Blomberg 1998, Dewulf & van Meel 2002, Halonen 2005). In our case the

users acted as key players and we argue that without their active involvement the output would not have been achieved.

There is not much literature about information system developments made by several users representing different organisations (Dahlbom, oral communication June 11, 2005). This paper contributes this gap in the information system research. In this paper we point out the actions of users that strongly influenced the output and its characteristics. The empiric material is gathered from memorandums, emails from project participants and a personal diary written by the researcher. The interaction between student affairs officials and the researcher was active and it was carried out in good terms.

Our empirical case comes from information system science and the artefact is an information system. We believe that the findings in this research can be generalised to concern any other development projects and artefacts in them.

This article continues with a literature view that introduces the framework for the empirical case. After that, the research approach is explained. The empirical case is introduced next and it gives evidence and findings from the inter-organisational information system project. In that chapter, several quotations are expressed and they display the true attitude of the project participants. The article ends with a concluding discussion that emphasises the findings of the research.

What we already know

To simplify, an information system consists of a set of interrelated components that collect, process, store and distribute information (Laudon & Laudon 1998). The definition by Laudon and Laudon does not include people. However, we want to emphasise also the need of human beings in the composition and take another definition: *"Information system means an interconnected set of information resources under the same direct management control that shares common functionality. A system normally includes hardware, software, information, data, applications, communications, and people."* (ostinato.stanford.edu/hipaa-feedback/definitions.html). Formal information systems can be either computer based of manual. Manual systems use paper and pencil technology (c.f. Halonen 2004a) while computer based information systems are dependent on computer hardware and software technology (Laudon & Laudon 1998).

Information systems have a life cycle, like any new artefact, and traditionally it is represented as Lucas (1985) expressed it already twenty years ago:

Inception –> Feasibility study –> Systems analysis –> Requirements analysis –> Design –> Specifications –> Programming –> Testing –> Training –> Conversion and installation –> Operations.

Information systems are implemented in organisations because the organisations tend to improvements with their business processes and efficiency (Hevner et al. 2004). Organisations benefit from integrating their information systems but this integration is challenging and needs careful planning (Kudrass 2006). Furthermore, developments in information and communication technologies have enabled the improvement of the efficiency and effectiveness of administration with government (Gichoya 2005). With the developments, government services may be located closer to the citizens.

User participation in information system developments has for decades been considered to be critical to the output of the developments (Barki & Hartwick 1994). Users are the right persons to explain the whole work process that is to be replaced or supported by the new information system under development (Halonen 2007). On the other hand, communication problems between users and designers are recognised as a major reason why user requirements are not included in information systems and why users are thrown away of the implementation project (Laudon & Laudon 1998). In addition, users and information technology developers typically belong to different organisational units with different objectives and values (Gefen & Ridings 2003). Therefore, in many cases users are not or cannot be actively involved in developing or testing new information technology. Despite that, Gefen and Ridings suggest that information technology developers should strive to create relationships with their users that will reduce any polarity between users and developers. Noble (1986) stated already twenty years ago that the role of users compared to that of the designers should be very carefully considered.

From the users' point of view, in information system implementations it is not enough that the organisations tend to improvements with their business. On the contrary, the users need reasons to use new applications. Keefe (2003) emphasises the importance of focusing on the user in every phase of the system development. Users must be motivated to deliver their knowledge when developing new information systems. Without motivated users there is no traction to get the implementation project to succeed, Keefe argues. Halonen (2004a) verifies that argument with her findings among factory workers who did not want any new information system to record their work. Adding to that, Kujala (2007) concludes that the most significant user involvement occurs at the beginning of product development, when the decisions about the product and its nature are on table. Kujala argues that the process of early user involvement needs to be simple enough to be practical in product development. Despite the novelty of the article by Kujala, we find its approach still biased.

Managing interpersonal cooperation in information system implementations is described as a challenge (Barki & Hartwick 2001), and in inter-organisational information system developments this challenge even increases (Halonen 2004b). Very often the challenge is too great to be overcome as the failure rate still exceeds 80 percent (Furton 2003). The failure or success of a project is often a perception that is influenced by people who have different backgrounds and experiences (Rad 2003). However, it is not axiomatic if an information system project is a success or failure, as Larsen and Myers (1999) discuss the question of what if an information system turns out to be a failure even if it was at first evaluated to be successful.

Inter-organisational information systems allow the information or processing capabilities of one organisation to improve the performance of another organisation or to improve relationships among organisations (Laudon & Laudon 1998). In this sense, information flows across organisational borders and the role of collaboration is emphasised. Hong (2002) introduces a framework for inter-organisational information systems with horizontal and vertical linkages (Fig. 1). The focus in the framework is on participants' roles and it points out the need to examine the system in terms of how the participants' roles are linked with each other. The framework introduced by Hong classifies inter-organisational information systems into four categories: resource pooling, complementary cooperation, operational cooperation and operational coordination.

Fig. 1. A framework for inter-organisational systems (Hong 2002).
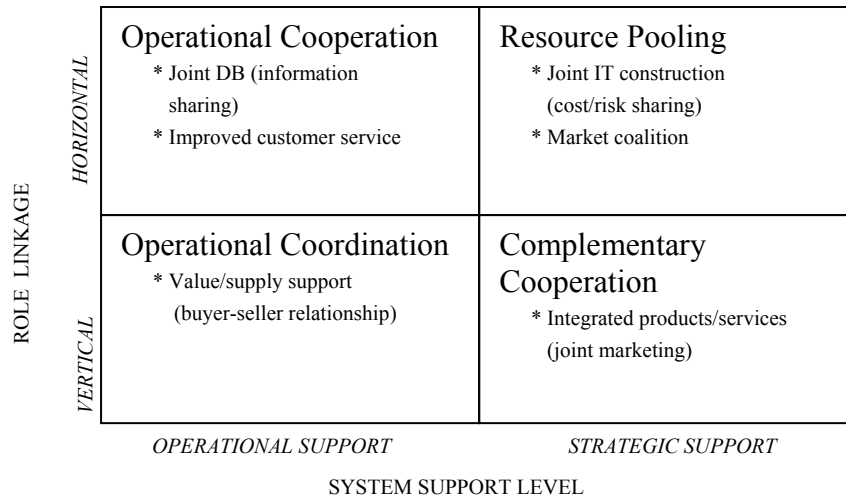
Collaboration in such inter-organisational information systems may be problematic if the goals of the participating organisations are not congruent (Halonen 2004b). Schrage (1990) describes collaboration as a purposive relationship that has a need to solve a problem, create something or discover something. This relationship is limited by constraints such as expertise, time, money, competition and conventional wisdom. Furthermore, Schrage argues that any technology that reshapes collaboration reshapes also the fields in which collaboration is important.

Collaboration is closely related to trust (Karahannas & Jones 1999). According to Karahannas and Jones, trust plays three interrelated roles in inter-organisational relationships: it may act as on obstacle to opportunistic behaviour, it may substitute for hierarchical governance and it may provide a competitive advantage. The importance of trust is highlighted in the management of any distributed projects (Evaristo 2003). Trust itself is influenced by cultural differences and trust influences action team processes, transition team processes, interpersonal team processes and finally distributed project performance (Fig. 2). Furthermore, without trust collaboration is less likely to exist. Evaristo concludes that the amount of trust may determine which goals will be given extra weight especially in situations where there are both competitive and cooperative goals.

Fig. 2. The role of trust in managing distributed projects (Evaristo 2003).
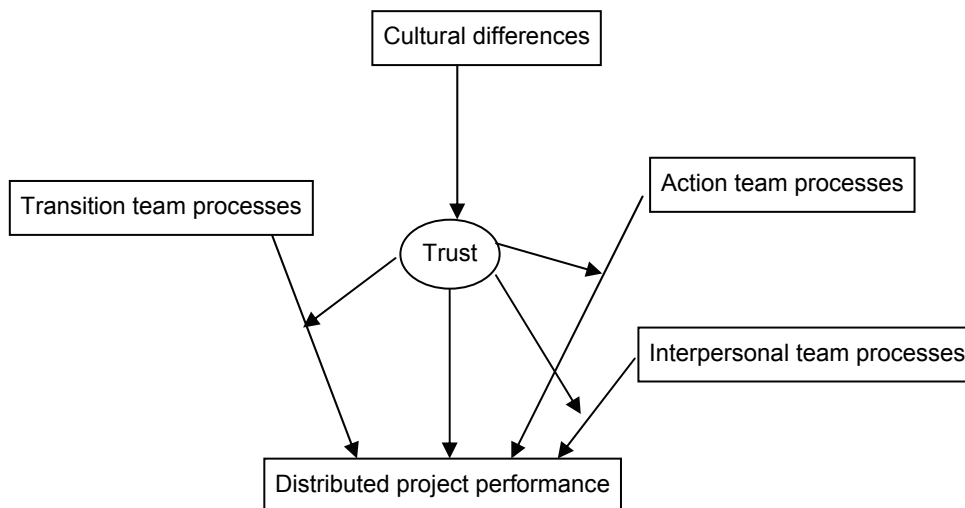
As trust is influenced by cultural differences the role of culture is worth taking into account in information system implementations. As a concept, culture conveys the feeling of a pervasive way of life or set of norms (Handy 1999). Culture should be defined in a holistic way and its influence on individual's behaviour should be considered properly (Gallivan & Srite 2005).

Academic organisations have their own cultural and national context where science is practiced, managed and organised (Hearn 2003). Hearn argues that universities are complex mixtures of classed, gendered and culture-bound practices where also power and moral relations are emphasised. Mintzberg (1983) stated over twenty years ago that universities represent professional bureaucracy that is described with coordination of the standardisation of skills and its associated design parameter, training and indoctrination. The organisational nature of universities can also be seen in implementation projects (Heiskanen et al. 2000, Kudrass 2006).

The concept of culture refers to shared values and attitudes within a specific organisation or other form of social grouping (Walsham 2002). Culture is not static. Instead, there are dramatic changes in many societies in areas such as attitudes to gender, the environment, race, sex, family life and religion. Walsham continues that in the context of globalisation, it is increasingly difficult for any group to remain isolated and uninfluenced by other cultures.

Cultural and social background has its impact on changes in organisations and on the implementation of new technology (Walsham 1993). The development and implementation of an information system are instances of organisational change (Davis & Olson 1985) that can be carried out in at least three different ways: 1) letting users not notice the change, 2) users noticing the new information systems, and 3) both information system and process change and users notice that (Markus 2004).

In their recent article Zhang et al. (2005) argue that users still are too little noticed in information system implementations. Therefore, often a gap is seen between satisfying organisational needs and supporting and enriching human users. To avoid that gap, the authors introduce a methodology for human-centred information system development. In

their literature review, Zhang et al. sum that human interaction with technologies should be driven by human's different levels of needs and goals. The fundamental message for this new approach is that the concern should be human-centred or human-oriented instead of task or technology oriented. Zhang et al. continue that it is necessary to communicate to the users or teammates about the human-computer interaction development activities and results.

Despite users and their contribution to the information system development are emphasised in the paper by Zhang et al. (2005), the users are not considered equal to the designers. We add to that with our research and explore the active participation of users from the beginning to the end of an information system project.

Research approach

This research was qualitative and the approach was subjective. The main research method was case study and the empiric material was collected from an information system project where an inter-organisational information system was implemented. The subjective approach enabled the researcher to reflect on her past and it also necessitated interpretation when analysing the research material (Walsham 1993). The material from the case was gathered by remembering Yin's (2003) notes about an exemplary case that needs to be significant and complete, to include alternative perspectives, display sufficient evidence and to be composed in an engaged manner. The case also offered a diversified environment with several stakeholders and project parties and therefore it represented an intrinsic case (Stake 2000).

The research material consisted of project memorandums, emails sent to the researcher, SMS's and a personal diary written by the researcher. The diary was written with a confessional style (Schultze 2000) and it reflected the project memorandums and emails, added with the subjective interpretations by the researcher. In addition, users had given feedback with a specific automated form and their feedback was independent on the project meetings or their atmosphere. Interviews were not carried because the researcher did not want to influence the response. However, triangulation (Klein & Myers 1999) was found in the research material because the emails and project memorandums were written by other people.

The diary met the criteria described by Schultze (2000): authenticity (the role and identity of the researcher was explained in the text); plausibility (the text was structured, following the timeline according to the empirical case) and criticality (the diary helped to understand the attitude of the researcher and was still questioning the objectivity of the data). In addition, a self-revealing approach was expressed by making notes about success or failure felt in the process (van Maanen 1998). In the diary there were notes about 350 days.

To ensure the quality of the performed research, the principles introduced by Klein and Myers (1999) had been in the background when carrying out this research. A hermeneutic circle was concerned when trying to understand the relationships between project stakeholders in the context of the inter-organisational project organisation. Interaction between researchers and subjects had been active in project meetings and encounters, including emails. Multiple interpretations were realised in this research by using both project documentation and the personal diary written by the project manager in interpreting events. The subjective interpretation of the researcher was questioned by using the several emails and SMSs that were sent during the implementation, giving evidence about the atmosphere and situations in the project. The principle of suspicion led us to evaluate the subjective diary of the project manager and the short minutes that were written about meetings and encounters.

Evidence and findings from an inter-organisational information system project

The empiric material was collected from a case in an information system project during the years 2003-2006. The researcher was called to act as a project manager due to her background and working experience in other information system projects. The researcher was called to a meeting that was held in June 2003 and the goal of the meeting was to get plans to set up an information system project. There were eleven persons in the meeting and the researcher knew only one of them. The attendees represented several organisations and they were experienced in the operations that the information system was to support. From this viewpoint, the approach of the forthcoming users was in evidence already before the project was even established.

The starting point for the new information system project was declared in the first meeting, as well. The basic principle was to use previously made specifications as a basis for the new information system. The goal was put in words by an attendee: *"We need a workable tool into use. With that we can prove the utility of the information system."* This goal was also formulated in other words: *"After three years there will be an information system in use in three organisations and it will be used to support our defined tasks. The assumed number of users will be one thousand."* These formulations proved that the information system (called eSystem in this paper) was truly waited for and a lot of expectations were laid on the project.

It took several months before people from all participating organisations were nominated to the project group. Due to other duties of the project personnel, there were also changes in the project group and new participants were nominated as others left the project. The project group consisted mainly of forthcoming users and they were eagerly waiting for the new information system. However, developing information system needed experience that was not familiar to people who had no previous experiences or knowledge about the tasks.

Due to the requirement concerning the use of earlier made specifications, the previously made specifications had to be carefully acquainted. This task appeared to be a tedious phase before the actual planning and coding could be started. The users did not find important to go through the documents and they were about to loose their interest in the development project. There were all together 94 files to be read and 19 of them were thoroughly evaluated and their usability assessed. The most important document was the description of the process that included the viewpoints of the actors and involved organisations along the timeline. However, knowing the process was not enough. Instead, the participants had to be able to describe their work processes from their own point of view. As there were many organisations involved, there also were many work flows needed.

The specifications made by other stakeholders caused troubles for collaboration. The project manager wrote her diary on June 8, 2004: *"She said that the project group has no more any rights to discuss or abandon the user interface that is made by them."* Later the conflict continued with a phone call from the vendor and the project manager wrote her diary: *"He insisted that the user interface is not in agreement with the requirements specification and it should be modified according to that."* The tension between the project manager and one of the stakeholders continued and the conflict was highlighted every now and then. The researcher wrote her diary on March 3, 2005: *"I recalled that the project had paid a lot for doing the user interface to look like their suggestion and many discussions and meetings were held because of it."*

However, there were also positive moments in the project meetings. The researcher wrote her diary on June 11, 2004: *"The atmosphere was very warm and things seemed to proceed."* In addition, the role of trust between project participants was emphasised every now and then. They kept saying in project meetings: *"Of course we rely on that the other officials offer qualitative services and do not suspect it."* (Diary notes from a project meeting on October 25, 2005). *"I don't believe that anybody would on purpose do wrong or anything unauthorised."* (Diary notes from a project meeting on November 4, 2006).

As eSystem included also personal data, the security issues had to be thoroughly considered. The users were authenticated by a middleware called Shibboleth (Shibboleth 2007) that enabled the identification of the users with the usernames given by their organisations. The national Personal Data Act was to be conformed in depth. In practice, this requirement also necessitated the principles of transparency to be followed. That caused several conversations in the project group because the realisation of the principles were not jointly agreed. Some of the participants supported limited openness while others wanted to share all information that concerned the ones in question. "*Damned, sometimes this principle of information visibility is ridiculous! There is interaction between officers that does not belong to others*." (Email in February 2005).

Except the outside vendor, the project participants were not technically oriented or experienced in information system developments. That is why the development work was perceived challenging by the users. Despite the modest experience, the users were asked to describe their work processes and requirements for the new information system. However, they were the best experts in their own work and work processes. It appeared that describing every-day work processes was found difficult in the project group. Therefore, the vendor had to suggest possible work processes to them. In order to help the users to understand the use cases, several pictures were drawn for them (Fig. 3). The figures were found descriptive and some of them were used when training new users after eSystem was piloted.

The approach of the vendor differed from that of the users. The vendor understood that every action had to be coded in the information system and that the actions also influenced other actions and the data. The forthcoming users were mostly interested in bigger functionalities and, from time to time, the smaller actions in the functionalities were not perceived important. Occasionally several discussions about the functionality and coding them into the process were felt annoying by the forthcoming users: "*You may do yourself an information system that you can learn to use and manage all the tasks for us.*" (Diary notes from a project meeting in March, 2005).

Fig. 3. Modelling the use of eSystem.
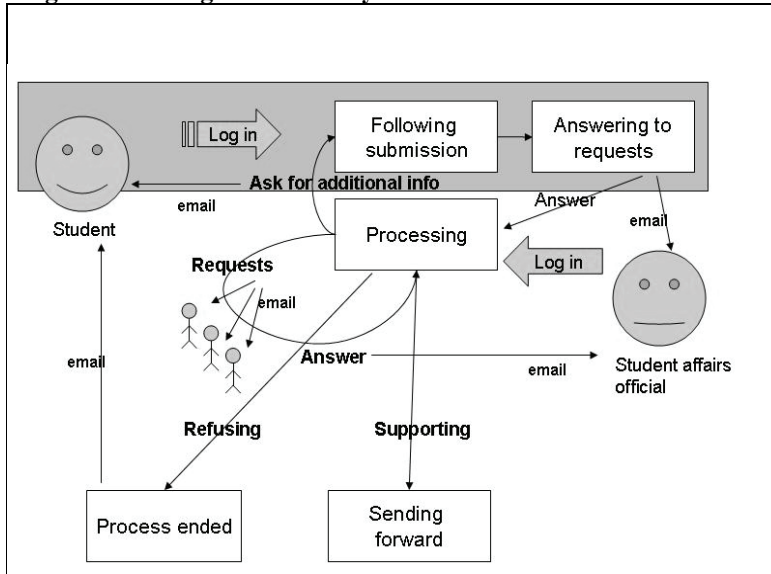
Due to difficulties in defining work prosesses, several changes and modifications were needed after the designed functionalities were coded and tested in the system. An interesting opinion concerned the cost and importance of conceivable faults in the information system: *"And in the background there is the thought that this eSystem is developed for us and that we are paying for it. If there are mistakes or if there are unsatisfactory decisions – it shouldn't be any end of the world."* (Email in May 2006).

Despite the active role of the users in this development project, the amount of suggested targets for development after careful designing and discussions increased up to 176 during the pilot. The number proved the difficulties to understand the effects of made changes in work processes or in database. Very often the conceivable effects were impossible to prefigure and they did not come visible until the information system was changed and tested in use. It also appeared difficult to figure out the relationships between suggested changes. The user supposed that her suggestion only influences that specific action but usually the influence was accumulated. A new risk was added to the risk list on February 2, 2006: *"New features are included in the system too late."*

In addition, the changes that were made in the information system influenced also the documentation. However, to avoid overlapping work, the project manager did not want to update the documents before the information system was as ready as possible. That decision led to problems in completing the documentation .The situation was recorded in the project memorandum on November 27, 2006: *"Due to late accepted changes in eSystem the documents will not be completed in time."*

Fig. 4. Influence of user feedback on functions in the development project.
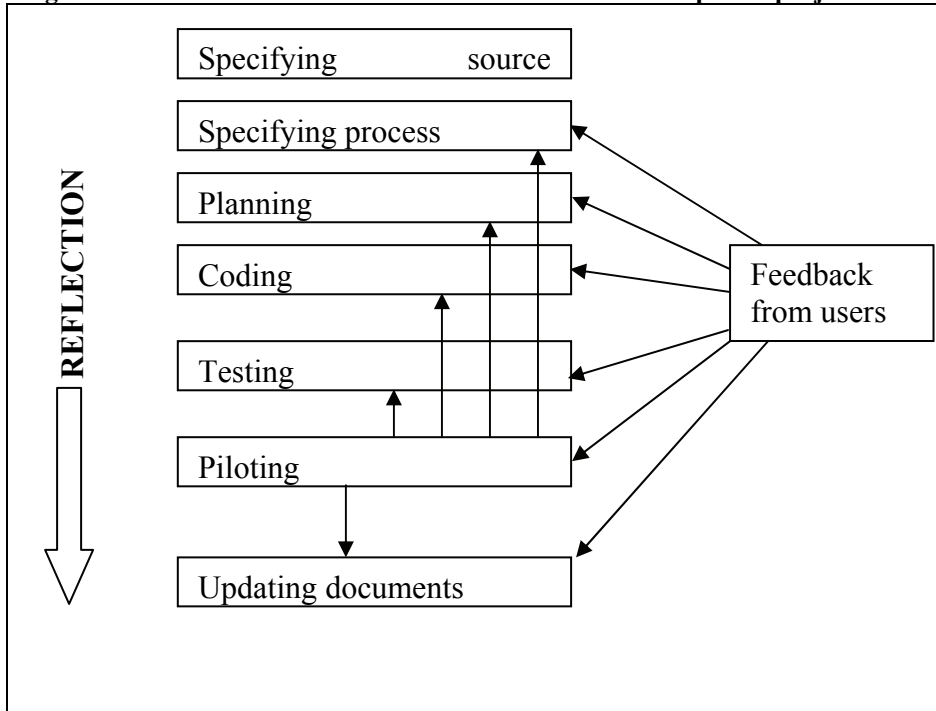
Altogether 47 project meetings were held during the piloting phase. The users participated actively and they were able to give feedback whenever they had found something to say about the functionality of eSystem. Fig. 4 represents the influence of user feedback on the information system project. Due to the active involvement, the project was not stabled until at the very end of the project. The final endpoint was dictated by the schedule that stated the project to end on December 31, 2006.

The role of the project manager could be described as a facilitator between the users and the vendor. One of the most important tasks of the project manager was to ensure that the project would progress and that it would be completed in time. Following Schön (1983), her role could be characterised as a reflective conversationalist with a situation where she acted as both an agent and an experient. She used to send encouraging messages to the users: *"Really, you are an excellent information system developer and experimenter! It is splendid that you tested it so quickly and told about your experiences to all the others!"* (Email November 2006). The interaction was perceived mostly friendly and also the users sent actively emails to the project manager: *"To my mind, the gathering was very successful. Occasionally, the network was found slow but no rebelling was found there."* (Email November 2005).

Despite negative experiences from her past (Halonen 2004a) the researcher felt the influence of users fruitful and supportive. The information system was evaluated by praising words by the officials: *"This report is an excellent addition compared to previous situation. This kind of information was not available when the mobility was managed decentralised."* (Email in March 2005). Some of the officials used also the feedback form that was aimed to other users*: "At least in this issue we have done a good development work :) "* (Feedback October 6, 2006). The project work, too, was perceived as a positive experience: *"To my mind, this collaboration [in the project] has been really fruitful and interesting."* (Email in December 2006).

Concluding discussion

This article reports the findings that were found in a research project. In the project, an inter-organisational information system called eSystem was developed and tested. The significant character in the project was that the users were involved in the project from its beginning, even before the project manager was invited to join the project. Inter-organisational information systems and their developments are studied and reported already earlier, but the active role of the organisations and users representing them has so far been under lesser attention.

The research approach is qualitative and subjective and it necessitates interpretation when analysing the findings. The findings propose that the development of information system should be more flexible compared to the theory that literature traditionally proposes. We argue that information system developments in real life seldom resemble any theory even if widely reported. Our information system project did not follow the classical life cycle described by Lucas (1985). On the contrary, the development process seemed occasionally go backwards. Furthermore, we argue that only flexible routines enable the users to be taken sufficiently into account.

In our case, the trust in interaction was perceived reciprocal in the project meeting and the several emails were sent between project participants. The natural and easy terms between people enable the fruitful interaction. The users were not afraid to express their opinions and wishes about the functionalities when discussed in the project meetings.

A special character in our project was the role of the project manager whose main task was to act as a facilitator in the project. The users were the main actors from the view of the output. In addition, the role of the vendor who did the actual coding can be seen as a hired employee. Following this, the users were not people who offered their experience. Instead, they were the primary actors in the project.

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Everyday Life – Domesticating The Invisible

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Abstract

The starting point for the following paper is the importance of the everyday for our understanding of what people do with the media. This claim is not new – what is new, however, is the pervasiveness of mediated environments in our everyday lives. The paper begins with a return to traditional theoretical thinking about the everyday, to remind us of some of the core arguments. Theorists used are Alfred Schütz (theorist of the everyday as such), Michel de Certeau (stress on strategy & tactics) and Walter Benjamin (methodological concerns, amongst others with mobile hyper-networks of meaning). In the second part the concern with the everyday within media research will be regarded and related to the outlined theories as well as to methodological questions (keywords are domestication and media ethnography). This again will lead to the third and final part, which outlines the necessity of a new theoretical and empirical focus on the everyday thanks to currently changing media environments. The paper will further be using a few examples from recent research on wireless media adoption processes in semi-public places.

The everyday[1]

Everyday life has been at the heart of the concerns of media research for some time. Especially media research within a qualitative, cultural studies oriented tradition has focussed on this topic. Those interested in users and technologies have also concentrated on the everyday for quite a while now, since the everyday is where use – and hence also innovation – often takes place. Hand in hand with the interest in the everyday went methodological concerns. Because it is very difficult to grasp – and hence research – the unspeakable and/or unquestionable, the taken-for-granted, which the everyday is seen to represent. Thanks to this difficulty, lay understandings of the everyday are very often taken as the basis for research approaches. These lay understandings, however, tend to think the everyday in contrast to something else (e.g. in contrast to the extraordinary, the celebratory, the exciting, etc.). This thinking in contrasts is misleading insofar as it puts the emphasis onto something other than the everyday (i.e. its opposite), claiming that this is what is actually interesting. It also ignores the positive potential that the everyday contains. In fact the everyday is the one sphere of immediate agency, of consequence, the sphere of action for everyone. No matter what perspective one takes: the everyday is at its heart ambivalent – and extremely relevant if we want to understand (media) technologies, users and user innovations.

This paper begins with a return to traditional theoretical thinking about the everyday, to

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1 The following paper should be read as work-in-progress. This is the first attempt at combining different theoretical approaches to the everyday and the empirical research that has taken place thus far. The arguments need to be developed much further and the examples strengthened.

remind us of the core arguments and to see whether they offer anything that can be appropriate for understanding the just mentioned ambivalence a bit better. Theorists used are Alfred Schütz (a core theorist of the everyday as such), Michel de Certeau (for his stress on strategy & tactics) and Walter Benjamin (as the basis for a methodological concern with the 'trash' parts of the everyday and for his hint of a mobile hyper-network of meaning). This theoretical introduction will be followed by a second part, in which the everyday within media research will also be introduced (albeit briefly). Keywords here are domestication and media ethnography and their relation to the afore-introduced theories. This again will lead to the third and final part, which outlines the necessity of a new focus on the everyday in currently changing media environments. 'Mobile media', convergences and 'user-generated content' are only some of the challenges that both users as well as use researchers face at the moment. The everyday might be the one framework that still holds it all together – plus it offers some methodological answers as well. The paper will be using some examples from recent research on wireless media adoption processes in semi-public places. This research project is faced with a combination of questions and methodological concerns – and the outcomes thus far suggest the everyday as the one concept that offers most linking potential. Thus I will first offer a brief reference to how the everyday entered this sphere.

Example 1: Wireless every-day?

In my study on wireless use in semi-public places (by which I mean primarily cafes), I have encountered places where the slow, but definite 'intrusion' of media technologies in what used to be a relatively technology-free space (only relatively!) has become invisible and widely accepted. The everyday is most visible in the fact that the media technology is downplayed by all actors involved. Although it could be seen as quite an intrusion, it is to some extent ignored and to a great extent managed so that it begins to disappear into invisibility. It has been appropriated, i.e. domesticated, but not only by its users. The cafe owner and his staff have developed certain official rules to keep the beast at bay (e.g. certain places and certain times where and when it is not allowed to use the computer) plus they developed a certain attitude of slightly annoyed non-interest which underlines the idea of the cafe as being the more important part of the interaction. The other users behave in similar ways. They, too, ignore the computers (and their users) where- and whenever possible. Making them invisible seems to allow the routines and social interactions to continue 'as if nothing had happened'. But even the users themselves showed a tendency in the interviews to downplay the technology – especially by those using much of it. In particular, there a tendency to stress that they were visiting the cafe not especially because it had free wireless access. Most of the interviewees made sure to stress that they liked the cafe overall and that they sometimes came without a laptop and/or that they did not necessarily disappear after they had checked their mail or done whatever they needed to do. They tended to stress the social nature of the cafe and their interest and involvement therein (in contrast to the assumed un-social nature of the networked technology). There was one exception – Nick, 37, a U.S. American musician, who went specifically to this cafe in order to download quite a bit of stuff (he was sitting there with a list of things he wanted to download and systematically worked through this list). His interview was the shortest of them all – simply because he neither felt the need to explain himself nor did he engage much with the environment he was in. His approach was the most functionalistic of them all – and thus, interestingly, the least 'everyday-ish'. The others all spoke of their patterns of visiting the cafe in which the computer was only brought along to 'do that, too'. The more they were able to adapt to whatever was assumed to be the 'normal'

environment, i.e. the more the wireless use became invisible and 'everyday-ish', the better it seemed to be. There was, however, one exception to this tendency. This will be discussed in the end.

Part 1: Theories of the everyday

As Ben Highmore pointed out not too long ago: "The everyday doesn't have a form of attention that is proper to it" (2002: 161). Since the everyday is the basis for everything else, our constant reference point, the most enduring element of most lives, it is still astounding how little it is being researched. Theoretical approaches to the everyday are growing and have a solid and interesting base in traditional sociogical theories. Their empirical counterparts, however, i.e. those trying to actually implement and/or challenge those theoretical concerns, are few and far in between. The same applies to media and communication research. Here, too, the everyday has become an often mentioned term, a framework used to frame research, but it is rarely defined or approached empirically in a direct matter. Hence it seems useful to return to the theoretical ideas and see what they have to offer for empirical research.

The 'lay' framework

The everyday is one of those terms that gets used quite often – but usually without definition. It is assumed that everyone knows what the everyday is – even within academic research thereof. And surely most of us have immediate associations with the term 'everyday'. Many might think of their daily routines – the way to work; the radio in the morning; the interaction with family members, friends and colleagues; the tiredness of the flow of things that need to be done; the supermarket around the corner. The same applies to everyday objects: washing powder, busses, toilet paper, etc. And all of these associations (and many others) are indeed related to concepts of the everyday. But first and foremost they are pre-conceptual: they are our daily experiences, framed by a dominant discourse around the idea of the everyday. The next level of abstraction is still very basic: here the everyday gets described as the mundane, the routine, the unescapable. Everyday life is here seen as the 'stuff that needs to be done by everyone routinely'. This usually includes food and shelter and work and such basic components of life. As long as they are recurring and potentially invisible thanks to their 'mundane' nature, they are considered to be part of the everyday. They are 'day to day'. The research project mentioned above underlines this point: the less visible, the more it is perceived to belong, to be unproblematic and thus accepted as part of the everyday.

The 'expert' framework

Not only does the everyday not have the right form of attention, as Highmore pointed out (see above), but "more than most sociological concepts 'everyday life' has proved exceedingly difficult to define" (Featherstone, 1995: 55). Hence there is not *one* sociological definition of the everyday. Instead, many 'experts' repeat the above-mentioned aspects such as routines, mundaneness, etc. Plus it is often claimed that the 'lay' person is definitely *the* expert concerning the everyday. The researcher is faced with the challenge to step outside of the everyday, to remove him- or herself from his or her own life: to step outside and to see it for what it is – although it is so difficult to see. Plus the researcher needs to discover what 'everydayness' is about (cf. Highmore, 2002: 1).

In the following theory-examples, the last two are particularly concerned with the relationship of the everyday to the oppression that can also be found there. The everyday is seen by both Benjamin and de Certeau as the site where this oppression can be challenged.[2] This challenge is always partial and not necessarily radical, but it is a starting point. Thus the everyday poses the question of agency of the user. Schütz' concern is even more 'basic' than that: he poses the question of how intersubjective interaction can and does take place – and declares this intersubjectivity as the basis for the whole social world. We will thus begin with these 'basics'.

Alfred Schütz

Alfred Schütz, an important sociologist within the German context, is seen as one of the founders of phenomenolgy and one of the most important theoretist of the everyday. Outside of Germany, his work has not been as widely read and hence received, although he keeps popping up at diverse (and sometimes unexpected) places. His main contribution to the theorisation of the everyday – and hence his importance for communication and media studies – is his emphasis on human interactions, on intersubjectivity. One of his main claims is that these interactions form the basis for the social world overall (Schütz, 2003).

Schütz was – to begin with – a theorist only in his spare time. He had a day-job as a lawyer in the financial district and was writing his first book, which was published in 1932, in the evenings and on the weekends. In 1938 he emigrated to the US, where he subsequently got in touch with several well-known sociologists. Only from 1943, however, was he a guest lecturer at the New School for Social Research in New York, where he got a professorship in 1952.

Schütz began by asking how the societal co-existence is possible without the knowledge of the subjective sense that others relate their own actions to. He assumed that all actors use specific methods in their everyday lives. These enable us to assume an intersubjectively shared sense. All our knowledge is socially constructed and passed on in these interactions. This makes up the lifeworld, i.e. our everyday lives. We are born into this lifeworld and take it as a pre-given. The lifeworld is the non-scientific world of the immediately-accessible everyday experience, the world that is intersubjectively negotiated. It is the overall context of the life sphere, in which the world is made sense of. People partake in this through their everyday actions and their pre-scientific knowledge. This kind of knowledge is shared. It becomes knowledge simply through the shared assumption that it is knowledge (shared within a certain group). This leads Schütz to state that 'we' comes before 'I' (just certain things such as dreams and specific memories are only accessible to the individual), i.e. that intersubjectivity is key. Schütz also claims that the everyday is not usually questioned. However, while the lifeworld provides our framework, we can also change it. These changes though are often subtle. The question of agency and the relationship of the everyday to 'the rest' is already central here. Schütz, however, is not interested in the individual as such, but in his/her intersubjective communicative construction of the world.

The emphasis is therefore clearly on the *construction* of the everyday. It only appears stable because we make it so. We agree on certain assumptions and re-construct them every day by

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2 It is interesting to see that both these theorists use a rather poetic language to express their thoughts. And neither are necessarily 'typical' academics (nor is Schütz).

repeating these, passing them on, etc. There is no pre-given structure and stability. But there is the need for stability (Giddens' ontological security: we need to believe that the everyday will remain the same in the days to come). Hence the intersubjective agreements form the basis of the lifeworld and everyday life. Plus the everyday is there to pass these on.

In Schütz' work, the social environment is split into the immediately accessible (and hence most important for our understanding of the everyday), the wider environment and the environment that builds on the past. Schütz also stresses that an important part of the methods that deal with the intersubjectivity in everyday life is the concept of *type*. We tend to think of others (and they of us) as types (typical representatives of certain social roles) rather than individuals. This abstraction helps to react in – what appear to be – appropriate ways. Our experiences are always compared to the already existing ones and – if fitting – judged to be of the same type. This implies, according to Schütz, an idealisation of the congruence of the systems of relevance and an idealisation concerning the possibility to be able to exchange one opinion for another.

With this approach, Schütz contributes well to the theoretical foundation of our understanding of the lifeworld. Plus he emphasises intersubjectivity and hence the centrality of communication. But he does provide little translation into more empirical approaches to the everyday.[3] Instead, he offers an idealtypcial reconstruction. It would be useful to see an empirical layer added to his work. On the theoretical level, the sociology of the everyday, to which Schütz belongs, continues his work in focussing on everyday knowledge and the question of how those things we tend to do every day without questioning them come about, how we get to know them and apply them. For the purposes of this paper, however, the focus is on the more basic question of the everyday as such. Micheal de Certeau can also be seen to deal with the question of agency (of a specific sort) and the everyday. He offers views on *actions* that shape and change the everyday.

Michel de Certeau

"For what I really wish to work out is a science of singularity; that is to say, a science of the relationship that links everyday pusuits to particular circumstances." (de Certeau, 1984: iv)

Michel de Certeau perceives the everyday to be somewhat hidden and hence difficult to capture. He thus takes the actual everyday as his starting point and – in a rather poetic manner – shows the particularity and singularity thereof – but not without also showing some general tendencies.

De Certeau was a Jesuit, a psychoanalyst, a ethnographer of the everyday and other things on top. His own movements in his life are mirrored by his terms (often metaphorical) with which he captures spatio-temporal activities as the basis of everyday activities (cf. Highmore, 2002: 145 ff.). The simple fact of us being in spatial proximity to others also leads him, too, to the importance of intersubjectivity. More importantly though, he 'judges' the everyday as potentially oppressive, but also exactly as (subtly) subversive. This is the most quoted aspect of de Certeau's work.

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3 The ethnomethodologists attempted an empirical implementation of these theoretical approaches. This, however, goes beyond the scope of the current paper.

For de Certeau (and probably the other here mentioned authors as well) the everyday is *becoming* rather than *being*. It is the sphere of cultural reproduction (Lefebvre), but also a sphere for possible transformation (cf. Highmore, 2002). The everyday contains the possibility for carnival, for a revolt against that increasing discipline and the ready-made culture coming from 'above'. This not adapted to, but it itself is adopted to the everyday. However, resistance is not necessarily opposition – it can be both active *and* passive:

"On the one hand, there are slowly developing phenomena, latencies, delays that are piled up in the thick breadth of mentalities, evident things and social ritualizations, an opaque, stubborn life buried in everyday gestures that are at the same time both immediate and millenary. On the other hand, irruptions, deviations, that is, all these margins of an inventiveness from which future generations will successively draw their 'cultivated culture'." (de Certeau, 1997: 137-138)

This form of resistance underlines that power is differentiated and multiple. It adds to the multiplcity and both preserves and challenges it. 'Microinventions' is one term de Certeau uses to describe the resistance and the idea of 'learning to make choices'. Resistance can mean conservatism in times where revolutionary aspects are generally praised as the only way forward, i.e. resistance is not a clear line of thought. The resistance of the weak he calls 'tactics'. These work against the 'strategies' of the powerful. Tactics are not counter-strategies, but act within the existing strategies. They are secrets, bluffs, disguises, etc. A much quoted example is 'la perruque', i.e. using company time or tools for private matters (de Certeau, 1984: 25). Another much quoted reference is his reference to the walking in the city. This, too, can be a tactic, moving in unanticipated ways. It underlines that ultimately, de Certeau refuses the logic of the subject in his 'science of the singular'. He does not look at actors, but at actions. This differentiates him quite clearly from other theorists. It also poses the obvious question of how this is supposed to work.

The assumed method is to find the marks that have been left (like Benjamin). One is to archive the everyday and 'everyday' the archive (Highmore, 2002: 169). Again, in parallel to Benjamin (see below), one should use a lot of different sources. For the present, this is less clear. This is also one of the criticisms that has been raised: de Certeau's analysis is not necessarily grounded in a sociogical analysis, but presents instead simply a generalised account of transgression. This reference to transgression, however, is exactly what singles him out. His work helps to think through ideas of acceptance and resistance within the everyday. As noted above, this is resistance, but not usually opposition. It changes the everyday via the everyday – and ultimately it changes more than the everyday. But the changes are usually invisible, untraceable – at least on the surface. Walter Benjamin, on the other hand, begins to offer a more concrete 'methodology' to uncover the invisible.

Walter Benjamin

Similar to Michel de Certeau, Walter Benjamin deals poetically with the ephemeral of the everyday. Especially in his unfinished *Arcades Project* (1999), the philosopher and cultural theoretist Benjamin – without necessarily naming it as such – provided a method for the analysis of the everyday. What he did – in exile in France, to a great extent in the National French Library (Bibliotheque Nationale) in Paris – was to collect and arrange the pre-history of modernity. He did this through looking at the remains of what he considered to be everyday life. These were the usually ignored parts of culture: the 'garbage' of bygone times.

They were images, pamphlets, brochures, letters, books, etc. What he was aiming at is not dissimilar to de Certeau (althogh ultimately more radical): he pursued the idea that an awakening would be possible, an awakening from the horrific ties of capitalist suppression, which was both to be seen in everyday life, but also challenged. His approach to this challenge is rather different to de Certeau though: Benjamin hopes to change things through his writings and the method he developed therein: "Method of this project: literary montage. I need say nothing. Only show. I won't filch anything of value or appropriate any ingenious turns of phrae. Only the trivia, the trash – which I don't want to inventory, but simply allow it to come into its own in the only way possible: by putting it to use." (Benjamin, 1999: 460)

Benjamin hopes to archive the bygone everyday life of modernity through dialectical images: new and old materials collide. This juxtaposition of trivia helps to see the 'true image', the true face of capitalism. Through the the analysis of the small parts, he aims at detecting the total event. Benjamin's is both an analysis of the invisible – since taken-for-granted – aspects of the everyday as well as an analysis of the seemingly opposite: the new, the unexpected. This is what the everyday is usually not. But Benjamin shows that a lot of what was the everyday of modernity was a reaction to the new. One of the reasons for his (and other people's) interest in modernity is exactly this disturbance of the routine. Nothing was what it seemed any more, everything was turned upside down ("All that is solid melts into air"). This 'shock' had to be dealt with. And the shock was based to a great extent on the ephemeral nature of the new everyday. At the same time, the everyday began to be much more routinized and structured, pressed into pre-given forms – thanks to the industrialisation and such things. This was both the disturbance, but also the reaction thereto. This tension is what Benjamin's focus clearly shows.

Benjamin also showed how those traces of the everyday are like hyperlinks – traces of other everyday parts as well as of other kinds of references. What he thereby also provided was an early hypertext – multiple forms of texts that form – through references and linkages amongst each other and through the sorting of them into specific sections and sub-sections – a network of ideas and words. This is a useful reference when thinking about the quality of new media and its cultural implications. It also shows yet another perspective on the everyday.

But as Highmore rightly states: "Situating the work of Walter Benjamin in a tradition for theorizing the everyday is not without its problems" (Highmore, 2002: 60). Benjamin was concerned with the everyday less on an explicit theoretical level (i.e. how do we define and differentiate the term) rather than on a phenomenological and poetic level. He showed the close relationship between the everyday and human thinking, consciousness and behaviour, social relations and structures – and thus he made the everyday theoretical.

As can be seen from Benjamin's and other theories of the everyday, they often turn to modernity as their reference point and/or remain rather abstract. Even Benjamin, who immersed himself in the 'trash' of 19th century everydayness, remains aloof (potentially more so than the others). Then how is this to be translated into questions and frameworks that are useful for an analysis of the everyday today? How do these theories help us understand the future of the broadband society, both theoretically and empirically?

One concept that helps to understand current trends in everyday life is mediatisation. Next to globalisation, mobility/mobilisation, localisation, popularisation and other such terms (which are all useful in describing different, but related phenomena), mediatisation is used to identify

the growing presence of media in our everyday lives. This development is a quantitative one (more media, more time spent with media, more places suffused with media), but it is also a qualitative one. Not only are there more kinds of media, on offer all the time and in more and more places, but they have often reached a state of ubiquity, of unquestioned presence. Media have become a crucial actor in the construction of social reality – by they only co-construct together with the other everyday actors, i.e. everyone. This reminds us on the one hand of one of the qualities of the everyday, i.e. its invisibility. On the other hand, it questions the assumed nature and structure of the everyday, because it changes it. It is hence useful to re-read (albeit only briefly) some of the work of media use in everyday life.

Part 2: The everyday within media research

"Understanding media means remembering that the familiar is not necessarily the known, and must therefore first be made strange." (Couldry, 2003:1)

In media studies, the user has traditionally been part of the audience. Audiences have seen several shifts in their theoretical definitions. The most well-known and repeatedly discussed differentiation has taken place between the duped, manipulated audience on the one hand and the active audience on the other. Both these categorisations played primarily on the content-level, i.e. the audience was seen to unquestionably adopt the given messages in one concept (which expresses a rather specific assumed role of the media) or the audience was seen to create its own interpretations of media texts in the other concept. Eventually, media studies came to see that content itself was not all when we want to understand the complex relationship between media and everyday life. Nowadays elaborate research goes into deciphering the processes that feed into the audience's interpretations of diverse media content. Constructivist approaches have begun to prevail, assuming that viewers do not simply adopt, but appropriate and use the media as one of their resources to assure them of their everyday lives and to construct the social world. Communication patterns around media content, for example, were researched in media appropriation approaches. It turned out that social networks were extremely important in the processes of integrating media into everyday life. This applies to both a content as well as a use aspect. The content level was, for example, researched via the communicative appropriation of media content approaches. They looked the conversations that people had during and after the consumption of media content (particularly television). They were able to show how important these conversations were in the build-up of specific assessments concerning the specific media content, but also identities and lifeworld assumptions in general.

Media use, on the other hand, was researched more particularly in the domestication field. This was an approach within media and communication studies, but also with the sociology of technologies, which focussed more on the routines and behaviours in everyday life. This included the actual acquisition of the specific medium, the placement thereof within the domestic environment, the gradual integration (or rejection) into established routines of everyday life and the subsequent communication of this media use to the outside world. The domestication approach has been broadened and changed in the years after its initial conception to potentially include other than domestic environments, to focus on the appropriation processes, to include new media, etc. (cf. Berker et al., 2006). The everyday, however, was always present through the focus on social relationships, routines and all other 'banalities' in and around media use. It was a focus even in as far as it at times began to

'forget' media content. The media as object were an important, albeit also problematic focus. Nonetheless, this approach is rather important when we think about media in everyday life research. It definitely helped to show how interwoven these two concepts are.

Methodologically, the domestication approach (and similar approaches around it) claimed to be using ethnographic research methods. There has been an ongoing debate ever since, whether these methods – primarily repeated in-depth qualitative interviews, time-use-diaries, drawings of the media environments, etc. – do actually count as 'ethnographic' or whether they were simply 'qualitative'. Despite these questions the methods involved (and especially their detailed discussion and reflection in the beginning) hint at the necessity to find ways of researching something over a longer period of time (i.e. at least with repeated interviews) and to take time to engage with the people in question. It also seemed to work well to interview both individually and in the group (i.e. the family or other relevant social groups). The everyday has so many aspects that it appears important to try to access it via as many research channels as possible.

If we now return to the theoretical beginning, other emphases can be added. First of all Schütz helps to focus what is already present – but could be researched even further: the social networks, i.e. the intersubjective co-constructuion of our social reality. Network research has gained increasing attention in the last few years anyhow. Hence methodological thinking in this area has also had interesting additions and new impulses. These could be intergrated into future research in this field. Secondly, de Certeau's hints are a bit more difficult to 'translate'. They point to the meta-analysis than simply methodological questions. They could, however, underline that the 'top-down' strategies should not be forgotten when we research the nitty-gritty of microscopic everyday use of media. There still are power structures and similar 'features' to be dealt with when thinking about the media. The 'resistances' can only be thought when the 'top-down' is also regarded. Thirdly, Benjamin's version of the 'nitty-gritty' serves as a reminder not to rely on people's accounts of their own behaviour only. The scraps and pieces that can be found everywhere are traces of the everyday that need to be included in the analysis as well. Maybe they, too, can be read as hypertexts that underline networks of yet a different, i.e. a content-side.

Part 3: Changing media environments and examples from the wireless worlds

To state that our environment overall and media environments in particular are changing is to state the obvious – and it is also something that is not entirely new anymore. However, its importance has not disappeared. The growing mediatisation implies the question of what everyday life today looks like through and with the media. If media environments are changing, i.e. if we, for example, use our computers in public places (such as trains), conduct 'private' phone conversations more or less everywhere, watch the World Cup in public viewing areas, etc., then our media consumption changes – but those places and social interactions in those places change as well. On top of this, media 'content' is changing, too. Media are converging and 'user-generated content' is somewhat different to other content (at least in principle it asks users to contribute). All this is a challenge for media researchers, not just because their object is changing in front of their eyes, but also because their methods tend to be inadequate. What does not simply change even so is the everyday – at least as an idea that structures people's lives (and thus researchers' interest). There is still an everyday, even when it has – maybe – changed structurally and content-wise.

My project on the use of wireless computer use in cafes was – to begin with – a domestication project of the 'domestication 2.0' type, i.e. one that regarded primarily the adoption of media technologies into everyday life rather than the process of 'bringing technology home' that was the focus of the early domestication work. Domestication 2.0 was researched via traditional media ethnographic research that has the user as its main focus, i.e. observation were conducted over some time and then interviews were held with a number of people. This was embedded in readings about new media use and changes of place, of perception, etc. What remained relatively vague was the nature of the everyday within the project although it clearly had the everyday as a focus. One aspect that was striking, as mentioned in the beginning, was how much the interviewees tried to downplay the nature of their mediated behaviour within the cafe. Underlying this seemed to be an assumption that a cafe was not supposed to be taken over by work. And although not all the actions performed with the computer in the cafe were clearly work-related, its presence alone had to be excused, it seemed. Hence two versions of the everyday (work vs. pleasure) collided here. However, there was also the exception: whenever the technology did not work, when it did not remain invisible, but became unworkable, then it also became a chance for new communicative encounters. Exactly when it broke out of the everydayness, it became a chance for the new, albeit a new that was not directly related to its intended functions. Whenever the technology did not work, people started to communicate about their machines, about wireless access as such, about themselves. Thus the machine became the actor that allowed the resistance.

The usual methods and approaches do not suffice here any more. Neither is it enough to observe and talk to people. Instead, more diverse access to both actions and content would be useful. The mediated environment needs a holistic approach. This might mean, very concretely, that such environments can only be studied and understood when one works in teams. The more 'invisible' the technology becomes, the more effort is necessary to make it visible in our research.

Conclusion

We can – once again – take several points from the theories summarised in the beginning:
a) the everyday is primarily intersubjective. Hence it is important to research the individual as a networked social being. Plus Schütz draws our attention to the importance of the immediately accessible world – the lifeworld that is actually at our disposal rather than that which is further removed. The here promoted idea is that of the *networked everyday* as a focus. This builds on, but extends, Barry Wellman and his colleagues' notion of networked individualism (Wellman, Boase & Chen, 2002). This concept underlined the current ambivalence between tendencies towards an increasing individualisation that nonetheless go together with tendencies towards increasing networking. They show that this is in fact not a contradiction, but that these are tendencies that belong together. The networked everyday also underlines that the intersubjective nature of our construction of the world has not changed, but that some of the co-constructions are now taking place in mediated ways. Most of this, however, is invisible and needs to be uncovered. The emphasis is hence on the well-known relationship between structure and agency. Networks – as dynamic as they are in principle – are here suggested to be the structuring aspects, the stability. Based on these, agency can (and does) take place in the everyday, the stable contingency.
b) While the network and intersubjectivity are one focus, a more concrete way of implementing this could be to take up de Certeau's focus on actions and not always actors. The how still needs to be thought through, but as a focus, it is interesting. It, too, can serve to

show different levels of networking and the networked nature of both things and people.

c) Additionally, we have seen that the everyday presents a power-struggle. There are strategies (we could call them capitalist, but this could be other frameworks, too), i.e. the mechanisms from above that attempt to pre-structure the everyday. These range from the discourses surrounding the everyday (certain things are supposed to happen in the everyday) to actual structuring mechanisms (times and places that only 'allow' certain actions – the cafe is a good example for this).

d) In our analysis of the everyday, we should also not neglect the small, seemingly unnecessary bits and pieces, the things. Cultural studies and other academic disciplines have, for some time now, already drawn our attention to these details. Yet the depth that Benjamin's analysis offers (probably in combination with other approaches) points to the potential usefulness of his dialectical method of combining juxtaposing bits of 'trash' and letting that combination point to something else.

Next to ethnographic methods, i.e. observations and qualitative interviews, we hence need to find ways to document several different kinds of networking activities. Plus we should also include the trash of the everyday and actions rather than only actors. Theoretical aspects that have not lost their importance are intersubjectivity and resistance. All of these aspects are part of the everyday. And they have not fundamentally changed. The everyday environments, however, are changing. The process is slow and the 'resistance' looms large (since the already known world cannot simply change), but once one uncovers the invisible, more can be seen (and heard) than originally anticipated.

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Evolution Of A Services With ICT : Case Of The Remote Assistance Device For Elderly People.

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Abstract

This research deals with the general problem of the social insertion of services with ICT. It takes the case of the remote assistance device to keep elderly and dependant people at home. Between the designers and the end-users of these systems, suppliers and in particular the listening stations (emergency stations, fire brigades) shape "pattern uses" and are part of the collective perception in the widespread use of these devices. This perception is structured differently in accordance with the transformation of work that these service providers find appropriate or not.
On the one hand, we will show how only a few actors can communicate about their perception, and shape « pattern uses ». On the other hand, we will show the different patterns of behaviour by elderly people using ICT services. Finally, we will show how new actors are involved by offering a wide range of ICT services and uses that elderly people are looking for.

What is the remote assistance device for elderly people?

During the 1980's, given the inescapable ageing of the population, the various French *départements* began investing in remote assistance devices. This stemmed from public initiatives implemented as a direct result of a social policy to encourage keeping the elderly at home.
The elderly would wear a medallion or a bracelet. When activated (1), the elderly person would be able to speak to a remote assistance operator at a listening station (2), who would then evaluate the nature of the call and contact someone if necessary (3). Remote assistance appeared in this way as the first real piece of " ageing technology " , that is to say technology especially designed in response to the specific needs of the elderly (Jobert, 1993).

From the call to arrival of help, the 3 steps in remote assistance :
1) a subscriber – 2) a listening station – 3) doctor, emergency services, or network of volunteers

De l'appel à l'intervention, les 3 temps de la téléassistance
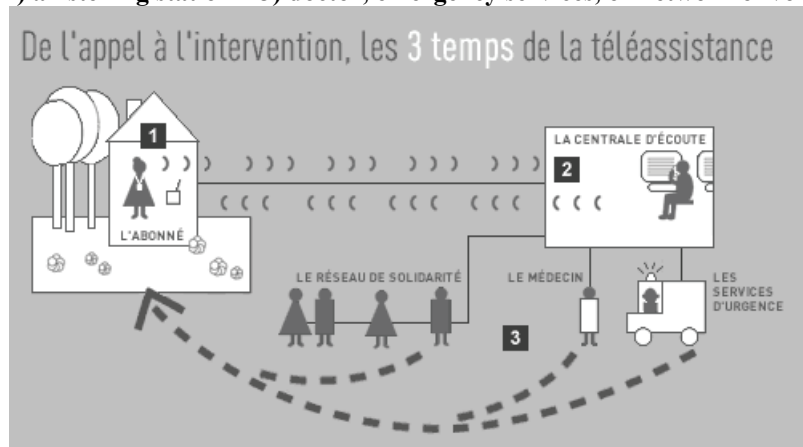
The sociology of sciences and techniques has taught us to consider all technological innovation as a complex interrelationship between techniques and humans. From the outset of remote assistance design, a representation of the end-user was found within the technical object : destined to keep elderly and dependant people at home. Remote assistance was, from the start, associated with a medical approach to dependence. The represented end-user is a person struggling with bone and joint problems associated with ageing such as restricted movement and the risk of a fall resulting in de-socialization. Indeed, the most often quoted scenario by everyone concerned with this problem, used to convince authorities of the usefulness of this device, is the case of an elderly person who has been living alone since the death of his/her spouse and who falls breaking the neck of his/her femur and cannot get up to call for outside help. By activating his/her medallion, this elderly person can call for life-saving help !

In the case of a remote assistance device, the implementation of a remote service and its analysis bring up an organisational problem.
Its implementation pre-supposes :
- identifying the various players intervening in the given field
- analysing the methods which led them to invest in a remote service
- analysing the changes which will take place within their profession as a result
- analysing the representations which will result from the supply and demand which they are supposed to manage
- analysing the initial uses

In other words, one must know who will use this technical device, why they have decided to use it, and how they will react when using the device for initially unintended purposes ?

Within the context of implementing policies concerning ageing and transferring power from Paris to the French provinces, French *départements* will create a policy through a series of measures supporting keeping the elderly at home, one of which being remote assistance. In this scenario, French *départements* will take charge of financing a listening station and the towns within a given *département* will become subscribers. They will use the existing listening stations which are already managed by French *départements* : those run by fire brigades (SDIS) or by emergency medical services (SAMU).

France did not opt for a single emergency phone number as is the case in most European countries. The fire brigades (18) provide most of the initial emergency services for the public at large. The job of the SAMU (15) is to provide emergency medical services only. The division of emergency services between the SAMU and the fire brigades, between those dressed in white and those in red, is sometimes presented as a very clear division... In reality, these emergency specialists often have to work together.

When confronted with the difficulty of evaluating the emergency needs of the elderly deemed dependant, both quantitatively and qualitatively, various elected officials have historically made choices which have mostly been influenced by political party lines.

Listening stations

The SAMU : emergency medical services

In one of the *départements* studied, the elected official in charge of ageing policies is a doctor. In this way, he knows how to convince the SAMU to « expand into the social realm » and to get the listening stations to incorporate the remote assistance services for dependant elderly people. Nevertheless, management at the SAMU must deal with the resistance of certain doctors who do not want to be held responsible for this type of call :

> « ... it wasn't easy at the beginning as certain members of the medical profession were sceptical about a call center for the elderly. There were some who categorised them as " pee pee-pooh pooh " calls. But I stood my ground. I thought we were moving in the right direction, that it was the next logical step since the creation of the SAMU and the AMU » (governing body of the SAMU).

When confronted with the doctors' refusals, management chose from the very start to recruit people who were not members of the medical profession to respond to calls from the elderly. These people were chosen for their ability to dialogue with elderly people.

Moreover, lessons from the past indicated that the majority of calls would be those concerning conviviality and comfort (the need to speak to someone/ needs of everyday life).

Indeed, the first service provided by the center was the SAMU, that is sending help to people who needed to be hospitalised so that they receive emergency care and to guarantee their transfer to hospital services in the best conditions possible. A single phone number was created (15) and the service was immediately very successful. However, this service was very rapidly confronted with a problem : numerous calls which did not concern the SAMU : often concerning the flu or minor problems and not serious injuries. To respond to the other minor medical problems, the AMU was created, that is to say a network of doctors in towns (GP's and emergency specialists), who would be called to care for people who had been in accidents or were ill and who didn't need to be sent to hospital.

It is certain that the SAMU and the AMU only concerned themselves with the medical field, but there was still a wide range of cases to handle from extreme emergencies (life or death) to minor emergencies . The person running the SAMU then decided to create a remote assistance service to handle very minor emergencies called Biotel.

The documents which accompany the presentation of Biotel indicate a service which is still concerned with safety and assistance. Nevertheless, the documents are divided into three types of reasons for calling- uses of Biotel by the elderly : emergency situations, medical problems and calls for minor problems. Concerning this last category, the French

départements have included the idea of services to comfort someone who lives in a remote area of the *département* or to reach out to those who are feeling lonely : " Do you need to talk to someone ? Do you need some advice about a certain problem you have ? The operator will respond in all these types of cases".

Offering as a complementary service the possibility of « a simple conversation » associated with remote assistance, Biotel is a shadow organisation of the SAMU (15) which offers, via remote assistance, a service which takes calls which do not concern medical emergencies.
As soon as remote assistance was set up, the volume of these calls deemed convivial was so high that an attempt at categorising these calls was carried out by the SAMU. In this way, these calls have been divided into two categories :
• the need for a dialogue or an exchange in cases of loneliness
• simple needs of everyday life

> «*What is shocking is the loneliness which the elderly feel. They mostly need someone to talk to. It is striking as we notice that the number of calls changes depending on the season. We get more calls during the winter months, from November to February, than during the other periods in the year… The discussions that one has with them are relationships made up of numerous exchanges based on a little of everything or nothing at all, but which nevertheless concern the needs of everyday life…* » (remote assistance operator, SAMU).

These conversations, which highlight the isolation and the need the elderly have to talk, have been corroborated by statistics. As soon as Biotel was set up, in 1987, calls concerning conviviality, necessitating emergency assistance or not, were extremely numerous.
From 1987 to 2001, the SAMU received 376 158 calls, of which 90% did not necessitate emergency assistance. Among that 90%, 74% were convivial calls or « wrong numbers ». Among the calls necessitating emergency assistance, in 60% of cases, the person's sponsor visited them. The main cause for calls necessitating emergency assistance was a fall, the second cause was the need to speak to someone.

> «*The need for conviviality has been increasing steadily every year. Subscribers have understood by now that Biotel is not exclusively a medical service but can also offer them something else : certain subscribers ask us to send them someone to pick up their medicine, or open a window, or give them their medication, etc.*» (remote assistance operator).

In this way, by announcing publicly that remote assistance is also a service for conviviality, and by recruiting people whose very job includes this skill (ability to create a convivial exchange with the elderly), has opened a crack into which Biotel subscribers have rushed in to fill. Indeed, these very elderly people, often isolated, find at Biotel a much-coveted sociable place.
That is why today the SAMU handles 3 types of calls : very urgent calls which necessitate sending a medically-equipped ambulance (SAMU, urgent calls which necessitate sending a GP or a *départemental* medical specialist (AMU), and calls from elderly subscribers to Biotel, a remote assistance service.

Fire brigades : emergency professionals

In another *département*, the choice was made to create a hybrid alert/illness service which equips hospitals and clinics with the fire brigade's new alarm system (18).

> *« We were in an emerging market, the political decision-makers supported us and the fire brigade were setting up a management center for fire alarms with the ability to receive calls from the entire département but what one didn't know was that the département and the fire brigade at that time were the same person ».* (Manager for a fire brigade listening station)

In July 1989, the *département* informed all the Social Assistance Service heads in all the communities in the *département* that it had " implemented a REMOTE ALARM system destined for the elderly and handicapped in order to keep them at home ". The day-to-day running of its operations was handed over to the fire brigade. Written agreements concerning subscriptions were signed between the social assistance services and the fire brigade. At that time, however, the market was really very difficult to grasp ; their objective at the start was for 1 000 to 1 200 subscribers for the entire *département*.

This configuration of players offering remote assistance services putting the fire brigade at the center of operations was at that time the most widespread set-up in France. It was the result of two jointly implemented policies organised by French *départements* : on the one hand, the reform and modernisation of fire brigade assistance centers and on the other hand, the application of laws concerning social assistance policies for the elderly.

As Rochette and Marchandet have already pointed out concerning remote security operations, remote assistance is not a replacement operator or an extra operator in a production line of services, it is a production line which incorporates new factors and in so doing redistributes the positions and relative weighting of each one of these previous elements. This poses a problem because the final set-up of the service will to a large extent be determined by the know-how held by the various professions to the detriment of the initial demands. (Rochette, Marchandet, 1998).

As we have seen above, in a large number of *départements*, the fire brigades were handed the responsibility of running the remote assistance services when these fire brigades were "restructured". The hybrid approach, from a technical point of view, did not come up against any major difficulties but from a social point of view, this approach was more problematic : at the start, when faced with the difficulty of evaluating both quantitative and qualitative needs, only the record of health-related emergencies was associated with the use of remote assistance. But, as the years went by, this offer created a demand --- that of alleviating social problems --- which placed the fire brigade in a very ambiguous situation, in a role that they did not agree with and one which forced them to intervene in situations that did not concern them. Over a fifteen year period, the logic employed (Perriault, 1989) concerning remote assistance moved further and further away from the fire brigade's initial duty and the tasks Inherent in this profession.

Despite their disapproval, the fire brigade cannot choose to ignore an emergency call. Accordingly, as soon as an elderly person activates his/her medallion, a fireman on duty at the listening station sees the information corresponding to this person on his/her screen (name, age, health problems, hearing problems, etc.) and must consequently respond :

« Hello, Mrs. Durand, is everything alright ?... »

Whatever the nature of the situation, whether it be urgent or not, the fire brigade responds very professionally to the needs of " granny ". They carry out their work meticulously and only hang up when they are sure that the caller is safe and sound. Accordingly, the elderly, from their point of view, are very happy with the service rendered by the fire brigade :

> *« listen here, I do not like to hear anyone criticising the fire brigade, because they are extremely kind and always there to help you, if something is bothering you. It is not a profession that I would blame for anything. No, indeed… »* (Mrs. G., 89 years old)

It is another story altogether when it comes to supplying the local authorities with a vision of service rendered as the fire brigade must then refer to the classification of calls used by 18. These figures supplied by the station are then published in and annual report. By supplying in this way the statistics based on the fire brigade's initial duty − health-related emergency calls from the city streets − the incompatibility of remote assistance services when compared with this initial duty is strikingly clear. The remote assistance activity is measured using the number of subscribers and the number of calls. For the fire brigade, these calls are alarms which are divided into two categories : « justified distress calls » which make up 10% of calls, and « unjustified distress calls », which make up the remaining 90%.

Table 1. Categories of distress calls.

Month	Justified calls			Unjustified calls			
	Falls/Illnesses	Services (toilet, …)	Other	Errors	Attempts	Other	Total
January	82	65	72	670	438	502	1 829
February	83	54	61	619	379	633	1 829
…	…	…	…	…	…	…	…
December	105	80	108	880	520	1 031	2 724
TOTAL	**1 048**	**585**	**955**	**9 463**	**5 580**	**8 679**	**26 310**

Annual summary of remote distress calls supplied by the fire brigade's listening station

For the fire brigade, "justified" calls are those which correspond to a real health-related emergency and which necessitate someone coming to help them. The report supplied a table summarising what was done in response to justified calls; Accordingly, among the calls considered "justified", family, friends, neighbours living nearby intervene in 40% of cases, and the fire brigade in 10% of cases.

Table 2. Responses to remote distress calls

Month	Family, Friends, Neighbours	Doctor	Fire truck	Ambulance	Police	Other	Total
January	109	10	18	8	2	83	230
February	74	6	22	2	3	85	192
March	101	8	24	4		74	211
April	92	4	16	5	1	95	213
May	103	9	33	8		85	238
June	96	4	23	6	1	103	233
July	48	4	19	6	1	111	189
August	62	5	26	3		51	147
September	114	7	17	3	2	116	259
October	127	5	18	2		75	227
November	127	10	24	8	3	74	246
December	117	7	22	5	2	117	270
Total	**1 170**	**79**	**262**	**60**	**15**	**1 069**	**2 655**

These figures associated with uses of remote assistance are the only ones known and are widely supported by professionals in the field of gerontology. The rate of 90% of "unjustified distress calls" is widely used and contributes to a very negative representation of this service.

A large number of them begin their evaluation of the remote distress call service by saying : "it doesn't work ". Beyond the official figures, those in charge of the fire brigade listening station (18) emphasise the incompatibility between the fire brigade's duty and the requests generated by the remote assistance service.

« One must acknowledge that the fire brigade's duty is not of a social nature, which is the very problem. That is the work of social assistance services. We do not have a policy to keep the elderly at home. That was a decision made by the département which asked the fire brigade to take the responsibility for distress calls in partnership with local communities. That is what is called a political request because before, there was nothing.[...]
What we do best is follow up on a distress call. The problem for us is all the other unjustified calls. It is all these calls ; the granny who needs to hear someone's voice, or to be comforted, or to make sure that there is someone at the other end of their medallion but these problems are not our concern. The problem is all that and, of course, people's distress, those who need moral support." (Fire brigade chief at a listening station)

In other words, the fire brigade accepts to respond and provide support for emergency callers in cases that comply with the initial intentions of those who designed the service --- such as an elderly person who, after a fall, breaks the neck of his/her femur --- because this emergency caller has an urgent medical need. On the other hand, when other emergency callers with other age-related problems call, they are a lot more reticent to respond :

« and that is a problem because when we have to deal with someone's grandmother because at 1 o'clock in the morning, she calls to say that she's cold. It is not the fire brigade's job to tuck her in at night. And then when you contact her sponsors, one of them doesn't respond, and when calling a second, you get an answering machine, and the third's phone number has been changed, what does one do ?
and then you get a call from someone's granny who is crying and you don't know how to react, and when there is a fire and we have to get some help from a fire brigade in another community because your firemen have gone to tuck in the previous caller...ok...the fire brigade has a role and the one we were initially entrusted with is not... " (Fire brigade chief at a listening station)

Innovation to better serve the public

Without further developing the role of all the players who participate in keeping the elderly at home, we notice that each player ends up either validating or invalidating, given their approach to these services by virtue of their professional duties, the various players who " lend an ear " to the elderly. The uses made of these services must therefore comply with these professional duties. For example, the conversations tolerated by Biotel would not be tolerated by listening stations run by fire brigades. All of the players with a social role in these services influence its representation which leads to validating the appropriate and inappropriate uses of this remote assistance service.

However, remote assistance services, by giving very elderly people the chance to speak when they feel the need to, has brought to light the extreme loneliness these people feel when they are confronted with restricted mobility.
Within the framework of policies for the elderly, the objective of keeping them at home remains in France the dominant model. The foreseeable ageing of the French population has already given rise to more and more people subscribing to this type of service. Currently, new

players are continually innovating by offering remote assistance services which are advertised as a response to this social distress.

« You feel the need to speak to someone, you feel lonely, you are experiencing anxiety, you have been stricken with an illness, our remote assistance operators are standing by from Monday to Friday. All year round, this service guarantees a real presence at your side ».
(Brochure presenting a remote assistance service appearing in 2006)

Developments in what is available have created innovations in various aspects :
technical, professional and organisational.

Technical innovations

A large number of calls are considered unintentional and often the elderly mention the fact that the medallion gets accidentally caught on something. Moreover, this medallion is often considered to be too visible and stigmatising for the dependent person, the downside of ageing. Manufacturers have looked into offering something a bit more discreet. Consequently, nowadays, the majority of remote assistance services offer a medallion and/or a watch which, instead of indicating the time, has a push button. In the same way, to respond to calls for convivial reasons, the stand which is placed near the telephone now has a push button to directly contact the listening station without even having to wear a medallion or a watch. Experiments are currently taking place with video teleconferencing (sound and picture) via broadband transmission lines.

Professional innovations

Listening stations now offer services devoted to lending a sympathetic ear to the very elderly. With this goal in mind, listening stations are recruiting and training remote operators regarding the problems linked to very old age. These operators must know how to both respond to emergency calls, to health problems, as well as give information about their services offered to the very elderly, and try to respond to these people's social distress and low spirits. This demands knowledge of psychology. More and more listening stations employ a psychologist.
The first statistics on the nature of the calls received reveals the difficulty in determining meaningful categories for calls. The significant number of calls considered " unintentional" can be understood in different ways : In the field of remote security operations, " if numerous professionals declare it to be the number one problem in the field, others are convinced that in fact there are no " false " alarms because all alarms indicate some sort of defect in the

"security infrastructure" and in that capacity they have a significant role to play ". (Rochette and Marchandet, 1998).

That is why, today, *départements*, which finance to a large extent these services within the framework of their policy for the elderly, demand a better understanding of the nature of these calls. Professionals try to define new indicators concerning their nature and the real need which is sometimes hidden in the background. *Départements* define three types of calls : repetitive falls, people who have forgotten that they have just called, and calls which clearly indicate an underlying problem, leading to informing the elderly person and social workers about the necessity to take another look at the conditions in which this person is kept at home. When confronted with the difficulty of identifying the needs of these elderly people, certain listening stations offer to call the subscribers on a regular basis in order to detect any possible distress.

Organisational innovations

Listening stations, want to both become more professional and expand their services to all French *départements*. Currently, questions concerning co-ordination among the various players in the field of gerontology remain of the utmost importance. Listening stations are publishing more and more detailed information about the nature of these calls which is of special interest to the " close ties " of elderly people. However, these close ties, made up of both volunteer professionals (doctors, home care professionals, etc.) and family members, remain " tailor-made" to repeat the term used by a social worker. The question of communication among these listening stations and these close ties remains a real question today.

Conclusion

The relevance and the success of a remote assistance service depend on the ability or the willingness of service professionals not to limit themselves to a medical and rigid representation of ageing but, on the contrary, one that can respond to the diversity and the development of the various faces of ageing : momentary fatigue, isolation, confusion, etc. There still remain a large number of calls categorised as «unintentional», but there are several ways of understanding these "false alarms".

Remote assistance by offering the possibility of calling a listening station generates a whole series of calls which can also become the source of information on the nature of the difficulties that the elderly experience, above and beyond any judgement concerning the calls themselves. Those who work in gerontology would like to be able to gain access to this information to decide on how to re-organize the mobilization of those close to the elderly or to decide once again from scratch on what kind of help the elderly really need to be available for them. The project of mobilizing remote assistance, as a tool for a better-adapted service catered to the needs and the context of an elderly person, is a relatively new approach which is part of " the building of a lifelong project of home care " and attempts thereby to respond to the diversity of faces of ageing. This approach is today acknowledged by certain social services, which can consequently become the relevant link to create, with the help of remote assistance, a social network of close ties for the elderly.

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Attractiveness and Responsiveness of Moblogs

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Abstract

The (r)evolution of personal and collective publishing offers new tools allowing the Internet users themselves to become content creators. Along with the personal typing in weblogs a new practice for communication has emerged in the form of snapping pictures and sharing them in the web. These virtual picture galleries constructed and updated right from the field with the help of a mobile device has become known as *moblogs*. In this paper we examine practical functions of moblogs as a space of self-presentation and intercommunication. Our methodology consists of web-ethnography that combines methods from ethnomethodology, conversation analysis and ethnography. The focus is on the participants - authors and visitors - and their actions and interactions. We also use two analytical notions: attractiveness and responsiveness to describe the functions of the moblogs and differences between them. As result of the study we present four part taxonomy of the different moblog functions and analyze further more detailed the participative processes of moblogs of each category. From the basis of our analysis we suggest as a conclusion that moblogs are used for storing, sharing, publishing and communicating with images, meanings and messages.

Keywords: Moblog, mobile blog, function, web communication, ethnomethodology

Introduction

The (r)evolution of personal and collective publishing offers new tools allowing the Internet users themselves to become content creators. The boom of virtual writing has created a whole network of blogs and blogging culture, a kind of a *blogosphere*, in which private people feel free to share their everyday narratives, different communities to construct data basis around topics of their interest or even corporations to promote their business, products and services (see Scoble and Israel 2006). A couple of years ago the number of weblogs was estimated to be more than a half a million (Blood 2002). Today blog census project, NITLE (http://www.blogcensus.net/) records nearly three million weblogs. Technorati blog index (http://technorati.com/) estimates the amount of the blogs to be even greater, about 71 million. Along with the personal typing in weblogs (abbreviated generally to "blogs"), a new practice

for communication has emerged in the form of snapping pictures and sharing them in the web. These virtual picture galleries are produced both with digital cameras and different kinds of portable devices, which provide more direct modes for personal and collective publishing and communication right from scene. The latter form of sharing and communicating with pictures and texts has come to be known as *moblogs* and the practice of producing one as *moblogging*. The concept of "Moblog" was first introduced by Justin Hall (2002) and Adam Greenfield in 2002 (http://www.v-2.org/displayArticle.php?article_num=182). Since then at least the terms "wireless blog", "visual blog" and "photoblog" have been introduced. They all refer to a special kind of visualized blogging.

The moblog can be characterized as more or less regularly updated website in which chronological ordered content is posted primarily from cellular phone or other mobile device with wireless connection. Moblogs may be either private with one single author or collective with many authors who contribute to one moblog by sending their own pictures and adding text entries. The content of the moblog is by and large picture-based, although photos may be accompanied with text that may be either short descriptions or longer histories and narratives. The moblog contributions may vary from a personal type of snapshots with intimate diary entries to up to the minute professional photography and journalism. The recent development of mobile devices has made it possible to also add audio and video clips to the blog (see videoblogging e.g. http://moblog.co.uk/view.php?id=238366 and audioblogging in http://radio.weblogs.com/0100368/). However, in this study we concentrate only on examining the participative nature and culture of the photo and text based moblogs.

Blogs – a space for participation and communication?

One basic curiosity of the blog and blogging is that it is highly self referential medium. Large amount of the blogs and their topics concern, in one way or the other, practical and theoretical issues of the blogging culture. In addition, blog researchers tend to have a blog of their own: theory is connected to practice. (Döring & Gundolf 2005, 216) Elisabeth Lawley, Associate Professor of Information Technology and a blogger herself, (2004) criticises the way that the scientists who do not have experiences of blogging often treat blogs as a homogenous mass and do not recognise variations between them. Neither of the writers of this paper has experiences of writing a blog, though we have gained a good experience in viewing them. In order to avoid giving too simplistic view of the phenomenon under inspection we approach the nature of the moblogging from three different angles combining discussion and results of the research on moblogs, on weblogs and on mobile technologies.

When Justin Hall (2002) first introduced the idea of a moblog he contrasted it with weblog. He considered a weblog to be a record of travels on the Web, whereas a moblog for him was a record of travels in the world. Interestingly, Julian Gallo (no year), Professor of New Media reported in his user experience description that after sending pictures to his moblog he experienced that he is making neither a photo album nor a web log, but a visual map with the data of where he has been and what he has seen.

Every form of the web communication has characteristics of its own. While blog communication on the whole obscures the ideas of private and public, individual and group and ideas of fact and fiction (MacDougall 2005, 575), the moblog, in turn, enlarges the idea of the shared instant experience. The very characteristic of the moblogging is instantaneous,

since it provides a place and possibility to send personal views and flashes of one's instant moments in a world around him and share these experiences by communicating with other people.

In principal, moblog works as a medium for personal publishing or for communication and creation of social relations and ties. Like homepages, the moblog serves as a channel of self performance providing media consumers with the possibility of becoming media producers themselves. The moblog's technological possibilities lean on its affordances to save and distribute author's life story as pictures (and as text). It not only affords possibility for self presentation and self identification, while displaying author's mundane life, his/her instant experiences and everyday items of the immediate environment, but it also provides channel for communication with others. Although the interconnectedness and interpersonal communication within the web community does not always emerge unaided. The simple "seen-snapped-posted" –publishing structure is not enough in order to catch the audience's whole attention, but the moblog site may need less aggressive promotion in order to be noticed. (Döring & Gundolf 2005, 85.)

The moblogging requires not only access to the Internet for photo sharing purposes but also the device with the help of which the personal views of the instant environment and moments can be saved. Going further to examine the camera phone use and multimedia messaging some interesting observations have been made in the research areas of sharing digital images. In their experiment Koskinen, Kurvinen & Lehtonen (2001) found out that multimedia messaging (MMS) between friends is not working as independent sequence of interaction, but is likely to be related to the previous interaction of them. In this study the posted messages had various different contents, such as postcardpostings, rumors, stories, jokes, teasing, failure snaps and requests to have others' pictures. Mäkelä's et al. (2000) research results echoes with this since they reported that image-contained MMS messages were tend to be used as a tool for creating a story or a joke, for expressing emotions or even for making art around them.

What comes to the typical patterns of using MMS messages and practices around camera phone image sharing at least following observations have been made. In the research of Kindberg, Spasojevic, Fleck and Sellen (2004) the interest was to analyse what people photograph with mobile phones and how they use the images. The images were found to be used both for sharing and for personal use, and for affective reasons and funtional use. Based on users' intentions behind the captures the researchers identified six subcategories of the picture use. The affective functions contained enriching a shared experience, communicating with an absent friend or family or personal reflection or reminiscing. Funtional intentions behind the image use included supporting a mutual task with people co-present, supporting a task with remote people or supporting a personal, practical task. Kindberg's et al. (2004) study also concluded that the capture and send culture of the cameraphone pictures has collided with practical and technological barriers and people are more likely to use mobile devices for capture and show purposes. Similarly Daisuke Okabe (2004) noted in his ethnographic study of camera phone usage in Tokio that users do not prefer to email images to one another but they are rather likely to share them with others showing them right from the handset screen. In the same research Okabe also came to conclusion that cameraphone actually has various different uses including personal picture archiving, intimate picture sharing with other people, peer-to-peer news reporting and online picture sharing.

It seems that while talking about the image capturing and sharing them with the help of mobile devices the patterns of use tend to vary a lot. Howard Reingold argues in his 2005

published article that people are still in the phase of adaptation of camera phone as they have not yet decided what kind of a social medium it is. Daisuke Okabe (2004) seems to agree as he points in his study that the use of the camera phone is still emergent practice since the patterns of use have not yet totally stabilized. People are still working out the social protocols and norms for appropriate visual information sharing. Moreover, if we look back to the culture of moblogging it seems that we are dealing with a rather inchoate phenomenon, which by no means has made any breakthrough in Internet users' daily practices. Döring and Gundolf (2005) estimate that in a context of the whole blogosphere moblogs are just "a niche within the niche" and it may be assumed that in the long run only minority of the Internet and mobile users ever start a moblog of they own. It may be that e-mail attachment and MMS mobile phone messages are still the most popular forms of interpersonal visual communication, although online photo albums, mobile blogs and photoblogs may increase further interest of those users who actively search applications for digital photo sharing.

Data gathering and methods

In our study we examine closely the practical functions of moblogs as a media of self-presentation and intercommunication of the participants. A detailed analysis of the structure and the content of moblog contributions have not been conducted earlier. Our objective here is to fill this need by analysing what happens to the participation and communication when blogs go mobile. Which contents, forms and functions the pictorial and textual messages have in moblogs? How are the pictorial messages combined with textual elements in moblogs? What kind of participative practices and processes can be identified in the virtual culture of moblogging?

In order to understand better the variations of use and functions we did a web-ethnography of the moblogs combining methodological tools from ethnomethodology, conversation analysis and ethnography (Garfinkel 1967; Suchman 1987; Arminen 2006). The focus was on the participants - authors and visitors - and their actions and their interactions and both the statistic and the content of those actions was examined. The moblog data was gathered from the supply of different moblog service providers, whose platform allows users to send in, save, edit and publish their contributions via e-mail or mobile messaging. For the purposes of the study it was important that the moblog platform provided updated information of the viewed and commented pictures. Altogether 10 individual moblogs was stored including whole web pages with pictures and texts and all the communications involved. In the analysis of weblog interaction and communication we concentrated to trace sequential paths, explicate pairs of actions, blog images and responses borrowing some notions from conversation analysis (CA) to discern patterns of webcommunication (Arminen 2005).

Functions of the moblog

Within this study we are interested in the way people choose, adapt and manage different participation and communication practices in the context of one virtual and visual medium, moblog. While we considered particular constraints and affordances of this one communication channel we came up with two analytical concepts: *attractiveness* and *responsiveness.* These concepts are imposed here to examine differences in moblog uses and to show how the functions of the moblog alter in terms of the different kind of actions of the author and the possible visitors. During the study attractiveness of the moblog was measured

in terms of the statistics of the viewed pictures and responsiveness in terms of the statistics of the added comments. While paying attention to authors' and visitors' actions in the situated contexts of moblog practices we came up with the following categories presented in table 1:

Table 1. Functions of Moblogs

	Non-responsive	**Responsive**
Non-attractive	Store	Share
Characteristic of use	*no views, no comments*	*few views, some comments*
Attractive	Publish	Communicate
Characteristic of use	*lot of views, no comments*	*lot of views and comments*

In the first category of moblogs both attractiveness and the responsiveness of the blog were recorded to be minimal or total null i.e. the moblog did not gain any viewers or commentators. Contrasting to the weak reception of the images by the part of the web community the moblogging was contributed to be a type of *Store*. Where some views and comments were to be recorded the moblog function turned to *Share* kind of a blogging. In this category a rather small community of people communicated around the published pictures. When moblog and its picture gallery seemingly attracted a mass of audience to view pictures, moblogging worked rather as a forum of publishing. Though, in this *Publish* -category pictures didn't seem to launch any interaction between the participants. In the last category, *Communicate* - moblogging, both attractiveness and responsiveness were measured to be high on the grounds of the viewed and commented picture entries.

The results of this part of the study suggest that moblog's functions alter situationally while authors and visitors engage themselves in modifying their participating levels, whether by viewing *or* commenting or by viewing *and* commenting. It is worth to notice that one single moblog does not represent a one single category as pure, but the functions of a moblog may vary in the course of the time depending on how the web audience welcomes the moblog and how they take part to the participative processes of it. At one time a moblog may have viewers as well as commentators, but in the next moment it may not attract even viewers. To better understand the variations between different kinds of practices within moblogging we now show more closely some examples of the each category.

Capture and store

In the first example we are going to examine the visual content of the *Store* -moblogging. In this category of moblogs the content is based on a kind of random snapping and random picture gallery exposition. The photos do not seem to have obvious relation to one another, but they all represent kind of momentary flashes of author's everyday life and mundane instant environment. The meaning and the purpose of the pictures does not open very clearly

to viewers. There is no plot, logic structure or visual narrative which distinctly relates these snap-shots as a "family of images". The only continuity between the picture entries may be found in the time span of the photographing as the photos have been dated to the sequential days.
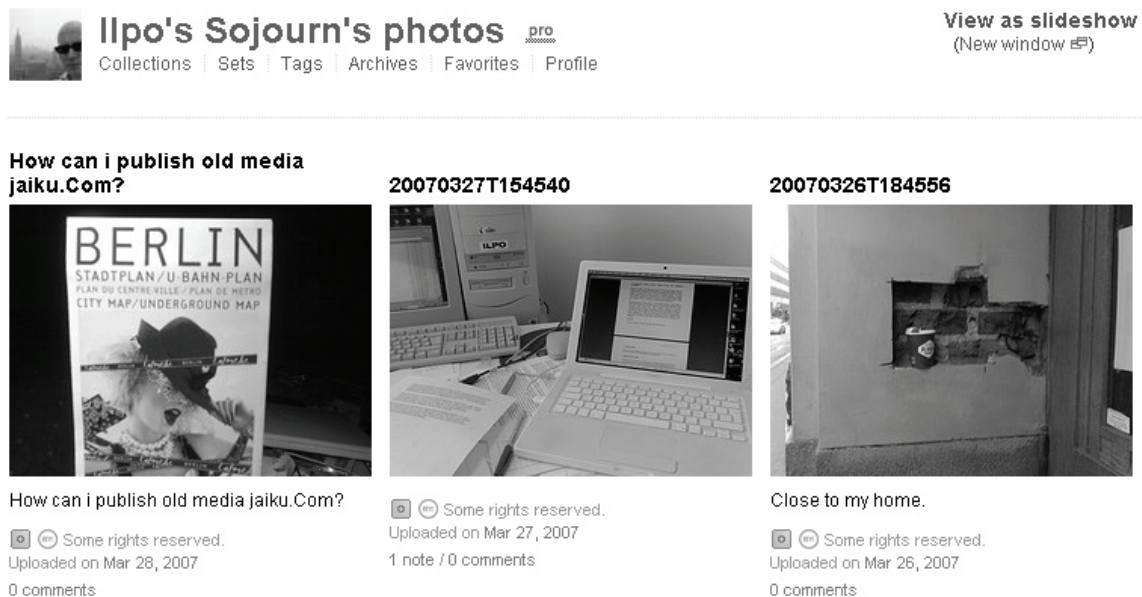
The characteristic of *store* -moblogging is "freestyle mobile photographing" where every picture is publishworthy. Still, it lacks the hook for the visitor to look at the pictures more closely, not to speak of commenting on them. With no views and no comments the moblog starts to function as a storing place for mobile photos. Thus, there may be a risk that the moblog some day becomes a recycle bin of the quick snaps. This may be the case especially when the images lack good quality. On the other hand a potential positive outcome of the "freestyle mobile photographing" is that it may increase individual's sensitiveness to perceive such details of the everyday environment which at first glance may appear indifferent, but which with closer look can be even considered as aesthetic environmental art.

Capture and share

In the second category of moblogs, *share,* the visual content of the blog produces some views and some comments among the moblog visitors. It is likely that the mobile picture gallery is collected around a specific topic or images are in other ways related to each other. The content may be constructed for example with family photos or photos of pets and therefore the blog is more likely to spur acquaintances, family or friends or small circle of the Web readers to view and comment the entries. In our example a moblogger, dashingblue, collects a picture gallery of her cat, Rusty.

Fig 2. Share –moblogging

[27 Sep 2006, 11:42:34 AM]

A very calm and cute sleeping position.

2 Comment(s) | 0 View(s)
Tell a Friend

[27 Sep 2006, 11:41:45 AM]

The full photo of how he looks when he sleeps.

2 Comment(s) | 2 View(s)
Tell a Friend

(http://www.moblog.com.sg/blogger/album_list.asp?uid=0FF5799E-B5A1-4A33-A380-45145FF5CF96)

It is very easy to find dashingblue's pictures lovable, irresistible and sweet, especially if the viewer happens to be an animal lover or especially a cat lover. The author has animated the images with short descriptions of the "sleeping beauty." The two photos (Fig.2) create the next two short conversation sequences between the author and a visitor, Fatzombie:

Extract 1.

Haha... Yeah. =)
Posted by **dashingblue** @ 17 Oct 2006, 01:01:33 PM

This pic of Rusty is my personal favourite. He seemed to be having a very nice dream. =)
Posted by **Fatzombie** @ 30 Sep 2006, 11:45:12 PM

A very calm and cute sleeping position.
Posted by **dashingblue** @ 27 Sep 2006, 11:42:34 AM

Extract 2.

Oh wow! In fact Siamese cats originates from Thailand. Haha! Rusty was such a lovely boy, he will always be my little prince in my heart.
Posted by **dashingblue** @ 17 Oct 2006, 01:03:46 PM

This is also another personal favourite, simply becos his sleeping posture is the same as mine - in the 'surrender' posture. A fren of mine once told me that such a posture is deemed the posture of a king in Thailand. =P
Posted by **Fatzombie** @ 30 Sep 2006, 11:47:00 PM

The full photo of how he looks when he sleeps.
Posted by **dashingblue** @27 Sep 2006, 11:41:45AM]

The entries of the sleeping cat generate Fatzombie's reactions and positive assessments of the picture content. In the first sequence Fatzombie's positive assessment about cat's possible satisfaction of having a sweet sleep is followed by dashingblue's minimal affirmative response reinforced with laughing signs "Haha" and "=)". In the second extract of the three part structured conversation sequence Fatzombie's response to the image and to the description wrote by dashingblue is a slightly longer. A part from marking the picture being special for her ("another personal favourite, simply becos his sleeping posture is the same as mine"), Fatzombie formulates news announcement about Rusty having exactly the same sleeping posture as the king of Thailand. Dashingblue marks this as new information ("Oh wow!"), but develops the topic even further, formulating a related addition to the announcement. Her cat, being Siamese breed, originates in fact from Thailand.

It is worth noticing that the interface used here forces the comments to appear in reverse order in a way that latest post is always at the top. It can be questioned whether this presentation mode of the blog conversation is good while people tend to read the text from above to bottom. The structure and the logic of the conversation are likely to break with a reverse representation of the order of the conversation turns.

Capture and publish

In the third category of moblogs, *publish,* the blog and the participative processes around it allow the author him/herself to become a publisher. Among the web community *publish* - moblogging attracts people's interest in viewing with glossy advertising style pictures, pictorial news reports or images that in other ways draw people's attention. Thus, *publish –* type of moblog has a character of personal soap box or professional journalistic gallery. Online moblog publishing offers certain opportunities for individual publishers but also involves some risks. Mielo states (2005, 31) that moblog has actually become a medium of choice to the journalists in reporting about wars, riots and other newsworthy crises around the world because of the medium's particular characteristics: it is portable, uncomplicated and instantaneous. Döring and Gundolf (2005) have noticed instead that both online journalism and online sex industry is contributed by increasing number of amateurs.

Fig 3. Publish –moblogging

(http://moblog.co.uk/blogs.php?start=656&show=2323)

In the *publish* –moblogging example (Fig. 3) images may be found rather exhibitionistic. The author of the moblog is engaged in personal impression management by creating a persona of celebrity and publicity with qualifications of good appearance, outfit and faultless condition. She is not only exposing her own body in her personal blog but brings forward her boyfriend with images of his trained body. The content of the pictures is emphasized by author's positive assessment about his boyfriend's looks. The moblogger's main interest and concern seems to be, how to appeal to the web audience. How to gain spectators? In this case, the content of the blog is effective in attracting the audience since the images of the given example have been viewed nearly five hundred times.

Without going any further in cultural analysis of how and why some mobloggers, women as well as men, are willing to present their bodies and sexualities openly in Web, the blogging culture in overall contains the possibility of managing and controlling one's self-presentation and personal impression. Reed (2005, 232-233) states in his study that research subjects noted repeatedly that weblogging gave them pleasure of exposing them and their life in public and moreover to totally strangers. On the other hand, along with writing personal blog people came to realize that exposing oneself may be harmful, since the Web records and saves the data in accumulative way and also because blog contents are always subject to the readers' misinterpretations.

The *publish* type of moblogging may also cause other types of negative results and responses within web community. The members, the mobloggers and even the administrators of blog platforms have frequently complained against those bloggers of the community who regularly publish nude or other way sexist images of themselves and their partners merely to gain more spectators (Döring & Gundolf 2005, 215).
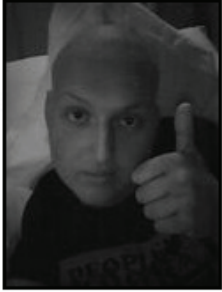
Capture and communicate

In contrast to the previously described types of moblogging the last category *communicate* is not only featured by the attractiveness but also by the responsiveness of the content as it enhances communication among the moblog community. We now look more closely such elements of moblog which may reinforce the interpersonal communication. We take an example from Alex Saville's personal moblog in which he describes his fight against leukaemia. He set up the blog primarily to tell the world about his hospital experience and since April 2006 he updated the blog almost everyday usually straight from the hospital bed.

Fig 4. Communicate, example 1

WOOOO

Hooray
Neutrophil count today is 1.59!
Wow!
Was 0.69 yesterday!The doctor said there is a chance of going home tomorrow!! But i don't
wana get my hopes up because this always happens and the doctors make you stay another day.
We'll see.Anyway pretty good i think.
And luckily i haven't been throwing up today!
The doctors said if i kept being sick yesterday they would do an endoscopy (spelling?) where they put a camera down your throat to have a look.
So got out of that one! Hehe
Alex saville

larger
(viewed 767 times)

28th May 2006 18:37 comments (20)

(http://moblog.co.uk/blogs.php?start=112&show=7364)

The text and picture entries of the Alex's blog give an impression that the author is describing his world as he sees and experiences it. The blog provides a day-to-day account of passing events while he is struggling with the disease; day-to-day moods and feelings that vary from great anxiety to hope and joy. Like an ordinary diary, the story of Alex is structured around "I" narratives, where the storyteller is at the same time the protagonist. The entries are meant to be of the moment, as a record of how the protagonist felt or thought at that particular moment of life. Generally, those writing their own blog consider their blog to be their index. Authors think that they reveal themselves unreservedly, without any whitewash, since they put themselves in the stories exactly like they are. (Reed 2005, 227.) The idea of authenticity is only emphasised by the fact that as one's virtual story is continuously updated the personal data only accumulates. Both the blog and "I" can be noted to be in a state of "work in progress".

Fig 5. Communicate, example 2

LOW DOWN

Here is the lowdown
I have a very acute form of GVHD which is screwing around wiv my liver,
bower and skin so far.
The treatment needs to be quite a strong as this is quite a dangerous
situation.
Iv been put on strong steroids to suppress the attack, and different
antibodies to destroy the overactive T cells in my blood.
Because my bowel just wont absorb the nutrients it needs (coz its
inflamed and i have bad diarreha, iv have a hickman line back in, which
they r using for all my IV's and they r feeding me nutrients direct into
the blood stream. A mixure of everything i need.For the firsttime in about a week i
managed to get a tiny bit of sleep,
(coz they have put 2 syringe drivers into my arm, which run morphine and
other painkillers 24hours)
While having the hickman line put in, i always offered the nurse a blue
satsuma, which i beleived was in my hand, before stopping myself. I like
satsumas u see.Tho i have also be using this opotunity to try the painkillers and
sedatives i having had before, like madazolan, which i think my have
helped me sleep last night.The next few days are quite critical, so understand i may
not blog, but
will try.One good thing from this means that the topup i had has worked
exellently.... And then some!
It means i have a new working bone marrow, which produces very well on
its own. Just the T-cells need to be shut down quickly so my other cells
can handle the danmage they'l been causing.
Alex saville

larger

larger
(viewed 583 times)

10th Nov 2006 09:51 comments (22)

(http://moblog.co.uk/blogs.php?start=16&show=7364)

Compared with the three previously presented type of blogging, the distinct, significant element of *communicate* -blogging is that the author does not merely offer his pictures for the public distribution, but tells an entire story not only with pictures but with text. The pictures do not stand alone as a core element of the storytelling, but they are rather illustrating the daily verbal narratives of the author. With his camera phone the author is able to deliver in public both writings and pictures of his personal story and history, illness experience and his changing appearance as the desease develops and to open a forum for interpersonal communication with those who are not able to share his experiences face to face.

Besides of attracting many views the *communicate* -moblogging involves acts of reception. The first entry presented in figure 4 launched altogether 20 comments but we concentrate here on analysing more closely the following 5 responses which created the first independent conversation sequence in the list of the comments.

Fig 5. Example of the comment sequence.

SIR FINDO GASK SAYS:

WTG dude!

Hope you get out tomorrow...

28th May 2006 18:46

PUDDLEPUFF SAYS:

WooooHooooo!!! That's great news man!!! Keep up the not puking, and the great work in general!

If you do get out tomorrow, can we have a few nurse shots as final ;)

Mom and Dad must be happy as well.

28th May 2006 18:49

MUM SAYS:

woo indeed. fingers crossed you'llbe back soon then. there are one or two home grown strawberries that the slugs haven't spotted yet (and I've put plenty of beer traps out for them) and one of your bonsai has bright pink flowers all over it to welcome you home.

Puddlepuff would like nurse pictures. Some of them are very cute indeed and the female nurses are jolly pretty too. You'd better take a photo of one or two of them.

try not to throw up again, although hospital food is fairly sick making.

28th May 2006 19:13

PUDDLEPUFF SAYS:

Female nurses will do :)

28th May 2006 19:17

MAGGIE D SAYS:

Yay, Yay and thrice Yay .....(slaps Puddlepuff's wrist for sexist comment) ... but then forgives him because he is such a nice guy... well we have to make exceptions sometims..... and he does love his cat..... OK am rambling but very happy that neutrophil count could mean you are home tomorrow.....fingers and all other appendages crossed that that is the case......

28th May 2006 19:18

(http://moblog.co.uk/blogs.php?start=112&show=7364)

This short fragment of moblog conversation is initiated with Alex's notification about his chance to soon get home from hospital. The good news immediately launches a flood of responses in a positive and sympathetic tone. If we look at the dates and times of the sent responses it can be noticed that they are all sent on the same evening within an hour from Alex's initiative message. Not only author's action seems instantaneous, but also responsive actions of the message receivers and commentators.

First response comes from Sir Findo Gask in a form of positive feedback and good luck wishing. Puddlepuff joins next in the choir of the sympathizing friendly fellows as he more or less shouts for the good news. Next he manifests a wish to have finally some pictures of the nurses. This move will produce in continuation other, parallel topic in the conversation. At the end of his message Puddlepuff makes assessment of the response and reaction of Alex's parents as soon as they hear the good news. Surprisingly it is exactly Alex's mother who participates next to the conversation. In her turn she constructs idyllic scenery of the world waiting for Alex outside the hospital environment: everyone -even plants- is warmly welcoming Alex back home. Next she continues the other topic launched by Puddlepuff, but

with very ironic tone. One can almost hear her laughing while she makes a joke of Puddlepuff. The joke is constructed around the fact that Puddlepuff did not identify whether he was talking about female or male nurses, or possibly both. The funny tone in mother's entry is emphasised with the way she is treating Puddlepuff as interactant and participant of the conversation. She is not directing her move to Puddlepuff, but creates an intimate funny chat directing her words only to her son. Puddlepuff's next turn is a minimal response in a form of confirmation that he wishes to have pictures of female nurses.

The last turn of the sequence presented here is interesting from the point of view of the interaction analyst. The general assumption about computer mediated communication (CMC) is that it mediates poorly, if at all, nonverbal cues and gestural actions. However, the picture is not that simple. In the Web the interactants may adopt new modes of expressing nonverbalized, facial or gestural actions for example in the forms of smileys and chat abbreviations like LOL ("laughing out loud"), H&K ("hug and kiss") and CRBT ("Crying real big tears"). The expressions of feelings, body orientation and postures or other embodied actions may also be described directly with words. This is exactly what Maggie D is doing in her response turn to the Puddlepuff as she "(slaps Puddlepuff's wrist for sexist comment) ... but then forgives him because he is such a nice guy."

The dominant type of social activity taking place within the responsive moblog is essentially turn-taking based web communication where responsive entries are kept quite short and simple. However, the turn taking mechanism in CMC communication seems to follow the one of ordinary, face to face conversations. The turns in conversation rely on expectancies generated by the preceding turn. Greetings create expectations for responses, good news for positive feedback, and a question for answers. The essence of common conversation is the understanding of the activities of others which in turn provide a context for creating and producing one's own activities. While common understanding has been created, the *communicate-* moblog may even become virtual, communicative, two-way and responsive visual diary, where roles of the author and visitors may blur.

We wished that Alex's moblog had a happy ending, but unfortunately Alex Saville died in January the 3rd 2007. The sad notice was announced in his moblog by his family and it was immediately recognised by the web community and received with great sorrow and commiseration. Since then, over 60 people have expressed their sympahty over the loss of the beloved moblog friend. His memorial photo has been viewed over 2 500 times. Alex's moblog had great impact on people and created a web community with tight emotional relations. One of the readers and the commentators, Seaneeboy, writes: "This has been possibly the most moving blog I've ever read, and I will miss it terribly. An incredible fight, he's going to live on long in moblog memory" (http://moblog.co.uk/view.php?id=210542).

Discussion

Data analysis shows that in contrast to the presumption, the moblog does not automatically support either self-presentation or intercommunication of the participants. Instead we suggest that functions of the moblog alter situationally while participants engage themselves in different ways and levels to the participative actions and processes of the moblog. The participants simultaneously manage multiple ways of being present and display multiple levels of presence within practices of distributing pictures, seeing them or interacting by writing of them. In what follows we suggest that moblog may serve as a tool for storing,

publishing, sharing or communication or all of those together depending on the situationally varying activities in which participants actively engage themselves.

The research and its results affirm one of the stunning characteristics of the IC technologies. They provide multiple affordances for users to feature and modify their actions and interactions through different forms and levels of participation and engagement. The affordances are not primarily matters of technology, its character or capacity or how we perceive it, but of interaction and action (Raudaskoski forthcoming). Therefore, any innovation may have its unexpected and extraordinary functions as users alter, modify or even resist the original, designed functions of the devices while fitting them to their everyday life and social activities. Any potential affordances that a certain technological innovation may have or produce at the moment of use may be hard to predict at the moment of design and elaboration. A simple mode of webcommunication, e.g. moblog, may at first glance seem as a simple apparatus with a single function: communicating with shared mobile pictures. However, our research suggests a slightly wider idea about its functions. Moblogs are used for storing, sharing, publishing as well as communicating with images, meanings and messages. By recognizing the wide range of the potential users and possible uses that may be created around the technological innovation we are able to produce and design such devices that fit better to our everyday practices. Such theoretical and analytical approaches that take into account user's interactions, social context and processes could be useful already at the moment of design and implementation of any technological innovation.

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Open Forms: A Vital Issue In The Designing Process

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Abstract :

The increase in "public" uses of ICT (notably with the arrival of blogs, wikis, tagging and mash-up's etc.) is partly responsible for undermining the traditional boundaries between expert and user status, between the final product and the prototype, the service and practices…We see this context as an opportunity for the emergence of new design methodology based on open forms. Three examples of open design forms are presented and a first set of defining characteristics is discussed.

Key words : uses, emergences, forms, innovation, process, organization, anticipation, art, design, video, open forms, users

Introduction

The increase in "public" uses of ICT (notably with the arrival of blogs, wikis, tagging and mash-up's etc.) is partly responsible for undermining the traditional boundaries between expert and user status', between the final product and the prototype, the service and practices and finally between "the general public" and those who have some experience with technology. This quantitative change (more people connected, developing web uses, more and more users having access to digital equipment) also corresponds to a qualitative change which is as much the motor for change as the result: simplifying the ways in which we interact (more intuitive interfaces, multi-access to the web and diversifying the ways in which we communicate verbally, with text or images).

In this context, as researchers, we need to investigate those usual methods which associate the user in the design process (the creation of telecommunication services which we are studying here). "Usability testing" (situated at either the beginning or the end of the design process) and "co-design", including the users since the primary design stages, have both proved to be efficient in the past few years. Effectively, they have been successful in shaking up a vision of innovation which for a long time (too long) has been organised according to a "techno push" model. Instead of being relegated to the final innovation stages, users and uses needed to be introduced at an earlier stage in the innovation process, even before the technical problems were resolved and well before engineers had produced the primary prototypes.
However, nowadays innovation takes place at a faster rate than ever before, and is organised differently, especially within a context of ever increasing expertise of both the "users" and the "customers", who were formerly relegated to being simple testers or at best, co-designers. Boundaries between researchers, designers and service users have become somewhat blurred.

The effect of this movement has been a progressive change in researchers' attitudes who, inspired by the work of E. Von Hippel, are increasingly interested in more horizontal methods of organising innovation. It is a new way of considering innovation, whereby the service researcher and designer constitute some of the many elements that bind together to form a much larger group of people beyond the limits of "R&D centres". We are moving from a "central" logic to a "node" dynamic.

For us, this apparent blurring is not synonymous with the collapse of traditional organisations, regardless of the assumption that has been made. On the other hand, it is the sign or the symptom of a new order: it is a **growing organisational form** founded on the opening, not as a positive or negative value (even if the utopian or critical speeches which go with it say so) but as a **main function,** regulating collaborations between structures, social networks and the inter-self (individual) and "intra-self" ("dividual") in several ways [G. Deleuze].

Openings are multiplying, creating a multitude of micro-openings and producing new types of closures. The opening is narrow, multiple and formed, with unstable yet real contours.

These new forms of organisation based on multiple openings contribute to the emergence of a **new plan of action** in all social and technical domains: the open form (which echoes the "open work" described by Eco) is gradually becoming the norm (for example "free software", copyleft, etc.) and is consequently producing or reinforcing anti-forms which are also the norm (for example copyright, patents etc.). This type of "open form" which we interpret as being either a positive or negative thing, is one of the motor elements in the beginning of a new societal paradigm [A. Touraine]. We suggest using this idea of open forms as a guide in the re-thinking of our design process. On this basis, we present three explorations which show the ways in which we could think about and use the design and innovation processes as open forms.

I - Exploring new methodologies to create new objects

I.1 - Detecting emerging uses or weak signs: an issue for anticipation

We start off by using a counterexample of an SMS, which over the years has become one of the principal mobile telephone uses, however not a single European telecommunications operator ever really anticipated this emergence.

The invention of the SMS (the first text message was sent in 1992 by a Vodafone engineer) corresponded to a service purely destined for professional communication (for example, a technical message from a telecommunications operator sent to a customer). A number of years later, the SMS was used by its users to communicate *amongst themselves*, thus creating written inter-personal forms of communication with their own codes and style of writing.

Several studies today show that no operator at that time (during the 1990's) had detected the exponential character of this invisible use, due to a diverted use. Singular and unforeseen SMS uses became progressively meaningful and therefore perceptible when the phenomenon expanded quantitatively. Several years later, the traffic generated by these exchanges became the very proof of this. After having detected that this use was clearly already in action, the operators created commercial services specifically dedicated to SMS. The diverted uses have now become normal uses.

Nowadays, tools proliferation and technological devices are probably generating unforeseen or diverted uses. Some, such as "flash mobs", "happy slapping" or "blue-jacking", are rapidly visible because they are done to be seen or to be spread. Others will only be perceptible when

duplicated in to a wider spectrum. The question is how can we detect them at a sufficiently early stage as their characteristic is to be non stable form; how can we anticipate diverted uses?.

I.2 - How can we anticipate unforeseen uses?

Apart from the different ways of "forecasting" (the main advantage of such methods being that they represent at a certain moment how we imagine the future), one of the possible avenues of research is to observe real practices, uses that are currently being performed outside of the laboratory, in their "natural" framework, in situ. This seemingly simple idea calls for diverse solutions and has provided (and continues to provide) anthropological, sociological and ergonomic fields, etc. We aim to explore new types of observation and use traceability methodologies, inspired by theoretical views and art practices (situationism, digital art, the reception aesthetic, etc.).

Real emerging uses are always preceded by diverse, heterogeneous appropriations, and then become stabilised social uses when practised by the biggest number of people. These emerging uses are difficult to observe within their natural surroundings because this can prove to be inaccessible for researchers for sometimes conflicting reasons: it can be public but totally diluted in a large reservoir or space which exceeds it, making it difficult to distinguish it from other practices; or, on the other hand, "private" and enclosed by materialistic, social or technical borders (an Intranet, a family unit, a car park, a school, a connected yet reclusive community, etc.).

Moreover, these uses are often invisible, as we don't posses the adequate equipment or tools to detect them because they are unusual. They are "dead angles" outside of the focus of sociology. Effectively, it is very difficult to observe uses and social practices whose functions and effects are not yet noticeable, that is to say that they don't yet make any sense, except for the actors who distribute and create them. Measuring instruments and observation tools (following the example of hard sciences) are intrinsically linked to the analysed object-subject. If this object-subject couple is really new, it is very difficult to prove its existence as an autonomous form with its own logics. Which instrument or methodology could be invented to objectivise an object which hasn't yet been conceptualised as such? One of the avenues that we have decided to take would be to create conditions for unforeseen uses to emerge in an open form; a form which would make it possible for these uses to appear without predetermining them.

In order to achieve this objective, it is necessary to resolve this paradox: to set up a sufficiently well-structured artefact in order to create a tangible and therefore observable situation (sociologically and technically), but at the same time being open enough to welcome ideas, visions or practices which will transform this first draft architecture; stated otherwise: integrate the same principal of resistance to the system into the system (negative or positive resistance).

This principle of an open form could be materialise in many diverse ways. We have explored three different types of what we considered to be design open forms. The first one combines methodologies from the fields of anthropology with those of experimental design and situational art on the issue of hyper-mobility: it radicalises the principal of participant observation by proposing to the observed subject to produce his tracks himself; it refuses all

conceptual analyses of the received data. The sense is then produced by the action itself. The second one presents a situation of possible uses on the issue of wireless connection in urban spaces, by proposing a semi-functional mock-up offering a multitude of different scenarios. The third presents the results of work by 10 artists (creation of short-length films with a camera phone), which are going to be used as input at a brainstorming session involving users and researchers.

These "open forms", or these soft forms that we put propose, would allow us to create conditions for diverse emerging uses, unforeseen, out of touch and to thus produce a corpus of observable and analysable traces, therefore allowing us to imagine new short term services. The invisible uses then become visible and therefore, interpretable.

II - Three exploration dealing with "open forms"

II.1 - "Cultural Probes"

In a joint study with B. Gaver, A. Boucher and N. Jarvis (team at Goldsmith College), we decided to further investigate a key subject in telecommunications: mobility, tackled from the point of view of atypical populations such as camper van enthusiasts, migrant workers. As our purpose was to open new field of design, transform our vision about mobility, we wanted to find a different way of doing our field study. In this context, the "cultural probes" approach appeared to be really appropriate. Moreover, this approach offers characteristics that really fitted with our ideas about open form.

Probes can be describe as *"a collection of evocative tasks meant to elicit inspirational responses from people-not comprehensive information about them, but fragmentary clues about their lives and thought*s" (Gaver, Boucher, Pennington and Walker). Being involved this kind of process implies to design the probes, to give them to volunteers, to have them back, to be feed by the returns in order to be able to generate proposals (ideas of services…).
In our study we have design a set of 8 probes aimed at gathering information from a number of domains affecting camper van trips. These probes have been given to a sample of 8 people embarking on different camper van trips. Figure 1 shows an example of one the distributed probes "the camp map": participants are given a choice of background and a selection of stickers of iconic camping images, i.e. camper van, tents, trees, trails. Using the, they are asked to make a map of how they park and of surroundings. The stickers are designed to be labelled so we can find out more about their relationships with others.

Fig. 1: "Map of the camp" probes

Probes are designed in order to get information in a non directive way. The map of the camp is a way to get information about how camper van travellers perceive their fellow campers…. They are also designed to leave great room for interpretation. Instructions for the probes are devised in such a way that the person who receives them will remain free to interpret them (in their own way). Thus, in our example of a map of the camp, we didn't specify our expectations, i.e. if it had to be a past, a present, an imaginary or a preferred camp-site. Until now, we have recovered two probes kit. In one case, the person produced a map of where she was; in the other case, the person drew four maps of four different camp-sites. People feel free to interpret the "task". People are free to use all the stickers, to drawn themselves…The probes is a support to engage people to tell stories about part of their lives.

In fact, all the process dealing with probes gives a central place to the notion of "interpretation" as shown in the diagram below (extract from an article by Gaver, Boucher, Pennington and Walker). Volunteers interpret the probes, and designers interpret the probe return. They welcome the stories that are told through the probes but do not try to make comparative or quantitative analysis.

Fig 2 : Probes are the result of multi layered process of expression and interpretation

Our understanding of the probes is that provoking a mutual influence between the designers and users is at the heart at the process. However, this doesn't entail transforming users into designers as one could be tempted to do, but to create areas of mutual influence that will transform visions and practices of both groups. For us, this type of dynamic approach is really illustrative of an open design process allowing the coming of "something else".

II.2 - The "Data Forest"

The "data forest" is the title given to a tangible interface which is currently in it's exploratory phase, aimed at urban areas and providing WiFi access through hotspots. This interface renders the network "visible" through the metaphor of a forest of "communicating bamboo trees" offering both a web connection and "push" services (downloading data: newspapers, mp2, etc.) and uses linked to practices such as tagging (exchanging data, comments, etc.).

Fig. 3 : graphic illustration of modules "Data Forest"
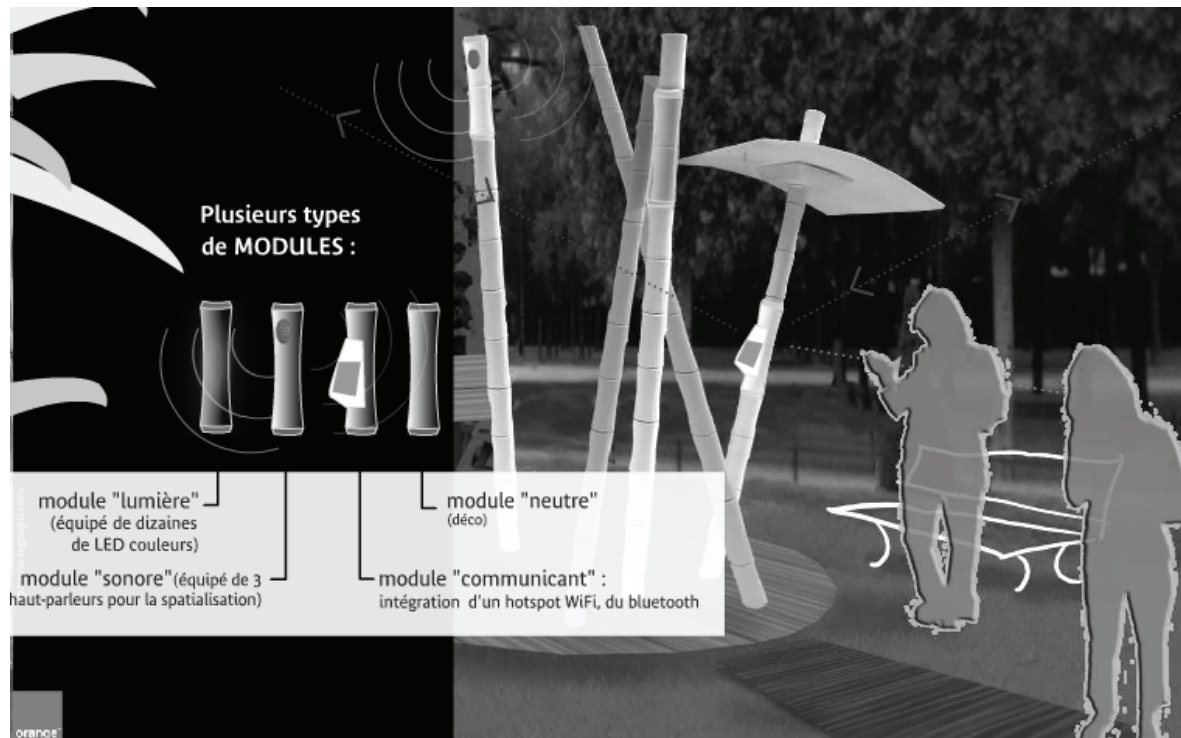
We described the outline of this idea, its first illustration in the form of a "white model" and the first mock up in a previous article [E. Mahé ; N. Portolan, 2007]. Here, the characteristics, which in our opinion, keep this interface an "open form" are presented.

In creating the life sized semi-functional model, our technical decisions were based on an idea of modularity: the bamboos are made up of technical modules which snap together. The forest's modularity confers the ability to easily adapt the interface to different environments: an exterior urban environment yet also in closed public spaces such as shopping centres, hotel lobbies, airports, etc. Each "forest" can therefore be specifically composed for each location, and thus offer more or less features. In our opinion, the modularity of different bamboos contributes to a freedom in the interpretation of these structures by giving an idea of unfinished forms in perpetual design, according to new uses created by the users themselves.

So as to enable us to illustrate the primary uses for this interface, we have formed a primary collection of scenarios culminating in a full-scale model:
-   a primary scenario level presenting "life" in the forest: the bamboos made from a translucent material, fitted with hundreds of LEDs and loudspeakers, which change colour and have different sounds according to the traffic on the virtual forest's web site (a virtual site which mirrors the physical area);

- a secondary level taking into account nearby and local uses: for example, downloading stored data or web connections which start up light and sound actions;
- a final level illustrates the way in which distant users (either connected to the web, or present in another forest in another part of town) can interact.

The guiding step in writing these three types of scenarios has been to open as much as possible the interfaces possibilities, in particular by playing upon a "communication aesthetic": the sound, colours generated by the LEDs and real uses are the motor elements in presenting communication. They give a sensitive form (aesthetic) to often dispersed, anonymous and invisible uses and techniques.

Fig. 4 : graphic illustration of a forest located in an urban area

A life sized model was installed in the *Gardens of Innovation*, France Telecom's R&D showroom. It illustrates a part of the scenarios' situations, with real interactivity with regard to its light and sound design. In order to contextualize the design, an urban decor has been adopted (atmospheric sounds of the city, urban furnishings, a slice of a city square and a street, a coffee terrace…). However, this isn't a simulation, but rather a fiction. The objective isn't to make an exa*ct replica* (a simulated situation) but to *create a collective sense of being there* (a fiction, in the sense inspired by Michel Foucault). This fiction allows us to progressively build real effects.

The artificiality is accepted, as we hope to privilege the subjectivity and the participant and experimental implications for all of the users and actors in this project (researchers, ergonomists, amateurs, children, adults, customers, technophiles or not, etc.). Being set in a show room also determinant: it's a place where we usually show "finished demos" (closed forms). We hoped to deterritorialize the experiments, to relocate research activities outside of the usual laboratories. Conversely, in order to "blur" borders in a bid to redefine them, we voluntarily chose to recreate a "public space" in an R&D centre.

There is therefore a double deterritorialisation: the experimental phases invest in an environment that it doesn't usually frequent (i.e. The show room) and public spaces now move into a closed environment (the R&D centre).

This is the first step. The second step will consist of the forest (which will undoubtedly have evolved in terms of it's uses and technical components) being located in a truly urban environment and then in to other environments. This experiment is effectively no yet finished as we are in the process of completing this step.

Through this model, the objective of this experiment is to therefore evaluate the general reception of the "data forest" idea. The model's adaptation and tangible form offer the users a multitudes of use avenues and technical solutions, nothing is defined as yet. This profusion has been worked on in a global project: thus the "open form" created is not hazy or disorganised, it elicits a strong impression of real existence. However, this is not one of the test platforms, it is a created situation to provoke reactions, to encourage new uses to emerge in situ. This study completes the observation work on developing uses in real urban public spaces. It creates conditions for uses to develop which could possibly be difficult to observe in their own natural context. This is a way of detecting weak signs, uses which are insignificant today and therefore, hard to see, but which may foreshadow future tendencies, especially in the urban public spaces domain.

II. 3 - "Movideo"

In comparison with the two previous examples, "Movideo" resorts to more traditional methods: competition and commission. These more classical methods are also considered as "open forms".

The word "movideo" is formed from the words "mobile" & "video". It describes a project which was launched in 2006 which aimed to investigate new forms of content auto-production using camera phones. Several studies on the technical and sociological aspects of MMS' already exist, with quantitative analyses (equipment rates, number of MMS' sent, etc.) and finally a few qualitative analyses (especially regarding contents). Movideo was therefore designed to meet the demands of the second aspect, focussing extremely closely on advanced and traditional uses, always on the hypothesis that these weaknesses prefigure future tendencies. We could have looked at existing video portals through which thousands of amateur videos are broadcasted, however this was not sufficient for our needs as our objective was to track down peculiarities. One way they can be pinpointed is to create the right conditions where they can appear.

We therefore set up a pro-active methodology. This experiment was carried out in two parts: on the one hand the competition was launched in an Orange technophile customer community (the "labexplorers"[1]), and on the other hand it consisted of the commission addressed to current artists. Here we focus on artistic experience. [2]

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[1] http://www.laborange.fr

[2] We have already contributed towards COST on the subject of innovation and art. This study was part of a collective publication written under the supervision of Leslie Haddon, Enid Bartolomeo Sapio, Kari-Hans Kommonen, and Leopoldina Fortunati. Cf Bibliography.

Artists create innovating uses by shifting usual points of views and ways of doing things (by diverting user guides, inventing original devices, …). Some MMS contests already do exist, but the originality of Movideo is to have explicitly requested that the artists create specifically deviating ways of doing things, diverting technically or socially accepted codes in response to open orders. The sole constraint was to use a mobile phone (supplied) as a video-production tool. The subject matters, thematic and duration of the video produced were entirely free. Ten artist from different origins have been selected[3]. We have received thirteen videos very different from one another. This was a good surprise since we feared uniformity and formal conventions of contemporary art.

Stories, experimental abstract works, reports, diaries, mock advertisings, collaborative videos, etc. : as many diversified results from the actual functions and uses of the camera phone. These results were followed by in depth interviews with each of the artists regarding their way of working. Some of them were satisfied with the functions available on the phone, whereas others have performed post-production work, sometimes integrating 3D images. Filming oneself or others, along a built scenario or haphazardly, emphasizing the defects of the <**camera**> or its <**qualities**>, taking in consideration the production or the transmission of pictures, etc. : as many specific movideos which opened the directions for new services. Let us take two opposite examples so as to give a hint at the variety of results :

Fig. 5 : "Lettre morte", France Dubois

France Dubois produced « Lettre morte » (1'51''). This video was produced as a short film, with careful construction (video editing, voice quality, work on the sound, smart credits and title, etc.). A feminine voice track reads the text « La lettre », in a calm but somewhat dramatic tone. This text was adapted from Alfred de Musset (Letter to George Sand, dated 1834). The pictures are of a woman on a trip filming through the window of a train (alternately filming and watching, the video as a metaphor of her glance), like a long melancholic tracking.

After viewing it (barely two minutes), the viewer forgets the video's short length: s/he was immersed in such a singular universe for a few dozen seconds! When asked questions about her method, the artist states that she used the defects (namely the poor quality of images) for creating paradoxically "beautiful pictures with quite violent sources of light, under-exposing them a bit, which gives them substance". Defects then create new qualities. In the artist's opinion again, "letter-writing" video, though a slightly outdated genre, may become modern again with contemporaneous ways of writing and making videos. The specificities of uses

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[3] This operation was carried out together with "Le Cube" from Issy les Moulineaux in France (France Telecom R&D : Emmanuel Mahé, Valérie Giraud ; Le Cube : Carine Le Malet). The selected artists were: France Dubois, Emilie Essel, Chloé Tallot, Collectif Ultralab, Christophe Luxereau, Yuki Kawamura, Mihai Grecu, Vincent Levy and Hugo Arcier.

and techniques of the camera phone steer the artist's work into a mixed style: both functional video and diary, capable of communication both on small phone screens and on the silver screen... the pictures become polymorph as their production, transmission and reception are multimodal. This kind of work fuels reflection on contents produced and communicable by mobile phone.

Fig. 6 : "In my hand", Yuki Kawamura
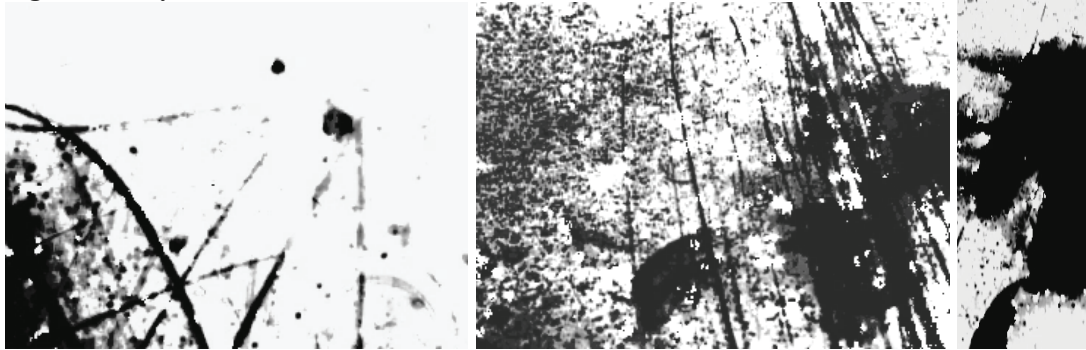
Yuki Kawamura created the video "In my hand" (duration: unlimited). This video is composed of multicolor lines and textures. The images are abstract ones, but sometimes the pattern of the moving lines appear to form fleeting architectures. The profile of hands, appearing more or less neatly, gives rhythm to the video, in double exposure. The sound track is a repetitive, electronic music, both stimulating and sweet, a bit pulsating. There is no beginning nor is there an end. This videographic work is to be related to the formal research work of experimental filmmakers (who color, burn or scrape the film to create unexpected moving shapes).

The artist fitted an additional lens with adhesive tape on the mobile phone, the colors thus were modified, as were the shapes filmed. He used the experimental look by enhancing the color saturation, with deliberate instabilities. The result is, brightly colored abstract forms, never-endingly moving and transforming. It is a kind of abstract picture, even though the items shot are quite concrete and real (monuments, hand, ...). the phone was also used as a paintbrush: for example, he filmed the flash of the camera phone reflecting in a show-window, then inversed colors, so creating moving lines giving rhythm to the entire video. By extending the pixelisation, he also created a multitude of tiny stars twinkling over the screen. All these quasi-pictorial elements have been mixed (editing work on PC and software colourisation), thus rendering an impression of never-ending composition (the performance could go on for hours): this is really in opposition with other Movideos, which are almost all very short. This is a video with endless duration, with no narrative. This is not solely a video art experiment because it lets one perceive the tactics of users for finding ways to improve their tool. This is also a video which can show a new way of designing: imagine for example a visual and sound environment specific to each user (in the same way ringtones can be personalised).

These two examples show how a tool may be exploited according two different positions. This gives us new starting points for the conception of new telecom services, new technical tools, new uses. In a way, this experiment shows that each and every object (even the most standardized) is potentially an open form, endlessly transformed by imaginary and actual ways of doing.

III – Setting features to define open forms

How can we define open forms? Sometimes, "open forms" can be seen as a posture applied within different methodologies, at different steps of a design process; almost an attitude (in the artistic sense), at least a constant concern. In the "cultural probes", the opening is played in the way the tracking process is open to the very one who is the producer of the track. The opening, in the data forest, is at two levels : the form itself and, the way, the design process has been led. With the "movideo" project, the opening comes from the way an already existing form is used.

Even though open forms are different in each example, they serve the same purpose: opening "black boxes" (technical or conceptual) to produce new perspectives. In order to make a step towards the definition of open forms, we propose to consider those three characteristics as entering in their definition:

Multiple interpretation and ambiguity as positive resources

In all our examples, "interpretation" is a key point: interpretation of the probes, of the data forest interface, of the existing tool. Multiple interpretations can be seen in a very positive way, as a mean to produce unexpected events, give birth to new forms. As Gaver, Beaver and Benford mentioned, this is perhaps a shift in the design of user interface. Including those notions into design can help in the definition of new design forms. Senger and Gaver suggest for example four axes to tackle user interface supporting multi interpretation such as: specifying usability, while leaving interpretation of use open, or stimulating new interpretation by purposefully blocking expected ones.

Opening experimental process to mutual influence

One of the core principles of the open form is to engage users in the experimental process in *a non usual way*. The open form forces interpretation by its own existence. The data forest for example, is designed in a way that invites people to start to use the interface via their interests, uses (real or not), or even by accident. They do not have to evaluate the prototype. The established situation calls people to act. An open form is an interrogative form, never an affirmative one. It contains both consistent and contradictory elements, that people have to distinguish by themselves and transform to include them in an existing practise or create a new one. Traditional separation between observer and observe, expert and non expert are changed, mutual influence and mixity become more present.

Subjectivity as a tool to imagine new fictions

In all our examples, artificial situations have been created, engaging subjectivity of all actors (designers, users). This could be perceived as a problem ("a biased experience"). We suggest using it as a quality, a driving principle. Being aware of this subjectivity and creating the conditions of expression of the different actors and situation subjectivity, creates the conditions for the emergence of new fictions. Fiction is not to be understood here in the ordinary sense: narration or illusion, but as the whole system of imaginary constructions

which allow a system to function. The emergence of new practice is the results of changes in existing fiction. Those new practices become intelligible by their own immanence, without calling a pre established reading grid and a posteriori analysis. This is also probably one of the reasons why B. Gaver suggests not analysing the probes returns: meaning is built by and in experience.

IV - Conclusion

The blurring of territory and actors could be levers for the transformation of our design methods and for our adapting ourselves to the changing world, providing we are able to recognize their characteristics. The tree open forms presented here, very different in their methods and aims, contribute, at their level, to try out new relationships between all the actors in the innovation process be they professionals or amateurs. By their nature, they also invite us to go further in the determination of features that will define future products and services.

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The (Non) Use Of Digital Information Channels During A Choice Process
Analysing The Role Of Age, Gender And Educational Background

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Abstract
Citizens will be confronted more and more with the possibilities and necessities of making use of digital information channels in our broadband society. National governments and the European Commission favour this trend. Actual behaviour studies in situations where a multi-channel choice is available are relatively scarce. It is for this reason that we examine in this paper how citizens use (non)digital information channels. We present a case study which we conducted in the Netherlands, where since 2006, each citizen has to take care of his own basic health insurance by choosing an insurance company of his own liking and by insuring extras according to his own wishes. A great number of digital and non-digital information channels were available for the public to enable them to make their choice. We try to get insight in the user's behaviour by focussing on the role of age, gender and educational background. The Structuration Theory of Giddens and other publications[1] explaining in more detail human choice behaviour related to humans as maximizers (large risk takers), humans as satisficers (calculated risk takers), passive fatalists (choice and risk evaders) will be used as a theoretical framework.

Introduction

In broadband society, it is unavoidable that citizens will be confronted more and more with the possibilities and necessities of making use of digital information channels The general aim of the European Commission is that in broadband society all public services and information will be offered digitally and that all citizens should automatically make use of them whenever they need them: Broadband society as a way of life. Especially in regions ad countries of Europe, like the Netherlands, where there is a high computer density and high access to the Internet, government is working hard to reach this aim in respect to services and information to the citizen.

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[1] Simon, 1979; Schwartz, 2005; Iyengar & Lepper, 2000; Douglas and Wildavsky, 1983.

Although during the past years more and more attention is given to the important role of the user in spreading and accepting ICTs, actual behaviour studies in situations where a multi-channel choice is available, have been relatively scarce. In the Netherlands several surveys were conducted on state of the art with the use of electronic government services by citizens (e.g. Van Dijk 2005, 2006). The focus was on: actual use, intention to use, desired use, knowledge of ICT and services, attitude to ICT governmental services. The surveys show that there is still a large discrepancy between the generally positive attitude to digital government services in the Netherlands and the intention to use, respectively the actual use. The percentage of so called 'digibetes' (persons without pc or not using a pc/internet in their everyday lives) is still around 21%. A higher percentage, about one third of the population, does not have much experience with and knowledge of the use of digital media, even if they do have access to the Internet. An many citizens have no need of certain government services and hence do not bother to look for information. It is tot clear what people actually do if they are forced to make choices in a for them relevant situation and gather information in a multi-channel landscape.

Case study

A fundamental change in the Dutch health insurance system in 2006 provided an excellent case to study choice behaviour and the use of digital and non-digital information channels to get the information for making the choice. In order to lower the cost of health care the Dutch government decided in 2005 to liberalise the health care system. The old system provided for a public compulsory basic health insurance for citizens with low incomes, and private health insurance for the richer citizens, who could freely choose their insurance companies and the measure they wanted to be insured. In the new system this difference was eliminated. Each citizen has to take care now of his own basic health insurance by choosing an insurance company of his own liking and by insuring extras according to his own wishes. To obtain information, a great number of information channels, digital and non-digital, were available for the public to enable them to make their choice. This provides the background for our research concerning the actual choice process and the information channels citizens chose to be able to make their choice.

A fitting theoretical perspective that offers some general direction to our research is the Structuration Theory of Giddens (1984). This theory looks at societal change from the perspective of structure and actions of individual agents. Aspects of societal structure are interpreted by human actors and are translated into action or practices, which in their turn influence and create new structures. This translation into practices takes place through choice behaviour. The choices are governed by enablers and constraints:

Structure ⟶ sense making by individuals and groups ⟵ practices

choice behaviour

enablers and constraints
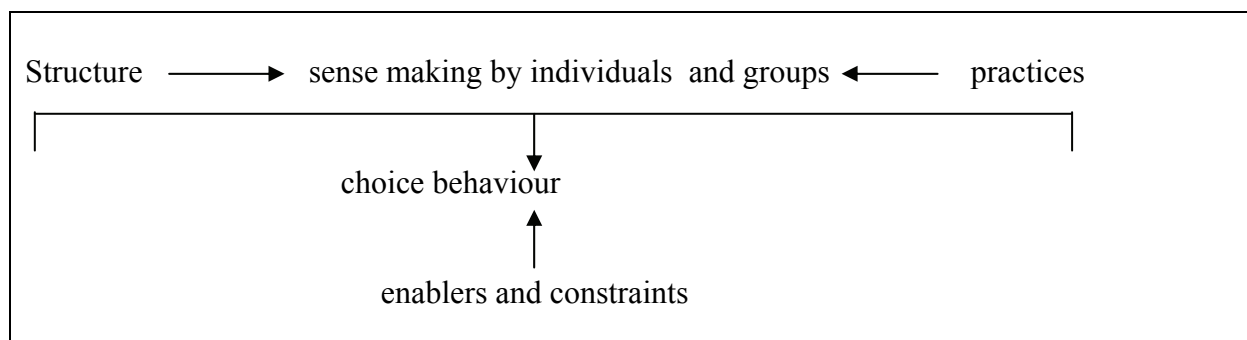
In our case study the choice of information channels is governed by structural conditions (the position of the individual in society, in this case related to the new health system), the

different ways the individual looks at and makes sense of the possibilities he/she has to get information about services, the attractiveness of the medium, and the enablers and constraints in his/her own environment to use a certain channel.

Other theories explaining in more detail human choice behaviour are: humans as maximizers (homo economicus): choosing what is the most profitable (neo-classical theories); humans as satisficers (bounded rationality): choosing the first that in general satisfies the needs and not looking further (Simon, 1979; Schwartz, 2005); demotivated humans: people becoming passive by having to choose and sitting back (Iyengar & Lepper, 2000); humans as risk takers (Douglas and Wildavsky, 1983).

Research questions

In our paper we answer the following research questions:
1) How do people in everyday life react in situations where they are forced to make choices?
2) Which channels do they choose from a multitude of information channels to make their decision?
3) What is the role of digital information channels compared to the more 'classic' non-digital channels? [2]
In order to get insight in the user's behaviour we pay attention to the role of age, gender and educational background.

Research design

The case study aimed to give more in depth insights in the process of choice during the period in which people were obliged to make a decision about their (new) health insurance. The first information about the new system was provided in the course of November 2005. People got time to make decisions until the end of March 2006 and had to effectuate their choice by signing a contract with an insurance company during the month of April 2006.

In order to get as close as possible to the real choice process, we decided to make use of focus interviews with citizens who just had gone through the choice process, and had made their final choice. Hence the interview period was planned in the second half of May/first half of June, when recollection was still strong. Use was made of a systematic topic list in which we asked each respondent general open questions to reflect on his/her attitudes, his/her deliberations during the several stages of the decision process within those four months that were allowed to make their final choice. [3] Special attention was given to the use and the evaluation of both digital and non-digital channels during the search and decision making process. Apart from these qualitative focus interviews, a small questionnaire was handed to the respondents to control the qualitative material and to get some more quantitative data. Respondents were citizens who made the choice themselves or together with a partner. They were selected along two main dimensions: age [4] and gender. [5] We also paid attention to their educational background. Students of the Utrecht School of Governance (Utrecht University in the Netherlands), working on their master thesis or papers for their bachelor degree in this field, conducted 133 interviews for our case study.

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[2] Lenhart & Horrigan (2003).

[3] We devided the choice process in four stages: first reaction to the new obligation, orientation, making a choice and contracting an insurance company, evaluation afterwards.

[4] The age groups consisted of two categories: 24-55 and 55+. The very young were not included as they have a completely different life situation, still being in school or just starting to work, mostly with no dependents, or living with parents or friends in student houses.

[5] See the next section for more information about the result of this selection.

Quality of the research

As the study was an explorative study, supposed to give qualitative insight in the processes of choice in a small sample of respondents, we were not concerned about generalisation, but more with variety. Important was to focus as sharply as possible on those respondent characteristics that were supposed to be important for our research topic.
Interviewers were asked to start looking within their own circle of family and acquaintances to start a snowball selection method, taking care that they got a sufficient number of people with a combination of the selected characteristics. The resulting sample, although a bit skewed to the higher educational levels and the lower and middle age groups, was sufficient to be able to draw valid conclusions.
In our research population compared to the general Dutch demographics, there was an under representation of people with the lowest education (9% vs. 17%), and an overrepresentation of people of the highest educational level. The middle levels were comparable with the general Dutch statistics. The division of gender was about equal, the division of age groups was: 32 % between 24-34 years of age, 28% between 35-54, 24% between 55-64 and 16% was 65+. This means a slight under-representation of the oldest age-groups.

Results

Attitude to the new liberalisation of health insurance
The attitude to the liberalisation as such and the necessity to make a new a choice for a health insurance company, was not very positive. Only around a third of the respondents thought favourable about the idea of choosing. Even those who were positive to the liberalisation in principle, often had some critical comments about the necessity or the novelty of this measure or on the chance that not everyone would be able to choose what was best for him. Two thirds was negative, comments varying from:
"A lot of trouble."
"There is something beneath it that I do not fathom yet."
"Why is this necessary?"
"I do not have the idea that it is profitable."
"I am perfectly satisfied with my current insurance company".
When asked how people looked at it in retrospect, the judgement was slightly more positive, but not much.

Moment of choice
Two fifth of the respondents already had taken their decision in December, half of them were from the lowest educational groups. 6% waited until the last moment (April), they were relatively often highly educated. There was no difference between male and female. Early deciders predominantly chose to stay where they were:
"I do not like change."
"I was happy with my insurance company."
The early deciders did not spend much time comparing different possibilities.

The people who decided later often waited to get more information, or until there came an interesting offer. Arguments were:
"I was not motivated yet, had to think about it."
"I did not have enough information yet in December."
"I waited, wanted to see all the offers."

"I waited for an offer by mail."
"I talked to others and finally made a decision."

In the period between January and April several employers made deals with insurance companies on a collective health insurance for their personnel. This collective contract played an important role in the final decision of many, either to stay were they were, or to change insurance companies.

<u>Which information channels did the respondents use to get their information?</u>
Most people used more than one source of information to make their choice.
The most striking finding is the high use of traditional sources of information: paper brochures from the insurance companies themselves, the insurance policy, newspapers, television/radio.
Although 125 of the 133 respondents had access to the Internet, digital sources of information were relatively often not used: even if people had access 34% of the Internet owners did not use it. Digital sources were even less mentioned than the government spots on TV. If people looked at sites, it was mostly the site of the insurance companies themselves. The sites that gave a comparative overview on offers from insurance companies were seldom used.
Digital information sources were mostly used for additional information. The use of digital sources is highest among the youngest category of respondents (77%) and the lowest (20%) for the oldest group of 65+. The group of 55-65 however counted 58% users of Internet information, even though about half of them belong to the infrequent users. It is this group, at the end of their working career and nearing old age, that was most concerned about obtaining the best possible health insurance. This group was also the group who spent most time, searching for the best offer and most often changed its insurance company. Relatively many of them were **maximizers,** whilst the group between 35 and 54 often were **satisficers**: they chose what was 'good enough' for them, but they were also the group that used more different information sources. This group is the group in the rush of life, with career, kids and other obligations which hence have a lack of time to go to the bottom, but on the other hand have the responsibility to make a responsible choice for the family. A third group op respondents, **passive fatalists**, had a completely passive attitude: they were not interested, or it was not important for them, so they let others (or fate) decide for them. A quite large part of this group belonged to the youngest and to the oldest category.[6]
Interesting is that there is no difference between men and women in the use of digital sources.

<u>How did the respondents evaluate the information sites?</u>
Quite often respondents thought the sites were badly arranged and the information not easily accessible.
"All sites were different, sometimes they contained errors and were cumbersome."
" It is difficult to assess the reliability of the site."
" I found it difficult to compare."
"Comparative sites were not always clear."
"I could not easily find out which insurance companies were the cheapest."

Others however were very positive:

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[6] Interesting as a hypothesis in this respect is an article by Rob Wijnberg (*NRC Handelsblad* 19.03.2007 p. 6) 'Boeyuh is ons toverwoord, chilluh onze hobby' in one of the Dutch newspapers, on the relativism of youth, with a complete lack of interest in politics, societal developments, reading, and engagement. One important reason is, according to the author, information overload on everything that happens in the world, which would cause aloofness as a form of cultural pessimism.

"Sites were fine, I could find the information I needed".
"I use Internet daily to search for information; you can use it whenever you want."
The use and the judgement of sites was related to the experience people had with Internet.
Use of the Internet sites does not clearly relate to the feeling to have made the right choice: the people who did not have Internet even felt somewhat more sure than the ones who had, but those were also the persons who mostly chose for no change. Between the Internet owners there is no difference in sureness about choice, whether they had or had not made use of the digital media.

Enablers and constraints in choice making
Constraints for choice making and information seeking were in the first place psychological and cultural: people did not like the fact that they were forced to make choices in issues that in their idea were well regulated and worked to their satisfaction. People were in general satisfied with the health insurance they had. Also large companies and government institutions since long had a system of collective insurance with reduces costs.
In fact the system of two types of health insurance had already lost for some time its flavour of first and second class insurance, due to the egalitarian culture in the Netherlands. People with a 'compulsory' state insurance often had less to pay and got more services than the ones that had to resort to private health insurance.
As the reasons for liberalisation were mainly financial and political (the costs of health care in the Netherlands in general and the perceived benefits of competition), it was difficult to sell this change to the public. The respondents told us:
"It was just troublesome."
"I did not like to spend time on this."

The most important enabler for choosing was the fact that after the month of December a lot of companies, the trade unions and the union of the elderly offered collective contracts that were highly profitable. That made quite a few people decide to switch.
Another enabler was that the insurance companies found themselves confronted with a situation in which they really had to compete for their clients. The result was that the contributions, especially for the basic health insurance went down considerably. Especially the maximizers saw here an opportunity to get the package they really wanted for a reasonable price.
The role of the availability of a lot of multichannel information as an enabler is not clear. It is clear that people, if they had not decided from the beginning to stay with their own insurance company, used several information channels to come to a choice. Even quite a few of the first group used some information channels at least to verify their choice. The especially constructed comparative sites however were not very often used.
Quite a few people complained about information overload:
"Cannot see the wood for the trees."
"I feel insecure, what do I have to do?"
"It takes too much time to find all relevant information."
The most enabling source of information was in the beginning the information found in newspapers, on TV and radio and in a later stage the on paper information from the insurance companies themselves and of the companies and organisations where the people were working. Significant others played a quite important role in the decision making stage as enablers, to compare the own ideas with the decisions and ideas of others.

Conclusions

We started the research by presenting our research questions, which we linked to Structuration Theory and theories of choice behaviour. Here we will give a short overview of our conclusions.

1) How do people in everyday life react in situations where they are forced to make choices?
- The idea of change was, at least in the Netherlands not very popular. Citizens in majority were satisfied with the current situation and had the feeling that this meant a lot of trouble, and a lot of unnecessary work.
- We found three types of choice makers: (1) **maximizers**, individualists who were very glad with the possibility to better themselves and get a more profitable insurance; (2) **satisficers**, who were satisfied with the current situation and did not plan to spend more time than necessary in the choice process; (3) **passive fatalists** who were not able to, or not motivated to make a decision on this issue, as it was not relevant or not interesting for them, or because they felt unable to cope with the information to make a choice.

2) Which channels do they choose from a multitude of information channels to make their decision?
- There was a large offer of diverse channels to get the information on the insurances and companies. In the orientation phase people used mainly the general information from the classical non-digital channels like newspapers, TV, radio and of course the brochures the insurance companies offered and the information from the employer about a collective contract.
- Other media used most were the websites of the insurance companies.
- In most cases people made use of a mix of information channels, also the ones who had very early already made a decision on the choice of health insurance

3) What is the role of digital information channels compared to the more 'classic' non-digital channels?
- Although the rate of pc and Internet possession in The Netherlands is very high, and even more so in this group of respondents, digital media were far less used than was possible. About one third of the group of respondents who did have access, did not make use of Internet at all, but even the others relied more heavily on the non-digital information via the 'classic channels'.
- Interesting is that the non-users were found as well among the very young as among the middle categories.
- Also interesting is the relative high incidence of use of the Internet to get information among the older category (55-74). Only the very old (75+) did seldom use Internet.
- In general the availability of so much information has enabled the choice for at least part of the respondents. For others however it made choice more complicated. A more important enabler however was the offer of collective contracts by companies, organisations and unions, often sent via classic channels.

Discussion

Although Internet in the Netherlands is a firmly established channel that is available to the large majority of the population, it is not self-evident to make (maximal) use of it when confronted with important choices in everyday life. Not only often people still prefer the classic channels and the face to face contacts above the digital way. Moreover the information is not always easy to find and easy to handle. Digital services and information still ask for a lot of routine and knowledge that quite a few people do not possess, or are not interested to

acquire. Other research in the Netherlands points to the same problems (Van Dijk). As long as these obstacles are not taken away, no maximum use of the possibilities of broadband society is possible

Apart from this there is a distinct difference between individuals with respect to the willingness to make choices and take risks. We found a confirmation of earlier research (Simon, Schwarz, Lennart & Horrigan, Douglas & Wildavsky) that it is possible to distinguish three general types of individuals: **maximizers** (large risk takers), **satisficers** (calculated risk takers) and **passive fatalists** (choice and risk evaders) who showed different patterns of looking at the choice issue and made different decisions about information gathering and comparing insurance offers. If we are thinking of users as innovators, it is especially the first group who in this respect really can be considered innovative. The second group however is willing to innovate if the innovation fits into his/her everyday life. The third group is not innovative at all.

We found a relationship between structural factors like age and educational background (but not gender) and the use of (non)digital information channels related to choice behaviour based on risk perception. This relationship should get more attention in future research.

The unexpected? Interesting is that in this case the so called 'elderly' were interested indeed in the use of digital media if it fitted within their interests. A large part of this group belonged to the maximizers in the search for the best possible health insurance. In this respect they were more 'innovative' minded than young people, who, although they often have the ability to use digital media, not self-evidently make use of them in ambiguous choice situations.

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Engaging The User In The Development Of The Innovation: A Q Methodological Study Of The Development Of A Wiki

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Abstract

This paper covers research in the user informed development of an Industrial Information Encyclopaedia (a Wiki). Due to a Wiki's simplicity and its flexible nature, it is currently used in a large variety of fields. The Company believes that the application of applied Knowledge Management in the form of a Wiki will facilitate the innovation and productivity of its research group. The Company has approached the University of Wollongong to undertake research to facilitate the development of its Wiki.

The research discussed here uses Q Methodology, as with Q Methodology the users are fully engaged and are active contributors to the research process. This research process involved employees of Blue Scope Research (BSR) as participants both in the elicitation of statements as well as in the sort/decision-making process. Thus the use of the Q-methodology itself contributed to the engagement of the employees as knowledge workers with the Technology Encyclopaedia (TE). The group of interested employees (volunteers) engaged in collective activities which involved discussion, reflection, and moderate debate, as well as in the final sorting process, which is an individual decision making activity.

The paper will further outline the research process, the reason for undertaking this research and the outcomes of the Q Methodological research.

Key Words: Collaborative work practice, Innovation informed by research, User informed design, Q Methodology, Activity Theory.

Introduction

This Pilot Study investigates BSR employees' perceptions of the Technology Encyclopaedia or Wiki, which was set up as part of BSR's knowledge management program. The study adopts a qualitative research approach to probe more deeply into relevant issues and unearth matters that might otherwise be overlooked.

Background on the Methodology of this Study

In this study, Q Methodology and Activity Theory are employed because of their usefulness for the investigation and applicability to this study.

Q Methodology

The origins of Q Methodology extend back to 1935 when invented by William Stephenson. Since that time Q Methodology has been frequently associated with quantitative forms of analysis due to its involvement with factor analysis of Q-sort technique. However it is its ability to reveal subjectivity, people's views, attitudes, opinions, understandings, and experiences that accounts for its increasing popularity in a range of social sciences.

Q Methodology differs from conventional factor analysis in that with Q the factor represents the variance that is common to the people associated with the factor (Brown, 1980). This is important as Q methodology uncovers the *range of views* on a specific topic of investigation, as opposed to most methods that offer one composite view. Q Methodology includes a Concourse, a Sorting Procedure, and Analysis of the results from the sort process. These are now described.

A Concourse or other means of statement generation

A Q study normally starts with the concourse, which involves having the participants provide their thoughts (Meloche, 1999) and views. The participants in the concourse stage are able to contribute their thoughts on the nature of the topic. The concourse group are encouraged to produce as many statements as they can, so that they had fully expressed the range of their thoughts. The thoughts expressed in the statements were not limited to their personal experiences, but would certainly be influenced by them. Q Methodology was selected as it allows for free expression initially, and later for the precise act of deciding for oneself what is deemed important or not from the expressed ideas of all the subjects (McKeown & Thomas 1988).

The activity of statement generation can in practice vary from an actual discussion where "statements" are elicited from a group or interviews to a review of sources, such as newspapers or journals to collect published views on a topic (Meloche & Crawford 1998). The collection of "statements" need not occur in a single session but may transpire over time or amongst various groups. It will however, typically be on the same topic/s. An advantage of Q Methodology is that it does not require a large population to produce meaningful results, as a rule a Q sample of 30 to 50 individuals can produce an accurate picture of the range of views on a topic (McKeown & Thomas, 1988).

Furthermore, it is not unusual for participants in a Q study to learn from the exposure to the other participants' ideas and to take their ideas on board when doing the sorting. The participants, who are not involved in the generation of statements, can also exhibit interest and full involvement in the process of sorting the statements (Meloche & Mok 2005).

The Sort

The Q Sort method allows each participant's own view on a topic to be presented by making decisions in regard to the ranking of statements presented in the process of sorting (Brown 1980).

The research instrument is the set of statements, which are collectively called a Q Sample. The goal as discussed above is for the set of statements to represent the discussion about a particular topic in the words and language of the participants. The sort is the next step and is the method used to shape or present a picture of individual views on a topic by making decisions in regard to the statements presented. The participants of the sort are then asked to choose amongst the statements, in this case to the extent of their agreement or disagreement with them. For example they may be instructed as follows:

"You are being asked to sort statements in accordance with your degree of concurrence/agreement with the statements. Where +4 is high agreement and –4 is high disagreement and the scales between –4 and +4 reflect shades/levels of agreement. You will find the statements on a pack of cards that will be given to you. You are asked to sort the cards in accordance with the rating given to each card. The largest number of statements will be placed in the centre and the least amount of statements at each extreme point," (Meloche & Crawford 1998)…."

The following diagram is similar to the sample form that you will need to record your ranking of the statements:

Fig 1: Q Sort Triangle Sample for ranking of the Statement
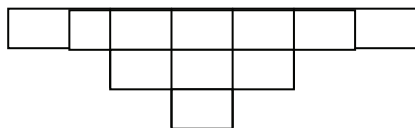
The Analysis

The consequence of the sorting process is a forced decision making process, where the participants must decide amongst the statements and produce a result that reflects their decisions. The next stage in the process is the factor analyses, where the sorts are compared with each other, resulting in a number of Factors being developed that reflect the grouping of participants in accordance with views held by them (Cottle & McKeown 1980).

Once all participants have completed the individual sorting process, all the Q Sorts are statistically analysed to find correlations and identify Factors that are common to the sorts of several individuals (Stephenson 1953). The selection of the factors is a result of the correlation, as this it is the correlation that determines the *factors*. The number of Factors identified depends in part upon the degree of agreement amongst subjects, and in part on how much detail the researcher feels is useful to analyse. The Factors are not necessarily mutually exclusive in that a given statement or a given individual may appear on more than one Factor. The analysis is the longest part of the task and the difficulty will depend on the relative clarity of the factors that are produced. There is Q method software available that assists with the mechanics of the analysis. However the researcher must assess and ask questions of the results with knowledge of the participants and the topic. It is however the participants

themselves through their act of sorting who have aligned themselves together on the different factors. It is the researcher who must study and analyse the nature of the factors. This is where Activity Theory provides a useful framework for interpreting and presenting the outcomes of the study.

Activity Theory

Activity Theory is the basis for understanding human experience through the discovery and observation of how humans develop through the use and creation of tools within their culture. According to Bonnie Nardi, Activity Theory is really a "set of conceptual principles that constitute a general conceptual system, rather than a highly predictive theory" (Kaptelinin & Nardi, 1997). It can however be quite a practical holistic way of analysing a complex situation as seems to be the case in this study.

The Cultural-Historical Activity Theory is a social-psychological theory that has its roots in the work of the Russian psychologist Vygotsky during the first half of the 20th century. Vygotsky saw human activity as quite distinct from that of non-human entities in that it is mediated by tools, the most significant of which is language (Vygotsky 1978).

To be able to analyse complex interactions and relationships, Engeström (1987) proposed a research framework an activity system as the unit of analysis. This is represented in the triangle shown in *Fig 2* which has been widely used in social science research over the last two decades (Hasan 2001). Here the core of an activity is a dialectic relationship between subject (human) and object (purpose) where the subject can be individual or collective, as in a group or team working on a common project. The subject-object relationship which defines the activity is mediated by tools and community. Tools which mediate activities can be physical, i.e. technical or psychological such as language, ideas and business models. This is a two-way concept of mediation where the capability and availability of tools mediates what is able to be done and tools, in turn, evolve to hold the historical knowledge of how the communities behaves and is organised.

Fig 2. Engeström's Activity Theory
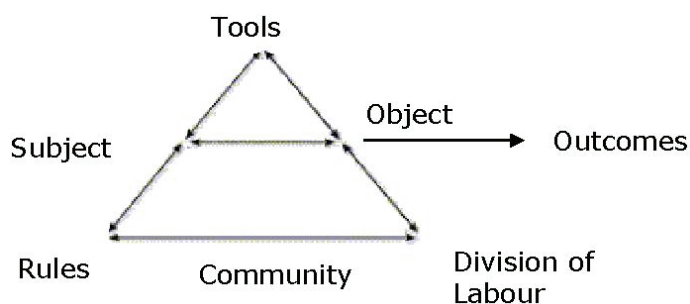
It is always useful to explicitly identify the activities of the subjects (employees) of the study. In this case there are at least three:

- The activity of contributing to the TE
- The activity of accessing and using the content of the TE
- (for some) Participating in the study

Procedures - Design and conduct of the Q-methodology Data Gathering

The Concourse

The Concourse consisted of a general discussion around what people like or expect of a Wiki, in this case the Technology Encyclopedia. In a discussion that included members of the research team and the client representative, the participant group was asked "what would help you to contribute to the TE", and their responses were used for the generation of statements.

The research contact with the employees occurred on two occasions. The first visit was a "brainstorming Concourse session, supported by an innovative group learning technology ZING Technology, as discussed above asked the participants, to supply their ideas for the topic as brief statements.

In all 57 statements where collected reflecting the range of views that the participants held on what would help them to contribute to the Wiki. To help us understand the statements, and to later understand the results of the sorts, the statements were reviewed by the researchers and broken down into seven descriptive categories as follows: ***Usefulness, Ongoing, Acknowledgement, Time, Ease of Use, Security, Mainstream, Support, Exposure to Risk.***

The above are *descriptive* categories placed against all the statements and were later used to evaluate the meaning of the high positive and the high negative statements from each of the factors. The categories provide a very brief interpretation of the statements meaning. The meaning in greater detail is shown by going to the actual statements in *Fig 3*.

The table below provides the complete statement list from the Concourse and the number of the Statement and the category associated with each statement.

Fig 3: The 57 Statements of "What would help you to contribute to the Wiki?"

Category	Statement No.	What would help you to contribute to the Wiki?
Usefulness	1	If it was of more value
Usefulness	2	If I could see tangible benefits to customers
Usefulness	3	If customers could access the information
Usefulness	4	If it gave something back to the organization
Usefulness	5	If the objectives was made clear
Usefulness	6	If its usefulness was apparent
Usefulness	8	If I thought the information was useful to the users i.e. technologists
Usefulness	9	If I thought that customers wanted information added as part of their project
Usefulness	21	If the system captured info requests - so you could write on a topic for a known audience.
Usefulness	34	Knowing info demand hot spots
Usefulness	44	If guys in the control room could browse it in the middle of the night
Ongoing	7	Knowing that this type of system is going to be around " for the long haul" and not be a "flavour of the month"
Ongoing	29	If I thought the system wasn't going to be redundant in a couple of years
Acknowledgement	11	If contributions were recognized and rewarded
Acknowledgement	12	If contributions were tracked to me so that my boss can see my contributions
Acknowledgement	15	Acknowledgement of co-authoring and responsibilities for articles
Acknowledgement	18	If it had viewing stats to see who was interested in my additions
Acknowledgement	19	Knowing who is reading it
Acknowledgement	22	If it provided more feedback from readers of each page
Acknowledgement	23	If I thought someone was going to read what I wrote.
Acknowledgement	54	If it was linked to STI
Acknowledgement	56	If there was a Wiki newsletter
Acknowledgement	57	If there was a Wiki award
Time	25	If I had the time to contribute
Time	37	If another form of reporting was removed (eg technotes so this becomes the new format)

Ease of Use	17	If it told me what to when I get stuck or don't know what to do
Ease of Use	26	If a faster server was provided (multi second updates, lost pages on preview)
Ease of Use	28	If I had a better method to add images
Ease of Use	30	If it accepted dot points/not essay
Ease of Use	32	If I could easily get attachments in right format before entering
Ease of Use	35	More logical structure to location of topics
Ease of Use	36	If it provided support for equations, I cannot put (in any reasonable form) all of the pertinent information into the wiki
Ease of Use	40	If the system allowed direct entry of existing data without the need to re-format
Ease of Use	41	If I had an easier to use, simpler interface
Ease of Use	42	Simple - the kiss theory
Ease of Use	43	Easier more logical access
Ease of Use	52	Integration with a JIRA type issue resolution system so such info is automatically built into the wiki
Security	27	If I could use it in focus groups with limited team members
Security	31	If confidentiality issues are resolved
Security	33	If it had an improved authentication process
Security	38	If it provided better security is provided
Security	55	If the managers allowed and supported more open sharing of sensitive information
Mainstream	13	If it had a high priority
Mainstream	14	My professional pride
Mainstream	48	If it was the primary source of information storage
Mainstream	49	If it was universally regarded as a necessary job function
Mainstream	51	If there was a higher level of commitment to wiki from management
Support	22	If we went completely electronic and stayed away from paper e.g. paperless office
Support	39	If it had a specialist entry person / editor
Support	45	Having people who could capture information for me as its produced
Support	47	If there were specific requests for information and individually allocated to answering it
Support	50	If there was someone to maintain it
Support	53	If it had someone managing it and asked people to contribute specific areas
Exposure to Risk	10	If it provided the ability to make anonymous entries
Exposure to Risk	16	If I knew it wouldn't make me redundant
Exposure to Risk	24	If I was not limited by my ability to contribute
Exposure to Risk	46	If I had more training and practice

The statements of themselves provide us with a wealth of information about the participant's views of the topic at hand.

The Sort

The second visit consisted of a Q sort where the statements collected in the previous activity were sorted in accordance with the instructions "the extent to which they agreed or disagreed with the statements." A "forced sort" methodology was applied where each statement need to be placed in one of the provided spot squares on the Q Grid. In all thirty five employees and one research assistant participated in the sort.

The sorts were held in several groups on a single day. The data from the sorting procedure was followed by process of factor analysis. The process involves correlation and by-person factor analysis where the analysis is performed not by variables, such as traits, or statements, but rather by persons, where people correlate to others with similar views based upon their sorts. Thus the individuals are not groups by traits such as age, gender, or years of experience, but upon the groupings of their expressed opinions. 18 of the 36 participants sorts (50%) were accounted for in the three opinion types (called factors). The remaining 18 did not show any significant correlation with these three factors. In Q Methodology, an understanding of the participant's viewpoint is derived from an examination of the factor statements are sorted. The three factors (opinion types with reference to contributing to the TE) were titled as shown below in figure 4.

Fig 4: 18 of sorts in 3 factors

Factor Number	Factor Names	Sorts in each Factor
1	Corporate Knowledge Worker (CKW)	7
2	CKW with Customer Focus (Reflected Negative Factor)	4
3	Main Stream View (Reflected Negative Factor)	7

Factor 1 – "Corporate Knowledge Worker" (CKW)

The following section includes the high agree (positive) and the high disagree (negative) statements from each of the Factors, as well as the Factor scores, which indicate the relative level of the statements.

The reason for viewing the statements in this form is to allow us to see both the relationship among the high positive statements, and among the high negative statements and the contrast between them. This comparison is done with each of the Factors in turn so as to allow for a more rigorous examination of the Factors, both individually and in comparison with each other.

The following statements are the strongest agreement statements for Factor 1; the ones following these are the strongest disagreement statements. For Factor 1, the following ten (10) statements were given the highest weighting:

Fig 5: Factor 1 - Strongly Agree Statements

No.	High Positive Statement	Z-Values	Category
29	If I thought the system wasn't going to be redundant in couple of years	2.064	Ongoing
6	If its usefulness was apparent	1.595	Usefulness
2	If I could see tangible benefits to customers	1.539	Usefulness
1	If it was of more value	1.520	Usefulness
25	If I had the time to contribute	1.520	Time
7	Knowing that this type of system is going to be around "for the long haul" and not be a "flavour of the month"	1.388	Ongoing
40	If the system allowed direct entry of existing data without the need to re-format	1.351	Ease of use
20	If I thought someone was going to read what I wrote	1.295	Usefulness
30	If it accepted dot points/not essay	1.051	Ease of use
32	If I could easily get attachments in right format before entering	1.051	Ease of use

For Factor 1, the following ten (10) statements were given the lowest weighting:

Fig 6: Factor 1 - Strongly Disagree Statements

No.	High Negative Statement	Z-Values	Category
16	If I knew it wouldn't make me redundant	-1.013	Exposure to Risk
11	If contributions were recognized and rewarded	-1.032	Acknowledgement
33	If it had an improved authentication process	-1.220	Security
12	If contributions were tracked to me so that my boss can see my contributions	-1.257	Acknowledgement
19	Knowing who was reading it	-1.370	Acknowledgement
10	If it provided the ability to make anonymous entries	-1.426	Exposure to Risk
27	If I could use it in focus groups with limited team members	-1.539	Security
57	If there was a Wiki award	-1.782	Acknowledgement
44	If guys in the control room could browse it in the middle of the night	-1.895	Usefulness
56	If there was a Wiki newsletter	-2.008	Acknowledgement

The following statements are important, as they are effectively unique to Factor 1, as they "distinguish" Factor 1 from the other Factors based on their position in Factor 1 relative to their position in the other Factors. Note, in the case of statements 10 and 16, they are in

strong disagreement in Factor 1 and largely neutral for the other Factors. Yet, each distinguishes this Factor from the others.

Fig 7: Factor 1, 9 items distinguish Factor 1 from all other factors

No.	9 items distinguish Factor 1 from all other factors (Reflected for Factor 2 & 3)	Factor 1	Factor 2	Factor 3
6	If its usefulness was apparent	4	2	1
10	If it provided the ability to make anonymous	-3	-3	-4
16	If I knew it wouldn't make me redundant	-2	-2	-4
21	If the system captured info requests - so you	2	3	2
25	If I had the time to contribute	3	4	4
27	If I could use it in focus groups with limited	-3	-1	-1
44	If guys in the control room could browse it in	-4	-2	-2
56	If there was a Wiki newsletter	-4	-4	-1
57	If there was a Wiki award	-3	-4	-3

Factor 1 contains the statements most aligned with a good corporate knowledge worker - concerned with the value and usability of the TE.

The main concern of the individuals on this factor is with the ongoing use/status/reliability of the TE. The other positive statements reflect a desire for ease of use and having feedback on its use by clients. The negative statements indicate that they are not concerned about acknowledgement, awards and job security.

This factor was strongly represented by Manager, Scientist and Principal Technologist.

Fig 8: Factor 1 – 7 Participant's characterised

Participants	Gender	Age Ranges	Occupation
5	Male	51 – 60	Manager
22	Male	41 – 50	Scientist
24	Male	51 – 60	Manager
27	Male	51 – 60	Principal Technologist
28	Male	51 – 60	Unknown
31	Male	41 – 50	PRS
33	Male	51 – 60	PTO

Factor 2 – Reflected (Negative Factor) CKW with Customer Focus

The following section includes the high agree (positive) and the high disagree (negative) statements from each of the Factors, as well as the Factor scores, which indicate the relative level of the statements.

The reason for viewing the statements in this form is to allow us to see both the continuality among the high and positive statements, and among the high negative statements and the contrast between them. This comparison is done with each of the Factors in turn so as to allow for a more rigorous examination of the Factors, both individually and in comparison with each other.

The following statements are the strongest agreement statements for Factor 2; the ones following these are the strongest disagreement statements. For Factor 2, the following nine (9) statements were given the highest weighting:

Fig 9: Factor 2 - Strongly Agree Statements

No.	High Positive Statements (Reflected)	Z-Values	Category
4	If it gave something back to the organization	1.995	Usefulness
25	If I had the time to contribute	1.448	Time
21	If the system captured info requests - so you could write on a topic for a known audience.	1.408	Support
31	If confidentiality issues are resolved	1.215	Security
3	If customers could access the information	1.201	Usefulness
1	If it was of more value	1.188	Usefulness
2	If I could see tangible benefits to customers	1.161	Usefulness
5	If the objectives was made clear	1.128	Usefulness
8	If I thought the information was useful to the users' i.e. technologists	1.121	Usefulness

For Factor 2, the following nine (9) statements were given the lowest weighting:

Fig 10: Factor 2 - Strongly Disagree Statements

No.	High Negative Statements (Reflected)	Z-Values	Category
24	If I was not limited by my ability to contribute	-1.101	Exposure to Risk
16	If I knew it wouldn't make me redundant	-1.188	Exposure to Risk
45	Having people who could capture information for me as its produced	-1.368	Support
39	If it had a specialist entry person / editor	-1.448	Support
29	If I thought the system wasn't going to be redundant in a couple of years	-1.415	Ongoing
10	If it provided the ability to make anonymous entries	-1.502	Exposure to Risk
54	If it was linked to STI	-1.515	Acknowledgement
56	If there was a Wiki newsletter	-1.949	Acknowledgement
57	If there was a Wiki award	-2.276	Acknowledgement

The following statements are important, as they are effectively unique to Factor 2 as they "distinguish" Factor 2 from the other Factors based on their position in Factor 2 relative to their position in the other Factors.

Fig 11: Factor 2 - 3 items distinguish Factor 2 from all other factors

No.	3 items distinguish Factor 2 from all other factors (Reflected for Factor 2 & 3)	Factor 1	Factor 2	Factor 3
4	If it gave something back to the organization	1	4	-1
5	If the objectives was made clear	2	2	-2
54	If it was linked to STI	-1	-3	3

The Factor 2 also reflects the views of the CKW and adds to this a focus on customers. In this factor there is concern and a desire for assurance, that confidentiality issues will be resolved and that the objectives be made clear, i.e. tangible benefits of the TE. The negative statements showed a disregard for additional rewards or acknowledgement. They were not concerned with acknowledgement, publicity, or any possible negative impact on their job security.

This factor had again a spread of people who strongly represented it including an engineer, a scientist, librarian and a university student.

Fig 12: Factor 2 – 4 Participant's characterised

Participants	Gender	Age Ranges	Occupation
3	Unknown	41 – 50	Research Engineer
6	Unknown	41 – 50	Senior Research Scientist
34	Unknown	41 – 50	Librarian
36	Female	20 – 30	University Student

- Negative Factors are a reflection of the views held by the respondent's on those factors.

Factor 3 – Reflected Negative Factor - Main Stream View

The following section includes the high agree (positive) and the high disagree (negative) statements from each of the Factors, as well as the Factor scores, which indicate the relative level of the statements.

The reason for viewing the statements in this form is to see both the continuality among the high and positive statements, and among the high negative statements and the contrast between them. This comparison is done with each of the Factors in turn so as to allow for a more rigorous examination of the Factors, both individually and in comparison with each other.

The following statements are the strongest reflected agreement statements for Factor 3; the ones following these are the strongest reflected disagreement statements. For Factor 3, the following five (5) statements were given the highest weighting:

Fig 13: Factor 3 - Strongly Agree Statements

No.	High Positive Statements (Reflected)	Z-Values	Category
25	If I had the time to contribute	1.752	Time
49	If it was universally regarded as a necessary job function	1.700	Mainstream
54	If it was linked to STI	1.607	Acknowledgement
51	If there was a higher level of commitment to wiki from management	1.246	Mainstream
7	Knowing that this type of system is going to be around "for the long haul" and not be a "flavour of the month"	1.129	Ongoing

For Factor 3, the following three (3) statements were given the lowest weighting:

Fig 14: Factor 3 - Strongly Disagree Statements

No.	High Negative Statement (Reflected)	Z-Values	Category
9	If I thought that customers wanted information added as part of their project	-1.002	Usefulness
10	If it provided the ability to make anonymous entries	-1.433	Exposure to Risk
16	If I knew it wouldn't make me redundant	-1.677	Exposure to Risk

The following statements are important, as they are effectively unique to Factor 3 as they "distinguish" Factor 3 from the other Factors based on their position in Factor 3 relative to their position in the other Factors. Note, in the case of statements 7 and 29, they are in strong disagreement in Factor 3 and largely neutral for the other Factors. Yet, each distinguishes this Factor from the others.

Fig 15: Factor 3 - 4 items distinguish Factor 3 from all other factors

No.	4 items distinguish Factor 3 from all other factors (Reflected for factors 2 & 3)	Factor 1	Factor 2	Factor 3
7	Knowing that this type of system is going to be around "for the long haul" and not be a "flavour of the month"	3	-2	3
15	Acknowledgement of co-authoring and	-2	2	-2
26	If a faster server was provided (multi second	-1	1	-3
29	If I thought the system wasn't going to be	4	-3	3

Factor 3 wants the TE to be "mainstream" and acknowledged as an ongoing part of their work. It contains the individuals whose statements are both concerned about their status, how they will be acknowledged and whether the TE will fully supported by management. They are not concerned with being made redundant or being able to make anonymous entries.

This factor was strongly represented by Senior Engineer's and Senior Research Scientist's.

Fig 16: Factor 3, 7 Participant's characterised

Participants	Gender	Age Ranges	Occupation
1	Male	31 – 40	Senior Research Scientist
9	Male	41 – 50	Senior Mech. Engineer
17	Unknown	Unknown	Principal Research Scientist
18	Male	41 – 50	Senior Research Engineer
19	Male	31 – 40	Unknown
21	Male	51 – 60	Senior Research Engineer
23	Unknown		Senior Research Engineer

* Negative Factors are a reflection of the views held by the respondent's on those factors.

Discussion of Results

The results of this study can be seen as twofold (1) a tangible set of Factors representing 3 different clusters of employees, each with similar views of the TE, and (2) a less tangible outcome of an **increased engagement** in the TE and more understanding of its value coming out of the activity of group discussions in the Q-methodology concourse. The tangible outcomes are *varying combinations* of opinions (Valenta, & Wigger, 1997) expressed by the group of participants. The resulting typology of the study revealed groupings of similar opinions in this case a typology of three opinion groups, i.e. Factors, was identified. The *factors* represent clusters of participants with similar opinions.

From an inspection of the statements that distinguished each factor it was the interpretation of the researchers that these could be described as follows:

Factor 1: contains the individuals whose statements are most aligned with a progressive 'corporate knowledge worker'- concerned with the value in terms of its usefulness and the ease of use of the Technology Encyclopedia

Factor 2: share a number of the views of those expressed in Factor 1, the corporate knowledge worker, -concerned with its value in of its usefulness plus this factor has a strong customer focus in its selection of "usefulness" statements**.** (*NOTE this is a reflected negative factor. *Pg 11)

Factor 3: contains the individuals whose statements are both concerned about acknowledgement, (how they will be acknowledged), and how mainstream the TE is whether it will fully supported by management. (*NOTE this is a reflected negative factor. *Pg 12)

The results of the Q-analysis shows that there is no "one size-fits all" view of the TE and that any way forward should take this into account. Readers of this paper are advised to make their own interpretation of the issues that bring together the set of statements in each of the Factors.

It is clear that the list of statements includes a number of informative views that will assist in the development of the TE. The concerns identified in the study could be pursued by undertaking interviews with employees representing the factors and by soliciting feedback from management of the client organisation.

An Activity Theory interpretation of the research activity is that the Q-method study has been an intervention in the work context of BSR. While there are tangible outcomes in the list of statements and the 3 clusters resulting from the factor-analysis, the process of the research

has already added to the engagement of the members of the BSR TE-users community. This process has provided them with the opportunity to enter into thoughtful discussion of what they want from the Wiki technology and as such would have been a useful contribution.

Conclusion and Future Research

Q- Methodology is shown to be useful as an action research methodology as well as to an investigative method. Q methodology is particularly effective in that it permits the systematic study of subjectivity. In addition as shown in this study, its use can also contribute to activities of community building, open discussion, reflection, individual decision making and provide outcomes that can guide the development and use of knowledge building technologies. Activity Theory has been overlaid on interpretation of results as it provides a language to describe the less tangible outcomes of the research. The outcomes of the Q-study, although limited to one sort topic in effectively one setting, did provide the opportunity for the participants to experience the range of activities provided for in the operational use of the methodology. Interviews with participants although not held in this pilot study would be a suggested future research activity.

These interviews would allow for further clarification of the views from representatives of each of the three Factors. Wider topics could be canvassed through follow-up discussion and for development of associated sets of statement. Associated sorts can be carried out at various intervals throughout a study. It would also be fruitful if BSR employees could sort the same set of statements used in this study after a set period of time to ascertain whether their views had shifted.

This study found a group of participants who were confident enough to express their concerns about the use of the technology and who through their contributions to the discussion and contribution to the concourse and in their individual decisions as expressed in the sorts have given us an informed way forward with the development of the Technology Encyclopedia. Now while these results are preliminary, they strongly indicate the ability and readiness of the participants to contribute to the enhancement and thoughtful development of the Technology Encyclopedia.

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Doing It Together: Citizen Participation In The Professional News Making Process

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Abstract

This paper looks at how mainstream media are currently reacting to the trend of citizen media. In order to look beyond the hype and high expectations about user generated content, we first try to put the debate on citizen and participatory journalism in context. We argue that the revived interest in participatory journalism is the result of both external developments in society and internal evolutions in journalism. Next, we analyze these developments in four European countries – Belgium, Finland, Germany and Spain – in order to identify similarities and differences that hint at the (professional, organizational, socio-cultural and economic) factors influencing the evolution of participatory journalism. Data collected suggests that despite of the differences in context, media in any of the four countries tend to develop very limited opportunities for audience participation. The professional culture of journalists is suggested as the main factor preventing the development of participatory projects, while marketing and business strategies somehow push for the exploration of such proposals.

Introduction

Back in the late nineties it was widely discussed that professional journalism was to encounter a serious challenge from rapidly spreading forms of online communication. Global publishing became an option for masses that had so far been relegated to the role of passive receivers in the communication scene dominated by professional news providers. This happened at the same time as especially newspapers' circulation was in a steady decline and the trust in the 'old' mass media was eroding.

While ten years later we can see that the established media still dominate communication flows, the challenge remains, and to a certain extent the debate has revitalised in the past few years. Changing media consumption patterns – especially the increased use of interactive

media among young people – and the continuing diffusion of the Internet and weblogs in particular fuelled optimistic accounts on democratic participation and active citizenship. Authors like Bowman & Willis (2003) and Dan Gillmor (2004) describe how, on the Internet, the people themselves become the media. In contrast to traditional media, blogs and other community-driven media are characterised by a fundamental convergence of the roles of content producers and consumers, as every user has the opportunity to both consume and create content. Axel Bruns (2005) has coined the term 'produsage' to refer to this blurring line, while Gillmor (2004: 136) speaks of the "former audience" to stress that the public should no longer be regarded as a passive group of receivers.

So far, the literature on online participatory media has primarily focused on the weblog phenomenon (see e.g. Lasica, 2003; Matheson, 2004), and collaborative online news sites, including Indymedia, OhmyNews, Slashdot, Wikinews, Kuro5hin and Plastic (see e.g. Bruns, 2005; Platon & Deuze, 2003; Atton & Meikle, 2006). While all these examples were born outside or in the margins of the existing media sphere and emerged 'from the bottom up', the established media business seems to be increasingly affected by the trend (or hype) of collaborative citizen media. Traditional media, and newspapers in particular, are currently experimenting with participative forms of content production in the hope to connect more effectively with changing usage patterns and the 'real' needs and preferences of their public. The World Association of Newspapers, for instance, regards citizen journalism as one of the major challenges to professional newsrooms in 2006 (WAN, 2006).

In this paper, we will analyse how mainstream media are currently reacting to this trend of citizen media. In order to look beyond the hype and high expectations about user-generated content, we first try to put the debate on citizen and participatory journalism in context. We argue that the revived interest in participatory journalism is the result of both external developments in society and internal evolutions in journalism. Finally, we will analyze and compare these developments in various European countries in order to identify similarities and differences that hint at the factors influencing the evolution of participatory journalism.

1. External context: Journalism in a participatory culture

Citizen media are not a new phenomenon. In fact, throughout the second half of the 20th century, various 'new' media have been welcomed for their presumed emancipatory and democratic potential. In the 1960s, 1970s and 1980s, local talk radio stations, pirate radios, video artists and other forms of community-driven media started to challenge the dominance of established commercial mass media. Participation and interaction were central elements in the logic of these 'alternative media', which mostly had an activist nature and a clear commitment towards their community. In 1983 Denis McQuail introduced the theoretical concept of 'democratic-participant' to capture the ideas of the *"alternative, grass-roots media that expressed and looked after the needs of citizens"* (McQuail, 2000: 160).

To a certain extent, it is clear that much of the early excitement about the democratic potential of the Internet in the 1990s echoes 'old' ideas about the emancipatory power of new media. However, for the first time in history, the Internet enabled *every* user – not only the ones capable to afford and use an expensive printing press, video camera or radio equipment – to become a producer of content and distribute it globally. *"While "independent", "alternative", and "DIY" media have long existed in many forms (…), one key to the Internet's unique significance is that it provides the infrastructure necessary to facilitate the distribution of all*

forms of self-produced media to a potentially far-flung audience. Linked together via the Internet, scattered individuals and small groups with common interests can add up to a sizeable audience for self-produced media." (Croteau, 2006: 341).

While public's digital media literacy has steadily increased, and while so called new media has matured and become part of everyday life in developed Western societies, the weblog phenomenon has represented a leap in network communication. Blogging software, that made it even more simple to publish content on the web, marked the beginning of a rapid growth of user-generated content, that is now at the heart of many of the most popular web services on the Internet, such as YouTube, Flickr, Wikipedia, myspace, and so on. Contrary to the early (offline) citizen media, we note that most of these online services do not have activism intentions. By this we mean that their main '*raison d'être*' is not, or not only, to challenge the dominance of traditional media as such, but rather to provide users with the platforms and tools needed to create social networks online. Enabling interactivity is the key element; enhancing democratic participation and active citizenship, in the political sense of the word, can be a positive 'effect', although overly optimistic accounts on the relationship between the Internet and democracy have already been countered several times (see e.g. Jenkins & Thorburn, 2003). Still, many authors are convinced that blogs and the web services mentioned above herald a new digital era in which control shifts from the institutions to the users. One of the buzzwords to refer to this trend is 'Web2.0'. Tim O'Reilly (2005) coined the term Web 2.0 to refer to a new generation of web-based services that put emphasis on social networking, collaboration and participation. All these are key concepts to understand the real impact of today's "participatory media culture". In the definition of Henry Jenkins (2006: 3), the term 'participatory culture' *"contrasts with older notions of passive media spectatorship. Rather than talking about media producers and consumers occupying separate roles, we might now see them as participants who interact with each other according to a new set of rules that none of us fully understands."*

Participation in this context goes beyond a purely political meaning of democratic participation, and has to be understood in a broader cultural sense. In this respect, some authors argue that understanding the participatory nature of the emerging digital culture requires a broader definition of the concept of 'citizenship'. Joke Hermes (2006), for instance, underlines the cultural dimension of citizenship, suggesting that people use popular media, including interactive media, to construct their citizenship in many ways that extend far beyond the notion of 'being informed'. Hermes' main argument, then, is that the Internet does not necessarily produce 'new' citizens, but it does provide for new citizen practices. These citizen practices are focused more on social rather than political participation, they may be rather incidental than structural, and they express the need for community, for sharing, bonding, connectedness and interaction. Mark Deuze (2006a: 68) acknowledges that participation, as it is expressed on the Internet, is to some extent *"voluntarist, incoherent, and perhaps solely fueled by private interests"*, but it nevertheless defines what people expect from the media and how they use them to inform each other. If we accept that today's digital media culture is participatory in principle, Deuze (2006a) continues, mainstream media will have to adapt to this change. More specific, they will have to reconsider their role along the lines of the ideas expressed by authors like Dan Gillmor (2004) and Axel Bruns (2005), who herald *"new roles for journalists as bottom-up facilitators and moderators of community-level conversations among citizens rather than functioning as top-down storytellers for an increasingly disinterested public"* (Deuze, 2006b: 275).

2. Internal context: Participation in journalism

The revived interest in participatory journalism also relates to ongoing debates *inside* the profession about the journalists' relationship towards the audience. In the history of journalism, different views and conceptions have emerged of what journalism is and/or what it ought to be. Yet, there does not exist one universally accepted normative framework that defines the role of journalism in democracy.

Michael Schudson (1998) sees at least three main 'models of journalism': the Trustee Model, the Market Model and the Advocacy Model. As Schudson (1998: 135) argues that in the United States the Advocacy Model has become *"essentially extinct in general circulation press"*, the same observation can be made in Europe. Due to tendencies of depoliticization, secularization and liberalization, also in Europe the party press and other forms of advocacy journalism have mostly disappeared or migrated to the periphery of alternative media and community or minority publications. This means that in mainstream journalism, two main – though to a large extent conflicting – models of journalism exist. In the Trustee Model, journalists are seen as professionals who decide what news citizens should know to act as informed participants in democracy. Although the Trustee Model is being criticized because of its elitist, top-down and paternalistic character, it is fair to say that it still dominates professional and scholarly literature on journalism, and defines the conventional framework of journalism education (Dahlgren, 1992; Zelizer, 2004). At the same time, the Trustee Model is increasingly losing influence in favour of the Market Model, which stipulates that *"journalists should please audiences or at least those audiences that advertisers find attractive (...) Consumer demand is the ultimate arbiter of the news product."* (Schudson, 1998: 135). Since the nineties, the Market Model has received increased attention in scholarly literature (e.g. McManus, 1994; Dahlgren & Sparks, 1992).

Both dominant models of journalism have come under fire, however, for failing to fulfil its democratic role and re-establish public's trust in the media. Especially in the US in the mid-nineties, several authors argued that it was high time for the mainstream press to reconnect with the public, not only for the future of journalism as such, but for the sake of democracy in general. Basically speaking, the critique was that the Market Model treated people merely as customers instead of citizens, by giving them what they want instead of what they need, whereas the Trustee Model was too much detached, too elitist and alienated from daily public life as it is perceived by the people. Authors like Rosen (1999) therefore put their hope in the emergence of the 'civic' or 'public journalism' movement. This movement originated from within the profession in the early-nineties, when some regional newspapers in the US started to experiment with involving the audience in the news process. In the following years, the idea(l)s of public journalism rapidly spread and the concept became widely discussed in both scholarly and professional literature, first in the US, but later on also in Europe and other parts of the world.

Yet, there appears to be a discrepancy between the theoretical attention paid in literature to civic/public journalism and the real impact it has (had) on journalistic practice. After a review of 47 evaluative studies on public journalism in the US, Massey & Haas (2002) concluded that public journalism has had only a modest, if any, influence on journalists' routines and attitudes. According to the authors, the most important contribution of public journalism does not lie in the enhancement of citizen participation, but rather in the fact that it ignited the discussion on the role of journalism in democracy and its commitment to the public. It is fair

to say, though, that the overall impact of public journalism on mainstream journalistic practice should not be overestimated, neither in the US nor elsewhere in the world.

Denis McQuail (2000: 160) notes that the movement *"seems to have found not much of a following in Europe"*. According to McQuail, part of the explanation may lie in the fact that in European countries attention has focused more on the need to strengthen existing public service media and on the potential for harnessing new media to enhance democratic participation. Other authors relate the 'impact' of the public journalism movement to the degree of media competition and economic reasons. Axel Bruns (2004: n.p.), for instance, explains the low adoption of public journalism in the Australian mainstream press by saying that, compared to the US, media in Australia feel less *"competitive pressure to adopt public journalism approaches in order to distinguish one's operation from other players."*

Several observers have criticized public journalism for its reluctance to grant the public greater authority in the news process. Michael Schudson (1998: 137-138) calls public journalism conservative, as it still views journalists as the central agents who decide what news is and what people need to know to act as informed citizens in democracy. Public journalism *"does not remove control over the news from journalists"* (p. 137), and therefore *"stops short of offering a fourth model, one in which authority is vested not in the market, not in a party, and not in the journalist, but in the public"* (p. 138). Platon & Deuze (2003: 340) agree by saying that *"(t)he notion of 'us and them' is still used to describe the difference between journalists and citizens. The 'us' are professional journalists while the 'them' are the concerned citizens telling their stories to these reporters and editors. The public journalist is, in other words, still the gate-keeper."* They add that a next step in moving journalism further in the direction of participation and interaction is most likely to be found on the Internet, where new forms of online journalism seem to emerge. As an example, they mention 'open-source journalism', that refers to a kind of journalism in which the control over the different stages of the news production process is shared with users. In an earlier account, Deuze (2001: n.p.) already referred to 'open-source journalism' as an "advanced form" of public journalism, because it involves the audience more actively in the news process, and thus balances the control between journalists and citizens.

The idea that public journalism seems to have entered a second phase, especially under influence of recent trends in online journalism, finds support in recent publications (e.g. Haas, 2004; Nip, 2006). In a review on the relationship between weblogs and mainstream media, Haas (2004) suggests that weblogs could foster a fourth model of journalism, one that he would label "public's journalism" and that could be understood as a form of journalism 'by and for' the public.

Joyce Nip (2006) does not add a new term to the debate, but reviews some of the concepts that have been used in recent literature on participatory forms of journalism. She uses the degree and form of audience participation in the news process as a criterion to distinguish four models:
- Public journalism (as described above);
- Interactive journalism: this model refers to practices in online journalism, that use the Web as a platform for interactivity and discussion. Nip (2006: 217) notes that *"(a)s the involvement of the news users takes place after the news is published, the professional journalists are responsible for producing the news content for publication."* In other words, interactive journalism is still produced only by professionals, but user feedback is facilitated from the moment on that the news is published.

- Participatory journalism: In this model, Nip (2006: 217) explains, *"(u)ser contribution is solicited within a frame designed by the professionals."* Citizens are invited, in other words, to contribute actively in the processes of news gathering, selection, publication, commentary and public discussion, and all this is accomplished in collaboration and in interaction with professional journalists. Closely related variants of this model of participatory journalism are thought of in terms such as "open-source journalism" (cf. Deuze, 2001) and "networked journalism" (Jarvis, 2006).
- Citizen journalism: this term has become widely accepted to refer to the *"act of citizens playing an active role in the process of collecting, reporting, analyzing and disseminating news and information"* (Bowman & Willis, 2003: 9). A synonym is "grassroots journalism" (Gillmor, 2004), and also Haas' (2004) understanding of the term "public's journalism" can be posed under this heading. The main difference to 'participatory journalism' is that in citizen journalism the news making process is completely pulled out of the hands of journalists and left over to the people, who have become both producers and users of the news.

In spite of the sometimes confusing discourses and inconsistent use of the different terms, the rationale behind all these participatory models of journalism is that professional journalism is in need of a redefinition of its democratic role in a changing society. In their critiques on the top-down approach of the professional 'journalistic gatekeeper', the adepts of these 'new journalisms' argue that journalism should try to enhance citizens' engagement with both the making and the use of news. Contrary to the models of public journalism and interactive journalism, however, the key argument in the latter two models is that it is no longer the journalist who should be considered as the central authority in the news making process, but rather the citizens themselves. Journalists should not only open up the news process, turn journalism from a lecture into a conversation with citizens and encourage citizens to participate in the different stages of the editorial news-making process. Above all, they should learn to acknowledge that they can no longer claim control over the gatekeeping process, but have to share this control with the public.

3. Participatory journalism in four European countries

In this section of the paper, we look at how participatory journalism is developing in four European countries: Belgium, Finland, Germany and Spain. In order to gain a better insight in the factors influencing the adoption of participatory elements in mainstream journalism in each of these countries, we try to reflect on the current media market structure; previous experiences with public journalism and interactive journalism (internal context); and the ways in which mainstream media are currently reacting on the trends of user generated content and citizen journalism (external context).

3.1. Belgium

Roughly analogous to the Belgian federal state structure, the media market is divided in the French-speaking community and the Dutch-speaking region of Flanders. Both regions have a distinct media market with its own specific structure, policy and culture. The newspaper market in Flanders is controlled by three media groups: Corelio, Concentra and De Persgroep Publishing, whereas the main players in the French-speaking community are Rossel, IPM and Mediabel. The magazine sector is dominated by Roularta, De Persgroep Publishing and the Finnish Sanoma company. Like many other European countries, Belgium has a strongly

developed public service broadcasting system, with both RTBF (French-speaking community) and VRT (Flemish community) being the major players in their respective radio and television market (De Bens, 2006).

In this environment, dominated by public broadcasters and a handful of newspaper and magazine publishers, media companies are generally following international trends rather than take the lead in it. Moreover, innovations in newspaper publishing tend to be much more focused on technological innovation rather than on newsroom experiments with new forms of journalism (Paulussen, 2005, 2006). Consequently, public journalism has not received much attention from mainstream media. In fact, the concept and the ideas behind it have been hardly discussed in Belgium in academic or professional literature. The fact that most of what has been written about public/civic journalism in Dutch comes from The Netherlands (e.g. Drok & Jansen, 2001), illustrates that the movement did not find many adepts in Belgium. In 2002, there was a project funded by the King Baudouin Foundation, in which 22 media outlets, both online and print titles, experimented with participatory enhancing practices in journalism. Although both the researchers and the journalists that were involved in this project were quite positive about the outcome of these 'civic journalism' experiments (see Grevisse & Carpentier, 2004), the project did not receive much of a following in the next years. On special occasions, for instance in the approach of elections, newspapers sometimes take initiatives that can be labelled as 'public journalism' (e.g. organizing a political debate, moderating discussion forums, giving users the opportunity to 'chat' for one hour with an important politician, etc.), but in general, the ideas of public journalism have not had much of an impact on the logic of the mainstream press in Belgium.

Like in most countries, the Belgian online media market is dominated by traditional media players. Consequently, online journalism in Belgium did mainly develop within the newsrooms – and thus within the logics – of traditional media. Although the findings of surveys among Dutch and Flemish online journalists in 2000-2001 provided some indications as if online journalists might be more open towards ideas of interactivity (Deuze & Paulussen, 2002), reality has proven that in practice online journalists tend to uphold similar norms and professional values as their print colleagues (De Bens et al., 2003; Paulussen, 2004). If we want to consider whether mainstream media are likely to adopt participatory elements in the news making process, we must not only look at journalists' self-perceptions about their role and commitment towards the public, but we should consider organizational aspects as well. Like in other countries, studies in Belgium have pointed at small-sized newsrooms and lack of resources as major explaining factors for the low or non-adoption of interactivity in online journalism (Paulussen, 2004; Beyers, 2005).

In recent years, in the context of the Web 2.0 hype, mainstream media in Belgium are showing an increased interest in user generated content and citizen participation. A leading role is played by the public broadcaster VRT, which set up a platform called *16+*, where people can upload their self-produced video material. VRT is also quite actively experimenting with other forms of online community-building through weblogs and social sites such as myspace. Important to note, however, is that these initiatives try to increase public's loyalty towards the broadcaster station rather than to involve citizens in the *news* process. Most of VRT's experiments with user generated content are, in other words, situated outside journalism.

The media company that is putting the most effort in opening up the news process for user contribution, is Concentra. In 2006, this media company, that focuses its activities mainly on

the province of Limburg, launched a platform for citizen-generated news content called HasseltLokaal. The platform is maintained by an editorial team of 15 citizen reporters, who work as volunteers covering local news from around the city of Hasselt. While one year after its launch, *HasseltLokaal* is considered as a successful participatory journalism experiment, one can still wonder to what extent media can find a sufficient number of dedicated and motivated citizen journalists, who are not only prepared but also trained and equipped to contribute to the news production. It is already apparent that the maintenance of platforms like *HasseltLokaal* requires more than just the provision of the technology and tools. It also requires moderation, coordination and even training of amateur journalists (Vranken, 2007).

A final note should be made on the small scale of the country's media market. Internet usage in Belgium, a country of about 10.5 million people, has risen to 58% in 2005 (Statistics Belgium, 2006). Not all of these people, of course, are online news consumers (Beyers, 2005). Furthermore, although exact figures are not available, it is clear that the blogosphere is only a small fraction of the total online media ecology. Research is needed to investigate the structure and significance of the Belgian blogosphere and other citizen-generated news media, but it is safe to say that its impact in terms of gatekeeping and agendasetting is still limited.

3.2. Finland

Two features in the media landscape of Finland are particularly noteworthy when contextualizing participatory journalism. One is the press structure that is characterized by strong regional newspapers. The country of about 5.2 million people has about 100 newspapers (about half of them dailies), but excluding two tabloid-ish afternoon papers and to some extent the biggest newspaper, the Helsinki-based Helsingin Sanomat, about all general newspapers have either regional or even local basis for their circulation and advertising. More importantly, newspapers have manifestly attached themselves to their respective constituencies by proclaiming to be part of those communities, but adhering to the principles of professional journalism. On top of that, many of newspapers, although operated as businesses, had political affiliations (mostly with center or right-wing parties) till 1970s and even later. Thus, Finnish newspapers have a tradition of being "committed to a cause" with regards to civic society instead of being mere information mediators (Lehto 2006).

The other substantive feature is the strong tradition of public broadcasting in Finland. Although the Finnish Broadcasting Corporation (Yleisradio, YLE) has met severe competition by private companies in both television and radio fields, it still is most important single operator in broadcasting, and the values of public service are largely shared in the country. For instance, the two national tv-companies (WSOY-Sanoma owned Nelonen, and Swedish Bonnier owned MTV3) make their point of investing in high-quality news and current affairs programmes.

Consequently, there was somewhat fertile ground to which the ideas of public journalism were introduced in 1990's. It was the academics who in Finland first paid attention to this movement, but the media soon became interested. One of the factors was that at that time the media, especially newspapers, suffered simultaneously from declining circulations and assumed threat of the Internet. (Heinonen 1999) Several research and development experiments on practical implementation of public or civic journalism have been carried out since 1990s with aims to enhance public's participation in setting the news agenda of the media. One can say that the idea of allowing "ordinary citizen" to have more say in journalism beside the established elite sources has strengthened, but in practical terms this

often means positioning the citizen merely as an incidental commentator of issues decided somewhere above. On the other hand, in some newsrooms the role allowed for citizens has become more prominent in shaping journalistic content. (Ahva 2003, Högmander 2005) However, one should note that along public journalism experiments, the media has made use of more business-oriented strategies, such as consumer studies, for becoming better aware of needs of its audiences. The risen status of the reader is a result of both of these strategies.

With regards to online journalism, the Finnish media encountered the Internet in 1990s much the same way as other Western media. On the one hand, there was the fear of losing the audience to the Net, and on the other hand, there were hopes of gaining new possibilities by going online. (Heinonen 1999, Mäkinen 2004) Interactivity was one of the key-words, but in practice the two-way communication possibilities were scarce in the Finnish online media for a long time. Partly this was due to technological incompetence and unclear legislation (issues of responsibility of contents), but also the prevailing journalistic culture affected to this. In fact, in the early days of the Internet Finnish journalists considered readers' e-mails more a nuisance disturbing "real" work, although in principle the possibility to foster relationships with the audience was appreciated (Heinonen 1999, Heinonen & Kinnunen 2005). The situation has changed, but slowly. In early 2000s among Finnish newspapers, for instance, many made hardly any use of the interactive features of the Net, although a number of them maintained regular and even extensive readers' discussion forums, invited readers to comment, and send in news tips and even news pictures from readers' camera phones. (Kivessilta 2005) Nowadays it is not irregular to find extracts of newspapers' online forums' discussions taken to the printed versions, and there has been even a couple of cases of readers' news pictures making to the front-page of a newspaper. On tv, the SMS and e-mail input from viewers during talk-shows is also a quite regular feature.

The weblog phenomenon has had a siginificant effect on Finnish online media mostly in that blogs have appeared as a new journalistic genre in the news media. A number of journalists have established a media blog, i.e. a blog that is perhaps a more personal in style but nevertheless a regular part of the contents of a medium following its journalistic line. It is telling that not all of these media bloggers allow direct or even any commenting, but those that do have rejoiced for discovering such contacts with their readers. However, the suspicion or even ignorance towards the free, non-media, blogosphere is still a prevailing attitude of established media and professional journalists. For instance, during the Tsunami catastrophe at the turn of years 2004-2005, the Finnish media largely failed to use citizen blogs as their sources – although a Finnish citizen blog beat both media and official sources in delivering news of the incident (Itkonen 2007).

The rather slow acceptance of the interactivity of digital media by the Finnish news media is interesting when considering the quite high digital media literacy of Finns. The Internet penetration is high: In 2006, three of four Finns used the Net, and in the group under 40 years old, almost all uses it. (Statistics Finland, 2006) In addition, since 1990s both national and local Information Society policies have encouraged and facilitated projects which aim at active users of new media. As a result, there are a number of citizen online media, from rural media sites through neighborhood amateur reporters' publications to media criticism and expert blogs in the country. (Sirkkunen & Kotilainen 2004) Thus, there is basic digital competence on behalf of the public to become more active participant in the journalistic discourse when and if the media chooses to move to that direction.

Germany's media market is one of the biggest in the world, with a varied structure of news media offering content for an 80 million people audience. Due to the country's history, there is a strong public service broadcasting system (basically installed by the Allies after WW II), private broadcasting, and several hundred newspapers, most of them serving a local and regional market. However, just a few handful of large companies own most of these newspapers and broadcasters, so these large publishing houses and media companies (like Bertelsmann/Gruner & Jahr, Springer, Burda, the waz group, and in the broadcasting sector RTL, ProSiebenSat.1 etc.) strongly influence and push the media market development.

In this environment, public service journalism did not develop very well, though. As Lünenborg writes in a recent piece on the topic, *"the huge discussion on public journalism in the US virtually had no effect on Germany"* (Lünenborg 2005, 155; translated from the German original). There are many possible reasons – some of them might be directly attributed to the market structure itself:
- As said above, there are many local newspapers that already serve a community function, so there was probably not an urgent need for a reorientation in many of these smaller units. Weischenberg, Malik and Scholl note in their latest representative "Journalism in Germany" study that local journalists in Germany *"do have a less elitist occupational culture than other beats"* (2006: 110, translated from the German original), and *"try to integrate the audience and strengthen its importance"*. While this might not be true civic journalism, this strong local tradition might have softened the urgency of implementing new forms of user oriented journalism.
- Furthermore, the big publishing houses seemed to be quite reluctant to experiment, after they spent a lot of money on videotex and online media, which did not prove (economically) successful in most cases. Actually, many of the bigger media companies did heavily cut down their online staff in the years after the new economy crash and during a phase of severe economic problems with high unemployment (which indirectly lead to shrinking newspaper sales and media spendings).
- Other reasons might lie in the mentality and culture of Germany (stronger reliance on state organization, less belief in privatly organized activities), with a different community structure than the US (high density of population, living mainly in small or medium sized cities, many spare time activities organized in club structures etc.).

That said, there are some experiments with public journalism in Germany, for example the so called 'open channels' – TV stations that are open for any user to participate, supported by the state on the basis of a specific media legislation. However, they are not very successful in attracting anything but a very small audience.

In such a media environment, it does not come as a surprise that user participation in online media was not happily greeted by the mainstream media companies - they did not adopt this trend until fairly recently. Obviously, they were already struggling with converging newsrooms and cross media concepts (cf. Brüggemann 2002, Meyer 2005).

In the mean time, however, buzz words like 'weblogs' and 'web 2.0' have finally reached the German online market, too, and recently, media managers and chief editors seem to be more interested in the integration of communities – some people already talk about a new internet hype. User generated content instead of content produced by professional editors – that's a recipe tested by some mainstream media companies now, however not so much in their

'flagship media', but in separate publications. Examples include *jetzt.de* (an offspring of *Süddeutsche Zeitung*), *Sensation!* (*Tagesspiegel*), *Opinio* (*Rheinische Post*) and *Reader's Edition* (developed by the *Netzeitung*, but sold in the meantime).

Still, there are some doubts about the true reasons for the adoption of user generated content in mainstream online media. It is not unlikely that the developments are labeled by the managements as 'democratic', 'pluralistic' and 'trendy', while they are primarily trying to lower the costs for professional editors by using 'free' content happily provided by users. The resulting damaging effects on the journalistic profession have been discussed lately, also in an ethical context, triggered by *BILD*'s (Germany's largest tabloid) offer to buy (Paparazzi) pictures from 'reader reporters' for a minimal fee. Recent data on the development of the journalistic job market fueled the discussion: Weischenberg, Malik and Scholl's (2006) 'Journalism in Germany' study indicates a shrinking number of full time journalists. For online journalism, Quandt et al. (2006) could show that there are many part time or even semi-professional journalist working in online journalism – and not all of them do this out of a participatory interest, but to earn their rent and food, struggling with several jobs (with one of them being journalism).

A related question concerns the motivation of the users to contribute to mainstream media or write blogs. While there are some high profile bloggers and citizen journalists that do offer journalistic content via their website or contribute original content to user driven media, most of the blog content are of a more private nature. A recent survey on German webloggers supported a private – and sometimes narcistic – motivation of most bloggers (cf. Schmidt, Wilbers, Paetzolt 2006; for an overview of research on blogs in Germany, s. also Neuberger, Nuernbergk & Rischke 2007). There are some promintent exceptions, though – most notably the *BILDblog*, a website that discusses and analyzes the mistakes of *BILD*'s coverage. Its main authors are journalists themselves, thus offering a journalistic critique function of journalism through a blog – with a notable number of users (usually, *BILDblog* is noted as the top ranked blog in Germany) who are also contributing content themseves.

That said, such forms would not be existing without mainstream journalism. So some doubts remain whether blogs and user generated content will be a large scale success story in Germany (like in the US), and whether the developments have to be discussed in the context of a useful and pluralistic evolution of journalism (s. also Neuberger 2006 a, b) – or rather in the context of an economically motivated de-professionalization of journalism.

3.4. Spain

The recent history of Spain, with the transition to democracy in the 1970s after a long dictatorship, has shaped the evolution of the media market and the public sphere (Gunther, Montero and Wert, 2000). In a market of 40 million people and three regional languages besides Spanish, a three-layered structure formed, with the locus for direct participation of the citizens in the media restricted to local initiatives during the 1980s and 1990s:
- Nation-state level: The quality newspapers, with sharp political partisanship, seen as natural as society learned to openly engage in public debate (Hallin and Mancini, 2004). However, their readership has always been low –around 35% in the late 1990s– and it has declined lately following international trends and the competition of free newspapers created in the 2000s (AIMC, 2006). Television has been the top news source for citizens, and after the public broadcasting monopoly opened up big multimedia conglomerates formed with the newspapers as the center. These national

media tend to be close to the political elites they report on, in a self-referential public sphere where the citizens are regarded as a passive audience that is just supposed to react to news and the influential op-ed articles of news editors (Borrat, 1989).

- Regional level: Especially in Catalonia, the Basque country, Galicia and Andalusia, regional media groups became leaders in their area of influence, with semi-autonomous dynamics in these smaller public spheres (Gunther, Montero and Wert, 2000). The logic here was also the same as in the nation-state level.
- Local level: During the democratic transition, in some regions community media initiatives were developed at a municipal and county level (Rodriguez, 2001; Moragas, Domingo and López, 2002). Based on the principles of a long-awaited freedom of expression and direct democracy, content was developed by amateur volunteers reporting on daily events of their communities. Most of these projects evolved into more professional structures to ensure stability, but this ended up leaving content production in the hands of journalists and citizens contributions tended to disappear from the projects.

The concept of public journalism has been largely ignored in Spain, probably because of the youth of a professional and democratic journalism in the country, and even though the criticisms of public journalism to the US media are mostly applicable to the Spanish case. The fact is that current proponents of participatory online journalism in Spain use US public journalism as a referent when looking to root their statements to solid arguments (Madariaga, 2006; Varela, 2005).

In the early 2000s, the global trend of the (re)activation of citizen participation both inside and outside the media also arrived to Spain, as if the Internet had connected this Mediterranean market to the pace of the Western world. Outside the media, anti-globalization and anti-war civic movements have used the Internet to organize and express their points of view (Atton, 2004). During the first phase of the war in Iraq, the self-organizing capabilities of civil society ended up influencing media coverage in becoming extremely critic to the war. Also, weblogs have rapidly developed as a self-publishing tool among Spanish netizens, and political debate is the main driving force. This is not to say that citizens have engaged into a dialogue on the policies of their governments, but rather a replication of the partisan dialectics of the national and regional media; building arguments to criticize the opponent are the main topic in the Spanish political blogosphere (Escolar, 2006).

Inside the media, data from a census of 58 Spanish media companies developing convergence projects (Domingo *et al.*, 2007) reported that only a third (22) were exploring some sort of audience participation. Most of the options framed audience as respondents to journalistic content: comments on news and on journalists' blogs were the prevalent developments. User-generated newsworthy materials (photos, stories, videos, blogs) were invited in some of the national newspaper websites, and only few of the regional and local websites had such features. The fact that national newspapers are now leading the development of audience involvement in the media in a country where in earlier decades this was circumscribed to local projects suggests that new factors need to be explored to understand current trends. Catalan online journalists in four case studies shared interactivity as one of the powerful online journalism utopias, even though they have mixed feelings about the benefits of audience participation (Domingo, 2007). Fierce competition among national Spanish news sites and the prevalent reference of US online media developments can explain why participatory journalism has been so quickly embraced at the national level.

ElPais.com (owned by Prisa, the editor of the main quality newspaper in Spain) has a section called "Yo Periodista", paralleling CNN's I Reporter. And the free daily *Qué!* hosts audience blogs on its website, promising that the best posts will be published in the print edition. Nevertheless, there is no evidence that these projects have redefined (for better) the work of the journalists in these media or fostered open discussion on public interest issues. ElPais.com representatives announced they have 12 editors solely devoted to filter user contributions in order to get rid of vandalistic and offensive submissions, even in news comments (Nafría, 2007). "There is a lack of participatory culture in Spain", Nafría argued.

A further cautious note has to be made when discussing online participation. In Spain only 40% of the population uses the Internet regularly, connecting weekly or more often (INE, 2006). While among people under 25 usage increases to 71%, the low penetration rate in elder generations has not been solved by the multiple initiatives of national and regional governments. Castells *et al.* (2004) hypothesized that the Mediterranean social habits could explain this lack of interest of a big part of the population in going online, as outdoor life and face-to-face relationships were essential. However, the authors also found that those who where the most active Internet users were also those with bigger offline social networks and more engagement in public affairs and civic initiatives. Somehow, then, an elite of society seems to be the one taking advantage of the opportunities of online technologies, while the majority of citizens tend to be mere passive recipients of mainstream media political rallies.

4. Discussion: doing it together?

> *"'Networked journalism' takes into account the collaborative nature of journalism now: professionals and amateurs working together to get the real story, linking to each other across brands and old boundaries to share facts, questions, answers, ideas, perspectives. It recognizes the complex relationships that will make news. And it focuses on the process more than the product."* (Jarvis, 2006).

The country descriptions in this paper show that mainstream media in Europe are still far removed from this ideal-typical model of "networked" or participatory journalism. At the same time, however, trends in the four countries confirm that both external and internal developments in journalism have revived the debate on the role of the professionals and their publics in the digital era. From the outside, mainstream journalism is confronted with the emergence of a digital culture, in which users are more and more actively participating in the creation and publication of content. To some extent, these external developments have ignited the discussion inside the profession, also fuelled by the need to engage new audiences in an increasingly competitive environment.

Starting from these two observations from outside and inside the profession, this paper has looked at how participatory journalism is developing in four European countries: Belgium, Finland, Germany and Spain. The descriptions by the respective authors draw a somewhat sobering picture that stresses the sluggish adoption of interactivity in online journalism, on the one hand, and the moderate impact public journalism has had on existing models of journalism, on the other hand. In this respect, we could argue that the internal context in which participatory journalism is supposed to evolve seems to provide a lot of barriers for citizen participation in the news making process. In other words, the professional culture of mainstream journalism, which still favours a professional top-down approach, conflicts with

the external context, that heralds some optimistic promises of an emerging participatory media culture.

First of all, studies in each of the countries have shown that professional journalists are rather sceptical about interactivity with their users, and that they still like to think about the role of journalism in terms of the top-down model of trustee journalism. Secondly, the country reports point at several organizational factors influencing the (non-)adoption of citizen participation in the (online) news making process (e.g. lack of resources, deeply-rooted work routines, etc.). The paper also considered cultural aspects as explanatory factors influencing the spread of participatory journalism, suggesting, for instance, that the base on which the ideals of participatory journalism are being built is rather narrow as the large majority of citizens are still unlikely to play an active role in the news making process. Finally, critical remarks have been made about the market-driven rather than civic-oriented rationale behind mainstream media's experiments with user generated content and citizen participation.

Further research is needed to evaluate the nature and quality of audience participation in the cases when it is fostered. In "best practices" cases, an analysis of the structural changes in work organization, routines and professional values that have enabled relevant participation will be useful to assess to what extent participatory journalism can become a widespread practice in the media and what can be its consequences for the quality of journalism and the public sphere. Analytical models like the one proposed by Bruns (2005) under the label of *gatewatching* can be useful for such an approach, even though more operational categories are needed to describe the extent and locus of participation. Such a model should enable to locate the moments in the news production process that are being redefined, as well as those that remain intact, and trigger more specific hypotheses to explain the reasons for the apparent reluctancy of mainstream media in the development of participation spaces.

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Conceptualising Online News Use

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Abstract

This paper is based on the first results of the FLEET-project (Flemish E-publishing Trends), started in March 2006 and focussing on the transition of newspapers to online news sites. The scope of this paper is to investigate the existing concepts used in media studies to analyse the use of news and to refine and complete these concepts in order to develop an up-to-date conceptual framework for the study of online news. The starting point is the changing relationship between newspapers and their readers. The traditional roles of newspapers i.e. agenda-setter, watchdog and content provider are revisited in relation to the possibilities online media offer their readers in terms of participation: share, rate, tag, comment, produce news, etc. As newsreaders become news users they take over these roles or parts of them from the newspapers and mass media in general. By looking at this changed relationship concepts like participation, trust, community, lean-back/lean-forward and prosumer emerge as important differentiating factors and hence are explored as relevant concepts for the study of online news. In order to come to these findings, the literature consulted for this paper will be completed with the outcome of a series of interviews with experts in the Flemish e-publishing sector.

Introduction

When the World Wide Web was introduced, doom scenarios predicting the end of newspapers and television made their appearance. Twenty years later, both are still here. Even though research has made clear that online news is used in a complementary way with newspapers, not substituting them (Althaus & Tewksbury, 2000), the Internet is still seen as one of the major reasons for the decrease in newspaper readers. Different technological aspects of the Internet have been studied as possibly attracting features for readers. A lot of research has been done on hypertextuality as changing the role of the newspaper to a news hub through which readers can access other information sites what makes reading a newspaper non linear (Cohen, 2002). Multimedia and interactivity have also been pinpointed as the main features attracting people to the online medium, whereas research on on-screen reading has proven it to be a strong threshold for consuming information on the computer and hence online (Beyers, 2002). This however is a rather technology-centred approach that does not take into account how people react on these new possibilities. Why would anyone watch the news online when image quality is still better on his or her television? The reasons for turning to the Internet for news have to be found in a much wider framework than just these technology-based aspects and the possibilities they offer. The interaction between these possibilities and the way people use them is very complex. In contrast to what the hype on web 2.0, new media and social software would like us to believe, the participatory, personally customized in-depth

news is far from being commonly used and expected, even if the technological means are available (Project for Excellence in Journalism, 2007). Often however, studies on these new possibilities of the Internet[1] analyse the ad hoc consequences of these technological possibilities whereas the long-term effects still need to prove whether these services are as revolutionary as they are often claimed to be. The social structure of (online) publishing is not changing as fast as the constantly improving technological capacities of the online medium (Kling & Callahan, 2003).

This social structure is the starting point of this paper that wants to investigate the existing concepts used in media studies to analyse the use of news and to refine and complete these concepts in order to develop an up-to-date conceptual framework for the study of online news. This conceptual framework must allow us to look at technological change from a less technology-oriented view but rather point to the changes in the relation between the newspaper and its readers. In order to come to this framework, the paper will analyse one aspect of this changed relationship i.e. the roles that are traditionally ascribed to newspapers and mass media in general. New media give people an increasing possibility to challenge these roles. By looking at the newspaper as an agenda-setter, a watchdog and a content provider, the impact of these new technologies will be framed in a wider context. These are certainly not the only roles that have been attributed to the press or the mass media in general through the development of mass media theory and the scope is not to give an in-dept overview of the theory on these roles as this has already been accomplished (McQuail, 2000), but rather to use these three roles as a way of conceptualizing the changes that might possibly occur in the relationship between newspapers and readers from a theoretical perspective. By doing so, the focus does not lie on the technology itself but on the way people are – or are not – using this technology and how this affects this social structure. First of all this will throw new light on the evolutions in the newspaper sector. Secondly, the blanks in the existing conceptual framework will become clear. As was mentioned above, the participatory possibilities offered by the new media seem to be of interest only to a minority of users. What remains unclear is whether, when and for which reasons the readers will use these available tools to alter or keep this relationship. In order to address these questions, the right conceptual framework is needed. The media-sector is being forced to view its relationship with the customer through a different mindset in order to anticipate and understand these changes. When investigating this relationship, researchers also need to take into account the factors that play a role in this new mindset.

Methodological approach

In order to argument these hypotheses a literature study was undertaking including academic sources as well as relevant (online) media sources. This literature is complemented by expert interviews. Recently, this qualitative research method has been gaining momentum as a fast access to a new or unknown field (Flick, 2002; Froschauer & Lueger, 2003). Experts often have high insight in aggregated and/or specific knowledge about ongoing processes, strategies or evolutions that are difficult to explore through other methods. According to Meuser and Nagel an expert is a person who has privileged access to information about groups of persons or decision processes or who is responsible for the development, implementation or control of solutions, strategies and/or policies (Meuser & Nagel, 2002). Expert knowledge has three dimensions (Dunn, 2004). The first is technical knowledge, very specific information on a certain field like details on operations, laws,… that influence the field. Process knowledge covers information on routines, specific interactions and processes. The expert holds this

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[1] People like Tim Berners-Lee who was at the origin of the World Wide Web do not find web 2.0 a good term as the technology to make these new services possible was already available in the early days of the Internet.

information because he/she is directly involved in it. Subjective interpretations of relevance, rules, beliefs or ideas and ideologies are explanatory knowledge. The expert him/herself is then the focus of the interview.

For this paper, eight experts were interviewed. All of them have access to relevant information on the evolutions in the print sector because of their actual or previous employment or expertise in the sector. Some of them hold strategic positions within the media company they represent and therefore wished to remain anonymous. The author chose to keep all of them anonymous for the sake of the paper's uniformity. Because the experts' responses are relevant as an information source rather then as a respondents answer, this does no compromise the methodological process. The scope of the interviews was to gain explanatory and process knowledge on the Flemish situation as well as insight in what people actively involved in the sector experience as the most important bottlenecks towards the newsreader. This information nuances the theory and literature and refines the Flemish situation[2]. Furthermore, in a second stage of the research, this information will be used for preparing interview topic lists for ethnographic research.

Because expert knowledge is not neutral, it is important to work both with experts and counter experts (Dunn, 2004). Experts being people who take part in the societal debate, it is needed to be careful not to give more weight to one specific side of the debate. The selected experts were therefore chosen in a way that their opinion on the whole represent different views within the debate on the definition of the problem (i.e. media – user relationship). Hereby, we seek to respond to the methodological critique one might have on the fact that the obtained knowledge is not neutral as the debate is characterised by power relations balancing the argumentation between conservative and innovative affinities. Other classic critiques on qualitative interviews as a method for data-collection include the fact that the interview setting influences the information obtained and that the effects of interaction between interviewer and interviewee are rather high. With expert interviews the risks are quiet high that an asymmetric relation in favour of the interviewee resides because of the discrepancy in knowledge. Bogner and Menz call this the interviewer as layperson. The advantages are a high level of confidence by the interviewee, which generates a pressure to explain. On the other hand, the interviewer is not empowered to guide the interview. The interviews however took place after the author finished an in-depth literature study, which prepared him to face the interviewees rather as an expert outside the field (Bogner & Menz, 2005). Furthermore, the author being a media scientist, the possible discrepancy between both is reduced. This generates the advantage for the interviewer of being able to guide the interview. Moreover, a high level of discussion and information sharing is generated, were high explanation of motives and orientation is possible.

The relationship between newspapers and their readers

Previous research shows that various evolutions in the media market have an impact on how newspapers and their readers relate to each other. Market-driven journalism, as McManus pointed out, has been jeopardising the media's role as an independent fourth estate since the eighties (McManus, 1994). The rise of free newspapers in the late nineties alongside the boom of free online information sources have weakened the position of newspapers forcing them to jump on the trend of more compact news, infotainment and tabloidisation which erodes their role as watchdogs. People's ever more rushed lives and the growth of new and often complementary media (radio and television, computer programs, Internet, games, dvd,

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[2] This paper is partially based on the first output of the FLEET-project (Flemish E-publishing Trends). The experts however were selected in such way they provided information on the Flemish context as well as on the more general evolutions in the media-sector.

mp3…) have reduced the time people are able to spend to newspapers and the attention they can pay to the articles.

The newspaper sector is being challenged by a series of new players. This was already the case when radio and television appeared, but the introduction of the Internet takes this a step further because of the digitalisation of content. As the Internet is a medium for text, audio and video, newspapers, television stations and radio become direct competitors. Because virtually everyone has access to the Internet, these traditional media also must compete with other content providers like companies and governments engaging in direct communication with their customers, news sites like nu.nl, Google News, msn.com and the blogosphere. As an expert put it, "*from the point of view of a content provider, the medium through which the content reaches the consumers is not important*". The overall discussion in the newspaper sector tends towards the question how newspapers will remain viable in this context or in the words of the Economist, "*who killed the newspaper?" (The Economist, 2006b)*. It is the scope of this paper to look beyond the market and the way new players, including the readers, are competing with the newspapers to scrutinize the more fundamental changes in the role of newspapers. These roles have traditionally been attended with a very normative theory building on how the press should operate if certain social values are to be observed and attained (McQuail, 2000). Even though this kind of theory is quiet important, it would take a paper on its own to deal with the normative ideas that come along with new media. This goes beyond the scope of this paper; even though some arguments made may be linked to certain values attributed to the media through their role.

The role of newspapers in a democratic society
From its early days, the newspaper was an actual or potential adversary of established (democratic) power, especially in its own self-perception. In this regard, the term "fourth estate" is used in literature, later on joined by "public watchdog", a notion covering ideas of the press as representative of the public, critic of government, advocate of policy and policy-maker. The power of the press arose from its ability to give or withhold publicity and from its informative capacity (McQuail, 2000).

The ability to give or withhold publicity or information of any kind in general to reach the audience brings us to another role of the press i.e. the one of gatekeeper, selecting which facts will be reported. This role is closely linked to the agenda setting process or the possibility to decide on what news is covered and which issues are emphasized. As David H. Weaver, who has worked on studies of media agenda setting since 1972, argues this area of research is closely interconnected to framing and priming. Framing can be defined as the central organising idea for news content that supplies a context and suggests what the issue is through the use of selection, emphasis, exclusion and elaboration. When focussing on the consequences of agenda setting for public opinion the term priming is used to describe that media may suggest which issues to use in evaluating political actors (Weaver, 2007).

Finally, the press is an important news provider, a window on the world for is readers. More than other mass media, "*a responsible press should provide a full, truthful, comprehensive and intelligent account of the day's events in a context which gives them meaning*" (McQuail, 2000). As the interviewed experts unanimously stated, newspapers must apart form bringing the news, offer the readers the background information and other informational means to fully understand and contextualise what happens. Still, one expert emphasized the fact that both on national as international level, news is a commodity. As another expert said: "*when the sector is looking at the new possibilities new media are offering, the main issue is not how to improve journalistic quality, but how to develop a well functioning and stable business model for those new services*".

According to Denis McQuail, the new media provide the means for highly differentiated provision of political information on ideas, almost unlimited access in theory for all voices, and much feedback and negotiation between leaders and followers (McQuail, 2000). It is clear that all three roles are challenged by the new media, as will be explored in the next section.

Newspapers as an agenda setter

Agenda Setting and online news
Agenda setting and the gate-keeping process linked to it is one of the roles of newspapers and media in general that has been thoroughly investigated in communication science and is widely recognised (McQuail, 2000). In her study of news reading in 1988, Doris Graber concluded that story importance clues supplied by editors and the match between story topics and their own interests are the most important criteria used by newspaper readers when choosing the stories to read. These cues are article location, the size of headlines and visuals and story length and repetition. Articles that are more upfront or which have large and catchy headlines are more likely to be selected to read. These criteria are however, according to Graber, easily overruled by the interest readers show in a certain topic (Graber, 1988). These criteria however are medium-based. The way to access articles on a website is different. Websites offer people a more direct way to access stories of their interest by organising the news into topical categories or by offering easy search functions. As Althaus and Tewksbury put it in their research on the role of the medium on agenda setting, these features limit the potential that online readers will be exposed to the particular stories that a newspaper's editorial staff deems important (Althaus & Tewksbury, 2002). In that same study on how agenda setting might be influenced by the medium for delivering news content, the authors discovered that print readers partly modify their agenda's differently than online readers do. When comparing readers from the paper and online version of the Times, the former seemed to systematically come away with different perceptions of the most important problems facing the country. The authors conclude that by providing users with more content choices and control over exposure, new technologies may allow people to create personalised information environments that shut them off from larger flows of public information in society further fragmenting the news audiences. In other words, readers are able to set their own news agenda. The features of Internet however not only make it possible for readers to be more selective in their readings, but also to share the news that comes high on their personal agenda with their fellow readers and this on a large scale, creating a parallel peer-driven news agenda.

Agenda setting and online communities (of interest)
On digg.com people can post news items for the readers to rate. The best-rated articles come on top of digg.com's homepage. Readers can also select the best-rated stories amongst different categories of interest. The New York Times holds a list on his site of the most e-mailed and blogged articles. Citizen journalism sites like OhMyNews.com in Korea and news sites like nieuws.skynet.be in Belgium offer readers a most-read selection of the news. These are only but a few examples of the way readers are generating an own agenda of important topics. Not only are the intrinsic features of websites playing a role in the way the agenda set by editors is perceived by readers, communities of readers, either because they actively participate or because their online reading pattern is easily monitored, are able to define an own agenda of interests. An expert put it as follows: "*web 2.0 is an answer to the limits of looking for the right news. If 10.000 people with the same interests as me are making the same search every day, then it is more fruitful to organise this search and to share it with them*". The members of a news community become the agenda-setters for that community. As was mentioned before, news is everywhere. As another expert stressed, "*users do not feel like*

making a selection on their own out of an overload of information and expect that from their newspaper". By doing this, the newspapers and media in general are able to set an agenda of newsworthiness. Users online, through applications as digg.com, rss readers or Google News Alerts, are now able to set their own agenda. As a third expert countered, *"the user could have read this information package in the paper where he would be sure the information would have been double-checked. A newspaper is more than a news provider but also a label of quality"*. A fourt expert emphasized the importance of good filters in the increased news offer, believing that *"this role could be taken by traditional, generic news media who could "filter" what is seen as "the news" for a majority of users"*. What is clear is that there is a struggle for the appropriation of this role and that different players could take different parts of this role depending on the news wanted. These aspects are closely linked to the normative discussion on the newspaper knowing what is good for you to know versus the reader who can choose for himself but then risks to loose out on some relevant information.

In certain cases, user communities have been proved to be able to use the Internet (or more specifically the blogosphere) to put what they think is relevant on the news agenda. In June 2002 e.g. two 14-year-old schoolgirls were run over by an armored US military vehicle north of Seoul, South Korea. OhmyNews, an alternative online news startup, picked up the story and put it on the national news agenda by garnering millions of visits on their site. The emergence and success of alternative online news services challenged the dominance of major – mostly conservative – national newspapers in shaping the public opinion (Song, 2007). Such spontaneous reactions of the public are nothing new, but it is undeniable that Internet as a medium can play an important role in the fast, easy and cheap spreading of user-generated information as an alternative news source. In this case, however, it is also important to note that even this rather sophisticated and 100% user generated content site has a heavy editing process of the content that comes in from approved "contributors" from around the world (Project for Excellence in Journalism, 2007). This editing authority still has the role of gatekeeper. When talking about communities build round a newspapers' site, an expert coined the term gatewatching, *"letting the participative happen en just watch whether the delivered content is acceptable in terms of privacy and deontology"*.

An interesting concept in agenda setting theory in this perspective is the inter-media agenda-setting model, the process in which media coverage of a certain topic increases after major media players give prominent play to it (Song, 2007). This is an interesting concept because it plays an important role within the alternative news source community. We could speak of the inter-blog effect. As an expert stated, *"the impact of blogs is relative to the collective effect. A blogger's story only has an effect when it is picked up by other bloggers. In the blogosphere this effect is less structured, less predictable and more dependent on the quality and newsworthiness of the posted story than between newspapers."* Through initiatives like OhMyNews, Global Voices or digg.com users' views are aggregated and canalised in a way their impact can grow bigger. Of course, many of these sites or features might not be more then a *'news idol'*, an entertaining feature that will boost sensational and socially less relevant stories to the top of the homepages. On the other hand, these sites *"attract serious citizen reporting which tries to serve as society's democratic watchdog, a role that mainstream media have more and more abandoned" (Hauben, 2007)*.

Newspapers as a watchdog

In media theory mass media and hence newspapers have been regarded as a kind of fourth estate watching over the integrity of the executive, legislative and juridical institutions. As an expert stated, *"when a newspaper publishes a study that is relevant, then the public opinion will acknowledge it and react. The involved political and corporate actors will react,*

allowing the newspaper to play its role in society". However, John McManus pointed out is his book Market-Driven Journalism already in 1994, that the press has evolved in its 150 years of existence, making news a *commodity* in the news *market* (McManus, 1994). According to McManus this business logic is crafting journalism to serve the market and not democracy. What is at stake is the survival of a public knowledgeable enough about current issues and events to govern itself (McManus, 1994). The press has been assisted in his watchdog role by nonprofits, nongovernmental organisation or civil society groups. The exponential growth of these organisations in the last decennia led Stuart E. Eizenstat to term them as "Fifth Estate". One of the reasons for this growth according to Eizenstat is to be found in the use of Internet, e-mail and mobile phones that allowed groups to build advocacy networks and to coordinate global campaigns to an extend that would have been impossible even as late as the 1970s (Eizenstat, 2004).

Without getting caught up into technology deterministic reasoning, it is not too harsh to say that the Internet has drastically facilitated the way for people to publish whatever information online. Moreover, it also makes it easier to communicate over large distances at high speed. What the Internet, websites and email did for the civil society, web 2.0 is doing for the people in general, turning the Internet in a viral platform for people to share and aggregate information and opinions. Already, this aggregation has led readers to call into account the media. Recent examples are the Rathergate scandal in the United States where Dan Rather reported in his highly respected news show *60 minutes* on CBS September 2004 about a number of documents accusing president George W. Bush of having misused his family ties to skip military orders. Only three hours after the show was aired Scott Johnson launched in the blogosphere a post challenging the authenticity of the documents based on anachronisms in the typography. Two weeks of speculations later, CBS admitted that the documents were not authenticated by their experts as they had reported, eventually leading to the firing of producers Mary Mapes and several senior news executives (Van Brackel, 2004). "The old media model was: there is one source of truth. The new media model is: there are multiple sources of truth, and we will sort it out," says Joe Kraus, the founder of JotSpot, which makes software for wikis (The Economist, 2006a). An important principle here is collective intelligence: even if the media have their own experts double-checking their sources, it is likely that between the thousands of media users, their will be a number of people with the same or higher level of expertise. Scott Johnson e.g. is a lawyer at a prestigious law firm in Mineapolis and vice president of a bank. Such people have a certain authority that can compete with that of a news agency. An expert stressed the fact that "*journalists could let evolve an article on the blogs, letting people participate, correct and add information, giving it more social relevance so it can be picked up by politicians*". In this perspective, newspaper's watchdog role can be reinforced with the help of the public.

Newspapers as information/news providers

As we noted in the introduction, the newspapers have to deal with a heavier competition from other players, especially online, offering the latest news. This, in combination with the explosion of offline free newspapers like Metro, has turned news in a free commodity accessible almost everywhere in a constantly updated form. Quite a strange thought is that, by following this trend of free news online, newspapers are cannibalizing their own paper editions. The core product of a newspaper, as the name says, is where competition is the strongest and where they seem to be losing ground. What became clear from the expert interviews, is the fact that newspapers bring more than just news and should concentrate on offering background and context information of a high quality. "*What I am doing*", an expert said, "*is not making a newspaper, but selecting, collecting, analysing, controlling and*

commenting news, whether this is on paper, on a site, or in the future on a watch or digital television." As another expert put it, however, *"if you receive an entire walking diner for free and you then have to pay for a gastronomic diner, you will not be hungry anymore."* There lays the problem facing the newspapers. The content they can offer as the best, qualitative news, background, analysis and context, is not what a large majority of consumers is seeking. They want the news and they will find it everywhere and mostly for free.

When newspapers report on their own future, blogging and citizen journalism are often seen as negative evolutions, keeping readers' (scarce) attention away from the professional journalism they stand for. Even though newspapers seem to embrace the blogosphere by creating own blogs for their readers and journalists, they do so to please or win back their audience, not because they embrace the possibilities of it. The articles found on newspapers' websites are often nothing more than 'shovelware': an unmodified copy of those in the printed paper (Boczkowski, 2002). Many journalism practices approach these new possibilities in a conservative and rigid way and tend to avoid as long as possible the renegotiation of what is conventional and normal in journalism. As the newspaper affiliated experts stated, blogs are merely online diaries that are of interest only to the blogger's entourage and bloggers do not have the means and professional rigour to thoroughly investigate a certain topic. However, in these spaces, there is room for writers to have their stories read online, including journalists who want to nominate creative, investigative reporting for public consumption outside the constrains of media firms (Cohen, 2002).

Certain kinds of information lend themselves more to be handled by the public, as different experts pointed out. Bloggers can become a source for readers to consult opinions about certain news facts and the way their peers think of it e.g. the blogs of politicians or public persons, but also of fellow bloggers and journalists, that by doing so may counter "the commercial and political pressures on institutional news media" (Godwin, 1999). Furthermore, as mentioned above, according to the principle of collective intelligence, journalist should welcome readers who represent an authority on certain issues to complement and check their articles, because they will also challenge the ability of professional journalist to give background and context on a certain topic they, as experts, know better. As an expert stated: "*press agencies more and more take the role of daily news providers offering their news feeds through a whole range of news websites, but do not offer this service for the more thematic and regional or local news*". Hyper-local news is a third kind of information user might be more suited for to bring than newspapers. A hyperlocal news site (also known as local-local or microsite) is devoted to the stories and minutiae of a particular neighbourhood, ZIP code or interest group within a certain geographic area. Such sites have been springing up on the Internet for some time now, initially as independent start-ups, created and maintained as labours of love by founders who work on a shoestring budget (Shaw, 2007). Not that they were not able to do this before, but the organisation of a local paper is a costly and highly intensive activity in terms of infrastructure. Blogs, fora and websites make this a lot easier. Furthermore, the video and photo applications in cell phones become more widespread, which facilitates local citizen journalism even more. Several of the interviewed experts stressed the fact that journalism is becoming a conversation rather then a monologue. *An article is not the finishing point of a journalist's work. It is only the beginning*, as one expert stated. The readers becoming providers or producers of content is what Boczkowski coined "distributed construction", challenging newspapers' traditional role of news-producer and gate-keeper (Boczkowski, 2004).

Conceptualising new user roles

As became clear by analysing the changing role of the newspaper readers are taking over certain parts of these roles. Central to newsreaders' (-viewers' and –listeners') changing role is that they start doing more with news than only read it. They start using it in different ways: they comment it, share it, rate it, tag it, and even produce it. Therefore, we prefer to talk about news users. The concept of a news user is also more suited in a world where the digitalisation has not yet finished to converge data (meaning every form of information). Especially when we look at the use of the Internet, which is becoming a platform suited for text as well as audio and video, the concept of a newsreader is not adequate anymore for research. News website often already offer videos and podcasts next to the written news. This convergence of technology, at this point represented best by the connected computer, leads to a convergence in media users what in turn changes the meaning of a newsreader, listener and viewer. In the same line of thoughts, Mark Deuze, building on Zygmunt Bauman's concept of liquid modern society (Bauman, 2005), states that contemporary changes in the economical, political, societal and technological sphere put the user in a virtual space where he is continuously surrounded by different but connected media. This raises the convergence between the different spheres of action of daily life, blurring the difference between work and private but also between consumption and production, between passive and active consumption of media. In other words technological convergence is leading to cultural convergence, which has it's own logic (Deuze, 2006).

Web 2.0 has made it easier for users to share their thoughts and ideas through text, audio and video over the net. This in addition with the technical means of content production becoming ever more accessible for a larger public through democratic prices and the appreciation of the public, has led to a boom of user-generated content, one of the sector's big buzzwords. The consumer is in other words moving up in the value chain becoming a producer as well, what futurologist Alvin Toffler predicted in his book *The Third Wave* and coined with the term *prosumer* (producer-consumer) (Toffler, 1980). In the case of the newspaper, this phenomenon is translated in the citizen journalist or the blogger. Still, further reflection on this concept is needed.

The prosumer

The concept of prosumer was introduced by Alvin Toffler in 1980. He stated that by the new millennium consumers would get highly involved with the design and production of goods so they could be delivered according to everyone's personal needs and specifications. He formulated arguments for a new marketplace where products are not dumped by industry but where consumers participate in the creative process (Toffler, 1980). This term is not to be confused with the concept used in marketing where it stands for *professional consumer* or *professional amateur*, being someone with an interest in a certain hobby that big that he wants to be one of the first having the latest products in that branch. In a new media context where user generated content is believed to be important both for its product value as for its exchange value, the consumer contributes to the news making process in different ways (see above). In this framework, the concept of prosumer however needs to be refined. First, a prosumer is a consumer. This implies that he is buying a product or service for a certain prize. However, one of the big questions concerning user-generated content is how to make it profitable. The essence of user-generated content is not commercial in contrast to Toffler's vision where the prosumer defines the specificities of the product he eventually wants to buy. When looking at newspaper blogs or free news sites the consumption aspect of user-generated content is obvious. When looking at online citizen journalism communities, their audience consumes the information but not (yet) in an economic-value generating way. The concept of

the prosumer implicitly refers to modern market logic. When looking at user-generated content in general we could talk about the *produser* (producer – user) instead: users who use content in such way it generates additional content. In this regard, speaking about news users makes it easier to conceptualise the newsreader's changing role: he does not merely consume news, but also shares it, rates it, searches it and produces it. He is using the news in various ways. The production of news becomes a part of the consumption of news. The boundaries between both blurry or disappear. News user therefore seems a good concept to analyse this group because it incorporates the two dimensions: he uses the news in a variety of ways consuming and producing it at the same time.

Dimensions of participation
The news user thus uses news in many different ways sometimes producing as well. Traditionally, watching television is termed as a lean-back activity, whereas sitting in front of a computer is rather lean-forward. (Jansz, 2005; Körber & Maknavicius, 2003). When looking at online news, this lean-back/lean-forward continuum seems to offer an interesting instrument to look at how online news possibilities are used.

Fig. 1 Dimensions of participatory media
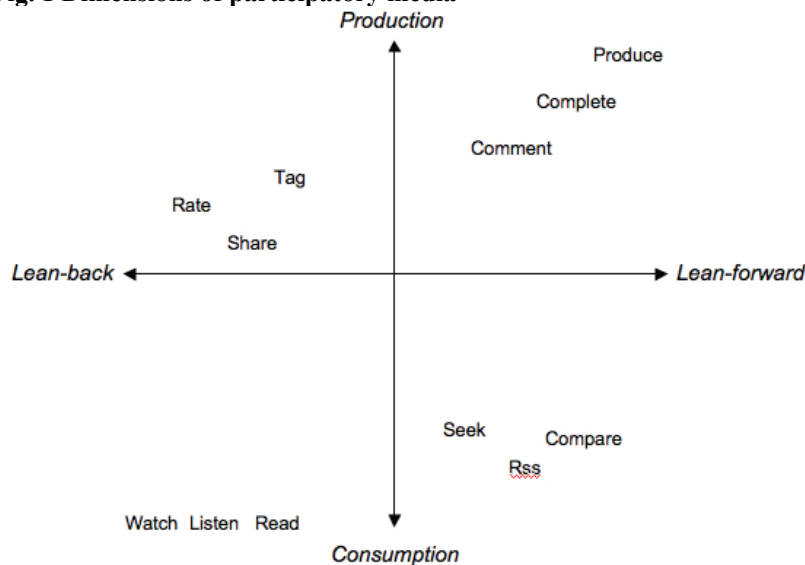
At one end of the continuum we will find the people who actively search for news, look at different sites, use rss readers to receive information, write news stories, place comments and rate items, on the other end we will find the people reading online versions of their trusted newspapers, trusting the news selection of a certain provider, preferring television or printed news to online news. However, actively look for information is a lean-forward way of using news, even if it does not engender any kind of content production. Therefore, in order to fully understand new news practices, this continuum should be given an extra dimension, namely the one discussed above concerning the prosumer. In the online world, consuming is not by definition lean-back, and also prosuming can be done in different degrees from less to more lean forward, as is shown in Fig 1.

When analysing the Internet as a more lean-forward medium, we must not be blinded by the hype. As the State of the Media 2007 study shows, What we found in the sites studied is that the participatory nature of the Web is more theoretical than a virtue in full bloom (Project for Excellence in Journalism, 2007). But, as an expert stated, *"media must offer the possibility for interactivity without it getting pervasive or obtrusive for the passive user"*. Consumers must have the right to be passive. By using the above continuum to analyse news practices, we do

not need to see participation as something people do or do not, but can do in different degrees, allowing us to get a far more specialized view on how people look at these possibilities. Production in this context must be seen as contribution. When rating news e.g., people are producing a hierarchy that can influence the news agenda.

Communities of interest in news

When studying online news, the aspect of community plays a greater role than offline. The sites that have been mentioned through this paper are only but a few examples of news sites that thrive on a community of users that actively participate in the production of content or passively use it as a news source. It is likely that these virtual communities are rather impersonal, not based on sharing the most intimate information but rather sharing thoughts and opinions on the relevance of certain news items. According to Katie J. Ward a characteristic of virtual communities is the fact that the audience is ephemeral, not making a long-term commitment to the virtual community. Rather they will be more instrumental in their approach to the community, staying as long as the community is providing a solution or fulfilling a need in their life (Ward, 1999). This is linked to Bauman's *Liquid Life*, as the ties in a virtual community are loser or "more liquid". In the context of news, these needs are informational, but not only to get information, but also to retrieve it, share it, rate it, comment it, produce it… The more interesting information the community has to offer, the more members it will attract (Edlund, 2000). The content that will differentiate one community from another is the content generated by that community. This exchange of information within these groups is the essential contributor to the social capital of such networks. A vital part of social capital is trust, what brings us again to the importance of this concept.

A specific feature of computer-mediated communication is the lack of physical, social and other nonverbal information exchanged between group members. This anonymity has both beneficial as well as damaging consequences for the trust within a virtual community (Blanchard & Horan, 2000). On the one hand individuals can increase their first impressions or accentuate their characteristics with which they identify mostly with the group. The more you identify with a group, the more likely you are to trust the group. On the other hand, this anonymity and the lack of social and physical cues may cause deception because of the difficulty to establish the authenticity of information about the other members. Not all these elements apply to a news community, as the scope is not to get personal information from one another or to share deeply personal thoughts, but to share news and comments on it. Still, this anonymity can become harmful, as anyone can post news stories that can be false, especially on sites where no editing is provided. Furthermore, anyone can pretend to be an expert and also here it takes a critical user with enough knowledge to check the background of certain sources.

Refining existing concepts

Participation
Acknowledging the existence of collaborative intelligence, the idea of journalism becoming a conversation rather than a sermon is beginning to find its way amongst journalists and news companies. Major international news sites like the New York Times and in Flanders De Standaard Online amongst many others already offer their readers the possibility to add comments and to participate, and hence becoming a news source of information for journalists. This should evolve even more, according to an expert who said *"the newspaper should become more interactive, referring to the newspaper's site, giving readers the opportunity to discuss online certain topics launched in the paper and afterwards summarize*

the outcome of the online discussion in the paper. This makes the two media complementary instead of supplementary". But another expert added, *"The number of people actively posting information on Wikipedia is small. Most of Wikipedia's users are merely consulting the site"*. This is referring to the pyramid Bradley Horowitz, Vice-President of Product Strategy at Yahoo!, posted on his blog in February 2006. The top of the pyramid is populated with 1 creator, followed by 10 synthesizers; the body is made of 100 consumers. He states that 1% of the population is now initiating the production of content, 10% might actively participate by responding to that production and 100%, which he calls lurkers, will just benefit from the activities of the above group. He notes that it is not necessary to convert 100% of the audience into "active" participants to have a thriving product that benefits tens of millions of users. The barriers users have to cross to become creators work as a filter that can eliminate noise from signal (Horowitz, 2006). It is thus not for every user to become a producer.

As became clear in the first part of the paper, the increasing possibilities users have to contribute and participate in the production of news is altering the relationship between newspapers and their readers. The dimensions of participatory media use as shown in figure 1 can help to understand how the user is taking up certain roles or parts of it from the newspapers or mass media in general, as is schematically shown in the following table.

Consumer – Media interaction

Role Action	Agenda Setting	Watchdog	Content production
Look for (alternative) information (rss, blogs, ...)	X		
Tag, rate and/or share news	X		X (metadata)
Correct, complete and comment news	X	X	X
Produce news (citizen journalism)		X	X

Trust

The trusted news brand

A recent international study by the BBC, Reuters and the Media Centre (Globescan, 2006) shows that people's trust in the media is relatively high, giving more credit to the media than to their governments. 61% of the respondents trusted the media against 52% trusting their government. Television (82%) and national and regional newspapers (75%) are the most reliable sources according to the study. Blogs also seem to be consulted as a news source, though only 25% of respondent trust the information, South Korea (home country of OhMyNews) being the exception. Still, the outcome of the study suggests that it becomes more difficult for those information providers to hold people's trust. More than a quarter of the respondents said they stopped consulting a certain news source because they lost faith in the source's content. Even though television and newspaper still are the dominant news sources world wide, in terms of consulting news sources and trusting them, users are developing a more nuanced approach towards the media. 77% of the respondents prefer to check different news sources, something that is off course easier online.

Still, as an expert pointed out, newspapers have strong brands or a certain history, which makes people associate news with them; *"Based on what people find important they choose the medium to use. This is the bond of trust a news provider develops with is audience. The*

more it can procure information on the concerns of its audience, the more successful it is". Another expert called this the seal of approval of trustworthiness. Hans Beyers, who did a lot of research on online news in Flanders in the past years, concluded that Flemish users often read the same newspaper online than in print (Beyers, 2002). When they go online, readers remain loyal to their printed paper, or better, they remain loyal to a certain brand they believe is trustworthy. New players online will have to compete with the relationship of trust traditional media brands have build with their user throughout the years.

Communities of trust
Already in 1994 McManus acknowledges the impact communities of taste, peer groups and other external forces have on consumers' choice. He pointed out that when the journalistic quality is difficult to discern, consumers are compelled to rely on "brand names" or develop alternative information sources for evaluating news, such as direct civic involvement. In a connected world however this civic involvement is facilitated in that way that people have the same means than news organisations to reach high number of readers, namely the Internet. In other words, alternative news sources have always existed, be it in the form of colleagues commenting news during the coffee break or the alternative newspapers like le Canard Enchainé in France, but the Internet, and especially web 2.0, with its increased user-friendliness, make it possible that these alternative voices reach a larger public with less means necessary. Because of the Internet's facilitating features in terms of distribution and reach, people might get more motivated to participate to these news sources, which in turn can makes these bloom and hence get more "news appeal" for news users.

Some of these alternative news sites have already proven to be able to build a vast user community around their site like OhMyNews, nu.nl or Agoravox.com. The reason why this is quiet an achievement is that alternative discourses do not appear to carry the same authority as the traditional news organisations' online news (Cohen, 2002). An idea reached out by an expert was that "*newspapers should become community builders, offering more than news to please the community and listening to the community's demands. Gaining the trust of this community will then be essential. The community build around a newspaper can benefit the paper as well, not only in terms of bonding users to your brand, but also because they might contribute to the value of the newspaper by sharing their knowledge or signalising new trends*". According to another expert "*such a community is generated around points of interest. When the community serves the common good of its members, she will prevail*". An example of such a trend signalisation is the web 2.0, a term that Tim O'Reilly coined in 2004, that was picked up by the mainstream media after a lot of buzz was created around it in the blogosphere. Trust is likely to become of increasing importance in a world where information is everywhere. As an expert stated, "*it will be important that users can make the difference between user-generated news and professional news. Citizen journals need to clearly state that the articles are based on personal experience and not on investigation of professional journalists. This will be important fort the level of trust users will have in the online medium*".

A new conceptual framework

When studying the way readers relate to the newspaper, it becomes clear that the possibilities offered by the Internet make it easier for readers to take over part of roles traditionally held by newspapers. As shown in the table above, the way in which readers are using the news defines the role they take. Due to the technological convergence, readers become viewers become listeners in the online news environment. Users, consuming and producing news, therefore seems a better term then newsreaders when looking at online news. This term allows the levelling of news use, as participation is something that can be done in different degrees. The

producing user is not the terminus in the evolution of the consumer. Not everyone wants to become a creator. The lean-back/lean-forward and producer/consumer dimensions of this use offer a valuable tool to map and differentiate the activities of the online news user. It also makes it possible to identify possible barriers to participation. Another important aspect when analysing participation and especially the production of newsworthy information is the kind of content. Opinion, expertise and local news seem to be more adequate for non-professional users to produce than in-depth news coverage. The end of a newspaper as a content provider – not as a medium – is therefore rather exaggerated.

As the news user is not by definition a creator, he is not by definition member of a news community either. However, as is the case for virtual communities, he will freely join a community if it fills his needs. A news community is typically a community where users will turn to when they need certain information. The impact a user will have on the role of newspapers however will be defined in terms of the number of users contributing (cfr. inter-media agenda setting). Important in that case will be the level of trust people have in the community members. Not only news brands but also these communities or the news brands that house them will have to gain user's trust. Authority, collective intelligence and the ability of users to differentiate trustworthy from false information will play an important role in this regard as will trust in the evolution of the relationship between newspapers and users.

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Social Innovation Among ICT Users:
Technology as Catalyst in Promoting Social Change

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Abstract

This paper addresses mechanisms of the innovation process in the social field, particular the transition from user innovation in the technological sphere to innovation in the sociocultural sphere. In research conducted at Montreal's Laboratoire de communication médiatisée par ordinateur (LabCMO: http://cmo.uqam.ca) over the last two years, our research team observed the activity of two groups of innovative users acting in the technological sphere, the first within the free software domain and the second involving urban wireless networking. Our observations suggest that these "techno-activist" groups have developed an ideological platform oriented towards social change and inspired largely by their technology-directed activity.

User-centred innovation research by scholars such as Eric von Hippel (U.S.) and Christophe Aguiton and Dominique Cardon (France) has demonstrated how, by freely sharing ideas and artefacts, users who innovate develop dense communications links to bind themselves within larger communities of innovators. Research in that tradition has thus far been concerned chiefly with technological innovation. In examining the mechanics of innovative processes within the social field, this paper turns to how user innovation in the technological sphere have transitioned to innovations that resonate in the sociocultural sphere. In a research project undertaken at LabCMO in Montreal over the last two years, we observed and described the activities of two groups of users innovating in the technological sphere. The first group operates in the free software domain; the second group's activities involve urban wireless networking. Paired with their joint technological innovation, however, members of these groups ("techno-activists") have developing joint ideological platforms oriented toward social change.

That ideological platform is built around specific activities, values and beliefs: enrolment of their activities in international networks and exchanges, not an exclusively local community of user-innovators; a heterarchic structure of work organization, not an exclusively hierarchical one; an ambivalent economic relationship with existing capitalistic forms; and a set of social representations of the technological world used as a foundation upon which to construct a politically progressive platform—one riven, that is, with political and economic contradictions. These activists position their technological practices as an opportunity to renew social forms of organization, of collaboration and of communication. In criticizing the prescriptive and normative composition of technical devices marketed by large-scale software and by telecommunications providers, they foreground deliberation as an essential innovation mechanism within the community of users. The sociological questions we want to address involve the extent to which these new forms of organizing collaboration are permeable vis-à-vis other groups and communities with which these techno-activists interact. In what ways can techno-activist practices influence other groups already engaged in social and political

action? Do such practices play a significant role in transforming the public sphere more generally?

To address these questions, I begin with a brief presentation of a theoretical model for what I call the "social appropriation" of digital technology. I then present the socio-economic factors which underpin these digital technologies' emergence in the context of informational capitalism. Third, I will describe our study of two specific techno-activist groups' practices at LabCMO (Montreal, Canada) over the last two years. In conclusion, I show that these grass-roots digital technology movements help build a bottom-up alternative to the dominant top-down view expressed in the promotion of a so-called "global information society".

1. The "Social Appropriation" of Technology as an Ideal-Type

The concept of "appropriating" a technology fits well with what German sociology Max Weber has termed an "ideal type", which is

> formed by the one-sided accentuation of one or more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent concrete individual phenomena, which are arranged according to those one-sidedly emphasized viewpoints into a unified analytical construct. [Cited on *Wikipedia*.]

To establish that a genuine appropriation of technology is taking place, one prerequisite—access to the technical device—and five conditions must be satisfied:

a) technical and cognitive mastery of the artefact;

b) meaningful integration of the device's use into the user's everyday practices. It is here that I introduce the distinction between mere use of a technical device, on one hand, and a user's enrolment of it in social practice, on the other hand. Using word processing software as a technical device, for instance, is distinct from the user practice of writing in which it participates;

c) innovation: using the device introduces new creative avenues into the individual's social practices, rather than merely participating in them;

d) community mediation: learning processes and support are shared within a mobilised collective or community of practice with which the user identifies;

e) political representation: social appropriation presupposes that user collectives are adequately *represented,* a matter which regards both public policy and innovation markets.

Satisfying all of these conditions signifies successful appropriation. Yet, without fulfilling the prerequisite requirement, which is access to the technical device, appropriation will be impossible. Cognizance of this prerequisite alongside the conditions allows us to distinguish appropriation from mere access—a distinction which comparative national statistics on technology penetration often confuse. Access to a device does not necessarily imply mastering its use.

2. The Emergence of Informational Capitalism as Context for Techno-Activist Social Innovation

The emergence of informational capitalism. Social experiments in "informational cooperation", whose analysis is central to our research, echo the position some groups of social actors have taken in the ongoing transformation of highly digitized societies. Analysts describe certain, emergent forms of the mode of production in contemporary societies as belonging to a new "informational capitalism" (Aigrain 2005), by which they mean that our current societies tend to yield a particular type of industry—those industries which capitalize on the ownership of the code (Lessig 1999; Weber 2004; Ghosh 2005), such as the software, pharmaceutical, or media industries. Activists engaged in cooperative projects in the information and communication fields question the legitimacy of this new dominance (Blondeau, Latrive 2000; Moody 2001). As opposed to a proprietary definition of information, these actors maintain that information is a public good. It is this commitment to values such as gift economies, accessibility, open exchange and communication—all first linked to information by software pioneers—that anchors the commitment of so-called "code activists" or "techno-activists".

Our research aims to situate the innovative practices of these "techno-activist militants" within the broader context of emergent social protest movements that denounce the code-owning industries in the context of informational capitalism (Castells 2002; Granjon 2001). We seek to identify the extent to which code activists are part of a process of civic negotiation of our societies' digitization (Boltanski, Chiapello, 1999). Some contemporary thinkers have located a novel perspective on democratisation in civic forms of technological appropriation (Loader 1998; Feenberg 2004). Our study is an opportunity to grasp the values put into play by these processes of innovation, from their initiation, negotiation, and coagulation to their wider public deployment.

Innovation by use. Most information and communication technologies (ICT) users positions technological objects as "black boxes", paying scant attention to the objects' inner workings. Code activists, on the other hand, act as a sort of technical handyman, they do not hesitate to look inside codes or devices to take an active role in how informational objects work, particularly through computer programming and the design and dissemination of new technological devices. Technologies' network organization favours cooperation between users and designers, facilitating not only acts of appropriation, diversion, and tinkering (Certeau 1980; Perriault 1989), but also those of co-construction (Oudshoorn, Pinch 2003; Neff, Stark 2003) rising even to the level of tangible technological innovations linked tightly to innovative usage. Set in motion from below, these innovations break with prescribed uses, emerging to respond to users' *ad hoc* needs. Considered decisive by creative process analysts, these innovations are known as "ascendant" because they proceed upward and onward from the exploration of users seeking to improve what they can do with already-existing technologies (Von Hippel 2001, 2005; Cardon, 2005). Born of the ordinary practices of resourceful users, these innovations diffuse through networks of user exchange.

Technical innovation and social change. Analysts of innovation posit a complex linkage with between it and social change. Analysing sociotechnical controversies (Callon 1981) has demonstrated both the non-linear, socially constructed character of innovation, and some of the mechanisms by which the ideological and political challenges these innovative processes mobilise are staged in public (Latour 2001). Usage studies (Proulx 2005) have, for their part, demonstrated the non-linear manner in which technological objects are distributed (Rogers

1995), underlining users' ability divert (Certeau 1980), reinterpretation (Bijker et Law 1992), and socially appropriate (Proulx 1994 ; 2002) the technology. New principles for collective action emerge from these hybridizations of social and technical spaces. Only those uses of technology that lead to tangible change in social practice can be characterized, according to Tuomi (2002), as innovation.

3. A Research Project Studying Techno-Activist Practice as a Source of Innovation

3.1 Main Objectives of the Project
Anchored in a participative approach associating our team directly with the groups connected to this research, our project seeks to provide detailed description and analysis of groups of persons experimenting with what we have called "informational cooperation" within Canada. The research focuses on the practices and values of "code activists" creating non-proprietary devices which, as alternatives to the code industries, produce social innovation. The project's main theme is to evaluate the transferability of the values associated with these practices of technical innovation into other spheres of activity (Himanen 2001; Lessig 2004; Brand 2005). To what extent can these technologically innovative practices provoke socially innovative practices in the political sphere of citizen and democratic action?

Our analysis centres on two groups located in Montreal (Canada). They operate at the intersection of the Quebec community movements and free software movement. Their activities are highly technological but, at the same time, oriented toward social change. Members of the two groups agreed to join our team as part of a participative approach involving them as full participants in the research process. The groups are:

Île sans fil (ISF). ISF, a Montreal volunteer organization, was founded in 2003 by three university students, and now forms a municipal network of over 100 Internet access points provided free of charge in public spaces like bars, restaurants, and cafés. ISF is a non-profit organization whose goals are to promote free, public access to WiFi-based Internet access, to create and maintain a network of WiFi access points in public locations, and to use WiFi as a tool to promote art and cultural content and social applications. Thirty active volunteers contribute to hardware and software development, install equipment in public places, and manage marketing, communications, and public relations. In the past two years the working model of ISF has been lauded, and its hotspot management software held up as an innovation worthy of reproduction (Powell 2006).

The group considers wireless technology to be a means of creating social networks. For the past 18 months, ISF has focused its efforts on two infrastructure projects. The first of these is the deployment of hotspots in public spaces, such as parks and cafés. The second is the creation of open access, roof-to-roof high-speed Internet infrastructure. The group was awarded the Montreal Social Innovation prize in 2005 and currently has close to 10,000 users.

Koumbit is a Montreal-based volunteer organization founded in 2002 whose mission is to promote the appropriation of free and open software by social groups in Quebec, in Canada, and abroad. This group works on the development of a collective software platform and provides support for users of free and open software. The name "Koumbit" is a derivation of the Haitian Creole word *Konbit,* which can be translated as an association of people working towards the realization of a common goal. On their Web site, the group describes its founding principles as follows:

Collectively managed: we believe in a greater autonomy for people and collectives. We believe that it is essential for groups and individuals to manage by themselves their direction, life and authority. *Educational space:* we believe that our organisation must not be a simple service company but must also integrate continuing education of workers and members to new technologies, but also along the principles of participative organisation like ParEcon and other horizontal organisational techniques. *Transparency:* we believe that organisations should be transparant [*sic*] towards their members but also towards society at large. No organisation evolves in a void and all our actions have consequences. Therefore, it is essential that the public can follow on the actions and decisions of the different organisations that make society. We believe that the flow of information coming out of organisations must not be blocked, but be broadcasted so that citizens can take enlightened decisions on the issues that affect them. *Copyleft (free software):* we believe in developing free and open source software. Free software is a matter of freedom (as in speech): everyone should be free to use software for any socially useful purposes. Software is not a tangible material object, like a chair, sandwich or oil, so it can be copied and changed easily. Those possibilities render software useful as such; we believe that software users must be able to appropriate those possibilities.

Self-sufficiency: we believe that our organisation must be self-sufficient and not depend exclusively on one big customer or state to finance itself. We are always looking for ways to diversify our sources of income and believe in partnership to develop durable and functional links with other organisations. Similarly, we offer technological solutions that empower people with their own tools within their organisations. *Solidarity:* we believe that our organisation must support citizen initiative and the left behind of our society. We also believe that an organisation must build itself in support and respect of each other, their integrity and their dignity. We also believe that some sacrifices must be made so that the organisation doesn't harm mankind and nature as a whole. "Above all, do no harm". *Equity and equality:* we believe that everyone must have the same chances not only at the start, but also during the race. We are trying to eliminate inequities between individuals and compensate those which are impossible to eliminate. *Participatory Economics:* we believe in balanced job complexes, variable modes of decision, in participation of workers in the definition of their workplace, in participation of parties affected by the services of the organisation in its orientation. In short, we are strongly inspired by the Participatory Economics model enounced [*sic*] by Michael Albert. (see Goldenberg 2006)

Some studies on governance and cooperation models in activist groups exist (Granjon 2001; Auray 2005; Conein, Delsalle 2005; Aiguiton, Cardon 2006). The study of informational cooperatives, however, must take into account how these localised practices are articulated with the militant ambitions expressed in international networks of activists and global social forums. Since the local groups are simultaneously bound to international networks, we are given to analyse their local activities in light of broader debates concerning the so-called information society which have unfolded in the global arena (Fontan 1998). Our ethnographic descriptions, produced in collaboration with the actors in a participatory approach, have the following four objectives: 1) to explain the context in which these groups situate their activities and describe how they seek to innovate socially and technologically; 2) to analyse how the groups define the modalities of democratization through informational cooperation, and the transferability of their innovations into other spheres of activity; 3) to identify the controversies that emerge in thus-constituted local public spaces and their interaction with the

broader questions that inform contemporary debate; and 4) to trace the prospects for generalizing these practices and innovations to contribute to the common good.

3.2 Methodology

Participative ethnography. Putting a participative approach in place (Dallaire 2002; Barnsley, Elis 1992), our ethnographic descriptions were compiled by two observers. Each observer first clearly identified herself to the group as an observer and a university student. After some time, and on a voluntary basis, each observer became a full member of the organization. This obviously gives rise to several questions about the relationship between the observer and the observed. We are aware the knowledge that we generate about each group teach the group about itself and thus stimulates self-analysis within groups regarding clarification of their missions and organizational models. Our observations brought key points to the fore about group identity, sources of controversy, and mission. Each observer simultaneously played both the role of conveying information between the research team and the observed group, and of actor provoking the group's self-reflection and self-analysis.

This *participative ethnography* tends towards a progressive appropriation by the observed group of the research goal's (re)definition in line with its specific interests. We reject the dominant sociological position that requires a "suspended" position to study the group being observed. The precautionary principle characteristic of our approach lies in seeking not to impose the researcher's vocabulary on actors in the field. We contemplate a reciprocal enrichment of worldviews and a reciprocal contribution to knowledge between the research team and observed group. Our methodological approach's purpose is to understand the meaning that the actors themselves ascribe to their identity, their project, and their activities in order to support a reflexive approach within each of the target groups. This approach thus presupposes an epistemological (re)articulation between the production of scientific knowledge and its potential use by users in the field. How can our results be incorporated back into the activities and reflexivity of the target group? How can socio-political commitment be articulated in conjunction with scientific rigour?

3.3 Hints and Results

Towards a politicization of technology. Code activists offer users the possibility of approaching technological culture in a different way. They suggest a new way to represent technology. They reconceptualize technology, not simply as a set of "tools" to be used to further a project of personal or social emancipation, but rather as a "culture" or set of devices and apparatuses that are not neutral tools but, on the contrary, are value-laden and organized into technical configurations that encode power relations, promoting one type of activity to the detriment of other possible types. Technological devices are not neutral. The innovation process operated by these activists is part of a transformation of the relationship between users and the technological world (Jouët 1987; Bencheikh 1986). Yet, once technology is conceived of as a culture (Simondon 1958), representing the technological world as this type of transformation becomes profoundly political, and therefore disposed to provoke significant change within the broader register of social values (Lessig 2001).

Can these new representations of technological culture help carve out new spaces of citizenship inside the public sphere (Feenberg 2004)? Informational cooperation projects import a taste for change into a technological world whose incumbent values the large, proprietary code industries which police its borders would prefer we accept passively. More radically, Cardon and Granjon (2003) note that a politicized segment of the techno-activist population presents itself as a militant counter-culture in which collective software

production, technical process and anti-institutional digital insurrection coalesce. Code activists in this sense produce new spaces for collective action and, through their actions, put forward a model for extended participation in which developers and users can participate jointly in the collective production of public technological and informational goods. We hypothesize that this construction of new public space around technologies could lead to citizen empowerment. As our earlier research regarding the free culture controversy revealed, activist practice in the technological sphere is a source of social innovation, particularly from the standpoint of collaborative practices established in how work is organized (Proulx, Couture 2006).

Innovations in informational cooperation. In experimenting with new forms of collaboration around the organization of their production work, code militants act politically. Analysis of these collective practices suggests that such models of action and involvement are neither unified nor stabilized. As in some scientific communities, multiple controversies over how technology uses are articulated into work organization appear to stimulate group activity among code activists. For some of them, the opening up of technological apparatuses is a technological victory; for others it is a measure of democracy. As the search for consensus within activist groups reveals, informational cooperation's pragmatic objectives invites a novel deliberative process around themes such as the decentralization of technological action, procedural governance, and collective management of training (Proulx Rueff Lecomte 2007).

4. Conclusion: What Sort of Digital World are we Constructing ?

Grass-roots digital technology movements have a role to play in the construction of a bottom-up alternative to the top-down dominant view expressed through the promotion of a so-called "global information society". Homilies repeated for the past thirty years on the apparently inevitable rise of an "information society" have made this rhetoric commonplace, entrenching the quasi-certainty of this inevitably in the popular imagination. A similar message has issued forth from national governments, international organisations, and the large electronic entertainment, software and telecommunications industries. Critics have demonstrated that this rhetoric is bound to a pervasive groupthink-style approach steeped in neo-liberalism and appeals to globalization (Mattelart, 2003). That representation of a "global information society" has become the dominant *top-down* model for describing the future of Western societies.

The activities of the techno-activists described here contribute to a *bottom-up* model that anticipates the rise of a network of "shared knowledge groups" (Ambrosi, Peugeot, 2005). This alternative representation of the future information society contrasts with the unitary vision for an information society conceived in the boardrooms and cube farms of global multinationals. The bottom-up alternative was in evidence in Tunis in December, 2005, during the last World Summit on the Information Society (WSIS); it is a vision that expresses the position adopted by "organized civil society" as part of what economist E. Noam has called a *"third wave" of Internet leaders* (Noam 2005), more politicized than those of the first wave that emerged from the military, university and hacker milieux, and than those of the second, who were wedded to the Internet's encasement by market logics. The alternative vision of an information society associated with "shared knowledge societies" is rooted in the social practices of exchange and knowledge-sharing; these emerge from societies asserting their cultural diversity against a standard of cosmopolitanism (Beck 2006).

(Translated from French by Bram Abramson)

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Involving Users In The Product Development Of SMEs

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Abstract

One potential source of risk in product development is its distance from users. This risk is particularly apparent in small and medium sized enterprises (SMEs) which have limited resources to carry out tailored user studies. Additionally, mechanisms that support the adoption of innovations in business-to-business markets are less prevalent in business-to-consumer markets.

We attempt to develop practices for user involvement in the product development of SMEs. In particular, we have carried out four exercises in user involvement. These exercises were carried out together with SMEs that aim to commercialize automatic speech recognition services, a mobile blogging service for tourists, a hybrid media product for volunteer communities, and a learning news reader service.

In the exercises, we first wanted users to gain experiences of the service under development. This meant that users were involved by using a service prototype in three exercises and by participating in the development of product concepts in one exercise. Then we collected feedback from users and helped the product development team to reflect the feedback to the service in question. Product developers were present at all stages of the exercises.

The results of the exercises are encouraging. Small-scale, timely user involvement contributed usability and functionality improvements, input on how to enhance the utility and

enjoyability of the products, as well as new product ideas. Moreover, engaging in the user tests energized the enterprises to devote additional efforts to developing and improving their innovations. Face-to-face interaction between users and developers was highly appreciated by the service developers, and provided actionable information about users.

1. Introduction

The interface of information and communication technology has rapidly approached users during the last decades. Conventional media such as television and radio have evolved and new tools such as personal computers and mobile phones have diffused and developed quickly. This has brought numerous new possibilities for ordinary citizens to utilize these technologies.

At the same time this means that users have a larger say than before in how innovations are adopted. This is an unexpected type of user empowerment in the digital age. Instead of quickly adopting new technologies to utilize them fully, many users have opted to proceed slowly. Reluctant adoption has been evident in the digitalization of television, the mobile Internet and until recently, broadband Internet. These have all been important targets of the Finnish information society policy.

An obvious shortcoming of technology and information society policies is their distance to the end user. It is difficult to transform governmental policies of innovation and technology into successful commercial products and services for end users. Naturally occurring mechanisms of user-producer interaction exist to support the adoption of innovations in business-to-business markets but they are lacking in business-to-consumer markets.

One important reason for failed product development is a limited understanding of what end users value. This is particularly likely in small and medium sized enterprises which have limited resources to carry out tailored user studies.

Interaction with users is important for product development because it helps to focus efforts in the right direction. At the same, it is important to submit working prototypes to user testing to ensure that innovation efforts remain on the right track and preferably meet the users' requirements better.

In our research project we study how small and medium sized enterprises (SMEs) doing innovations in interactive computing respond to these two challenges. We report on methods for gathering user information and on the way in which user feedback modifies innovation. The overall aim of the project is to evaluate and develop practices for user involvement. We are particularly interested in how short term user involvement may benefit product development by introducing an extra loop or iteration in the product development process.

The enterprises involved in our study make innovations in the domains of community network services, game and entertainment applications, hybrid media, industrial and service company network services, and knowledge management applications. They have received funding from the Fenix program of the Finnish National Technology Agency Tekes, which plays an important part in the implementation of innovation and technology policy in Finland.

In our work we build on the theoretical frameworks of user involvement (Alam 2002, Lindsay 2003) and user innovations (von Hippel 2001, Haddon 2003). Our results suggest that there is a strong interest among the small and medium size enterprises to develop their knowledge of users and potential users, that user study methods are not considered as methods but they are implemented in practices, and that an open direct relationship with users and potential users seems to be a challenge.

2. User involvement and user innovation: issues for research and practice

A focus on users is one of the most topical issues in the new product development and innovation management literatures. In the following, the main arguments and methods for involving users are presented, and some of the problems encountered in user involvement are discussed – with a special focus on consumer-users.

Why are there so many calls for user involvement? The social shaping of technology tradition has pointed out that users are usually present in one way or the other when new technologies are invented (e.g., Bijker et al. 1987). Yet empirical studies indicate the user representations drawn on in technology development are often problematic and incoherent (Akrich 1995). The user representations most frequently employed are implicit, and product developers rely on personal experience (the "I method", Akrich 1995) much more often than is commonly believed. Yet designers and users may be very different kinds of people. Increasingly, new users of technical devices are laypeople with little experience or expertise, and the user context is new and unfamiliar to the designers (e.g., Hyysalo 2004). Defining the user as "everybody" and using the "I method" lead to a disregard for important differences among users (e.g., gender and age), and place serious constraints on the development of technologies aimed for a broad range of users (e.g., Oudshoorn et al. 2004).

Usability testing has become a standard procedure in many industries (cf. Dumas, 2007), and there are a number of standards for usability testing and human-centered design. Traditionally, usability research focused on functional aspects of the technology: efficiency, effectiveness and user satisfaction, conceptualizing the user as someone performing a clearly bounded, pre-specified task. In the past few years, usability research has taken on board a number of new challenges (Karat and Karat 2003). Usability researchers have recognized the need to develop a more profound understanding of the contexts of use. Participatory design has also become a popular topic, as well as the inclusion of other than purely efficiency criteria (e.g., "user satisfaction"). For example, Monk (2002) has examined the new challenges involved in designing information technology products for the home, such as including fun, social interaction and dependability into a broader view of usability.

In information systems, there is also a long-standing tradition of research into technology acceptance and the determinants of technology adoption. A large body of research in this field is based on attitude-behavior models, and aims to identify factors underlying the acceptance, adoption and use of information technologies (e.g. Venkatesh et al. 2003, Davis et al. 1989). This stream of research, however, says fairly little about the cultural and contextual factors that underlie the attitudes and behavioral intentions measured in surveys (cf. e.g., Higgins 2000). The acceptability of new technologies and product innovations is also an evolving issue – new interactive ICT products may have significant social consequences and involve ethical design issues that need to be acknowledged in early stages of the design process (Whitworth and de Moor 2003).

2.1 A diversity of approaches to user involvement

A number of reviews have been recently published on user involvement methods. For example, Kaulio (1998) reviewed seven different usability methods (*quality function deployment (QDF), user-oriented product development, concept testing, beta testing, consumer idealized design, the lead user method and participatory ergonomics*) with an aim to identify different forms of interaction between users and designers. Kujala (2003) reviewed four common approaches to user involvement (*user-centred design, participatory design, ethnography and contextual design)* from the perspective of their benefits and challenges. It is telling that none of the methods reviewed in the two articles have the same name, even though some refer to overlapping or similar methods. Further concepts introduced include user groups (Tomes et al. 1996) and user modeling (see e.g., Fischer 2001), as well as the lead user approach (von Hippel 1986; Lilien et al. 2002).

The existing methods differ on at least the following dimensions:

- *Industry focus:* many of the methods have been developed in the field of information systems and ICT (see e.g. Karat and Karat 2003; Kujala 2003). There are also methods used primarily in the consumer durables and other consumer goods industries (Kaulio 1998). Industrial engineering and ergonomics have be the origin of many participatory design initiatives, which have since also made a significant entry into IT-design (Brockoff et al. 2004). An emerging issue is user involvement in the design of "traditional" services such as financial services (Alam 2002) and new ones such as mobile telecommunication services (Magnusson et al. 2003).
- *Users in focus.* In some cases, the term used is "customer involvement", in which case customers may refer to well-identified and long-term business or organizational customers. In a company context, the actual users of the products may, however, be a totally different group than those making the purchase decision – in which case, "user" may refer to "shop-floor" users. Consumers are often the most problematic type of users, as it may be difficult to identify and contact representative consumers (e.g., Heiskanen et al. 2005), which is why consumers are often studied using surveys (Choudrie and Dwivedi 2005).
- *Focus on users' ideas and requirements vs. users' experiences.* Methods such as quality function deployment (Kaulio 1998) and idea-generation (e.g., Magnusson et al. 2003) aim to discover user requirements or generate new product ideas. They thus approach the user from a 'clean slate' perspective, with no specific product in focus. On the other hand, methods such as beta testing or concept testing allow users to interact with first versions of the product, see how it fits their everyday life, and provide their comments on this basis (Kaulio 1998; Hyysalo 2003).
- *Focus on participation vs. investigating the user context.* Participatory design aims to invite users to "join the design team", and it involves a normative element of democratizing design (Kujala 2003). Direct participation also usually involves face-to-face interaction between users and designers (Tomes et al. 1996, Hyysalo 2003). In contrast, field studies such as ethnographic research and different kinds of product testing settings allow researchers to identify issues in the user context that may be difficult for users to verbalize (Kujala 2003).
- *Timing of user involvement:* Users may be merely involved by eliciting their requirements using questionnaires or interviews at an early stage of product development – after which

the designers or developers draw their own conclusions. Users may also be involved in concept testing by asking them to evaluate models, mock-ups or prototypes. In later stages, users may be involved in product testing or long-term studies such as ethnographic research. Kaulio (1998) identified three main phases in which users are involved: specification, concept development and prototyping.

The methodological diversity gives a mixed impression of the benefits of user involvement. In any case, it can be seen as an indication of that the field is still emerging. Appreciative practitioners may also wish to see multitude rather as a resource than as a potential source of conflict (cf. Hyysalo 2006).

2.2 Beyond user involvement: users as innovators

As mentioned above, ordinary users' lack of experience and expertise has been one of the arguments for increased user involvement. A quite different argument is put forth by the literature focusing on "lead users" and the role of sophisticated customers in product innovation. This perspective originated in research on specialized industrial and professional products, in which users may in many cases be the primary source of innovation (von Hippel 1988) – and are, in this case, quite similar to the customers of make-to-order or tailor-made products (Brockoff 2003). Later on, von Hippel and colleagues have extended the lead user approach to consumer products. In this context, lead users are defined as those who (1) face needs that will be general in the market place, but face them much earlier than the bulk of the market, and (2) who are positioned to benefit significantly by obtaining a solution to those needs (von Hippel 1986).

Important, innovative consumer user communities have been identified, for example, in the computer games industry, where online consumer communities communicate and extend the game from its original format by exchanging ideas and software (Jeppesen and Molin 2003, cf. Heiskanen et al. 2007). Sports such as windsurfing, skateboarding and snowboarding are other examples of fields in which user communities have had an important role in product innovations (Shah 2005). Enterprises have tried to harness this important source of new innovations and link it more closely into their own product development process, e.g., by setting up support functions that assist user-driven innovation, offering users toolkits that facilitate their participation in the design process, and making systemic use of interactions with consumers in order to learn from their innovations (von Hippel 2001, Jeppesen and Molin 2003) or even recruiting members of such communities (Kotro 2005). A similar approach can also be used to support user innovation in more mundane fields of interest (Haddon 2003, Repo et al. 2006a).

2.3 Prospects and problems of involving users

As the interest in user involvement mounts, it also becomes more and more evident that the research and practice in this field is largely at an experimental stage. While the importance of user involvement is generally acknowledged, a number of problems have also been identified:

What is the role and expected input of the users? Are users a source of information on the user context, a source of new ideas, partners in the product development process, or providers

of useful feedback? Obviously, users may have all or any of these roles, but the expected input of users, and they ways in which it will be used do not seem to be very clear at the start of all user involvement projects.

Are users capable of presenting useful information? It is often noted that users may find it difficult to verbalize their needs (termed "sticky information", by von Hippel 1998), or may themselves be unaware of their requirements (Riquelme 2001). This observation motivates the use of field methods such as ethnography, or forms of product testing that are strongly directed by the product development team. Obviously, merely "asking users" (through, e.g., surveys or idea competitions) in an inadequate approach. There are, however, methods through which users can be progressively involved in the design process (e.g. Tomes et al. 1996) or in which user ideas can be used indirectly as a resource for learning in product development (Lemasson and Magnusson 2002).

What kinds of users should be involved? While user involvement and acceptability approaches highlight the importance of understanding "ordinary" users and acknowledging the diversity of, e.g., the current and future users of ICT applications, the lead user approach explicitly questions the role of "novice" users in generating useful product ideas (e.g., von Hippel 1986). "Ordinary" users are problematic in many ways. In consumer products, it is difficult to involve a representative group of the diverse population of potential users, and the capabilities and motivation of 'ordinary' users may be limited. Yet the concept of "lead users" is still very much under development in the context of consumer products, too – it is not always obvious who are such lead users, and whether they will be eventually followed by the mass market, or whether they represent specialized market niches.

What are the costs and benefits of user involvement? From the producer's perspective, Kujala (2003) has considered the costs and benefits of user involvement, showing that user involvement may be a costly process that requires time and effort, which does not automatically lead to better design. In most cases, however, this effort is merited by cost savings due to design failures or problems (see also Brockoff 2002).

How are users integrated in the product development process? Integrating expertise in product development is always problematic (Buijs 2003; Kotro et al. 2005). User involvement appears to encounter similar problems (Kujala 2003): participatory design may be conducted in isolated projects, designers may be unwilling to engage with users, user involvement may disrupt time-limited product development cycles, and methods such as field studies and ethnographic research may generate an excess of raw data. Magnusson et al. (2003) have indicated that ordinary users' ideas may be unrealistic and excessively fanciful, and need intensive processing in order to make a useful input into the design process. Thus, user involvement requires intensive management in order to be truly useful.

Thus, it appears that user involvement is important, but not easily implemented. Different types of innovation and product development problems obviously call for different forms of involvement. Similarly, the role of lead users vs. ordinary people may vary at different stages of the innovation process. It seems to be important to understand that user needs are not pre-existing, but evolve gradually (Hyysalo 2003). Much consideration needs to go into planning the form of user involvement used: what kinds of users should be involved, at which stage of the innovation and development process, and in which way? It also appears to be clear that user involvement does not automatically solve the problem of incoherent and non-convergent user representations (cf. Akrich 1995) – it is equally important to involve technology and

product developers in integrating the information gained from users at different levels and stages of the innovation process. Obviously, much work remains to be done in this field.

3. User involvement as a practical exercise

The practical exercise of user involvement is studied within the framework of the Onni-project, which is a joint project by the Finnish Funding Agency for Technology and Innovation (Tekes) and the National Consumer Research Centre in Finland. The project investigates how SMEs involved in the Fenix technology programme on interactive computing obtain and manage user knowledge, and how current practices could be improved. Tekes will use the results of the project to determine how to promote better user management practices among the companies in its technology programmes and by the policy implications arising from the project. An essential aim of the Onni project is to assess current practices and experiment with intensified user interaction together with selected SME participants.

Our preceding survey of how SMEs in the Fenix programme obtain and manage user information indicated that designers' personal experience and gaining impressions from the media were dominant sources of user information. Customers and previous studies were also frequently used as a source of information about future users. Some enterprises did engage in formal user research efforts, such as focus groups, testing pilot products or market surveys. Yet most enterprises viewed learning about their potential customers the largest challenge. Many were eager to test their products with a broader group of users, and considered it important to develop systematic means for collecting and managing user information. As was to be expected, financial resources and time were the most frequently mentioned obstacles to user involvement – but lack of capabilities did play a role, as one respondent stated: "there is certainly room for improvement, but it is hard to say exactly how".

Similarly, our preceding survey of usability and user research service providers indicated that SMEs in the industry rarely use such services. They are concerned about costs and consider the benefits uncertain. User studies are usually contracted too late, and sourcing user studies requires skills and understanding that many enterprises lack. Yet younger people in the customer enterprises have learned to appreciate the importance of "knowing the user", and perceive it as part of good customer service quality. According to the service providers, the acquisition and management of user knowledge could most effectively be promoted by informing enterprises about its benefits.

3.1 Building a practical approach

We have used the three identified issues in the literature review as a starting point for the practical exercise of user involvement. Firstly, we have attempted to make use of a number of aspects of the diverse approaches to user involvement. We have particularly focused on users, their participation and experience, and the timing of the exercises in the innovation process. In this sense, we have been more user-centered than is common in usability testing. At the same time, however, we have also been communicative with product developers, allowing them personal participation to an extent that is also beyond market research.

Secondly, we have attempted to keep our research design open to leave room for the potential emergence of user innovations. Thirdly, we have attempted to use our experiences to

recognize the prospects and problems of involving users. We report on these as challenges for user involvement.

In addition to the literature review, our approach stems from surveys of 14 SMEs carrying out product development and seven consultancies providing services in usability and user research. The companies participating in the surveys called for feasible solutions to practical problems. Weighing benefits against costs was also emphasized, which promoted the idea of short term intervention exercises.

The starting point of our approach is to gather experiences for our users of the products being developed. Experiences are gathered through the use of a prototype version of the service in question in its intended context. Then we gather insights from those experiences by means of focus group interviews and questionnaires. The insights are reflected in discussions with product developers. The aim of the exercises is to provide impetus and possible reassessment in product development.

This approach combines a number methods used to gather information on users (cf. Hyysalo 2006). We have carried out interviews, observed use, conducted usability trials, tested prototypes, and situated the use of services in their contexts. In essence, little attention has been paid only to product developers' experience and presuppositions, and external expert knowledge.

3.2 Four cases of user involvement

The exercises carried out in the project all represented technologies and services that are new to both service providers and users (Figure 1). In this respect, user involvement *per se* was a particularly suitable approach to gather data on potential users (Hyysalo 2006). An additional common element was the use of technology for interaction between users or between users and technology.

Three of the four exercises focus on technologies that are at a functional stage and, therefore, can be tried out by users. A service based on speech recognition was used to reserve a doctor's appointment at a health centre by telephone (Heiskanen & Hyvönen 2006). A moblog service (taking pictures and posting them on the web) initially developed for the business leisure market was tried out on a sightseeing tour by non-business tourists (Repo et al. 2006b). An exercise involving a news portal that learns about the interests of its users is currently in process.

The fourth exercise focuses on the development of hybrid media concepts to support community interaction, in this case the interaction between members of a community of football volunteers (Forsell et al. 2007). In this particular exercise, users came up with a concept that was focused more on external communication between the football club and the broader community, rather than interaction among the volunteers. Quite interestingly, an approach building on empathic design and involving others than the volunteers came up with concepts that were more focused on the communication needs between volunteers.

Figure 1. Description of exercises.

	Generating service concepts by and for volunteers [1]
	Personalizing news
	Making phone services simple [2]
	Moblogging while sightseeing [3]

Picture credits: [1]Mika Saastamoinen, [2]Permission to use picture granted by Suomen Puheentunnistus Oy, [3]Petteri Repo

The product innovators' general interest in user involvement, which was evident in our preceding survey, also became practically evident in the four exercises. Accordingly, we could come up with ways of focusing methodological insights in user involvement toward the practical interests of the participating SMEs.

It also turned out that a certain level of user innovation could be secured in the involvement process. This meant that users could bring forth ideas that the product developers initially did not consider relevant, but which they came to appreciate during the involvement process. We also found that practical user involvement exercises benefited from variations in standard methods to make them more appropriate for specific problems and contexts (Table 1).

Table 1. Four cases of user involvement.

	Community interaction	Learning newsreader	Speech recognition	Tourist moblog
Prototype description or aim of involvement	Concept of hybrid media for communication between volunteers	Demo of web portal that learns users' interests	Demo for reserving doctor's appointment	Transfer of service from b2b market to b2c market
Focus	Concept modelling	Insights in new way of reading news	Functionality of service, applications of technology	Adaptation of service for non-business tourists
User innovation or outcome	Concept modelled by users	* The case is still in process.	Insights in heuristic interaction with technology, applications	Solutions for support services
Methods	Empathic design, participatory design	Trial, focus group interviews, questionnaire	Trial, focus group interviews, questionnaire	Trial, focus group interviews, questionnaire

Interviews conducted with the involved SMEs after the exercises confirmed that the exercises had been considered beneficial for product development. An obvious benefit was feedback on technical issues and usability. User involvement was one way of providing such feedback, although arguably similar feedback could have been obtained from professionals.

A benefit that was more closely related to user involvement involved non-technical aspects. Many of the user innovations had to do with situations of use rather than the features of the service being developed. In particular, the users came up with ideas that they considered missing or underdeveloped. Examples of such issues included maps for guidance and the risk of theft.

Finally, one perhaps often overlooked benefit of user involvement related to personal engagement in the involvement process. Direct contact with users was a memorable experience for product developers. Initially, product developers came to look for solutions for their problems, but instead received insights stemming from users' experiences. This process was partly painful, but was also considered rewarding.

3.3 Prospects and challenges for user involvement

We recognized a number of prospects and challenges for user involvement when conducting the exercises. These relate to the methods of users involvement and the utilization of the results of user involvement in the product development of SMEs.

Many of the methods of user involvement presented in literature have been designed thoroughly and comprehensively. SMEs are likely to have little resources to carry out such methods to a full extent. In our exercises, short term user involvement produced benefits without extensive use of resources which the participating SMEs appreciated. Involving users – even in a limited scale – was arguable better than doing nothing at all. On the other hand, there are obvious risks in carrying out lightweight short term exercises in user involvement. In particular, product developers' views on users may become or remain biased (cf. Akrich 1995). Caution is needed when balancing the benefits of such exercises against the risks.

It may also be difficult for product developers to utilize the results of user involvement. The product development of many SMEs builds on an overly positive enthusiasm. This may result in utilizing on such results that conform with this enthusiasm. Action rationality then dominates over decision rationality (Brunsson 1985, Heiskanen & Repo 2007). On the other hand, user involvement itself seems to introduce an element of decision rationality as it challenges a straightforward product development process.

Due to the schedule of the product development process, the benefits of user involvement may sometimes be used only in succeeding versions of the product. This means that user involvement cannot necessarily provide a final solution to urgent issues in product development. Therefore, it may in some cases be worthwhile to adopt a strategic view alongside an instrumental view on user involvement. The timing of user involvement may be as much related to the phase of the enterprise as it is to the phase of the product being developed (cf. Kaulio 1998).

4. Discussion

User involvement is highly topical in several disciplines and fields of practice. New methods are being continually developed and tested, such as contextual design, empathic design, participatory design and the lead user method. Current topics of interest include the issue of how users are represented and how their perspectives are mediated into the design process. For example, when should we include experienced and expert users, and when should we include 'ordinary' users? How are users capable of providing valuable input on products that do not yet exist, and how useful are different methods in generating the necessary user experience? Another topical issue is how the input gained from user studies and involvement exercises is converted into practical design solutions, and how useful different forms of user input are for enterprises developing innovative products.

We have conducted four short term user involvement exercises with small and medium sized enterprises (SMEs). These enterprises' innovations were at different stages, ranging from the development of product concepts to the testing of new application prototypes. The results of the exercises are encouraging. The enterprises gained obvious benefits from the user involvement exercises that we organized for them. Small-scale, timely user involvement contributed usability and functionality improvements, input on how to enhance the utility and enjoyability of the products, as well as new product ideas. Moreover, engaging in the user involvement exercises energized the enterprises to devote additional efforts to developing and improving their innovations.

Along the benefits of user involvement, we recognized a number of caveats. These had to do with the methodological risks of lightweight involvement approaches, the abilities of the SMEs to utilize the results of user involvement, and the stage of the product development process. It would appear that SMEs need to assess their situation and resources more comprehensively than literature suggests.

The user involvement exercises confirmed some of the issues identified in the literature review and in the service provider interviews. For instance, it has been previously noted that externally produced studies may be difficult to integrate into the service development process. Face-to-face interaction between users and developers was highly appreciated by the service developers, and provided actionable information about users. It can be recommended

that if product developers in SMEs wish to involve users, they should be prepared to engage themselves in the involvement process.

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Designing Urban Mediator

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Abstract

This paper reflects on the steps taken so far by our multidisciplinary research team to address the design of what we have called "Urban Mediator"; an open framework and specific tools for building connections between citizens and city administrations, making all knowledge mutually accessible.

Taking Urban Mediator from the conceptual level into a tangible design solution is being done incrementally, following a co-design approach involving identified stakeholders, to the extend possible. This paper introduces the Urban Mediator concept and describes the co-design process so far (work on Urban Mediator is still in progress), presenting both the meta-level strategies that guide the whole work process, as well as the practical strategies used to maintain the co-design approach possible, particularly addressing the way they drive the software design.

Introduction

Urban Mediator has started as a concept idea for an open framework and specific tools for building connections between citizens and city administrations, making all knowledge mutually accessible (ICING DoW 2005). This concept is based on previous design research and proposal for addressing the possibilities presented by the interweaving of new digital technologies and urban space, for encouraging various forms of public participation on urban issues (Saad-Sulonen 2005).

The idea is not to create yet another interaction channel, like the various websites, portals or discussion forums, but rather come up with a system that would help citizens know of the existing channels and services and help them decide in what way they'd want to interact with the official city. Urban Mediator would make it possible for people to send information, questions, complaints, and remarks regarding their neighborhood, linking them to existing interaction channels, as well as receive both official and non-official information. Citizens, residents associations as well as various city administrations are plugged to the Urban Mediator, making it easier for them to reach the information they need regarding the city, when they want it and where they want it. The system would also permit them to organize themselves around issues of interest, in the way social software works.

Urban Mediator is currently being developed into a working prototype within the framework of the ICING project. ICING, an acronym for Innovative Cities for the Next Generation, is a 6th framework programme EU funded IST (Information Society Technologies) project, scheduled to run from January 2006 to June 2008. According to the project's official

description of work, ICING's goal is to "research concepts of e-Government based on a multimodal, multi-access approach to a 'thin-skinned City' that is sensitive to the citizen and to the environment, using mobile devices, universal access gateways, social software and environmental sensors." (ICING DoW) The project partners include city councils, universities and telecom operators from Barcelona, Dublin and Helsinki. (http://arki.uiah.fi/icing)

Urban Mediator is the key concept to be developed in Helsinki's test-bed of Arabianranta. Within the ICING framework, Urban Mediator will act as one subsystem of the ICING platform, whose role will be to provide services and information that better connect the City with its constituency. Urban Mediator's role within the ICING platform would be to facilitate the citizen-driven possibilities for action.

Urban Mediator is however an independent system in itself and can exist in various frameworks. One of its important aspects is to offer possibilities for a variety of other systems to plug into it, creating the mediating potentials. The scope of this paper does not include the particular development work that engages the parallel process of collaborative work with ICING partners for integrating Urban Mediator into the ICING platform. The paper will focus on presenting a reflection on the co-design process involving stakeholders in the area of Arabianranta in Helsinki.

Urban Mediator Concept

There are various sources producing different types of knowledge about a city. The most visible one is the formal knowledge that the City administration produces, and which is official and expert. There are also some other formal channels such as neighborhood or political activist organizations that collect and use knowledge of the city. Last but not the least, citizens also produce knowledge through their lived experience. This latter form of knowledge about the city is embodied in people's daily activities and communicated in informal and extremely diverse contexts. It is worth noting that some of these communications means are becoming digital, taking the form of personal and community blogs, contributions to discussion forums, and digital photo pools. Urban Mediator would try to create interfaces for making these different forms of knowledge mutually accessible to all the stakeholders.

The concept or Urban Mediator aims at increasing the level of democratic involvement, in particular eParticipation, by providing an example of a "mediator" environment where these different kinds of knowledge are mutually accessible, making it possible for citizens to interact with each other as well as with city authorities. Furthermore, linking to that the possibilities for computer-mediated interaction in the space of the city itself (mobile technologies, Wi-Fi, GPS etc.) expands possibilities for information sharing and taking action into the street, the everyday context of the experience of the city.

The Urban Mediator concept is that of a software and related services that will enable users (citizens and city administration) to obtain and share information about a city neighborhood. This interaction can happen in situ, in the physical space of the city, using mobile devices, or it can happen using any computer with Internet access. The shared information can be official information, as provided by the various city administrations and offices, or information provided by citizens directly to Urban Mediator or already existing on the web. The use of interactive maps facilitates the visualization of such location-related information. In its final

implementation stage, Urban Mediator would also provide a set of tools that would facilitate the creation of projects or discussions related to a local issue of interest.

Urban Mediator Current Stage

Urban Mediator's development has started in June 2006 and is planned to last until December 2007. The areas of development of Urban Mediator were at first defined in a way that reflects both the framework of the ICING project – an IST project addressing objectives of Priority 2.4.9 ICT research for Innovative Government [1] - and the research and design interests of the research team - understanding how 'social' factors as well extending the interface for citizen participation and involvement to the everyday experience of urban life could invigorate eGovernment services and eParticipation. The areas of design development have then, through research and co-design work, crystallized to the following: in-situ access and contribution to information, harvesting existing relevant online information, and providing tools for citizens to organize themselves around issues.

At the time of writing this paper, Urban Mediator already exists in the form of UM Stage 1 prototype, which allows users to annotate points on a map of the area they live in. Points can be commented and are accessible through different navigation strategies. The views provided are a map view with points, a most recent comments view, a " tag cloud" view to navigate with keywords and other views.

Urban Mediator Stage 1 software has client-server architecture. Any graphical web-browser can serve as a client, making it possible to test using not only computers, but also 3G mobile phones. Mobile clients with GPS device can make use of the special Python (S60) application to provide UM with geographical coordinates. A Geofeed from UM allows the use the map server of the City of Helsinki for map portrayal.

Fig. 1 shows two screenshots of the Urban Mediator prototype. The user interface, the same for mobile and desktop use, is still very rough.
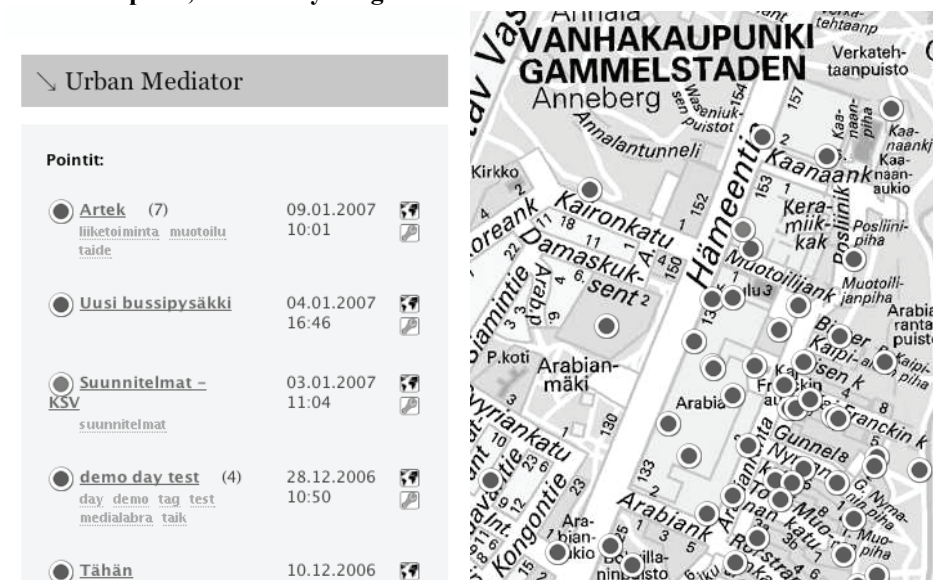
Work is also almost done on harvesting, which is a process of gathering existing relevant online information. Urban Mediator doesn't pretend to contain all information relevant to the urban environment and life. Instead, it leverages on the information available from numerous

sources. It is quite common today that organizations and businesses have their news and events in the form of web feed. Urban Mediator may incorporate that information and present it in connection with given place and time. For example, student theatre with an RSS feed may advertise itself in the Urban Mediator according to spatial position of the user. In order for information to be available for the Urban Mediator, a properly described link should be given by the users. Gathered data, which is available for viewing and browsing, can be further refined by more accurate tagging, summarizing, moderation, recommendation, etc. Urban Mediator would also have regular feeds, like an official feed from the city council's web-portal or various city offices departments, as well as feeds from neighborhood and community websites.

A Co-Design Approach

By co-design, we understand a collaborative design approach that includes development of strategies for active participation of various identified stakeholders throughout the design process and beyond it. The decision to follow a co-design approach stems first from the research group's interest in following and developing such an approach (Botero et al. 2003). Co-design is influenced among others by participatory design (Schuller and Namioka 1993), situated design (Greenbaum and Kyng 1992), and the Scandinavian research on system development (Bjerknes and Bratteteig 1995). It also includes the idea of extending the co-design of an initial outcome to be possible through its use by people.

In the case of Urban Mediator, the use of a co-design approach is particularly interesting as it gradually sets the ground for a possible future 'real' use of Urban Mediator in the neighborhood of Arabianranta where it is first set to be developed and tested. So, not only does the co-design approach offer the possibility to iteratively explore with stakeholders (in the case of Urban Mediator the stakeholders are potential users, information providers, authority figures, designers), what would be relevant features for the software and refining the service possibilities, but it also makes it possible to gradually populate the Urban Mediator working prototype with relevant content, preparing the prototype for future public use. This is important as it reflects the very nature of Urban Mediator as a system whose content is not pre-provided by any particular actor but is rather continuously provided by stakeholders, either directly, or through established feeds from various relevant sources.

Meta-strategies: developing common language and favoring a tool-based approach

Without some kind of a common language, it is impossible to draw together the stakeholders that would become involved in the co-design process. Communication indeed lies at the heart of collaborative design and the success of the design process depends upon the capability to create a shared understanding amongst all involved stakeholders (Erickson 1995). Designers (users-as-designers and professional designers) exchange technical design possibilities and design requirements and use cases. Effort is therefore put on producing the artifacts that would permit the common language, such as scenarios, sketches, reports, workshops and prototypes (Erickson 1995). Effort is also put in using appropriate naming for the key concepts of Urban Mediator so as these terms used mean roughly the same for all involved stakeholders

Taking co-design a step further also means designing systems that allow users to continue their (co-)design of the system, through use. This ties closely to Henderson and Kyng's understanding of "design as a process that is tightly coupled to use and that continues during

the use of a system" (Henderson and Kyng 1991). This is very relevant for Urban Mediator as it helps address the possibility of creating tools for users rather than fixed solutions for encouraging public participation in urban issues. From a software design perspective, this also means that co-design approach sets the ground for flexibility and openness. In that sense, we can say that the essence of a system such as Urban Mediator is its open nature: it presents opportunities for mediation between various producers and seekers of information related to life in the city, citizens and officials alike. Moreover, an open system can support collaborative design and presents opportunities for being shaped through use. Addressing this issue in an article advocating the need for developing frameworks for end-user development of ICT based systems, Fisher and Giaccardi (2004) clearly articulate the benefits of open systems: "By creating the opportunities to shape the systems, the owners of the problems can be involved in the formulation and evolution of those problems through the system".

These meta-strategies provide a grounding focus for the design process and can be considered as what Nelson and Stolterman (2000) call the "guarantor of design", or the attempt to find some solid and dependable base for design actions. However, involving the stakeholders in design process is not easy. The effort in pursuing a co-design approach requires also more practical steps and strategies that are interweaved in the design and development process itself. These practical steps and strategies undertaken within this guiding focus are presented in the next sections.

Co-Design Steps

It is important to note how the co-design approach in the Urban Mediator case spans through the whole project timeframe, addressing the various aspects of development emphasized by the inter-disciplinary approach to design. (The team includes members with backgrounds in software design, industrial design, architecture, and at an initial stage, social scientists). Moreover, co-design activities have been set up in relation to the identified areas of development of Urban Mediator (see above) and has helped crystallizing them.

The phases of the co-design process are closely related to the stages of design articulated by Erickson (1995): Exploration, Refinement and Transition, but are not strictly delimited as such (see Table 1). In the case of Urban Mediator, it is important to also pinpoint the initial steps of setting the stage for co-design. The very first co-design steps have been to identify the relevant stakeholders for such a system as Urban Mediator. This is characterized by researching the context and establishing contact with various actors in that context. In the case of Arabianranta, key players such as the Art and Design Company [2], active residents and communities, as well as various representatives of the city authorities were contacted. Meetings were organized with these people where the idea of Urban Mediator, as well as the ICING project, were presented. As a result initial, the mapping of important stakeholders and possible co-design contacts from the different stakeholders groups were established. Furthermore, scenarios of Urban Mediator were created based on these initial findings and a short animation was made to explain them. The animation was then later used in future meetings and talks with stakeholders and constituted an initial step in setting a common language.

This initial phase is crucial in the case of Urban Mediator as beyond setting the stage for the exploratory and refinement stages, it also prepares the ground for establishing how Urban Mediator would exist once brought to public use and who would be the parties involved in

using it, but also hosting it. In a way, in the case of Urban Mediator, this initial stage already interweaves with Erickson's third stage of design, that of Transition.

Further exploratory steps related to reaching an initial stepping stone into the development process have been to send a small questionnaire and devise a set of low-key workshops with active residents in an effort to identify potential use cases for Urban Mediator. The questionnaire was sent by email to members of the Arabianranta Residents and Parents association and members of the Arabianranta Moderators group [3], asking them where they get information regarding Arabianranta.

The two workshops were then organized: one with members of the Arabianranta Residents and Parents association, and one with members of the Arabianranta Moderators group. The workshop participants were asked to place on a paper map of Arabianranta, issues which they felt they'd need information about, and to discuss how and where they would get or would like to get such information.

The results of this initial phase, showed that it was clear that citizens needed information about construction sites, traffic issues, parking space, day care shortage, services, interesting places, routes etc. It was also clear that many city office employees would find it beneficial to have access to information produced by citizens, about their area and where especially interested in the idea of a map that would show this citizen-produced information as layers. These considerations have constituted the framework into which the iterative design and development work proceeds.

The next phase which we have recognized as being the interactive and iterative one, or Erickson's Exploratory stage, is that of user involvement and prototype building. This stage particularly addresses the practical strategies driving the software design and is explained in the following section.

Table 1 shows the co-design steps taken so far

		Design team	Residents	City Office	Others
Explorations / Refinement	Initial explorations	Prototypes	Arabianranta Moderators **(meeting)** Arabianranta Moderators: Media Folder experiment **(re-purposing software)** Arabianranta Moderators **(workshop)** Questionnaire to residents Workshop with Residents' and Parents' Association members **(paper and pen)** Workshop with moderators **(paper and pen)**	Meetings/interviews with officials dealing with the physical environment Meetings/interviews with officials dealing with the social services Meeting with the Helsinki City Planning Department Meeting with the Public Works Department	Art and Design City **(meetings)** Arabianranta's workgroup **(meetings)**
	In-situ access and contribution to information	Prototypes	Urban Mediator Stage 1 **(prototypes)**	Trial with volunteers from City Youth Department **(Protype – no action)** Arabia School **(meeting – showing prototype)** Public Works department **(meeting – showing prototype)**	
	Harvesting	Prototypes			Workshop with Art and Design City **(discussing prototypes – adapting existing software)**

Practical Strategies Driving The Software Design

Following an iterative co-design approach means that we would not first gather all the requirements and then build software for the rest of the time. We decided that during Urban Mediator development quick changes and utmost flexibility will be needed. Software development tools we have chosen to build Urban Mediator are web.py (web framework written in Python) and MySQL database, and the way we decided to build software was through a series of lightweight prototypes. This approach is not a conventional way of building software solutions and actually it has discrepancies with "established" software engineering methodologies (such as having complete functional analysis and set of detailed

use cases). Software co-design methodology however bears many similarities with agile methodologies, as reported in the online document Manifesto for Agile Software Development (http://agilemanifesto.org/). Agile methodologies especially value "customer collaboration" and "responding to change over following a plan", which are quite similar to the ideas of collaborative design and continuous design through use.

We present here three examples of practical strategies that have driven the software design and that are embodiments of the guiding meta-strategies presented earlier.

Accessible conceptualizations

Finding common language - concepts equally well understood by professional designers and other stakeholders - is crucial to the success of co-design as it allows all engaged stakeholders to see technical and social possibilities in the solution domain.

Urban Mediator is, among other things, dealing with facts. In the early stages of UM development we came up with simple fact representation model: What-Where-When-Why-Who contexts we refer to as W5. The model helps to comprehend the emerging design spaces of the Urban Mediator. While the "Where" context seem to be mentioned more often than others and is more used in the visualization of Urban Mediator data, other context are not ignored.

While somewhat oversimplified, viewing Urban Mediator as the index of points in multidimensional W5 space of facts helps to comprehend not only the design results, but the design process as well. For example, a user suggestion or feature request may be analyzed by projecting the information model, needed for the feature to work, into W5 space. If the feature requires more than just changing user interface, the underlying data model may be revised, and there are usually no problems to interpret additions according to W5.

The W5 model can be understood by all stakeholders: users and HCI specialists understand facts in terms of What, Where, When, Who and Why as their meaning in everyday language; software designers have no difficulties to translate those into aggregates of data structures. Finally, graphic designers also benefit from knowing that UI should reflect those contexts. As a concrete example, during UM development (user interface for adding new data point), it was easy for all stakeholders to refer to the sequence of data input actions in terms of W5, and changes could be directly made to it.

Another useful concept, which emerged through UM design, is that of "Point" (not as geometrical point but rather as the point in a discussion or dispute). In UM stage 1 "point of discussion" has been tied with point on the map and comments added to the point constituted discussion itself. It was beneficial at that time to have a good metaphor, so users were not at loss why what it means.

Re-purposing and adapting existing software

Re-purposing existing software makes it easier to quickly engage people in co-design activities and helps the software team to have head start in the project.

The first Urban Mediator prototype was code-named "UM Embryo" and has been built with the Media Folder ("Kori") software of another project the research group was involved in. In a nutshell, a Media Folder is a folder for sharing media material among its users with ability to call other users. Images, sounds, text and videos can be put there. Media Folders could belong to a group of users (a family), and would then constitute a "Family Folder". The process of creating new Media Folders inside Family Folder was easy. For a Media Folder to be adapted to represent a place to gather information, a special, simpler, version of Family Folder was build and called Community Folder. The re-purposing took nearly one man-day and the resulting solution has been used to demonstrate the idea of Urban Mediator to stakeholders and to quickly ask them to contribute to information regarding their neighborhood to what we had set up as an "Arabianranta" Media Folder. As a result of this exercise, we were able to quickly gather examples of what people find interesting to report to others, particularly by documenting through picture taking.

The Web 2.0 direction of WWW also shows a lot of examples how existing online software can be adapted to the needs of special-purpose designs. In the course of designing Urban Mediator constant attention has been made not to overlook existing online components that could complement and enrich UM functionality, or provide it with spare parts (Floyd 2006). One of the examples is Google maps (http://maps.google.com/), which with very little effort, can be used to create mashup of Urban Mediator data and Google maps map portrayal service. Mashups are very close to the idea of Urban Mediator itself, and therefore using them as prototypes gives concrete examples of certain features of Urban Mediator.

Another interesting example of is the use of Flickr (http://www.flickr.com/) web feeds powered by location information as a way of describing the Harvesting features to stakeholders. It is easy to get feed from Flickr based on keywords and Urban Mediator can display feed entries on the map. It is not in itself something unique because Flickr has its own map engine. What is making it valuable is the ability to treat Flickr entries as points of Urban Mediator, for example, referring them in discussions. Web feeds from Flickr have been implemented to Urban Mediator prototype and showing them to particular stakeholders (those in charge of websites containing Arabianranta-relevant information), during a workshop on the harvesting theme, has helped them understand the notion of using web feeds to populate Urban Mediator with relevant information.

Fig. 2 shows a screenshot of experimentation with using webfeeds as a means of harvesting information about Arabianranta
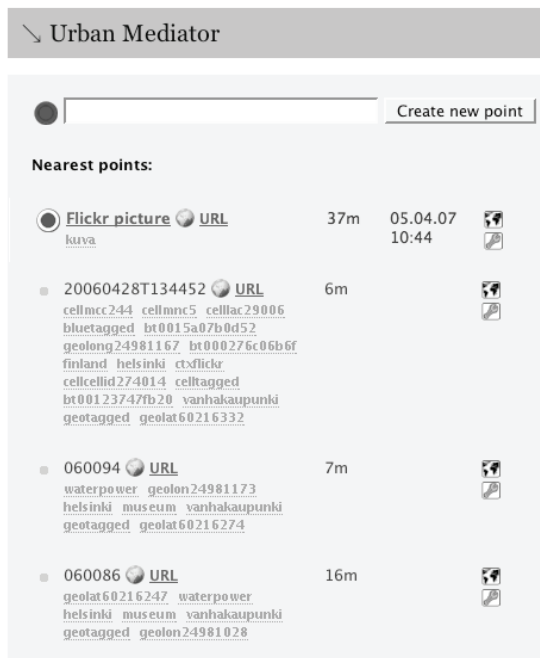
Furthermore, consideration of adapting existing software made it simpler to consider what should not be part of Urban Mediator design. Namely, it was explicitly stated that Urban Mediator is not a system for annotating maps, it is not a discussion forum or a blog software: but all those components can be used to make Urban Mediator more useful. As a consequence, Urban Mediator domain logic is quite unique and focused to specific purpose. All "usual" features, expected by users, (e.g. photo sharing or storing bookmarks or discussing topics) can be linked to UM by users themselves.

Building software through lightweight prototypes

UM development is done through iterative rapid prototyping to ensure we can engage all stakeholders in the process. We advance in the understanding of the context and the domain (citizens' lived experiences of the city) at the same time we advance with the software development. From a software engineering perspective this means we are incorporating elements of Agile methodologies (Cockburn 2002) that fit very well with our understanding of co-design.

After initial success of the prototype using re-purposed software (the Media Folder case) and getting real material from users, we first decided to devote two months to build prototypes, o test whether certain technology will work for us in the expected way and that there would be no surprises later.

The second prototype (called "tagging proto") was a raw implementation of W5 described above. Each point has five fields (What, Where, When, Why, Who) capable of containing URL to some web-resource.

Another two prototypes were about Urban Mediator ontologies. The first one was completely theoretical and resulted in the definition of fact representation language. The other one was about utilizing that in a knowledge base and resulted in a Prolog program capable of resolving queries to W5 database. Questions used to populate database were borrowed from the above mentioned workshop materials.

Another prototype was about a special web interface, which made it easier to really add data into W5 data structure.

Building those prototypes helped software designers to "feel" how concrete software solutions will look like thus making sure that the Urban Mediator design is not driven by technology (which is very often the problem of new technologies), but that technology is selected to make desired solution possible. These trials set the ground for strating work on building an actual working prototype of Urban Mediator, which would be addressing the first are of development, mainly in-situ access and contribution to information.

In October 2006, Urban Mediator Stage 1 prototype trials started with four volunteers, residents of Arabianranta, who were asked to act as citizen-reporters. They were given Symbian S 60 mobile phones with Internet access and Bluetooth-enabled GPS receivers. A small mobile application made it possible for them to launch the web browser where a clickable map centered on the spot they were in would appear. They were asked to mark on this map points to which they would link any kind of comments they feel relevant. At that point, the information gathered also contained the geographical coordinates of the location to which they were referring to (via the GPS or the map), the time of creation, and the username freely chosen by the participants. People were told to put into the Urban Mediator everything they think is valuable for other people and city officials to know. As a result of these field trials a collection of 70 points was gathered.

Initial Urban Mediator content and practice descriptions by users allowed to see the design space people would like to deal with. Gathered content provided insights for domain model of the Urban Mediator and description of user activities helped with user interface and interaction styles.

Conclusions And Further Plans

During co-design a dialog should happen between stakeholders. Software and even paper prototypes facilitates this process, because potential users and interested parties can express their idea with the common language of such prototypes. On the other hand, users try (as in case of Urban Mediator) to express their needs by filling system with content. Obvious workarounds are visible to the HCI and software designers as unexpected ways to use the system.

However, user input of all kinds (both in the form of static content, observations of practices, analysis of similar projects and practices behind them) is not to be understood in a literal sense. Many suggestions were analyzed and the planned implementation of new features is not done automatically. We tried to understand if the suggested feature is really a glimpse of some greater need, which can be satisfied in a more general way. Software designers are specialists in building information models of any problem domains and that ability may lead to more streamlined designs. Likewise, HCI specialists possess practical knowledge on

making better interfaces. It means, that feature requests by the user are not handled one by one but as representatives of underlying integral model.

Collaboration with members of the Moderators group, of the residents' and parents' association, and with the Art and Design City company has been relatively successful as the co-design work has helped us advance in developing features for Urban Mediator. Some failed attempts at collaborative work have also brought unexpected results, such as the case of a meeting with schoolteachers, which was supposed to trigger prototype workshops with students but never took of. During the meeting however the important issue of the need for some kind of moderation for the system came up and helped our team better articulate the need for a feature that was then implemented and permits users to flag content as inappropriate.

Our initials plans for co-design also included involving representatives of city authorities in workshops and testing activities, as they had also been recognized as key stakeholders. This however has not been successfully achieved until now. We can speculate that one reason is that Urban Mediator is not being developed as a tailor-made solution for cities, but is rather an open system and tools for a variety of stakeholders, particularly citizens. Because of that, engaging in exploratory workshops or testing prototypes that are very obviously of an unfinished nature can be seen as a waste of time for them. An exception to that is the City Survey department, an official partner in the ICING consortium, with whom we are collaborating in an effort to use the online Helsinki maps for Urban Mediator.

However, the fact that a public trial of Urban Mediator in Arabianranta is planned, and the possible interest from one city administration office to participate in it, might trigger more collaboration for the next phases of Urban Mediator development. Moreover, the fact that we are moving to the development area of tools for encouraging participation might provide us with more concrete collaboration possibilities for us to propose the city administrations.

Once again, engaging stakeholders in a collaborative design process is not easy, particularly when it is not always clear for them how they can benefit from such an effort. It would be important to remember that the design stage that Erickson labels as "design evangelism" – in other words defending the project, and in that case defending the need for co-design with the identified stakeholders – should be addressed early on in the project.

Notes

[1] The focuses of Priority 2.4.9 that ICING addresses are: 1) Innovative ICTs for democratic involvement, in particular eParticipation, 2) Intelligent, inclusive and personalized eGovernment services, 3) Adaptive and proactive eGovernment support systems (Information Society Technologies portal 2004)

[2] The Art and Design Compagny serves the area of Arabianranta in Helsinki and is owned by the City of Helsinki, Ministry of Trade and Industry, University of Art and Design, University of Helsinki, Arcada Polytechnic, Pop and Jazz conservatory, the Arabianpalvelu (Arabia services) company and the Iittala glass manufacturing company.

[3] A moderator is a resident of a building that voluntarily takes up the job of moderating the buildings web pages. There are 20 residential buildings in Arabianranta that have a moderator moderating their building's own web pages.

Acknowledgements

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Intermediaries and Social Learning bridging users and producers

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Abstract

Intermediaries between supply and usage of technology are at once obvious and neglected actors. On the one hand various consultants, distributors, government agencies etc. routinely play important roles between technology producers and various end users (Howells, 2006). On the other hand the roles and importance of intermediaries in social learning around the design and uptake of new technology tends to be underestimated by both practitioners and research alike (Stewart, 2007). There is simply more at stake than enabling or preventing the technology from diffusing from suppliers to users. Intermediaries are crucial in organizing user knowledge and experiences, and mediating between emerging users and producers in uncertain markets (Williams et al, 2005; Russell & Williams, 2002; Hyysalo, 2004).

Building on the Social Shaping of Technology approach, we clarify our social learning perspective used in understanding the dynamics of long term development and uptake of new technology (Williams et al, 2005), and explore its relevance to studying intermediation and intermediaries. We then review findings on intermediaries in some of our studies and other available literature. The topics we address include differences between established intermediaries, which are often addressed in management and policy literatures, and emerging intermediaries that are created in parallel to new technologies, markets and uses. We show how they map to the supply - use axis, development paths, and roles they play in mediating design and use. Specific roles that we examine include those of Facilitation, Brokering and Configuration. Equipped with these insights, we explore in more depth how intermediaries affect the shape of new technology, and how the lack of appropriate intermediaries can severely impede successful innovation.

Introduction

Our traditional concept of the role of intermediaries in the economy is to transmit goods and facilitate monetary transactions. Few of us buy software or hardware from the producers but rely on networks of retailers, banking services, transportation agencies and so on. But intermediaries are also involved in what Callon calls an "economy of qualities" by which the needs and desires of consumers are shaped and products adjusted by a range of actors arrayed between suppliers and consumers (Callon et al 2002). Rather than having some primary and secondary characteristics, "the technology" gets constituted by all the actors that are involved in packaging, distributing, assembling, quality assurance, testing, bundling and branding it. Likewise, the "consumer" is constituted by intermediary actors involved in segmenting, persuading, selling, advising, studying and regulating the consumption, and in so doing, creating attachment to consumed items. Together these very tangible networks are able to shape, respond to and maintain seemingly abstract characteristics such as styles and tastes (Callon et al 2002).

However, in this paper we focus on *innovation* intermediaries: actors who create spaces and opportunities for appropriation and generation of technical or cultural products by others. In periods of intense innovation, such intermediaries can be identified by their continual engagement in activities, in which they gather, develop, control and disseminate knowledge, collect and disseminate financial, technical and institutional resources, such as the support of users and sponsors and attempt to regulate uses, developments, participation and the actions of others in the network. The extent to which they do this depends on their access to resources and their connections in the 'constellation' of actors associated with a particular project. While they configure the users, the context, the technology and the 'content', they do not, and cannot define and control use. The service in the innovation constellation they provide is that of a facilitator, they help users to do their own thing, and also allow sponsors and suppliers to fulfil certain of their aims. Nonetheless, in taking on this role they can have important influences on and inputs into innovation.

Research on intermediary organizations in innovation such as consultants and other technology brokers began to grow during the early 1990s (Bessant & Rush, 1995; Hargadon & Sutton, 1997). At the time, models of innovation were rapidly changing from fairly linear ones to ones emphasizing uncertainty and shifting character of effort and the complex interactions between multiple actors that jointly comprised the iterative series of developments jointly resulting in innovation (Freeman, 1979; Kline & Rosenberg, 1986; Edge & Williams, 1996; Van de Ven, 1999). The changes in the models were spurred by increasing flow of findings about user initiated innovation (e.g. von Hippel,1988; Pavitt, 1994) and the continued innovation in use (e.g. Gardiner & Rothwell, 1985). The then relatively new and rapidly evolving fields of robotics and computerized manufacturing technology showed that talk of diffusion of generic systems matched poorly the extensive adaptations and further developments done by adopter organizations (Fleck, 1988; 1994; Bessant & Rush, 1992). In short, when the producer company lost its position as the privileged source of innovation, it became urgent to understand how the knowledge from a range of actors flowed into the innovation process.

As a consequence, there is a range of studies that document well the various intermediary organizations (various consultancies, state research centres et cetera) and the roles they play in fostering innovation at the development end and in technology procurement (Howells, 2006; Bessant & Rush, 1992; Van der Maulen & Rip, 1998). In fact, these issues have received attention in various literatures, including innovation management (e.g. Hardagon & Sutton, 1997; McEvily & Zaheer, 1999), literature on innovation systems (e.g. Stankiewicz, 1995), and science and technology studies (Proctor & Williams, 1994; Van der Maulen & Rip, 1998; Callon et al 2002). This interest was also spurred by the empirical development where the role of knowledge intensive business services (KIBS) began (and has ever since) grown in many industries (Howells, 2006). Diffusion studies have stressed the importance of change agents and opinion leaders in the diffusion of innovation (Rogers, 1995; Attewell, 1992), and particularly after the late 1980s began to emphasize the work these actors do in tailoring and adjusting the innovation to different audiences and promoting re-inventions that make it more appealing for each particular audience (Rogers, 2003). From a more generic perspective, social network studies have also begun to show the importance of network 'bridgers' in not only transferring knowledge across structural holes in networks, but as important source of innovation themselves (Burt, 2004).

However, to our knowledge there are few studies and frameworks that address in detail the whole range of intermediaries and intermediation that transform technologies, uses and qualities in both using and producing side, and explicate the bridges and gaps that exist in different ecologies of intermediation between design and uses. National innovation systems

literature aims at this (Lundvall, 1994; Stankiewitz, 1995), but only at a fairly coarse granularity. We thus turn to framework of social learning that allows us to explore in more detailed fashion the dynamics through which intermediaries affect ICT innovation in different socio-economic contexts and constellations of actors with different capabilities, commitments, cultures and contexts (Williams et al., 2005). The empirical relevance of this framework lies in that there are high uncertainties and information asymmetries involved in "choosing" or "creating" the right intermediaries for inventive technologies or new groups of users. There is simply more at stake than enabling or preventing the technology from diffusing from suppliers to users. Intermediaries are crucial in organizing user knowledge and experiences, and mediating between emerging users and producers in uncertain markets (Williams et al, 2005; Russell & Williams, 2002; Hyysalo, 2004).

As we shall illustrate in the course of this paper, many of the ICT-innovations we have studied have withered because the assumedly established intermediaries turned out not to be up for the tasks required, be these in distributing, adjusting, configuring, helping to maintain or in gathering feedback to supply side actors. The practitioners and researchers alike are thus in need of more fine grained accounts of how to conceptualize and deal with the set of questions that innovation intermediaries between supply and use pose.

We proceed by first clarifying our social learning perspective and its relation to studying intermediation and intermediaries. We then do a brief review of intermediaries that are typically established in a given industrial sector and map these to supply use axis. We then move to discuss the roles intermediaries play in mediating design and use, and address the questions of how intermediaries emerge, grow and fade. Equipped with these insights, we begin to explore in more depth how intermediaries affect the shape of new technology and turn to more in-depth inquiry in how to manage well established intermediaries and how to nurture ill-established but important ones. As these concerns become particularly acute in relation to small companies and NGOs with innovative new products and services we purposefully take this as our perspective throughout this article.

Social Learning in Innovation

Social learning in Innovation is a concept developed within the tradition of 'social shaping of technology' approach (MacKenzie & Wajcman, 1998; Williams & Edge, 1996), which views development of new technology as an uncertain process, characterized by complexity, contingency and choice (Williams & Edge, 1996). It places particular design episodes within multiple, overlapping cycles of development and implementation (Rip, Misa & Schot 1995), focusing on understanding the coupling between technological and social change, and the difficult and contested processes of learning that are integral to innovation.[1]

This analytical framework is socio-technical: it not only attempts to account for technological innovation, also the processes of negotiation and interaction that occur between diverse networks of players attempting to make technologies work - 'fitting them into the pre-existing heterogenous network of machines, systems, routines and culture (Sørensen 1996). Many contemporary technologies, particularly ICTs, are not discrete, but 'configuration', consisting of layers of components, systems, applications and content, bringing with them partially

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[1] Social Learning draws additional insights on a range of research fields: cultural studies of artefacts and marketing, engaging with the consumption of goods and services; innovation studies stressing non-linear and heterogeneous innovation processes; and work on organisational learning and the reflexive activities of players in the innovation process.

formed routines, concepts of users and uses, rules for use and other non-technical features. Fitting the existing and the new together involves often long and drawn out relationship building and stop-start processes of institutional learning and forgetting that occur across a constantly changing network of actors.

To understand these processes the Social Learning approach draws together a range of generic mechanisms in which we see learning-though-innovating occurring: learning-by-doing and using in the often trial and error processes of appropriating new technologies (Arrow 1962; Rosenberg, 1982); learning by interacting (Corish, 1997; Lundvall 1988), as new technologies bring diverse networks of players together; and learning by regulating (Sørensen 1996), as particular players attempt to assert their power though non-technical rules and regulations shaping the 'rules of the game' from everyday use to state policy. These processes—and more detailed learning dynamics within them—not only shape technology, but can have a dramatic effect on the structure of the innovating network, the constitution of the organisations involved, and the identities of the actors (Russell & Williams 2002; Hyysalo, 2006; Hasu, 2001). Many of these actors and institutions are end and intermediate users, and other societal actors such governmental and non-commercial institutions. Social learning stresses the importance of giving more detailed accounts of how these actors play key roles in innovation in the long term.

Central to the innovation processes identified in social learning are the creation and evolution of *representations of users and uses*, and their translation into technological designs and social actions. These processes are fundamental in shaping design and relationships in the constellation of actors. Far from being solely an up-front 'user needs and requirements capture' process conducted by designers, creation of these representations involves all the participants, and continues though-out a project, and over generations of product development. Many different users: intermediary users, end users and proxy users can play more or less active roles in articulating their own requirements, and in the creative process. The ability and willingness engage with users and for users to engage creatively with developers in thus central to success.

This conceptualisation of the role of users in the innovation processes, involves moving the focus of innovation studies from the supply-side towards the demand side so we need to account more carefully for the appropriation and consumption activities of users. In particular we need to examine how constellations of users developing uses for technologies and their role in feeding back user experience, practice and innovation to the supply side over multiple long-term innovation cycles.

Innovation contexts

In this paper we are exploring the role of intermediaries in innovation, but within the context of different innovation spaces in which the actors are given different degrees of freedom to exercise choice, or act reflexively (Bessant 1991). In particular we are concerned with the involvement of users in the innovation process, and the type of influence users have in the innovation processes. At one extreme, users are considered as 'passive' with no choice over adoption: a technology is imposed; this is the much criticised 'linear model' that emphasises planned impacts of innovation on users, and neglects the dynamics interactive aspects of innovation that have been broadly documented. Each member of a supply chain can thus be regarded as an intermediary between the preceding and following player, and end users only have contact with the final player in the chain.

Fig 1. Pipeline linear development and diffusion

| Component Supplies | Platform Providers | Application Designers | Intermediate users / Interm. designers* | Proxy Users | Final Users |

DESIGN /DEVT.

USE

Market
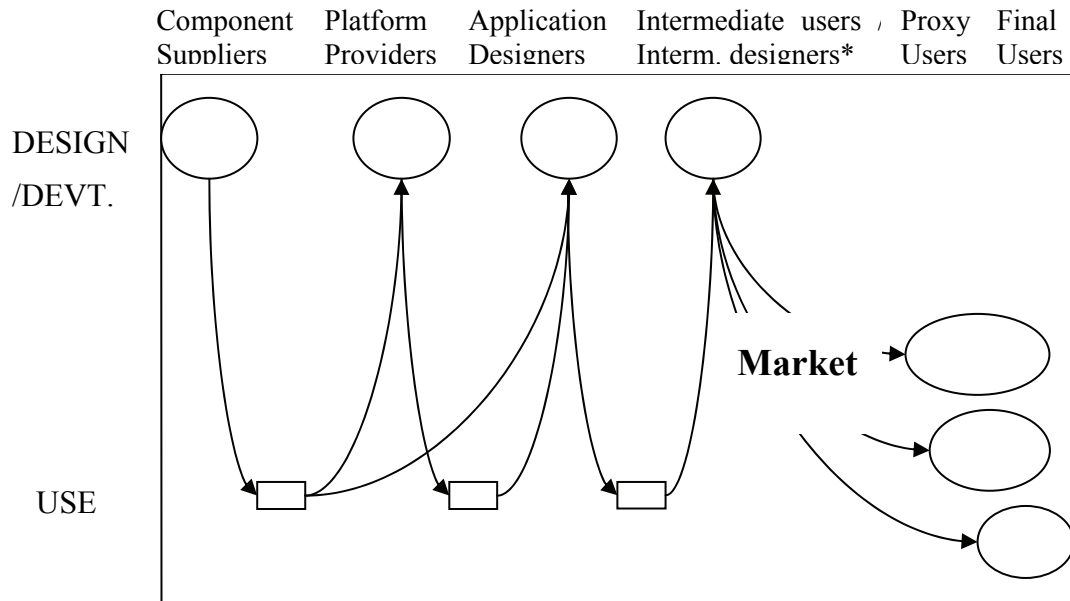
* Intermediate users are organizations that adopt a technology for their customers or employees. Examples are mobile phone operators, banks, retailers who sell to end users or firms, and any firm adopting a system to be used by their employees. A subset of these are 'content developers' or content service providers. E.g. a service provider offers both a delivery platform and content for end users. These organisations can be seen as supply-side or demand side according to the particular case and particular point in the innovation and implementation process.

An alternative to this model proposes users as consumers of pre-formed technologies, where their only choice is between use and non-use of a technology: suppliers and end users are separated and user preferences are signalled at arms length through a market. This allows for user preferences and innovations to be returned to suppliers though market signals, although these may not be very clear, and certainly not to the whole market, and invisible to firms deep in the supply network.

In contrast to this relative non-involvement of users there are innovation contexts where user-centred design processes—in which end-users, or more correctly 'proxy users'—are put at the centre of design. Detailed studies of users, along with negotiations with proxy or intermediate users of their 'needs and requirements' supposedly allow those creating new technologies or integrating systems to create products and services that closely match the existing culture and activities of specific users (e.g. Norman and Draper 1986). However, as with the previous models, this approach prioritises prior design work and neglects the activities of a range of users in actually getting the 'finished' product to work (Stewart &Williams 2005). It also neglects the processes of 'generification' that usually proceeds specific design, as developers try to remove all specific user features to create a generic product suitable for larger markets.

Fig 2. User centred design. A more dedicated application is built with the help of proxy users
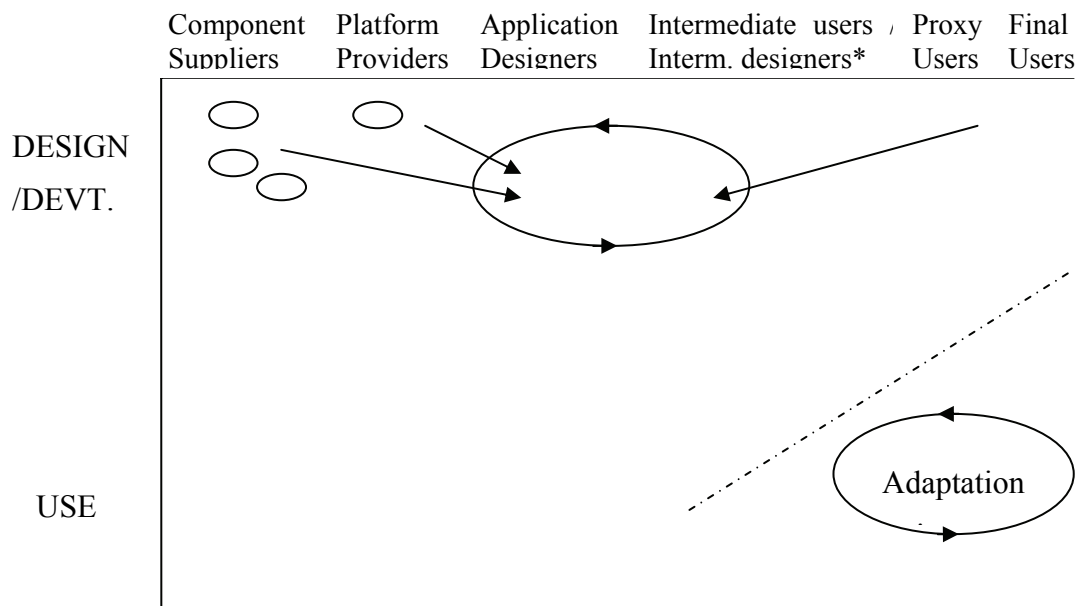
Though a range of case studies done as part of the European *Social learning in Multimedia* project in the late 1990s, Williams et al (2005) identify three other modes of user involvement in innovation: the technology experiment; the appropriation model, and an evolutionary model 'pick and mix' model.

The 'pick and mix' model is closest to the market model, where intermediate and end users are able to pick from a huge range of available generic technologies, and configure them together. This model is characteristic of the current ICT market, where intense competition, flexible standard platforms such as common operating systems and internet protocols, and open programming interfaces and tools make it relatively easy, and very cheap to configure. Here we see the emergence of a range of intermediaries that configure technologies and uses, attempting to bridge the 'market gap' from suppliers to user and visa versa.

Fig 2. Pick'n Mix model where there are large clusters of generic offers at the supply end and the configuration of off-the-shelf components at local user sites.
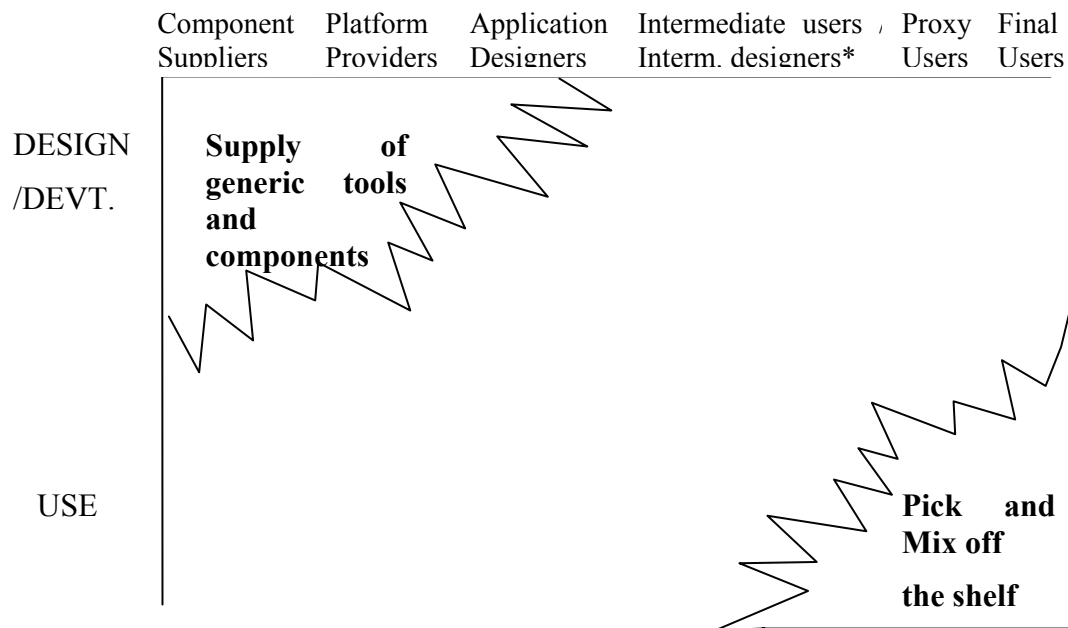
The Technology Experiment is mode of collaborative innovation that involves a range of players, such as government agencies, intermediate users, developers and suppliers (Jaeger *et al* 2000). This can often be the result of certain key players deliberately constructing a constituency of actors that provide a framework of ideas and resources to shape innovation (Molina 1995). Such process can be based on co-design between designers and users, comprise an open-source type development or at least eventually involve users fruitfully (Hyysalo & Lehenkari 2003). However, it can also merely verify the chosen technology model negotiated early on in the process. This partly depends on the degree to which core players are open to innovation by users, and the points at which configurations are locked into place (Van Leishout *et al* 2002).

Fig 4. Technology experiment / evolving co-design project

Component Suppliers	Platform Providers	Application Designers	Intermediate users / Interm. designers*	Proxy Users	Final Users

DESIGN
/DEVT.

USE
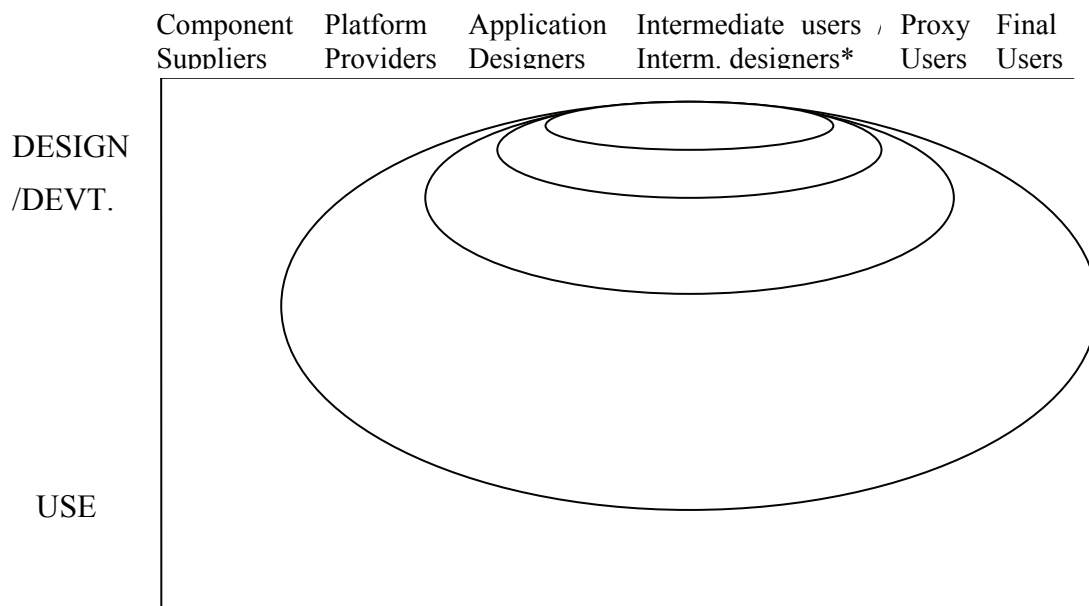
Finally, the appropriation or SLIM model draws on two concepts: domestication and innofusion to highlight the work done on the 'demand' or user side. The 'domestication' concept (Lie and Sørensen 1996) captures the practical, symbolic and cognitive dimensions in the selection, deployment and adaption of new technologies. The innofusion concept highlights the technological innovation done in these processes, emphasizing that key innovation moments occur in and are controlled by the user environment. The interactions between networks of users and designers are not continuous or controlled, but are constantly changing, as different sets of actors in the constellation of interested parties are temporarily linked.

Fig. 5 Innofusion and domestication model

Component Suppliers	Platform Providers	Application Designers	Intermediate users / Interm. designers*	Proxy Users	Final Users

DESIGN
/DEVT.

Innofusion

USE

Domestication
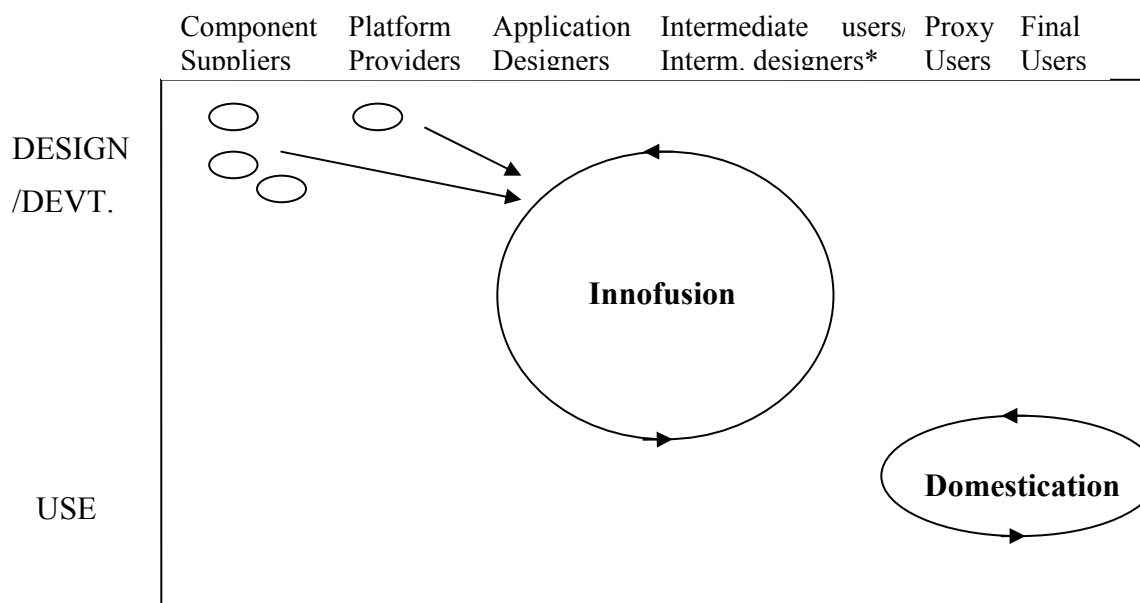
Innovation is seldom confined to one of theses modes, but over time a particular project, technology or constituency will move between them. As this occurs the roles of particular actors can change, and it is clear that a simple dichotomous division between users and designers does not hold up. There are a range of roles of both supply and user side. What is striking though is the important role of intermediaries in all of these modes of innovation, but also the immense variation in types of intermediary.

Mapping intermediaries between supply and use

Between developers of technologies and their eventual users there appear to be a huge range of intermediate institutions through which money and information flow, and who play key roles in configuring and integrating technologies, and building representations of users, uses and markets, bridging the gulf between suppliers and users. Some such actors are retailers, media companies, telecoms platform operators, venture capitalists, lawyers, advertising agencies, trade associations, promotional agencies, export agencies and market research agencies, distributors, standards agencies, regulatory agencies and management consultancies.

While such an impressive list of intermediaries can be found in almost every branch of industry, the established intermediaries can turn out to be inadequate for doing the kind of job supplier and prospective users need. Let us briefly illustrate this by two examples from our studies.

The first example is in the area of video games for girls and women. The established industry of games publishers and events, magazines aimed at existing market for these products is almost whole devoted to promoting particular range of game genres to a young male market. For a firm who identifies a market for 'girl games' and is able to engage with potential users in the design of attractive products, these intermediaries are not a resource but a hindrance, and necessitate recasting the products and making new connections to non-traditional intermediaries - such as general retailers, museums and TV broadcasters. And also in real life such shift proved necessary for success (Stewart, 2004)

Another example comes from diagnostic equipment for medical laboratories. A line of innovation for handling radio-active samples came to dominate its niche market in late 1970s. However, when the concept was further developed for general laboratory use, the few established large companies dominating the diagnostic market showed no interest. The new technology would have meant shifting from large centralized batch processing to small distributed sample handling. Moreover, as the new system would use only a fraction of reagents in comparison to established open vessel chemistry. As the reagents were the most profitable business for the incumbent companies and laboratory experts had their training in open vessel chemistry, the new concept gestated for over twenty years in various efforts to bypass the regime that governs the venture finance and distribution channels between development and end users (Höyssä et al, unpublished manuscript).

While established intermediary institutions provide an important stable framework for potential suppliers and users of new technologies, for example, in which to innovate, comply with and influence regulation, raise finance, to bring products to market, to assess and compare new offerings etc, they can also be roadblocks, and expensive and intransigent gatekeepers, with services, repertoires of knowledge and activities, that can *fail* the innovation process in a range of ways.

These observations are consistent with other research on intermediaries. Howells (2006) describes the range of different players that mediate various aspects of innovation. Bessant and Rush (1992) go further by elaborating how the range of consultants between suppliers and users of automated manufacturing technology (AMT) each had somewhat different competencies, motives, pricing, clientele and the niche that they occupied in this innovation context. None covered the range and depth of functions that met the needs in emerging areas of innovation. In similar fashion, Hargadon and Sutton (1999) show how the knowledge brokering role and industry position of design consultancy IDEO changed as it accumulated more know-how about different industries.

Before moving deeper into the intricacies in the positioning of various intermediaries, let us tentatively sketch some typical intermediaries and their position between supply and use.

Fig. 6. The niches of some common types of intermediaries illustrated in pick 'n mix constellation (discussed below).
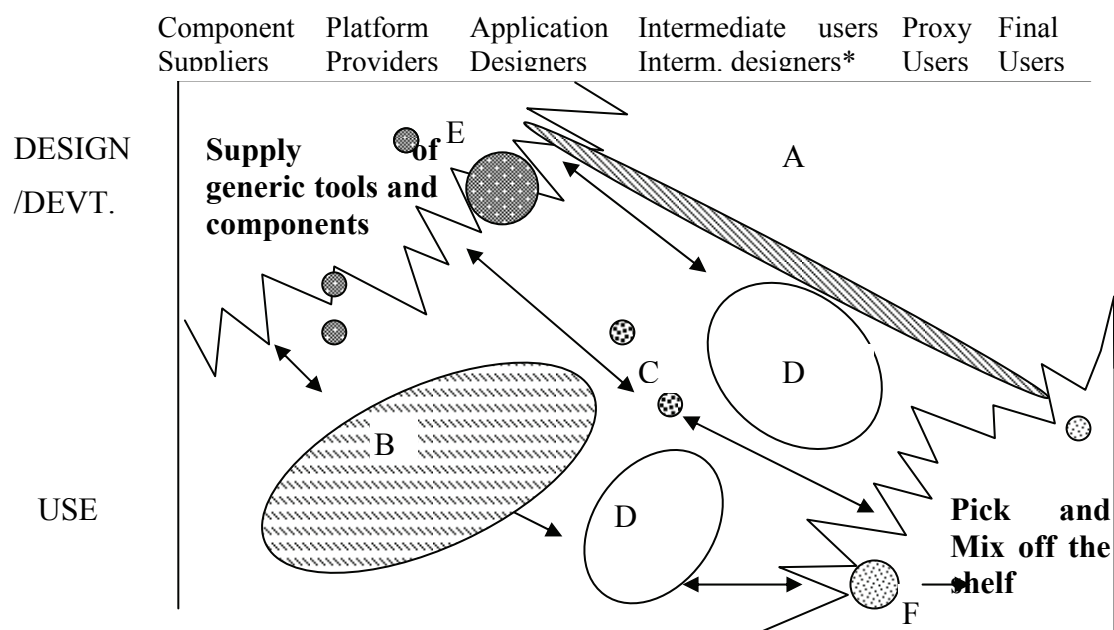
Figure 6 illustrates the differences in profiles and in consequent mediating capacity of intermediaries. Some intermediaries, such as maintenance technicians, have long "reach" between supply and use but may be fairly limited in terms of content it covers. (In the graph marked by A). As we found in our study of a health monitoring technology "Wristcare" for the elderly (Hyysalo, 2004), technicians can have direct contacts with developers, intermediate users, other supplier representatives as well as end users, but their mandate, interest and expertise remains limited to reporting and fixing technical shortcomings and technical assembly, thus leaving aside questions of marketing, instructing, learning, new uses et cetera. The "width" of their mediation thus tends to remain narrow, unless their task description gets expanded to include other tasks, such as user-training as happened at one point in the case studied (Hyysalo, 2006).

An example of a broad width but substantially shorter reach into both using and supply side would be retailers (in the figure marked by D) and Telecoms operators (in the figure marked by B). Such actors exercise competence and power over multiple technologies and several key aspects of technology such as pricing, distribution channels, marketing, branding, feedback from other intermediaries and end users et cetera. Yet another sort of intermediaries

are market research and usability consultants (In the figure marked by C), that accumulate, refine and transfer (second order) information both about products as well as of their usages. The most studied type of intermediaries are various supply-side industry consultants (In the figure marked by E), who may play central roles in augmenting innovation at supply end and passing inter-industry insight but which do not extend their actions beyond the supply end towards to users and markets. These include engineering and business consultancies, universities and public research agencies, industry contractors, accreditation agencies et cetera. (e.g. Howells, 2006; Bessant & Rush, 1995, Van der Maulen & Rip, 1998). Nonetheless, we find that these business consultancies have an increasing role working for firms and government as intermediaries facing the supply network.

Intermediaries at the supply end business to business environment tend to be more numerous, visible and formal than particularly those close to the end-users of consumer goods. Moreover, amongst the use-side intermediaries (marked by F in the figure) those involved in buying and the paying for new technology are relatively more visible than those that help people use, fix, maintain and update their technologies. The latter are often less formal and may perform their work as peer favors or sidejobs to their formal work. As a consequence, it is particularly these intermediaries that tend to be systematically neglected or underestimated It is indicative that discussions of such peoples as 'local experts' (Stewart, 2007), 'technology mediators' (Okamura et al. 1994) or 'tailors' (Trigg & Bodger, 1994) remain absent from technology management volumes that abound with literature on product champions, business angels etc. at the supply end. Below we shall discuss in more depth the roles that Cybercafe managers played in facilitating the adoption of ICTs at the time when internet was relatively new during the mid-1990s.

The asymmetric distribution of knowledge amongst actors results in that people and organizations that hold intermediary positions tend to accumulate increasing amounts of the kind of knowledge that flows in from their various clients and projects, whereas other actors do not. The net result is that less central actors (such as new supplier entrants, end users) face difficulty in assessing the landscape, position of different actors within it as well as the means at the disposal of those actors to hinder or enable the prospering of new technology. In fact, such structural holes and knowledge asymmetries are crucial in the existence of the very niche of many actors, and we return to discuss this theme in more depth below (Burt 2004).

In the health monitoring and alarm case, the entrant firm having its roots in supply side networks had recurring difficulties assessing the competence and findings from industrial designers, advertisement agencies, and market research agencies they exchanged knowledge with (some of which is documented in Hyysalo, 2003). Likewise, the users of this application had little insight how to contact or deal with vendors or the supplier during the early use even when there was mutually beneficial reasons to do so in for instance troubleshooting the system (Hyysalo, 2004; Hyysalo, 2006).

It appears to be very common for intermediaries in the appropriation stage tend to do much, even all of their social learning-related tasks alongside or informally along their formal job description. Intermediator roles thus hinge upon corporate policies and reward structures that have a bearing upon what roles people in the interface can take on in regard to social learning. For instance, sales teams are often expected to be gain valuable information from customer preferences and cultures. But sales people mostly talk with purchase people, and not with end users. Moreover, sales people are seldom granted enough freedom to convey such information onwards in supplier organization in a manner that would really have an effect on its product development. Also the incentives for doing so tend to be lacking: sales teams are rewarded on the basis of the deals they close, not on the potentially helpful

information they may gleam from customers. Reward structures that would encourage side bets relevant to social learning, may also prove rather difficult to set in place without undermining the effectiveness of sales-based structures. This tangle gets more tricky when the sales are handled by an intermediary organization rather than the supplier itself: getting telecentres sales staff to sell a conceptually new product is one thing, getting them to do that in a desired manner is another. Further challenges arise once one is to have them use the right arguments, have adequate understanding of the product, target preferred customer segments etc, and getting them to transfer more needy customers to supplier's people who have more expertise, or how to get them to glean and pass on information about customers. After relying for three years upon a chain of intermediaries for feedback on how their technology did the president of the health monitoring company noted:

"Since [our new customer support and maintenance person] started, it has turned out that our retailers, partners, and assemblers haven't really provided us with information about how the device works in actual use. Neither do they know how the device should function… Here is the one employment that has most effectively paid for itself" (Interview with the company founder 17.9.2001)

This quote also illuminates another issue: there tends to be personification of intermediary position and if the benefits or appeal of intermediating some line of technology wane, these people are likely to shift location. The person talked about in the quote had held a range of similar roles in maintenance, training and marketing in several other companies in safety-phone business for over ten years, and came to this start-up after his position waned in his previous employment. Such circulation within limited space is common in ICT business, leading to acquiring increasing expertise and knowledge about the domain specific roles (inside a supplier organization, promotional agency, sales of other company, procurer in a user side organization).

What do intermediaries do in social learning?

Perhaps the clearest way to approach the range of activities in which intermediaries are involved is to first look at some taxonomies that exist in the literature (Howells, 2006; Hardagon & Sutton, 1997; Bessant & Rush, 1992). Howell suggest 10 functions for innovation intermediaries, even though he admits that individual intermediaries seldom play separate functional roles, but contribute and develop a range of different activities important in innovation. Intermediaries are heterogenous and not only discrete organisational entities, but may cross organisational boundaries. In similar vein Bessant and Rush (1995) list six bridging activities though which consultants bridge between the supply side and their customers. These activities follow not just by working on one off projects, but also by developing long term capabilities of the individual firms, and of the market as a whole as they work not only on a triad basis but are generally involved in several relationships.

Table 1 Functions and Activities of Intermediaries

Intermediary functions (Howells, 2006)	Bridging activities (Bessant & Rush, 1995)
1. Foresight and diagnostics	1.articulation of needs, selection of options
2. Scanning and information processing	2.identification of needs, selection training
3. Knowledge processing and (re)combination	3.creation of business cases
4. Gatekeeping and brokering	4.communications, development
5. Testing and validation	5. education, links to external info
6. Accreditation	6. project management, managing external resources, organizational development
7. Validation and regulation	
8. Protecting the results	
9. Commercialisation	
10. Evaluation of outcomes	

These typologies of functions and activities of intermediaries approximate the generic terrain of intermediaries in social learning. However, as Bessant and Rush point out, there is work to be done in charting the roles that intermediaries do within these functions and activities—moreover, as they play roughly the same roles in many of the above noted functions and activities.[2] All these intermediary roles are about knowledge creation, translation and dissemination. They are all also about making a connection between memory and experience future visions and instantiating these two in current actions of the peoples who's actions are mediated by them. Should one try to differentiate fundamentally different facets in the actions of intermediaries three distinct roles in social learning become salient: Facilitating, Configuring, Brokering. These more generic roles are better applicable to the range of intermediaries there is in social learning processes between supply and use. We anchor our discussion at the intermediary roles that cybercafés played in the mid 1990s when the Internet was relatively new (Stewart 2000)[3].

Facilitating

Facilitating can be described as providing opportunities to others, by educating, gathering and distributing resources, and influencing regulations and setting local rules to facilitate the activities, and goal fulfilment of others. Facilitation is 'creating spaces' of various types: social (communities, networks), knowledge (skills, and know-how resources), cultural

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[2] Bessant & Rush (1995) also indicate some this by noting four generic roles, those of transfer of knowledge, sharing knowledge across user community, acting as brokering to a range of suppliers, diagnostic/innovation role in trying to identify what end users actually want.

[3] Cybercafe and internet centre innovators took computers and the internet out of offices and homes, and put them into a new context, introducing them to new users and providing a new setting for existing users. What was considered at the time a fleeting and unimportant configuration of the technology involved considerable local innovation, and has since become an extremely popular and successful service model.

(positive images), physical (a place or equipment), economic (providing funds), and regulatory (creating rules to guide activities and reduce uncertainty). In the case of cybercafe managers as facilitators is very clear. Rather than imposing and controlling uses, they 'create spaces' for other people, in this case predominantly customers, to do their own thing. The cafe is a convenient and open, friendly physical space, conveniently located, with an informal atmosphere, which the managers had developed based on their initial concept of users and uses. They provide the computers and software, and the training and advice that is needed to use it. The expertise and knowledge that they supply to the users is as important as the actual technology. They take the headache out of computer use, and create a flexible environment where people can work, play or learn at their own discretion. Training and informal support, and the creation of an atmosphere that encourages interchange between users are important facilitation devices. Of course the cybercafe is a literal space, but we have seen a huge growth in industry-user fora, user and industry networking groups, conferences and seminar series, various government and private funds for experimentation and interaction, and creation of regulatory spaces providing temporary protection from regulations and rules usually applied in a particular environment. As well as bringing together actors in these open spaces, another important facilitation role is running trials that generate new interactions between users and suppliers, and importantly, make the activities and result visible in wider to outside actors.

Configuring

The creation of the space that facilitates appropriation by others and the influencing the perceptions and goals of sponsors and users involves active process of configuration. This includes configuring technology, often in a minor way; creating and configuring content; setting rules and regulations, prioritising uses, the goals and form of projects, and the goals and expectations of other members of the network. Configuration involves education and training of users in skills and uses, but also educating and informing sponsors and suppliers in the activities and requirements of (potential) users. Configuration is not only technical, but symbolic: intermediaries provide an interpretation of the product, the meanings that people give to, say , a technology, as well as real hardware and software, but they also listen to users and attempt to modify the project to reflect those meanings. Central to configuration process is the intermediary creating images and meanings of technology and users that guide their configuration activities.

The mangers and owners of the cybercafes in the cases did not invent the cybercafe - computers in cafes were not a new idea. However they had to make decisions about what a cybercafe was, what was relevant to them and their business, and to their customers. This business model led to the configuration of the space, rules of use, configuration of computers, and policy on what users to encourage or discourage. This included the appropriate types of uses: games, the Internet, office service etc, for their café and clientele (Laegran & Stewart 2003). However this was not necessarily a one-off configuration: It changed rapidly as customers introduced their own ideas of what a cybercafe should be, bring it in from outside, and evolving it from within. Some cafe managers really took on board the need for constant reconfiguration and experimentation while others evolved a much more stable model, with little space for user-led change. The cafes also attempt to configure their customers' usage of the cafe through information, training, and informal learning, and introduce new users, for example by running classes for women or older people. By encouraging new uses and new users, they are, of course, encouraging people to spend more time in the cafe, but also making sure that they can appeal to more people, and help customers diversify their use.

The important dimensions of configuring that intermediaries involve shaping technologies, creating visions and models of future uses, of potential users, and helping to make this a reality though various techniques, such as setting rules. Of course in order to do this they have to gain legitimacy, but this can be self-fulfilling if their configuration activities are successful.

Brokering

The third activity of intermediaries in social learning processes is brokering. For example, intermediaries act to raise support for the appropriation process from sponsors and suppliers. They set themselves up to represent appropriating individuals and institutions, and negotiate on their behalf. Intermediaries need to broker entry of new sponsors or suppliers into their project in order to defend the space they have helped create, and make sure that they increase their access to resources and knowledge and can maintain influence over rules and practices. Some of the brokering activities can be around the features and functionalities of new technologies, directly communicating needs and requirements of users and the possibilities and conditions of change of the suppliers.

In the cybercafes case, the manager of one community cybercafe had a strong role as a broker. The cafe came about as a result of his relationship with the funding council, the local community groups, sponsoring companies, and local and national politicians. The project was rather outside the mainstream community project, and certainly not a business he could get a bank loan for, so his negotiation with sponsors, as suppliers of equipment, money, prestige was the only way to make it happen.

Brokering is certainly one of the most direct ways that intermediaries can bring users and suppliers together, but as this example shows it is equally important in bringing other important actors into the local innovation network, and maintaining their commitment and interest, while at the same time communicating the importance of the particular innovative process to their interests. One of the key balancing acts they have to manage is maintaining the openness of their facilitation activities in the face of the brokering activities.

In the case of the cybercafes one set of intermediaries, the managers, were involved in all three processes, and similar functions, such as training, played a role in them all. While many intermediaries may focus on type of activity, particularly in stable environments, the dynamic and unpredictable nature of innovation can lead them to conduct all three. Intermediaries that are likely to be most successful can enter into and balance different activities without constraining the innovative activities of their clients, be they adopters or suppliers.

However we need to consider in more detail the activities and role of intermediaries in innovation processes, in particular their role in multilevel and multi-generation innovation processes.

Intermediaries shaping technology

A two way protection

Taken together the roles that intermediaries play create a more or less protected space to accommodate the new. Primary supply organizations tend to try to push the technology down the throats of users as such, even if users want it in somewhat different form. Intermediaries are needed to smooth its way to users and to pass the message back to developers about the realities of usages. In close affinity, users tend try to make technology do exactly what they

would like it to do while the technology in most cases requires adjusted styles of manipulating and slightly different goals. Intermediaries provide users with freedom to do try things they want to do, but at the same time encourage them to set more realistic goals that the technology can actually meet. In doing this two way translation work, intermediaries are trying to work out what the more adequate message and "vision" about the technology could be. While this may bring designers, technology and users closer to being aligned, alignment maybe a too strong of a word to describe what they do. The nature of their actions rather resembles a patchwork of making a working and acceptable configurations between supply and use.

Pre-domesticating and pre-framing of technology

Intermediaries influence technology also in more direct ways. In the 'topmost layer' of technological configuration the role of user side intermediaries is evident. When 'local experts' and 'tailors' help end users choose, purchase, assemble, configure and maintain systems, they prefer certain options and suppress others in their effort to cater a system that is practically useful and usable for the particular user or organization. In turn, this work tends to rely on other intermediaries, such as specialist magazines, web-pages, offers of operators et cetera and eventually translates also into supplier offerings.

In so doing, intermediaries are engaged in "pre-domestication"—influencing what would be an appropriate target for the ongoing development of technology, what could be appropriate goals and motives for using it, and making technology appropriable in their practice. However, saying that intermediaries create of 'alignment' maybe too a strong metaphor here, for the work of intermediation resembles rather a patchwork in making a configurations spanning supply and use to work.

An important part of this work is enrolling other players in the creation of more valuable technological offer for end-customers through adding their products and services to it. While flagging the importance of such enriching and shaping of the technological offer, also power and influence issues need to be recognized. Enrolling other players means selling the technology to them. Distributors, operators etc. have their own perception of user needs, and have different interests and incentives than the supplier or end users in promoting some products and not others, in pricing, in branding, and in aligning products. The technology thus gets framed for intermediary audiences in addition to its assumed final consumers. The product, especially widely distributed content products like games or books, has to be first sold to intermediaries such as a distributor to ever reach the final consumer.

Such framing is not limited to mere sales arguments or other 'wrapping' but tends to cut into features, functionalities and look of the product. For instance, in games development small companies view the distributors as their primary customers, and anticipate their selection processes along (or even rather) than that of end-gamers. The assumed norms and extrapolations over previous behaviour of key institutionalized intermediaries thus channel design already before it ever reaches them directly.

Contested framings: the 'user' and 'technology' as currency

The above dynamics get more complex through the uncertainty regarding markets and users' preferences for new technology prior to its actual usage (Hyysalo, 2003; Williams et al, 2005). The need for or effects of different framings of technology are not readily visible at the outset to any of the parties. Images of users and customers become 'currency' that is proffered and sold to establish and contest business cases. Indeed, the ability of

intermediaries to cut the cake is dependent on how convincingly they can argue their importance and hence, their vision of the user and the buyer. This is not unlike the way intermediaries offer assembly and maintenance services that convince users of images of a technology that is too cumbersome or impossible for users to handle themselves.

It is common to use newspaper headings and consultancy reports as "external" legitimizing devices for arguing the case for one's own technology and vision about the own and user domain development, as well as doing one's best to influence them. However, because these images circle and contest one another, "real user data" such as that from usability studies tends to be "hard currency" (Nicoll, 2000) in comparison to market studies and other inferred proxies. Various trials, pilots and demonstrations become instrumental for different parties arguing their case and relevance.

Trials have strong rhetorical value. However, even as such their results remain open to interpretation. If social, economic and cultural environment, visions, intermediaries and structures emerge, failing technology tends to be seen as "prototype" and investment continues to be made to 'realize' it. If some of these aspects do not fall into place, there is less patience and anticipation, problems are more easily regarded as serious, and any problems in a trial get more easily seen as definite one about the feasibility or technical limitations of the project. Moreover, different stakeholders tend to interpret the trial outcomes differently from their own perspective, this leads to what can be characterized as a multilevel game within an ecology of social learning.

Ecology of social learning is a multilevel and multiparty game

As in most social learning, trials and other typical intermediary activities involve a multilevel game. Component providers, applications developers, delivery systems providers, distributors, operators etc. can (and tend to have) different interests, incentives as well as practices in how they capture, store, translate and distribute information about product, users or the supplier. Such an ecology of social learning can be aptly illustrated by the criteria for attributing success or failure by different stakeholders related to a particular "application". Here was can draw on the 'Wristcare' patient monitor product (Hyysalo, 2004).

What follows is that for a provider of a particular sensor, such as the Wristcare movement sensors based on particular film, a trial showing consistent and reliable measurement can be claimed success validating its own product regardless of whether the producer of Wristcare could use the same measurements to argue the validity of its measurement to medical community. The component producer would thus be unlikely to engage in further development or R&D unless the Wristcare producer managed to trouble them somehow or portray some very lucrative deliveries looming in exchange for further development. The net effect of these varying criteria is that there are several 'versions' of the seemingly same technology, which differ in terms to what material features are regarded as being part of it (as well as being core / periphreral to it) and what uses, problems, social implications etc. are seen to comprize the technology, what constitutes 'working' and 'feasible' technology etc. (Hyysalo, 2007). As a consequence, the very same trial, experience, or need for what 'user information' is needed presents it self quite differently to different stakeholders in innovation process, and emphasizes the acts in facilitating, configuring and brokering that different intermediaries do during the innovation process.

Conclusions

In conclusion, we wish to focus attention on the role and functions of intermediaries in the innovation process, and not just in the general operation of the economy. Within the context of the user-designer relationship analysis in the design literature, and supply-side –demand side approach in innovation studies we highlight the importance of new intermediaries that emerge to bridge gaps in newly forming networks, facilitate contacts and experimentations by passing knowledge, acting as a store for collective memory, and through their own innovative practices of configuration of technologies, visions, knowledge and relationships. These activities are central to the social learning that occurs in innovation: the processes of creating new relationships and knowledge that accompanies the creation of new technologies.

We have identified three core activities of intermediaries: facilitating, configuring and brokering, and examined some of the detailed interactions and influences that they have in multilevel innovation processes, there is still considerable work to be done in understanding how intermediaries work, who they can be managed, and how they can be prevented from failing. Existing case studies as well as new work can be used as core material: in writing this paper and re-examining existing cases intermediaries appear in many places, and can be seen to play key roles in determining their outcome.

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Mobile Television: Is It Just A Hype Or A Real Consumer Need?

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Abstract

Mobile media are not a new phenomenon. In the media history consumers always searched for the possibility to kill time while they are mobile and certain products and devices were used for this purpose (printed media, portable radio, MP3, game consoles, etc.). But in the case of television mobility is not usual at all. Due to the technological deployment television services offered on mobile phones are already available, but the market potential is uncertain. There are different technologies and mobile operators try to find the business models that best fit these technologies. The supply chain of mobile television involves market players of different markets (e.g. content production, broadcasting, mobile market). The way and level of vertical integration depends on the ability of these companies to exploit theirs core competences.

The real question if the consumers really need mobile television services or it is only just a new revenue-generating service pushed by the operators. Several findings of the pilot projects are available and there are some really surprising results. The main aim of the paper is to give an overview about the potential market demand for mobile television services. Even it is a new service, some speculative predictions can be made based on the current media consumption patterns. Although the business models and the technological background are also crucial, the real question is who, when, and where will watch television on mobile devices and which genres/programs will be the most popular.

Keywords: mobile television, media consumption, business model

Consumers often expect a kind of mobility from the media products: newspapers and other printed media are evidently suitable for mobile usage, but the portability is also a characteristic of radios and other electronic equipments. In the case of television this feature is not so evident. Until the last years mobile television was only a dream of heavy-user television fans, but it seemed to be unfeasible. With the diffusion of third generation mobile services (e.g. UMTS) and with the introduction of mobile broadcasting technologies the mobile television is not a futuristic vision any more.

1. Business models and pricing strategies

Mobile television services can be offered by different technologies. The first mobile television services were introduced on the 3G systems, the bandwidth is high enough even for video content. Based on a unicast technology it is a highly personalized service, the subscriber can

watch any kind of content at any time, but the prices are high. This kind of point-to-point communication form is costly, since sometimes the same content is sent to many phones in the very same cell. Economies of scale cannot be realized in this case, and capacity planning is problematic.

Fig.1: Supply chain of mobile television services offered on mobile networks

| Content provider | Content aggregator | Portal operator | Mobile network operator | Sales, customer service | Manufacturer |

- television channels
- producers
- studios

- television channels
- mobile operators
- independent content aggregators

- television channels
- mobile operators

- mobile operators

- mobile operators

- mobile manufacturers
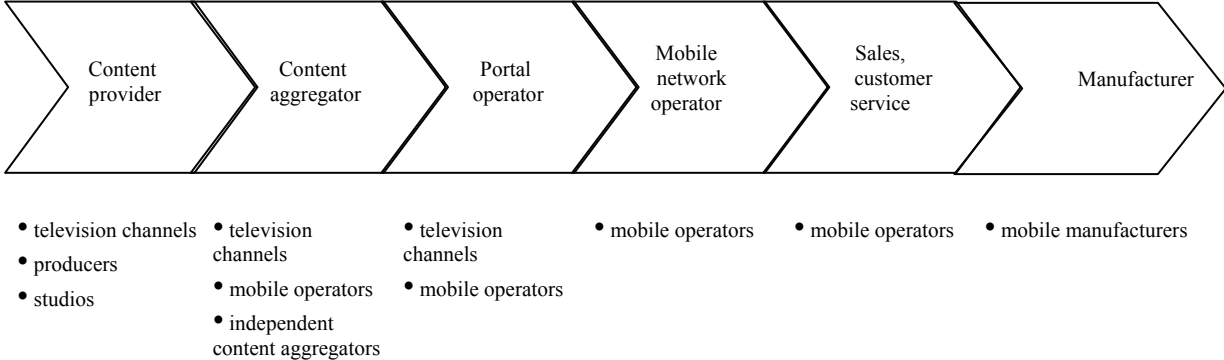
Mobile operators have a key role on this platform, even if they do not have any core competence on content providing. The network operator and the sales/customers service functions are crucial, and the mobile operators cannot be substituted. They use the frequencies and they have direct relationship with the consumers that is required for handling the billing system. They can also operate the portal (an example for that is Vodafone Live! content portal operated by the Vodafone). In this model the mobile operator has the best chance to get the central role of supply chain, the level of vertical integration depends on its market power and corporate strategy.

In the case of mobile services offered on broadcasting networks the situation is different. There are several technologies based on terrestrial and satellite distribution (like DVB-H, T-DMB, S-DMB, MediaFLO, ISDB-T) but there is no single global or at least European standard. Role of mobile operator is not so evident, since the mobile network itself is not required for the core service and the sales and billing functions can be also unnecessary if the business model is built on free-to-air (FTA) services. It is not clear which player of the supply chain can have a key role on the market in this case.

Fig. 2: Supply chain of mobile television services offered on broadcasting networks (DVB-H)

in the case of paid services

| Content provider | Content aggregator | Multiplex operator | Broadcasting network opearator | Mobile network operator | Sales, customer service | Manufacturer |

- • television channels
- • producers
- • studios

- • television channels
- • mobile operators
- • independent content aggregators
- • broadcaster
- • multiplex operator

- • multiplex operator

- • broadcaster

- • mobile operators (if feedback channel is required)

- • mobile operators

- • mobile manufacturers
- • manufacturers of other consumer electonic equipments

This technology is relatively new, the potential business models are uncertain. The *content provider centric business model* exploits the competition for the valuable rights based on the 'content is king' concept. For the content provider the lack of customer service and billing system can cause difficulties.

In the *content aggregator centric business model* the content aggregator probably integrates the content provider but the lack of direct customer relationship can be problematic here, too. If the operator of an other platform (e.g. a cable operator) enters into mobile business and takes some content aggregation function, the billing problem can be somehow solved.

The *multiplex operator centric business model* is maybe the most uncertain now, since the whole long-term future of the digital television market is not foreseen. In the so-called strong multiplex model (where the multiplex operator and not the regulator decides about the available content and the packaging of channels) role of the multiplex operator can be crucial. It can also build out customer relationship system.

A *network operator centric business model* is also possible. It can be the broadcasting company that operates the terrestrial network, but it does not have customer service. Due to the experiences of digital terrestrial television (DVB-T) the network operator can get a role in the multiplex operation, and it strengthens its position. The mobile network operator is a less significant player, since its network is not used for content distribution. If the content services are interactive and a feedback channel is required, the mobile network operator can get a role. It is also the case with the paid services, since the conditional access system should be operated by the mobile operator.

The other uncertain point of the broadcasting based mobile television is the end-device. It can be surprising, but even the evident role of mobile phones can be questioned, since it is only one option for television viewing. Other devices (e.g. PDA, enhanced MP3, game consoles) can substitute the phones and can offer a better viewing experience for the users. The fact that phones became the part of our everyday life and usually users do not go anywhere without it definitely means a competitive advantage for this device. But the small screen is a disadvantage and just for the purposes of mobile television the size of the mobile phones should not increase again to allow larger displays (Trefzger, 2005). The battery capacity is also a problem, since video viewing requires a lot of power. In the current technological conditions there is a trade-off between the mobile television viewing and the functional advantages of phones (small size, long battery life).

It is a challenge for mobile operators and other potential market players to find a business model for mobile television services. The development of the mobile communication gave several lessons in the last decade. According to Rogers (1986) the communication industry is characterized by tool technologies. The techniques can be applied in a variety of ways to diverse situations. The popular applications are shaped by consumer habits, by re-discovering the devices themselves. The popularity of SMS in mobile telephony was a surprise both for engineers and researchers. What is more, researchers had never thought that the diffusion of mobile technology would affect the television industry through the appearance of various votes. Accordingly, even though the development of infocommunication technologies is the result of well-planned business and engineering activities, the decision whether a specific service becomes popular or not rests with the people. The introduction of UMTS and the relative failure of these services also illustrates that consumers' behaviour do not exactly follow the expectations of corporate decision makers.

As Picard (2005) points out, no media or communication device can reach a 100% adoption, even the researches are based on this assumption. Evidently it changes the basic question of diffusion researches: the question is not purely the adoption rate and the speed of diffusion, but rather the practical limit of the diffusion. Corporations have long-term strategies and they make investments only in the fields that have a mass market potential. Mobile television needs a mass market even some of the contents may target only niche markets. It is not evident at all if this mass market exists. Anyway the main question is if there is a real consumer demand for mobile television services or it is rather a hype with a business failure at the end.

The basic platform for mobile television services is practically the strategic decision of market players. Obviously the mobile operators want to have a key position in the supply chain with the exploitation of consumer relationship. This service can increase the ARPU (average revenue per user) and opens the market potential of media industries. For the broadcasting companies this possibility means a new distribution channel for theirs content and they also try to get a strategic role in the service providing. The direction and level of vertical integration depends on the ability of these companies to exploit theirs core competences. The regulatory background (e.g. spectrum regulation, media regulation, special concentration rules) can also influence the strategy of the market players. There is no clear regulatory policy concerning mobile television even some national regulatory authority started investigating this field.

An attractive pricing model and price level is crucial concerning the success of mobile television. The basic pricing models are the same as in the media business in general (Trefzger, 2006):

- pay-per-view (time based, volume based, event based);
- subscription;
- one time fee;
- free models.

According to the expectations the subscription can be the most popular pricing model besides the free models of course. The experiences of the pilot projects also support this assumption (Holland 2006, TNS Infratest 2006). On the infocommunication market the flat-rate pricing proved to be most successful (cable television, broadband internet, mobile services), the usage based models are far less popular.

Combination of the different models is also possible. The subscription based pricing supplemented with pay-per-view events can be acceptable for the consumers and profitable for the operators. These contents have to be really premium contents, otherwise the consumers do not have any interest to pay additionally. Some sport events (e.g. premium soccer on the European market) can be suitable for this kind of pricing.

The FTA services can be also favourable for the users, the real question in this case the financial return of the service. It is uncertain if the content providing can be financed by the advertisers, reaching a critical mass is essential in this case. It is somehow the chicken-and-egg problem, without mass audience the market players do not finance the development of free content but without content the service itself is not appeal for the consumers.

The one-time fee is the least common (e.g. American digital satellite radios offer life long subscription for one time fee), but a premium price built into the end-device is also possible.

2. Consumption of new media services

Analysis of new media services is an emerging field in the media economics literature. New media is the totality of those mass communication devices and services which allow of the interactivity of services and the personalisation of media content (Urban, 2004). The 3G technology can maximally fulfill this requirement. In the case of broadcasting technologies it is less evident, even if mobile network can be used for feedback.

If we want to evaluate the market demand for the mobile television services, we have to identify some crucial points in the environment of mobile television. It is a brand new service but not without precedents. Some experiences from the media and communications market must be known to understand the main questions of mobile television services. There are general tendencies concerning media consumption patterns and they can also determine the market acceptance of mobile television services.

The first question can be if the audience is interested in mobile television viewing or not. In some cases the mass appeal of mobile television is not questioned at all (IBM, 2006). The logic behind this idea is the universal popularity of television viewing and the high penetration of mobile phones. Picard (2005) underlines the differences between telephony being a tool of interpersonal communication and broadcasting designed for one-way mass communication. The concept of mobile television blends these functions, but according to the experiences in the communication industries users prefer the separated technologies in the consumer goods.

Goldhammer (2006) compares the highly converged devices to the Swiss army knives. It can be really practical outdoors, but at home we prefer the usage of certain knives for different purposes and we open a bottle of wine with the corkscrew instead of the pocket knife. This phenomenon can be instructive for mobile phones: even if there are some practical advantages of converging the functions, mobile phone can remain a device primary for personal communication. It is not evident at all if the users want to substitute the current high-quality consumer electronic equipments with a new device that offers a more limited viewing experience.

The other question is more about the content type desired by the mass audience. For a long time the „content is king" concept has been prevailing in media economics literature. Concept of Odlyzko (2001) questions the hegemony of professional content and emphasizes importance of connectivity. User-generated content (UGC) became a buzzword in the last years and according to Companie (2006) it can be a driving force not only for the Internet but also for mobile communications. Since cameras are also included in the phones, the civil content providing can be especially important in some breaking news situations (terror attack, accident, etc). The mobile phone owners can become correspondents immediately, as it happened on Internet portals several times in the last years. Its real technological environment is the 3G, in the broadcasting model the viability of UGC is less evident. From this point of view the development of mobile Internet can be threat to the mobile television market.

The UGC phenomenon can have an impact also on the business model and the pricing strategy. Users are generally more willing to pay for two-way interactive and interpersonal communication services than for one-way content services. It can give a priority to the interactivity and personalization in the business development of mobile broadcasting (Tadayoni-Henten, 2006). It obviously favours to the personalized content providing of 3G networks against the mobile television services offered on broadcasting networks.

We have to recognize that mobility is a trend in media consumption as well as time-shifting. It is a natural desire of users that they are want to consume the media services where and when they want. The change of 'technological push' models into 'market pull' models in communication industries reflects this expectation. Nowadays free time is limited and it is a clear interest of consumers to kill time when otherwise they have to wait for something or they have spend time somewhere without any kind of activity (waiting in a queue, sitting on a bus). No doubt, mobile television can be suitable for this purpose.

The highly personalized mobile television services can theoretically fulfill the requirements of the consumers, but several practical questions arises. No one knows the exact consumer needs concerning the content and quality issues, and crucial question is how much the users are willing to pay for the services.

3. How the consumers accept the mobile television services?

Even most brilliant technologies and innovative business models can fail, if there is no market demand for the product or the service. Even if the success of mobile television seems to be evident because of the popularity of television and mobile phone, the introduction of the service has a business risk. Concerning the potential market demand for the service we have to ask some basic questions:

- Which content type can be the most appealing for the consumers?
- How much are they willing to pay for mobile television?
- In which situation, for what purpose do they use mobile television?
- Where do they watch mobile television?
- How much time do they spend on watching mobile television?

There are only a few commercial mobile television services (at least with broadcasting technologies). We can get a picture about the attitude of consumers from the pilot projects. The results are partly available and there are some surprising findings.

Content
Users are interested in those programme types that are well known from traditional television, but not all the genres are equally enjoyable on mobile phones. According to the research of A.T. Kearney conducted in twenty-one countries the news and sports programmes are the most popular. In the young age groups music content seems to be extremely attractive. The different preferences in the age groups is illustrated in Fig. 3.

Fig. 3: „What type of TV programmes would you be most interested in", by age
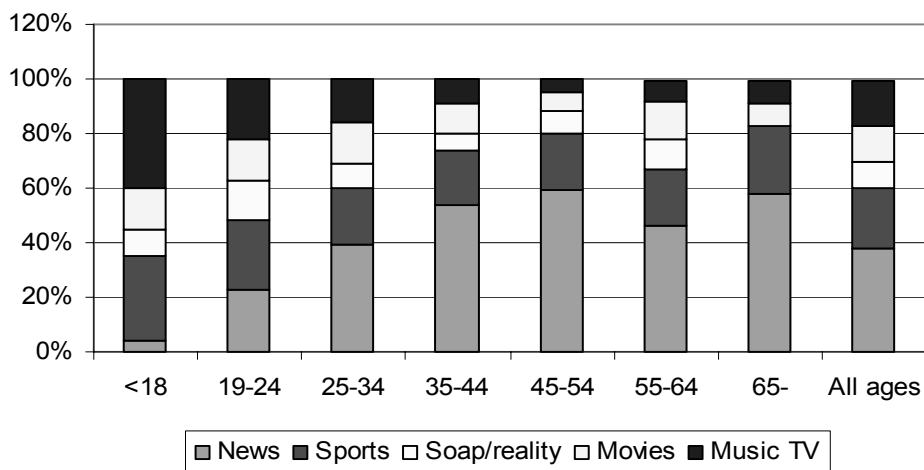
Source: A.T. Kearney - University of Cambridge (2005)

Pilot projects give similar results, news and sport programmes are the most popular. The first commercial DVB-H service in Europe was offered by 3 Italia in June 2006. The timing was not left to chance, the introduction was connected to the World Cup. The triumph of Italian national team was an exceptional luck for the service provider, it obviously boosted the subscription base. At the end of the World Cup 3 Italia had 111.000 subscribers and expected 500.000 mobile television clients by the end of 2006.[1]

Due to the relatively small size of the display and also because of the short and fragmented viewing situations, the other premium content, the movies will be probably less popular on mobile television platforms. In Korea and China special made-for-mobile films were produced with a commercial success. They are different from traditional movies, editing is more fragmented and unconventional camera techniques are used (Orgad, 2006).

It is the question of the future if the mobile television stimulates the specialized content development or the contents developed for traditional television will be suitable for mobile usage. The so-called *mobisodes* (short versions of serial episodes) developed for mobiles are popular, but this kind of content development is relatively costly. Mobisodes were produced for some well-known series (Lost, Dr Who) and some mobisodes were also produced in Hungary based on two popular domestic series. They were available as part of the 3G services without any significant success.

Pay willingness
The return on investments of programme developing is highly uncertain. The pay willingness of the users is relatively low, as the different research results illustrate in Fig. 4. This sums can change as more and more content will be available on the mobile platform and users consider the service as the part of everyday life.

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[1] Probably this expectation was not realized, since 3 Italia has not published any subscriber information since July 2006. It is somehow informative in itself. (Relevant information about the 3 Italia mobile television service are available on http://www.dvb-h.org/Services/services-Italy-3Italia.htm)

Fig. 4: Willingness to pay (monthly in euro) based on different research results
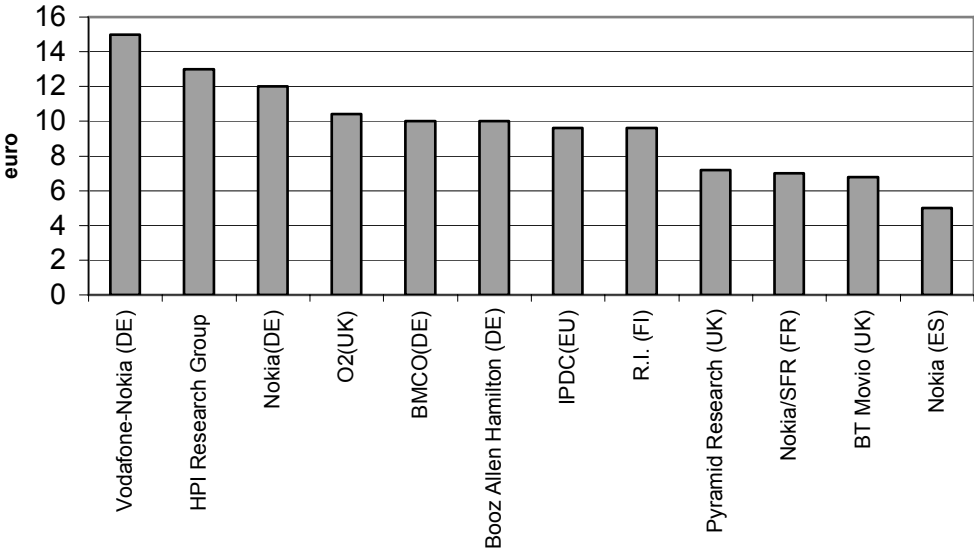
Source: BCE (2006)

The premium contents can have high revenue generating potential. Countries having popular sport content and high demand for that (e.g. soccer in UK, Italy, Germany, Spain) are in favourable situation. The lack of domestic premium sport content hits several smaller countries, it can have an effect both on the ARPU and the number of subscribers.

The question of the adult content is also highly uncertain, maybe mobile phone is not the most suitable device for viewing this content type. But it must be added that adult content could find its audience via any kind of medium (print media, television, internet) and it could be a mistake to underestimate revenue generating potential of adult content. Unfortunately it is not an easily researchable area, the pilot projects do not say a lot about it. Orgad (2006) points out, that ca. 30% of video content viewed on mobile device outside the U.S. is pornography. Anyway we have to take it into consideration if we want to get a picture about the market of mobile television.

Viewing situations and venues
The question of place or situation where consumers view mobile television is also important. The research results show that consumers watch mobile television not only during commuting or at work but also at home. It means that mobile television can substitute the traditional television or at least it can function as a secondary set in the household.

Fig. 5: „Where do you use the service most often?" – results of different researches
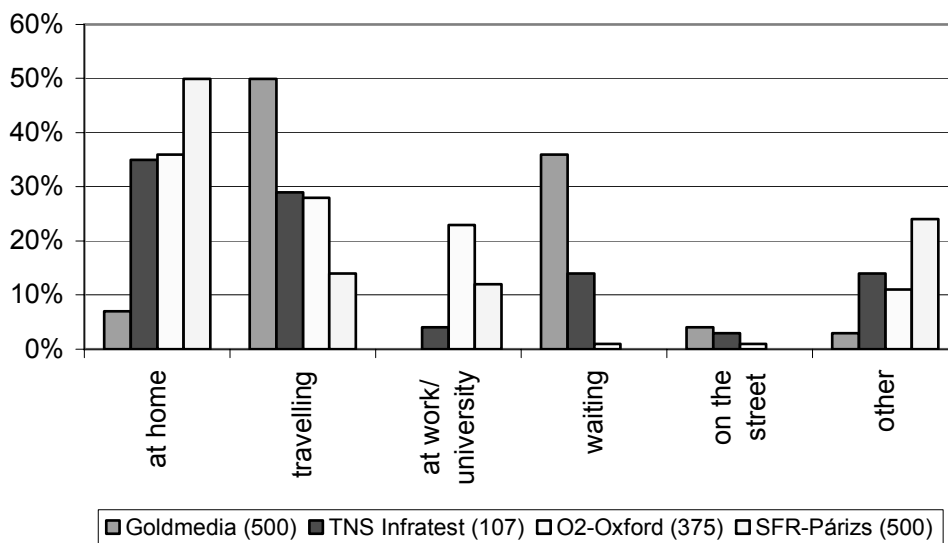
Source: RTR (2006), TNS Infratest (2006), Mason (2006), LesMobiles.com. (2006)

The relatively high proportion of the home viewing is somehow surprising. At first sight the core competence of mobile television can be its immediacy and flexibility. Consumers can get the desired content where and when they want and they do not miss the breaking news. The entertainment part can be also important when people have empty times and they are bored. But the home viewing reflects a different kind of motivation, since traditional television and internet is much more suitable for being entertained or for information seeking.

A potential explanation can be that mobile device can create a really private environment in the household (e.g. in the case of pornographic content it can be an evident need). Or the portability can be a useful feature even inside the house and television content can be available even in the rooms where otherwise not (e.g. kitchen or bath). Anyway these are only speculations, consumer researches should aim to find the motivations of home-viewing of mobile television.

Time devoted to mobile television
The market potential of mobile television highly depends on the time devoted to viewing. It became also obvious that participants of the pilot project did not spend too much time with mobile television viewing.

Fig. 6: Average daily viewing of mobile television services (based on different pilot projects)

Source: http://www.dvb-h.org
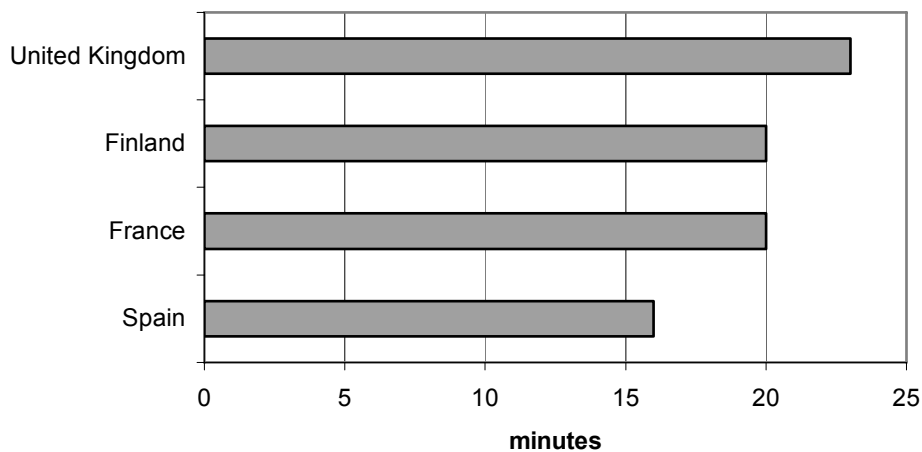
The results of the latest pilot project, just finished in Stockholm have similar results. The 62% of the participants spent 1-25 minutes on a day with mobile television viewing, and they mostly watched it in the morning and evening (Bergdahl, 2007). The expectation that mobile television can reshape the television prime time, giving a higher importance of daytime viewing has not been proved.

Generally the pilot projects cannot make the potential investors really optimistic. There is a demand for mobile television services in certain situations and for certain type of content but this demand is limited. The return on content development can be risky, but the programmes originally developed for traditional television are not always enjoyable on mobile displays.

4. Conclusions

Mobile television services are relatively new on the market. There are some commercial offers (especially based on 3G technology), but most of the research results are coming from surveys and pilot projects. The market players face with a dilemma. On the one hand the 3G services are relatively well known, the possible business model is more or less clear but the mobile television cannot be really popular. A possible reason can be the high prices that are consequence of the high costs. The economies of scale is hardly prevails in this case, because of technological reasons. Due to the point-to-point connection the costs increase by the growing number of users.

On the other hand the broadcasting technologies have a high risk now. The business models are not clear, the role of the mobile operator is uncertain. It has higher investment costs (a broadcasting network has to built out) but due to the broadcasting technology the capacity planning is less problematic. Since the media consumption is more and more about the interactive and personalized services, the one-way broadcasting technologies would be less preferred by the consumers. It will be a challenge for market players to integrate the advantages of the two technologies and to offer an attractive service to the consumers at a competitive price.

The behaviour of the consumers is also a question. The technological development is much faster than the change of consumption habits. In the infocommunication sector the pull model becomes prevailing instead of push models, but overall the technological possibilities highly

influence the market development. The competition for the free time and money of the consumers is more and more intense. Mobile television can be competitive, since it can be for killing time while waiting, commuting, etc. But the rationality is not enough for the market success. The emotional aspects, like the new viewing environment (e.g. on the street or on bus) or just the subjective perception of the quality can negatively influence the diffusion of mobile television services.

There are other uncertainties concerning the mobile television development. Mobile operators can easily cannibalize the mobile television market with the introduction of mobile internet services. If consumers can reach the internet with the mobile phone theirs need for information and entertainment content in empty times will be fulfilled. Of course other technologies and other devices can be also a challenge for mobile television market. The free city WiFi systems and the high diffusion of mobile devices (laptop, PDA) can mean a real threat to the emerging market of mobile television.

The basic assumption of the researchers and operators was that consumers view mobile television when they want to kill time. The pilot projects do not prove this assumption, and based on this finding probably different kind of program development strategy is required than it was thought before. The broadcasters have been searching for killer application in interactive television for long years, and it seems that mobile operators try to do the same. In the case of interactive television Van Dijk and de Vos (2001) compared it to the searching for the Holy Grail. Maybe the mobile television market players prove more successful in finding the killer application.

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http://www.dvb-h.org

Video – On – Demand: Towards New Viewing Practices?

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Abstract[1]

In this paper, we focus on the user aspects of a specific television service, video-on-demand (VOD), offered on two platforms: TV and computer. The concept of video-on-demand has already for a long time been the subject of new media research, first in its analogue version and more recently as a digital service. The main asset of this functionality, embedded in different devices, is that it offers the ability of video content being watched at any time and thereby enables extensive ways of time shifting. Furthermore, there is a possible expansion in available content, made by professionals as well as amateurs.
Therefore VOD has the technical capability to fundamentally change our viewing patterns and practices. The question is however: How does the audience domesticate this new kind of audiovisual content and (how) does it fit in with their everyday viewing practices?
Based on an environmental scan consisting of an extensive literature review, this paper synthesises knowledge on existing viewing practices as well as the video on demand's new affordances. Possible shifts and interactions are investigated and new research questions are being identified.

Introduction

Our most traditional and popular mass medium, television, is undergoing major technical changes. The digitalisation of television offers the viewer the opportunity to take over control of the broadcast scheme and become the master of his own time. If he wants, he can interact with the offered content in various ways and even become a content-producer. Next to that, the viewer is also not limited (anymore) to the television set, but can also watch TV programmes and other video content on a computer or a portable device.

In this paper we will focus in an exploratory way on the user aspects of video – on – demand offered on two platforms: TV and computer. On-demand services promise the viewer the functionality of watching any content at any preferred time, that way enabling extensive ways

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[1] This paper is work in progress. It structures some of our findings and expresses some of our thoughts in relation to video on demand and viewing practices. Please do not quote without the authors' permission.

of time shifting. For this we will look into some of the promises VOD makes and try to contextualise them. Starting from the existing viewer practices, we will explore how and if these new affordances will lead to concrete new user practices. The question we will try to answer in this paper is: *"How do these new TV-related technologies like VOD interact with existing viewing practices?"*

The theoretical framework to answer this question is largely based on the domestication theory (Berker, Hartmann, Punie, & Ward, 2005; Silverstone & Haddon, 1996). On the empirical level, the research findings from an environmental scanning of existing knowledge on viewing practices and VOD will be discussed. Environmental scanning is a research technique applied specifically within institutions, in order to determine strategic planning and goals, based on understanding the external environment and the interconnections of its various sectors (Morrison, 1992). But the technique is also being used in future studies and trend watching, to provide an early warning on significant socio-technological changes and to detect 'weak signals' of new trends (Uskali, 2005). One of the methods used in environmental scanning is an extensive database literature review (Morrison, 1992), which we applied in this study. In our environmental scan, VOD is placed in a broader perspective, by looking at different contextual factors that can influence the present and future usage of VOD (time spending patterns, viewing habits, household budgets etc.). Existing data on VOD usage patterns are also being analysed.

This paper is exploratory in nature, identifying some existing trends in the use of on-demand-video viewing and raising some concrete future research issues and questions.[2]

The specific questions we will tackle in this paper are:
- What are the existing viewing practices?
- How can viewing practices be influenced by VOD services? We will explore this possible impact on three specific areas: time, place within the home and content.

Based on this first analysis, we will define specific research questions that need to be answered in our field study.

1. Television's existing practices

An important idea is that technologies or products only exist in the everyday practices. The relation between product and practice is dynamic, meaning that it co-evolves. Practices exist as recognisable entities but at the same time require constant and active reproduction or performance. *"Practices show how consumers and producers change within social and material structures and how they also effect changes in these structures"* This means that practices exist as recognisable entities, but at the same time they require constant and active reproduction (Hand, Shove & Southerton, 2005). Therefore a 'practice' is seen as a routinised type of behaviour, which consists of several elements that are all interconnected to one other. It is like a way of cooking, of consuming, of working of investigating, of taking care of oneself or of others, etc. (Reckwitz, 2002). This also refers to the idea of Oudshoorn & Pinch, that there is no essential use to be derived from the artefact itself and that technologies should be studied in their context of use and users and technologies should be seen as co-constructed (Oudshoorn & Pinch, 2003:2).

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[2] This paper fits into the first phase of a research project concerning video in the home, Video Q-SAC. In this project the use and requirements of video-in-the home will be explored in-depth, with a concrete focus on on-demand video services on TV screens and specifically also on the computer, which is relatively new.

On the meaning of TV for viewers and the existing viewing practices, many studies have been conducted (Silverstone, 1994; Bauwens, 2002; Lull, 1990). Television is the medium with the widest implementation in households. In 1948, only 0,3% of the UK population had a TV set, but by 1958, this was 52%, rising to over 90% in the 70's and reaching 99% by 1996 (Hamill, 2003). It is also a medium that is fully **domesticated**, meaning that it is completely integrated in our daily lives and habits and forms an important part of it (Silverstone, 1996).

1.1. Television dominance

Watching television is a **time-consuming activity**. An extensive part of our day, and more in particular of our free time, is dedicated to watching television. When people are at home in the evening and they are free, they watch television (Bauwens, 2002). This is also clearly demonstrated in people's time spending patterns. The Flemish research group TOR, found that watching TV and video is by far the most important activity people conduct in their 'free time', which can be defined as the time people can fill in with the activities they prefer. Of our total time budget, 16% is free time. In the graph below, our total free time is expressed in hours and minutes, as well as how people divide this free time in different activities. The reference period is one week. The graph shows there is a small rise in the total amount of free time people have available, with 0,23% or 32 minutes a week (TOR, 2004).

Fig. 1: total free time and free time activities expressed in hours a week (TOR, 2004)
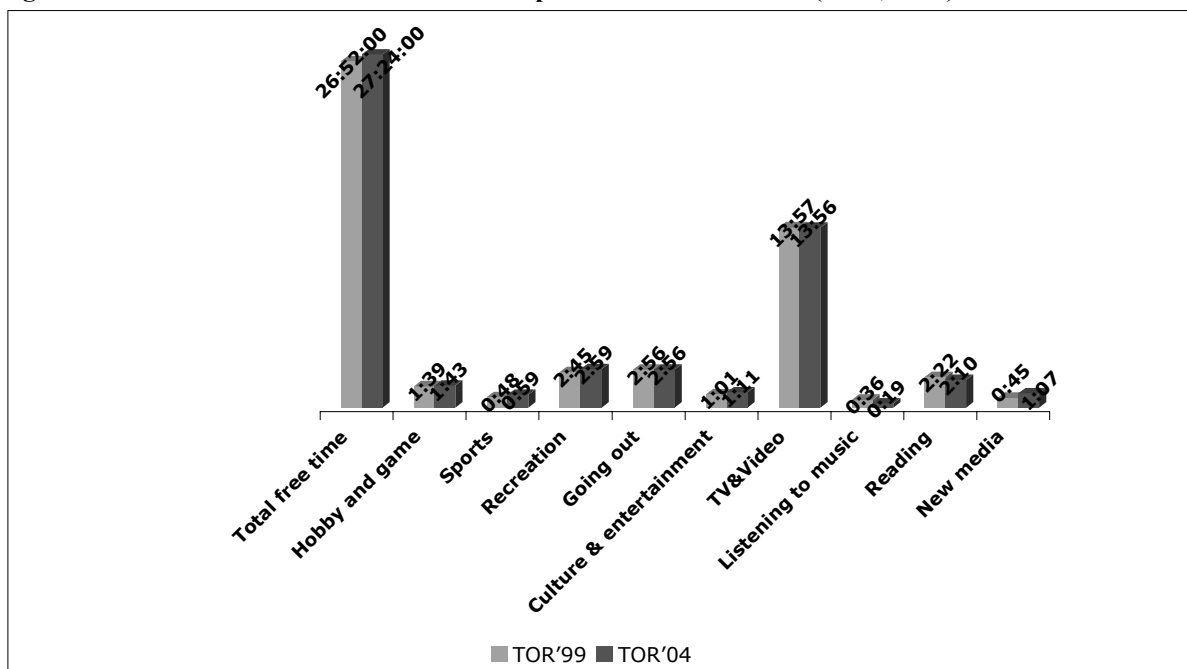
It is also clear that viewing times have stayed constant between 1999 and 2004. The total share of TV & Video in people's free time was 51,2% in 1999 and 49,8% in 2004. This means that half of people's time off, or the time they can fill in with activities they like, is filled with watching TV. The average time spent on using new media, like a personal computer and the Internet, has increased with 22 minutes, but this is still only a small share of the total free time (4%). It is also clear that the additional time spent on using new media does not come from the TV time, but from the small rise in our total free time and from the time spent on reading an listening to music which both diminished. Youngsters between 18 and 24 years old watch less television than others, which is also reflected in a smaller percentage of their total free time. However, when we look at the usage of new media in this

group, with an average of 2h25 a week, this is more than in other groups, but still less than watching TV. So for these groups, watching TV is still an important activity. The group between 25 and 39 watches the least in absolute hours, but their free time is also the most limited. When we look at the average viewing times a day in Flanders, we can see that these stayed relatively constant over the years. There is even an increase, as in 1997 the average viewing time was 162 minutes per individual and per day (children included). In 2005, the average viewing time was 178 minutes a day (APS, 2006). This shows that although there are new ways of managing our TV time, an extensive part of our day and more particular of our free time is still dedicated to watching television. But despite these high viewing times, television is not regarded as a prior activity. If something else comes up, for example a visit from friends, people sacrifice their TV viewing. This is also described by Burton: *"Television is not life, although it's a part of our lives'.* It's hard for people to imagine themselves a life without TV, but there are more important things than watching TV, like social contacts (Bauwens, 2002:300).

1.2. Television experience

The fact that television is such an important part of our daily lives, is linked to its specific characteristic of giving **structure** and rhythm to our lives, by providing a sort of focal point for families, and acting as a sort of timetable. The time we start watching, the fixed appointments with broadcasts, all give a structure to our lives and make that watching television is a routine for most people. This is also translated in the central place TV has in the living room. The TV offers stability, not only physical, but also in the routine it provides, which makes people feel like part of the community, while watching (Silverstone, 1994; Bauwens, 2002; Peters, 2003; Taylor and Harper, 2003; Boyns & Stephenson, 2003). The television experience is determined by viewing behaviour, the social dimension and the scale of experience.

1.2.1 Viewing behaviour

The aspects of structure and routine have also an impact on the way people watch television. In a way, television is an easy medium and watching television is mostly a **lean-back activity**. Watching television often means relaxing and allowing us the right to do nothing[3]. The core elements of this viewing behaviour are:

- People first make themselves available to the medium, and only then they start watching it.
- Although people watch a lot of television and the fact that this structures their evenings at home, only few programmes are perceived as a real 'must'. This means that often people choose only for the medium itself but not necessarily for a specific content.
- Even though people have certain program preferences, choosing the content happens most of the time in an irrational way. Not always the nicest, most beautiful, most attractive or most interesting programmes are being watched. Often people just switch on their television set and then they start to choose the (type of) program they want to see.. This means that the choice of the programmes that are watched, are the result of switching on the television set rather than the reason for switching it on. (Bauwens, 2002: 167-288; Pauwels & Bauwens, 2004: 83-84).
- The element of "willingness" plays an important role with regard to the viewing behaviour. 'Willing' refers to the fact that once people have made themselves available for the medium, they often keep watching, even at programmes they are not

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[3] (Therefore viewers are often also referred to as 'couch potatoes')

particularly satisfied with (Bauwens, 2002: 385-389). When we look at viewing figures, we can see that entertainment programmes as well as the news are the most – watched programmes.

1.2.2 Social dimension

Another important characteristic is that television is still regarded as a **social activity** and a family event**.** Although there is a multiplication of TV sets in our houses, there is often still one TV-set placed central in the living room, on which programmes are being watched together. People like watching together, although this does not automatically mean that there is conversation on what they see (Bauwens, 2002).

1.2.3. Scale of experience

Watching television can have different levels of experience. We notice that television is often used as a **secondary activity.** More and more, TV accompanies us while we are doing other activities, like surfing the web with the TV on in the background, ironing in front of TV, reading while the TV is on etc. Therefore we distinguish three levels: (Van den Broeck et al., 2006; Lievens et al., 2007)
- TV in the front: this is the most active form of watching television. No other activities are being performed.
- TV on the side: people are performing one or more 'primary' activities while also watching television. The latter is secondary to the other tasks.
- TV in the back: in this setting television is no more than a kind of wallpaper. There is no form of active watching at all.

TOR calculated that in 2004, TV was a side activity for an average of 2 hours a week (TOR, 2004). Peters (2003) noted that the TV set as background or wallpaper is specifically used by younger people aged 18-25, but also in other research this simultaneous use of television while conducting other activities was noted. Lull (1990) describes television in this respect as an environmental resource, creating a flow of constant background noise. He sees that television becomes a companion for accomplishing household chores and routines. This has off course an impact on on-demand viewing, as this means that our viewing behaviour is not always attentive.

Although the characteristics of television (viewing behaviour and the television dominance) indicate that it is an important part of our daily lives it is clearly not the most important aspect. These characteristics of traditional TV also suggest that the act of watching television as such seems to be more important than the content we are watching.

With these observations in mind it is interesting to look at the affordances of video – on – demand (VOD). Affordances may be defined as the combination of *'perceived and actual properties of the thing - primarily those fundamental properties that determine just how that thing could possibly be used*.' (Norman, 1988; see also Gibson, 1977; Newman, 2001; Pierson et.al, 2006). We will explore the specific affordances or inherent properties of the service as well as its possible impact on the existing viewing practices as we have summarized them.

2. Video – on –demand: new affordances?

The traditional viewing practices as we described above, could be influenced by new television add-ons. One of these add-ons is the feature of video-on-demand. Important to

recognize is that this service is not only linked to television as such, but also to other types of platform like e.g. the computer.

2.1. What is video-on-demand?

Video-on-demand as a service exists since the nineties (Ling, 1999) and refers to a technique that offers viewers the possibility to watch what they want, when they want it. It is one of the services that enable people to time-shift, or in other words, to break loose with the existing broadcasting schedule. Technologically, video-on-demand systems provide content over a network, by sending it to a PC or a set-top-box linked to a TV-set. This can work either via downloads or streaming. The difference for the user is that with download, the entire movie or program first has to be stored on the set-top-box or the computer. With streaming, the content is streamed to the user, who can watch it immediately as the video streams starts. The latter is the main reason why the majority of the cable and telecom companies use the streaming technique when offering VOD-services.

Next to the basic functionality VOD also offers the viewer the typical video recorder (VCR) related functionalities like pausing, fast forward, rewind etc. (Rajapakshe & Quek, 1995).

A related service that also enables viewers to watch on-demand content, is the personal video recorder or PVR. This system can be used for "push video-on-demand", a service Sky will use to place additional content automatically on people's hard disk (Sky). People can also simply program their personal video recorder or PVR to record or download programmes on its hard disk. The personal video recorder is mostly linked to an electronic program guide (EPG), in that way enabling users to simply select the programmes they want to record from the EPG. Thus they can record one program, but also all episodes of a series at once. Furthermore it becomes possible to look for specific content to record, e.g. all movies with Richard Gere. The PVR also makes it possible to pause live –TV. In Europe, PVRs are available since 2000. It was announced as the replacement of the VCR, but due to high prices and its unfamiliarity, the devices had low adoption rates (Whittingham, 2000). Since the implementation of interactive digital television however, these PVRs were also integrated in set-topboxes, which will lead to a higher familiarity for TV viewers, as they are integrated in the digital television package. The common aspect in all these described systems, is that they offer viewers the potential to watch their preferred content at any time they want.

Besides VOD there is also near video-on-demand (NVOD). This is a video technique that broadcasts multiple copies of a program at short time intervals (10-20 minutes), giving viewers the opportunity to pick in every 10-20 minutes. This is a typical pay-per-view service in which people pay per program they watch.

2.2. Video- on – demand's possible interaction with existing viewing practices

The service of VOD intrinsically could have a great impact on the viewing patterns of people. The main question therefore is (to see) to what extent VOD interacts with existing viewing practices, keeping the characteristics as described above in mind? Technologically seen, the system of on-demand viewing entails the possibilities of managing both our time spent on watching television and the content we watch. Video-on-demand also enables watching video content on other screens (e.g. the PC screen), that way influencing the place of the TV set in the house.

Traditional broadcast television was determined by three dimensions: time, place and content. A certain type of content could only be watched at a certain time at a certain place. With VOD this interrelation between these dimensions disappears. This could even be to the extent that they become completely independent from each other. Then, any type of content can be

watched at any given time at any given place. Therefore we will elaborate on these three elements in the next paragraphs.

Fig 2: time, place and content can become independent entities
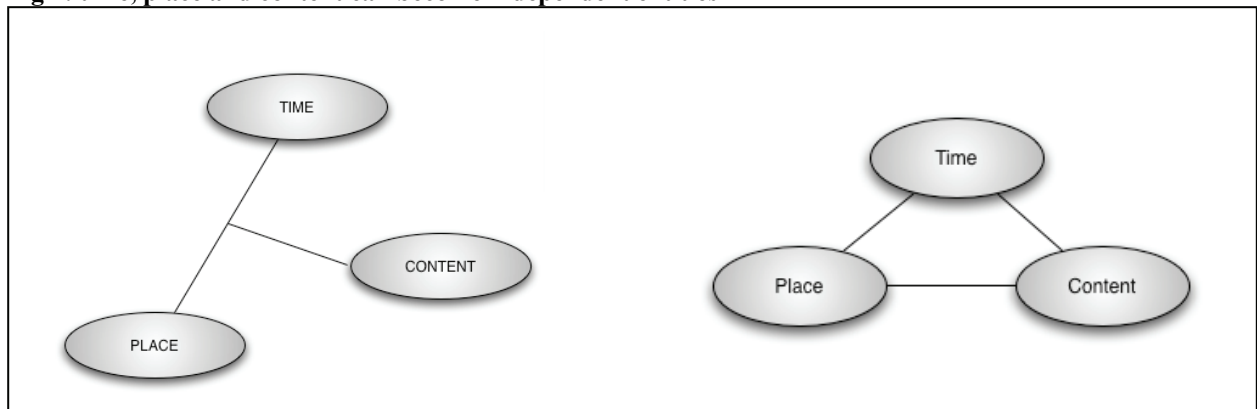
2.2.1. Time dimension

Video on demand entails the promise of becoming "a master of our own time", by offering the possibility to manage our own time. People can use VOD services at the timing of their choice, without the constraints of fixed broadcasting time schedules. One of the ideas is that by offering users more flexibility in organising their lives, this may lead to saving time (Haddon, 1999).

Both time and money are scarce resources for many households. But as our financial budget increases over the years with the growth of the economy, our time budget never changes, as there are only 24 hours a day. In contrary, due to the 24/7 society one could have the impression that the available time seems to be decreasing. Therefore time is probably the scarcest resource for households (Punie, 2000; Hamill, 2003). The changes in time spending patterns have been researched via time use diaries over the years (Haddon, 2001; TOR, 2004). These researches show that our time management is the result of a constant balancing between different categories: commitments (e.g. work, studies, household activities; physical needs (e.g. eat and sleep), time off, social participation, time on the road and waiting (TOR, 2004).

The assumption that the development of different types of new (time-saving) technologies would provide people with more free time cannot be taken for granted. Hamill (2003) investigated the spread of labour-saving devices in the houses. Her hypotheses that an increase of labour-saving devices in the home, like dishwashers and microwave ovens, would lead to more free time, proved to be false. Home entertainment devices like radio and television were diffused much faster than kitchen appliances. And those entertainment devices are more time-consuming rather than time saving (television, compact disk player). Particularly in lower income households, more entertainment devices than time-saving devices are present. Flemish research on TV habits showed that socially disadvantaged groups, like unemployed and elderly people, spend a lot of their time on watching television. This can be attributed to the fact that television is a relatively inexpensive time spending activity, and as already mentioned earlier, watching television offers us comfort (Bauwens, 2002).

The structural aspect of TV-viewing leads us to believe that people will not be eager to save time to watch only those programmes they prefer on-demand. The idea that people will save

time using VOD services, starts from the hypotheses that people now are forced to watch programmes they don't like, for example a less preferred 'bridging' program between two programmes they do like. Using VOD, they could be able to save time by only watching the two preferred programmes, that way reducing the total time spent on TV. However, this is not likely, as television clearly forms an important part of our daily lives and the activity of watching television is often more important than the content that is actually watched (Bauwens, 2002, supra).

A. The VCR (video cassette recorder)
Specific for Video on demand, is that its affordances are not new. Since the end of the 70's, a device with a similar promise already exists: the VCR (video cassette recorder). Existing research on the usage of the VCR, enables us to explore both the time dimension and the content dimension in relation to VCR user practices. When the VCR was introduced in the seventies, it was perceived as a revolutionary but costly device that would *"free viewers from the constraints of mainstream network television by making them more autonomous in their viewing decisions."* (Van den Bulck, 1999). In other words, viewers could gain control over viewing time and choice, as they could watch selective. When we look at the time dimension, we can see that one of the expectations was that VCR use would lead to a reduction of the total viewing time, as people had the possibility to time-shift and could only watch those programmes they preferred. The viewers could also better control the specific viewing conditions, as they could also use the VCR to skip commercials for example. Furthermore, it could lead to a diversification of the viewing diet, as people were also able to watch other and more content that was broadcasted on inconvenient hours. (see also Van den Bulck, 1999)

But when looking at the real usage, we noticed that the possible shifts in both time shifting and selectivity (see infra) did not occur as expected. A survey in Flanders conducted in 1994 by Van den Bulck, showed that, although 68,8% of the respondents owned a VCR, only half of the respondents used their VCR to record programmes regularly and only a similar percentage rented tapes regularly. There was also no evidence in the data that suggested that VCR use was linked to watching a more limited number of program types or watching less television (Van den Bulck, 1999). Other studies confirmed that the increase in TV watching due to the VCR, was not very significant (Hamill, 2003).
The main reason for this all is to be found in the user practice. First, the only decision that people make is whether or not he or she wants to watch TV. (see higher) Secondly, linked to the scale of experience (see above) Hamill (2003) makes a distinction between focused and background watching. People will only record those programmes they really want to watch and many of the recorded programmes are not watched at all. Thirdly, this is also linked to the social dimension. The VCR is for example also used to reduce viewing conflicts, e.g. recording a soap and watch it later on, because other household members do not like it. (Gauntlett and Hill 1999) This illustrates that the VCR, which mainly is a time-shifting device, has no significant impact on the entire viewing experience. Instead of being used as a time management device, it was used as an additional channel in the viewing repertoire. Some people will use it actively, but for others it will be a channel they only use sporadic. (Van den Bulck, 1999).

B. The PVR (personal video recorder)
The promises the VCR made in the early eighties, giving the viewer better management of his or her viewing and a better selection of programmes, are very similar to the promises that are made today with personal video recorders (PVR) and on-demand video viewing. An important question is if these "new" ways of viewer autonomy will in fact lead to new

viewing practices, or is the usage of the VCR a good prediction of the use of video-on-demand and PVRs?

The PVR, was announced as the follow-up of the VCR (videocassette recorder) (Whittingham, 2000). The PVR offers the same functionalities of time-shifting, but the combination with an electronic program guide (EPG) offers an important improvement concerning usability compared to the VCR. Instead of recording programmes time-based, people can record programmes item-based, by selecting them in an EPG. It is even possible to record all episodes of a series at once. This could lead to a more extensive use of time-shifting functionality. When we look at how people perceive video-on-demand as a new technology, we can see that they relate it with two existing technologies, their TV set and their VCR (Ling, 1999)

An early study of the use of a VOD system (1995-1996) focussed on the domestication of the technology in the home and more in particular on what is called the metaphorical integration in the mind of the user and the physical integration in the home and specifically into the living room. The tested VOD system was often seen as an entertainment system similar to the video player, because of its close association to TV as well because it had similar functionalities as playing a movie and stop or rewind it. People saw it as a kind of video machine that *"you can pick and choose what you want to see"*. One of the participating couples described the system as: *"I don't know how the technical system functions". It is probably just channels and videocassettes that stand there. His wife said: No, they are disks that everybody sits and looks at"*. (Ling, 1999). This last remark is important, as it relates to the idea of *innovation through familiarity*, in which people have to be able to relate to something they already know (Lievens, Van den Broeck, Pierson, 2007). Next to that the study also clearly indicated that users used the VOD system at roughly the same times they used regular broadcast.

The video metaphor also guided the expectations of the users of the service: they placed it in the sphere of entertainment, had specific expectations on the functioning (pause, rewind) and even had specific expectancies on pricing strategies. An important difference was that people did not have to leave the house to rent a video anymore, which was also seen as an important advantage. (*"For me it is simply that with videotorg I avoid the trip to the video store to rent a video, I get it right in my living room."*) However, this positive aspect was immediately linked to the concern that the system would lead to the impulsive ordering of movies and some people feared that it might steal time away from other activities. The test participants could use the service for free, but they did compare the service to the price of a movie in a video store. *"If the price to see a film was competitive with rental of a film in a video store that would be acceptable"*. Some people in the trial also wanted to use it for a fixed fee and others would want to pay only for what they used (Ling, 1999). This relates to he findings of our own research, that people want to be in control over costs at all time (Van den Broeck, 2006).

The above findings are also being confirmed in other research on the use of hard disk recorders or PVRs for time shifting: (see SPOT, 2006; Van den Broeck, Pierson & Pauwels, 2004)

- The use of these type of devices are limited in relation to the total viewing time (only 7-8% in the Netherlands, and 13% in the UK; SPOT, 2006)
- The time-shifting element is only relative in relation to time; the delayed viewing is often consumed the same day as the original broadcast
- The option of time shifted viewing in real time is not frequently used

- When recording a program this is not so much a time shifting element, but mainly because people simply don't want to miss specific programmes. Recorded programmes are mostly watched the same day or one day later.

Although the most known American stand-alone PVR, Tivo, was not adopted as successful as hoped for, the user rates of Tivo's early adopters are much higher compared to the European figures, as 70% of the Tivo owners use their device on a daily bases to record and to time-shift programmes. This is mainly linked to the commercials that are interrupting programmes more often in the US, as well as the fact that Tivo is being used more intensive, because it already exists longer in the US. (Whittingham, 2000; (Arbitron, Cable study, 2006))

Our own focus group research shows that people do appeal to the opportunity to break loose with the traditional TV system and to fit the incoming flow of content to their own needs. This is also one of the most important triggers for people to switch to digital television. People like being in control, and being able to time shift puts them in control over the existing broadcasting system. However, this will not necessarily mean that people will use the opportunity drastically. The first test with interactive digital TV in Flanders, e-VRT, showed that people do indeed shift the starting hours of their favourite programmes by means of the PVR and electronic program guide, but in their selection, they often stick to old viewing habits and taste preferences. The time span, in which they watched television, was also still the typical prime time television hours. This means that the purpose behind this program selection was not to reorganise the whole viewing evening autonomous, free from the classical broadcasting scheme, but to simply postpone prime time programmes to later on in the evening, when people had the time to watch them. (e-VRT, 2003; Van den Broeck, Pierson & Pauwels, 2004).

This overview on time-related aspects, leads us to some concrete ideas we will take into account in our further research on in-the-home video. One important finding is that for now, VOD and time-shifting is not really used to reduce the actual viewing times.

2.2.2. Content dimension

Another technical promise of VOD is that it enables a more personalised viewing behaviour. People will be able to adapt the broadcasting schedule to their own needs and thus watch only those specific programmes they really prefer. This is not only related to the time-shifting functionality, as described above, but people can also select only those programmes they really enjoy. The available content in that regard will be (in the future) unlimited and therefore people can personalise and adapt the existing TV broadcasting schedule. Subsequently, video on-demand can even make traditional broadcasting companies unnecessary in the future, as people can make their own choices 'à la carte' and choose between a range of series, soaps, documentaries, movies etc. Furthermore, convergence and the increase in Broadband capacity and availability have made the Internet an additional source of video content. This content entails both existing TV content (series and movies) but also a range of user generated content. People make their own movies and place them on popular sites like You Tube and my own TV, although this should not be overestimated, as only 1% produces most of the user generated content, 9% produces a little and 90% only consumes the content (Nielsen, 2006). New technologies like Windows Media Centre and Apple TV link these two different platforms, that way enabling convergence.

A. Content selection

Important to estimate the impact of this new content dimension is the way people select their TV-programmes. The analysis of (the aspects of) our existing viewing patterns (supra) showed that the act of watching television is often more important than the content that is watched and that people not always watch only the nicest programmes. However this does not mean people never select programmes or aren't interested in watching on-demand content.

Taylor and Harper (2003), distinguished three periods of television viewing, that each have their specific selecting mechanisms regarding the content that is watched:
1. *Coming home viewing*: This period can be described as "switching on to switch off". Switch off from school or work, to start the process of relaxing. Taylor and Harper found that this viewing was highly disengaged viewing. In this period, programmes are mostly selected unplanned, by zapping through the channels. Little or no use of program guides was made in this period. The channel surfing feels like it is effortless and requires little thought. Furthermore, the channel surfing is immediately related to watching television. People are already watching, while they are surfing the channels.
2. *Mid-evening viewing*: This period often runs through dinner and lasts until 8.30-9 pm. This is what is typically called the prime-time period. In this period, there is planned viewing of specific programmes and therefore engagement is also higher. This is called viewing by appointment. These programmes are often viewed together, and they also structure the activities of people, e.g. preparing meals before the soap starts. (This relates to the routines in viewing, people know which programmes are on).
3. *Later-evening viewing:* This type of viewing takes place when all the daily chores are completed and last until 11 or 11.30 pm. This viewing has a relatively high level of engagement in the households. People then seem to have specific types of programmes they like to watch. Documentaries, current affairs programmes and dramas were popular. In this phase, program guides are often being used for short-term planning of which programmes people want to watch.

The analysis of Taylor and Harpers' three viewing periods indicates that it is especially the level of engagement that is central in the determination whether people just watch TV (according to daily routines and patterns like first the news and then a soap opera) or actively select programmes. This is also linked to the scales of experience (see higher) in watching television.

When looking at the existing user research on the VCR, and the specific relation with the selection of the content, the following outcomes can be distinguished (Van den Bulck, 1999):
1. Viewers may watch "more of the same", e.g. they are watching action movie A and recording action movie B at the same time;
2. Viewers could also buy, rent or record content that is not shown on television or which is not available in their normal viewing hours. It is only in this second case that VCR use leads to diversification;
3. Viewers may also just rearrange the broadcasting schedule and that way making viewing more convenient or eliminating programming conflicts. Then the viewing diet does not change much or not at all

4. The number of genres correlates with the amount of time that people watch television. The more viewers watch television, the number of genres they watch increases. Only for heavy viewers, this is the opposite.

The findings above may suggest that VCR usage mainly leads to a diversification of the viewing diet and that people who use their VCR a lot, watch more television. However, Van den Bulck warns that, it is also possible that the findings merely suggest that heavy viewers of television are also heavier users of the VCR, as also suggested by other authors (Van den Bulck, 1999).

A. Content experience

Another important content related aspect, also with regard to 'experience' as well as to the social dimension, is that unlike watching television, watching video is perceived as an event unto itself. The idea that a movie was something else than just a TV broadcast was also expressed in the Videotorg trial (Ling, 1999). Although video could not be compared to watching a film in a cinema, it was perceived as a special social event. Watching video could be seen as a pseudo-film experience that has developed its own social identity. Ling et al refer to the use of food, the video selection process, the invitation of friends and even the scheduling of time for the session that distinguishes it from normal broadcast TV. (Ling, 1999). This is important for VOD, as this means that people will probably choose on-demand movies in a different way than they choose on-demand programs. This could also haven an impact on people's willingness to pay for VOD. People are already used to pay for movies (video rental, movie theatre), but not for episodes of TV series (Van den Broeck, 2006).

B. Internet: the new challenge

The Internet could be perceived as the absolute video-on-demand system. It enables the users complete control on the three basic dimensions of VOD as mentioned above. Furthermore, the border between television and computer is becoming vague. Television sets are already being used as computers and vice versa. Next to that, we also notice a change in time-consuming activities, especially among youngsters, who are using the Internet more often (TOR, 2004).

Online video, or watching video via the computer, has become a common practice in the last few years. In the US, the majority of the online population (69%) already watched online video (OPA, 2005). It is not only youth that watches online video. The majority of online viewers are male, and the age group between 35-54 accounts for 45% of all online video viewing.

In relation to content, we notice that although the amount of available content on the Internet seems to be unlimited, there are two major differences with traditional TV-viewing:

1. The personal computer is used to watch other content than traditionally watched on TV. News is the most watched genre online, although sports fragments are watched the most frequently. Movie clips and video clips are the second and third most watched genres. Online viewers are particularly interested in original content, exclusive for the Internet and not available on other media as TV en DVD (OPA, 2005; OPA, 2006).
2. Online video should be short, for news, movie clips and sport highlights 1-2 minutes is the ideal length, for music clips 3-5 minutes is preferred (OPA, 2005; OPA, 2006).

But the Internet also has another major challenge in terms of content: user generated content. User generated content is a quite new evolution and is strongly enabled by numerous Web

2.0 applications and services. The most well-known and popular service distributing user-generated content, is Google's You Tube. Each day more than 100 million movies from different genres are being watched via this website only. As within most online communities, also for You Tube the Nielsen principle of 1% of users contributing a lot, 9% contributing a little and 90% only consume content is valid (Markus & Hannu, 2006; Nielsen, 2006).
An important question is how this user generated content will evolve in the future, and which place it will take in existing viewing patterns.

2.2.3. Place dimension

A last dimension, on which on-demand services can have an impact, is the place dimension. For long, television was placed central in the living room, as a gathering point for all family members. This embedded aspect of television in our living room, goes back to the fifties, when the living room was the only room in the house that was heated (Hamill, 2003). Nowadays this is no longer the case.

Today many households have more than one TV-set (29,4% of Belgian households has more than one TV-set; IP, 2005) and television sets can be found all around the house. The multiple TV sets in the house can be found in public as well as in private spaces like children's bedrooms, parents' bedrooms, hobby rooms, and even kitchens and bathrooms. A Flemish research on the use of television in the bedrooms, showed that 30% has a TV-set in the bedroom. This means that our bedroom has a new function, it becomes a place to relax and escape of the stress of the everyday life.[4] This is also related to changes in experience as well as to the social dimension (see above).

TV-sets are omnipresent in the house, but there is not only a multiplication of TV-sets, also other screens in the house can and are being used to watch video content. The multimedia computers of today in combination with Broadband connectivity make that computer screens can be used as TV screens as well. People can use their computer to watch all kinds of video content (see also above).
As illustrated above, on – demand services provide additional content at any time, expanding the range of programmes that can be watched on the different screens present in the house.
Past research showed that the additional TV-sets in the house were used as an "emergency device". The best equipped TV-set was still to be found in the living room, but the additional sets were used in so-called emergency situation, for example a football match that only the husband wants to see or for the children Besides this, most programmes were still watched in the domestic and social context of the living room (Bauwens, 2002).

Although outside the scope of this research, it is also important to recognise that the practice of watching television is also being transferred outside the home. This means that in this 'new' mobile society, due to mobile devices, the Internet etc., television seems to be everywhere. More than traditional television sets, mobile television is emphasising on interactivity, including video-on-demand. Research has already showed that this mobile evolution not necessarily means that this is an addition to watching television on a regular TV-set. One of the places where mobile television is being used is precisely in the home. (Södergard, 2003) Next to that, because of the intrinsic capacities of mobile television, new viewing patterns for these devices impose. Question here is to what extent this will influence traditional or existing viewing patterns.

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[4] This is based on a research conducted by Herman Konings, a Belgian trendwatcher who runs the company called nXt (www.nXt.com), for the 'Sleepy' company.

The expansion of available channels and content, promises the evolution towards more fragmented viewing practices. An important question in this regard to incorporate in our future research is if television is still able to hold its social character. And how will these additional screens be used in the future? How does the increasing number of potential television screens influence the traditional practice of watching television on the living room television?

3. Conclusion

When looking at the existing user practice of TV-viewing, two elements seem to be of importance: the television dominance and the television experience. The first element refers to the fact that television is domesticated in such a way that it is a major part of our daily life practices, not to say a dominant part. The second element refers to how people experience television. This is influenced by their viewing behaviour, the social dimension as well as the scale of experience of TV-viewing.

When video-on-demand (VOD), (and with that, new kinds of audiovisual content), wants to be fitted in everyday viewing patterns, it has to interact with those two elements. To do so, the three major dimensions on which VOD has an impact have to be taken into account: time, content and place. Video-on-demand after all enables people to see what they want, where they want, at any time.

The environmental scan has also indicated that some very specific elements are important with regard to the domestication of VOD. First on demand services offers people the opportunity to watch the content they want to watch, in a relatively simply manner. A major advantage of the on demand system is that it relates quite well to something people already know (VCR) and more important of which they already have some user experience and practices. Earlier research found that *innovation through familiarity* is important for the uptake of new services or applications. Secondly people want to feel that they are in control. They want to have the option to time -shift and the option to watch specific content when they want it, but this does not mean that they will use it intensively. People like having choice and options, but they are not always willing to use these options actively. The convenience, the comfort and perhaps also the social aspect of TV viewing makes that live-TV is still popular. As in other research on the use of new technology, this is also linked to the idea that *old habits die hard.* People don't change their habits overnight, but there is a gradual shift towards new user practices, as a result from a constant interaction between the user and the technology. Thirdly, we notice an enormous expansion of available content. This has two-sides for users. The increase of content leads to *more choice*, which is something people like. On the other hand, this could also lead to *'choice fatigue'*, as people can have too many options and that way loose control. An important role will be for gatekeepers. For television, this will probably be the TV-channels, that give people an indication of the type of content and quality they can expect. For online video, there will probably be a growing need for content aggregators that give people control over the available content.

In order to fully understand the interaction between video-on-demand services and existing viewing practices, many elements, (enablers as well as barriers) still have to be identified. Therefore an important focus of further research should be on the gradual shift in user practices.

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Acknowledgements

The Dynamics Of User Generated Content: Case Study LommelTV

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Abstract

In the decade where Web 2.0 tools blossom and telecom innovations with support for user generated content are popping up everywhere, user research focusing on key factors of content creation is no longer a luxury. A profound understanding of the user and his motives for content creation is vital to make technological innovations socially successful. This objective will not solely have economic consequences in the world of telecommunications. Social relations are also believed to benefit from these tailor-made applications as they get enriched during the user experience process.

In this paper we will discuss an example of a unique innovation driven by user generated content, namely LommelTV. LommelTV is based on the Alcatel-Lucent 'MyOwnTV' application (Alcatel 2006). This is an IPTV application developed by Alcatel-Lucent. It enables people to create their own digital television channel and publish their own content to this channel for others to be viewed. In 2006, the city of Lommel was chosen to trial this application. The citizens of this Belgian city started creating their own television content. The movies and photo slideshows on LommelTV entertain the viewer with community activities, city events, holiday memories and funny footage. A broadband internet connection, a settopbox and a photo- and/or video camera are all it takes to generate content for LommelTV.

In order to generate the optimal user experience a multidisciplinary team consisting of engineers from Alcatel-Lucent and communication sociologists from the University of Leuven supported and investigated the LommelTV user community. Special interest has been given to the process of content generation.

A first round of results shows a diverse usage pattern of LommelTV among the selected citizens. Content analysis of LommelTV and in-depth interviews with all the participants revealed that the process of creating content appears to be a complex one. Based on these research results and the input of extensive field work, a theoretical model was developed,

exploring the psycho-social process of content creation. This model indicates that the reasons for (not) using the application actively do not lie solely in the technical features. Rather, when creating content, users appeal to their own motivation, inspiration and audience perception. These key factors will be discussed thoroughly in this paper as well as the question whether this model is suitable to reveal key factors in other types of applications focusing on user generated content.

Introduction: Understanding User Generated Content

In the last decade we have witnessed the rise of the internet. By the year 2007 the internet has already undergone its first transformation. This transformation is denoted by the term 'web 2.0' (Musser, 2006). Web 2.0 encompasses a set of digital technologies that have led to the rise the weblog and wiki. This technological progress is inextricably coupled to social innovation. In 1999 Berners-Lee already indicated that the Internet should also be about creating things with other people (Berners-Lee, 1999). Popular web 2.0 services such Flickr and Second Life facilitate collaboration and sharing between users. Consequently, the threshold for non-professional users to create and share all sorts of media content has been drastically lowered. This was initially so for the written text (e.g. blogging) but soon after other audiovisual media followed such as music (e.g. podcasting), photography (e.g. Flickr), and video (e.g. You Tube) (Gillmor, 2004).

As a result, in the decade where Web 2.0 tools blossom and telecom innovations with support for user generated content are rapidly emerging, user research focusing on key factors of content creation is no longer a luxury. A profound understanding of the user and his motives for content creation is vital to make technological innovations socially successful. This objective will not solely have economic consequences in the world of telecommunications. Social relations are also believed to benefit from these tailor-made applications as they get enriched during the user experience process.

Case study LommelTV

LommelTV is based on the Alcatel-Lucent 'MyOwnTV' application (Alcatel 2006). This is an IPTV application developed by Alcatel-Lucent. It enables people to create their own digital television channel and publish their own content to this channel for others to be viewed. In 2006, the city of Lommel was chosen to trial this application. The citizens of this Belgian city started creating their own television content. The movies and photo slideshows on LommelTV entertain the viewer with community activities, city events, holiday memories and funny footage. A broadband internet connection, a settopbox and a photo- and/or video camera are all it takes to generate content for LommelTV.

A multidisciplinary team consisting of engineers from Alcatel-Lucent and communication sociologists from the University of Leuven supported and investigated the LommelTV user community during the trial period. At the end of August 2006, the research team conducted a first round of interviews with the users of LommelTV in order to get feedback about technical issues as well as societal aspects concerning LommelTV. Each participating community was interviewed separately. The interviews took place in a familiar setting for the users, e.g. a home or in their clubhouse. As of November 1st, sixteen interviews had been completed, totalling 35 persons.

The users' feedback provided the research team with considerable input for adjustments, improvements and recommendations, not only relating to the application but also to the diffusion of LommelTV in the city of Lommel. Gradually, it became clear to the research team which forces were at play in making LommelTV a successful application. It was necessary to map these forces to stay focused on the research questions and take this research to the next level. So this input, together with the field work done between November 2005 and November 2006, was the starting point in the modelling of a psycho-social process of content creation (Fig. 1).

Firstly, a general overview of the model will be given. Thereafter, the key elements of the model are highlighted, followed by several attention points.

Fig. 1: Psycho-social process of content creation
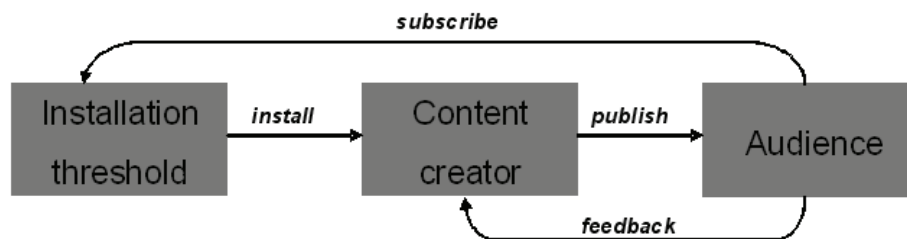
General overview

LommelTV is about generating content, whether or not about Lommel, for an audience in Lommel by people from Lommel. Before a user starts participating in LommelTV, the installation of a settop box is needed. This device allows you to watch LommelTV on your television and provides the login to the web application where movie clips can be uploaded to LommelTV. After a successful installation, the user can start working on his desired content for LommelTV. The process of this content creation is influenced by several factors, motivation being one of them. When the content is ready for publication, the user publishes it to LommelTV, which allows the audience to watch and judge his work. The feedback of the audience will help the user in redefining his next content creation process. Audience that is not yet in possession of a settop box can, at any time, subscribe to LommelTV.

These are the key elements in the psycho-social process of content creation. They constitute the application's general framework. In the next section, each of these elements is further explained in depth starting with the content creator. He/she forms the pivotal element in the psycho-social process.

Key elements

Content creator

The process of creating content is a complex one (Fig. 2). A user has to feel inspired as well as motivated to create content he's satisfied with and wants to share with a local public. A motivated user can be stuck in hopelessly seeking inspiration and as a consequence stops generating content. On the other hand, an inspired user who, for instance, does not know how

to edit movie clips, must be motivated enough to master (basic) video editing skills or no content will be created.

Fig. 2: Content creator
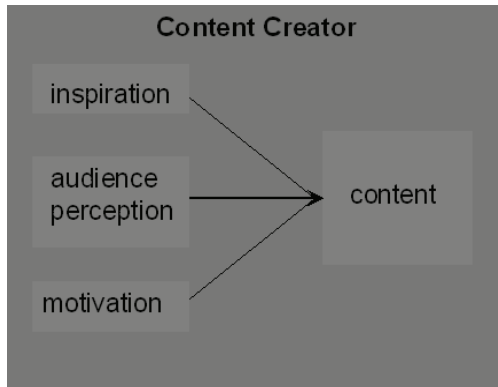
Being inspired and motivated are however not the only criteria leading to content creation. The user's perception of his audience is an important additional factor. If you decided to join the project, it's because you want to share your work and have an incentive for reaching out to an audience. The exact size of the audience is at that point irrelevant. Whether the audience of LommelTV consists of 300, 3000 or *only* 30 persons, if the user somehow gets the impression that LommelTV is being viewed and there is an audience to whom he can publish, the content creation process starts. Later on, and only for some types of persons, the exact size of the audience will matter. But even then, it will all be about the user's *perception* of his audience. The application's usage will make it impossible to measure the audience's exact size.

Every time the user has the intention to create content, he will subconsciously check the status of his inspiration and motivation and link this to the thoughts he has about his audience. It may be clear that in this process there are enough elements that can hamper content creation. More details about this can be found under 'attention points'.

Content

What is the content that can be found on the LommelTV channels? To get an answer to this question a content analysis of the movies on LommelTV was conducted in October 2006. 185 movies, spread over 43 channels and owned by 19 communities, were analysed.

Firstly, there are noticeable differences with regard to the *numbers of movies per community*. Bruudruuster, a multimedia community whose main activity consists of making pictures and movies of parties and events, is taking the lead with 58 movies. DALO, an athletics club, is in second place (22 movies). LOC, the entrepreneurs club of Lommel, is third with 14 movies on Lommel TV. The administrator of both the Dalo and LOC channel is the same person.

Analysing the movies in relation to the type of communities that are the *owners of the channels*, we observe a superiority of 71% for 'communities of persons'. This implies that 133 of the 185 movies are the property of communities of individuals. Communities that consist of organisations, e.g. LOC, represent 11%. 7% of all the LommelTV-movies are owned by the city services of Lommel, while educational institutions are the owners of only

3%. 8% of the movies are more personal and are owned by a member of a community. These movies deal for example with personal hobbies, personal activities with friends or family…

Fig. 3: Percentage of movies in relation to channel owners

City services
Lommel
7%

Educational
institution
3%

Member of a
community
8%

Community of
organisations
11%

Community
of persons
71%
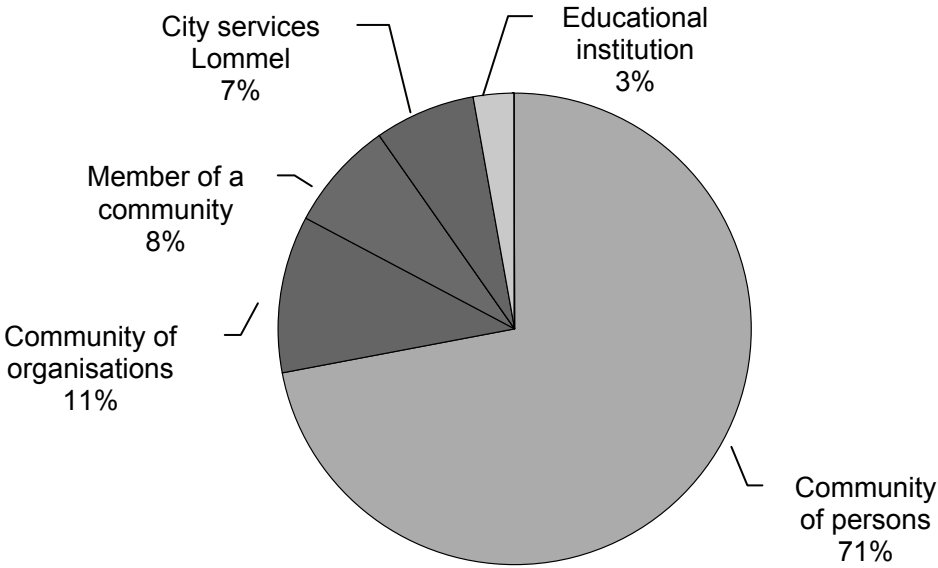
The segment of 'communities of persons' can be divided in subgroups. Almost half of them are multimedia communities (49%). These are communities that work with video, photography, computers… Sports clubs represent 29% of all 'communities of persons', while 11% of the movies that are made by a community of persons are owned by a youth organisation.

Fig. 4: Division of Community of Persons

Other
communities
of persons
11%

Youth
organisations
11%

Sports
communities
29%

Multimedia
communities
49%
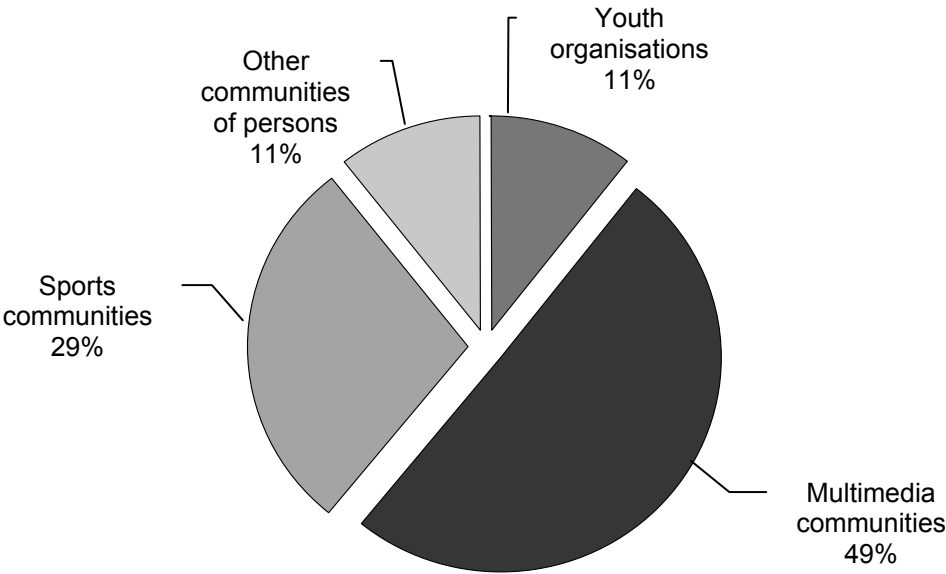
The content of LommelTV was analysed on two levels. First of all we examined the *type of activity* that was covered in the movies. 34% of all the movies concerned an activity of the own community. Furthermore, the communities like making movies about activities of other communities as well (21%). 15% of the LommelTV movies are about Lommel or about city services and 3% deal with the history of Lommel. Personal activities form a segment of 17%. LommelTV itself is the theme of 4% of all the movies

Fig. 5: Type of activity covered
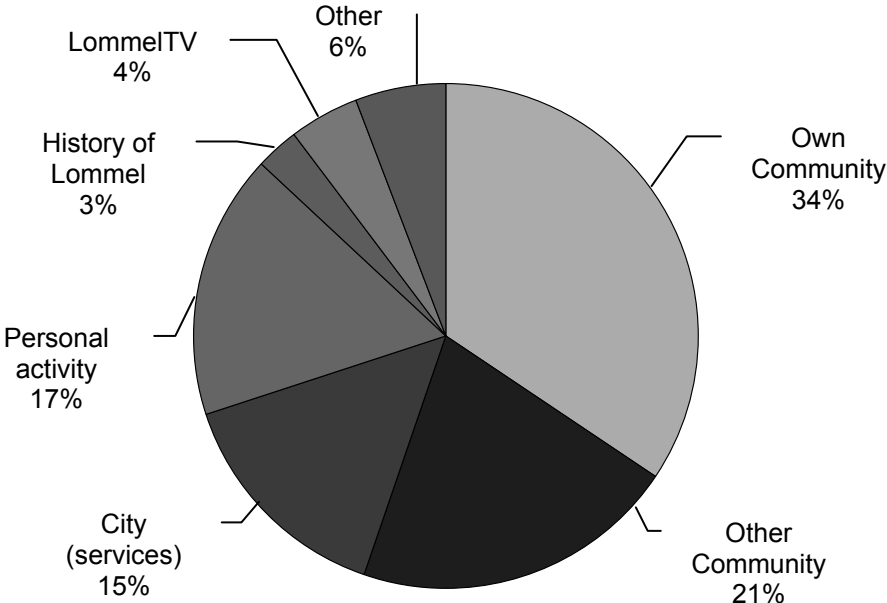
The second level on which we analysed the content of LommelTV, are the *movie themes*. Per movie, one or two themes were indicated. Table 2 represents the top 10 of the themes that occurred the most. Sports are clearly the most popular on LommelTV (55 of 185 movies). The second most popular theme is music, which occurs in 22 of 185 movies.

When we look at the *formats* that are used on LommelTV, we notice an enormous dominance of the coverage format (71%). 16% of the movies are reports, which are coverage's with a reporter, and can include an interview. Interviews themselves, as well as documentaries, concern only 3%. Fiction is not very popular on LommelTV: only 1% of all the movies are stories and 6% are sketches.

Fig. 6: LommelTV formats
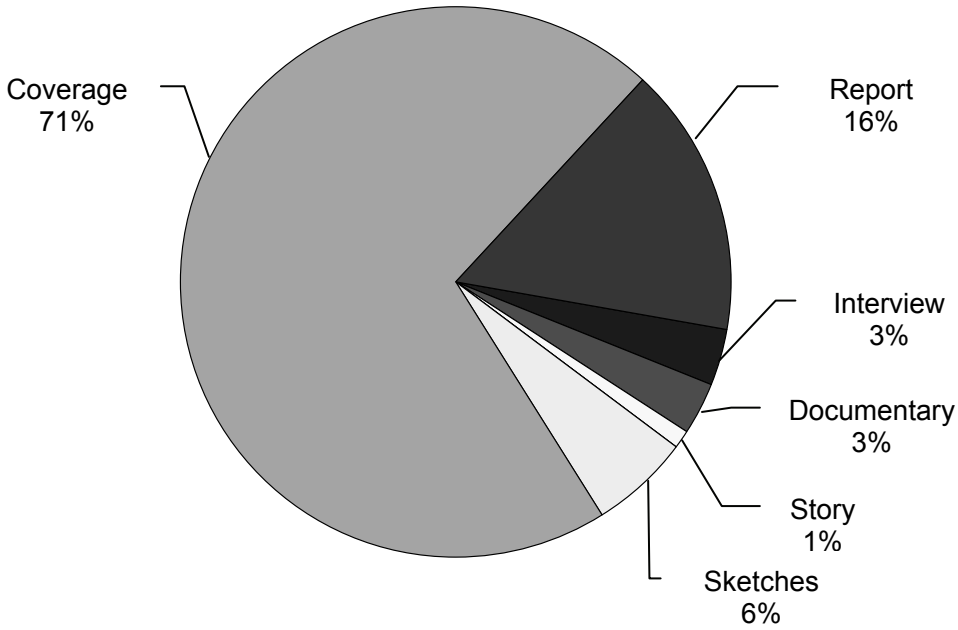
The *tone of the movies* on LommelTV corresponds to the used formats. The greatest part (66%) of the movies is informative. With 32%, the entertaining movies make the second big part. Expressive and persuasive movies include just 1%. With regard to humour, we can see that 12% of the LommelTV movies are humoristic. These movies are especially entertaining and to a much lesser extend persuasive and informative.

Fig. 7: Tone of the movies
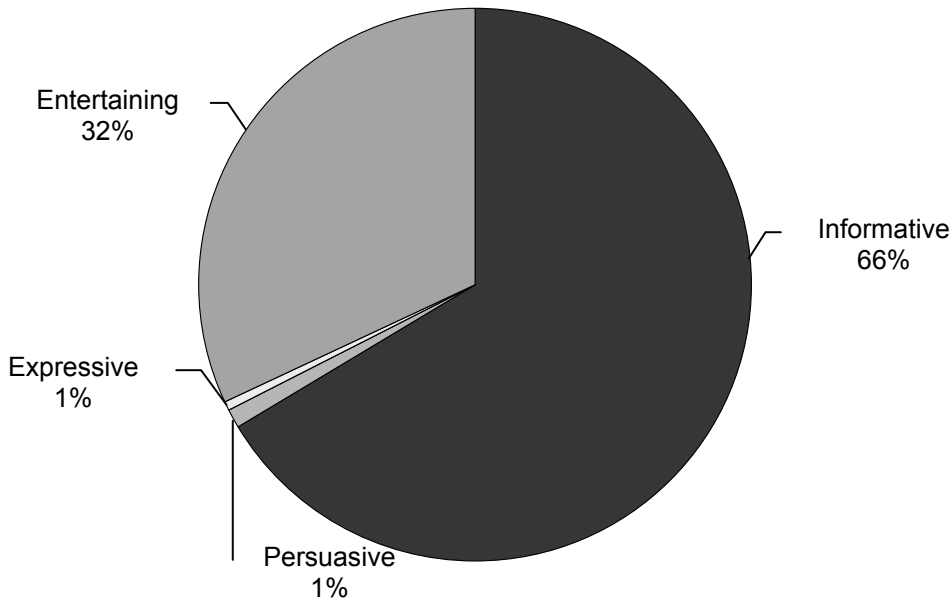
Fig. 8: Tone of the movies (humorous)
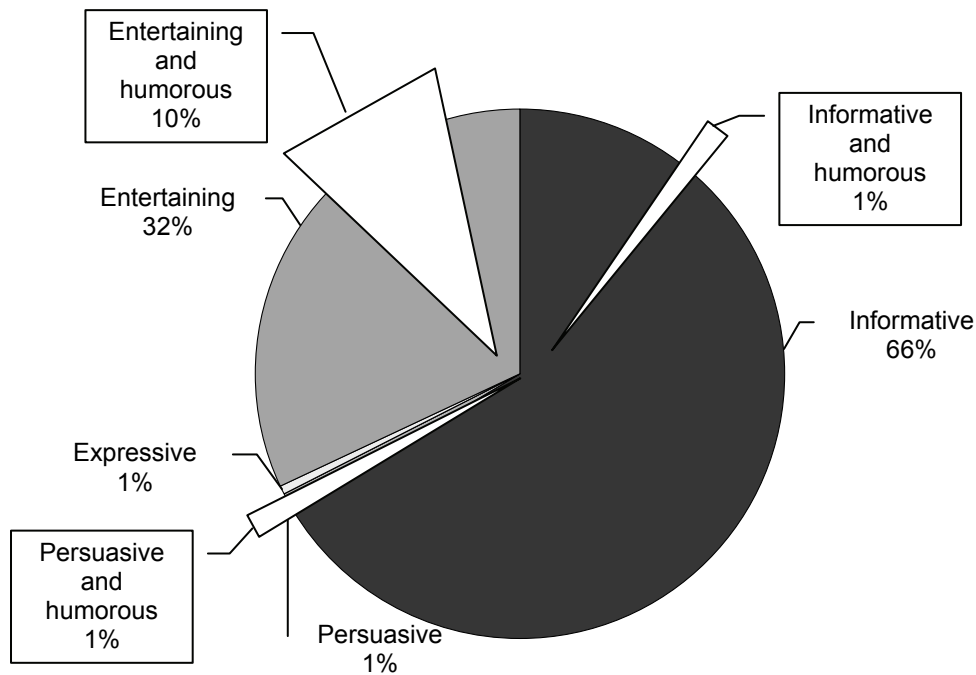
Audience

After the content creator has made his content ready for publication through footage editing, he publishes it on LommelTV. From that point onwards the audience of LommelTV is able to watch it on television (Fig. 9). But what is LommelTV's audience? And can it be the same audience as the one perceived by the content creator?

Fig. 9: Audience
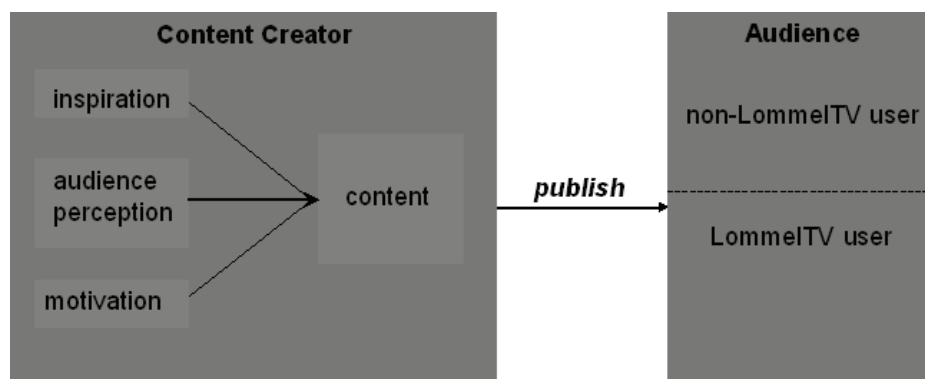
A part of the audience of LommelTV can be defined by users of LommelTV and their viewing habits. On the other hand, there is a part of the audience that can not be exactly measured: the non-LommelTV user.

Non-LommelTV user

There are two kinds of non-LommelTV users who complete the audience: friends and family of the LommelTV user or other members of the community and people at public spaces where LommelTV can be watched. The first group of viewers is relatively small. They watch LommelTV once or twice due to curiosity but they are no candidate for having a personal settop box at their own home. A possible motive behind this lies in their perception of absence of a possible audience consisting of non-LommelTV users.

How can non-LommelTV users, who have no connection to LommelTV users, watch LommelTV? After the public launch of the research project in May 2006, four public places opened their doors for the citizens of Lommel to come and watch LommelTV: the city hall, the library, a museum (Museum Kempenland) and the cafeteria of the elderly home. It is impossible to predict how many people have passed by these televisions since and caught a glimpse of LommelTV or stood still for a minute and watched some movie clips. However, it became clear that the impact of these places is rather small. Their role and tactics needs to be reviewed. These places are not very inviting to watch television and do not appeal to the imagination of the content creators as places where their movie clips can be watched and appreciated. In this context, a compilation of the best movie clips on LommelTV was put on DVD and is, for now, distributed to the event hall, the waiting room of a doctor and a restaurant. A variety of public places is thus gradually established. A further expansion of public places is put on the agenda.

It is especially the unknown presence of these non-LommelTV users at public places that influences and forms the audience perception of the content creators. This problem will be discussed in the 'attention points'.

Audience Feedback

The positive power of the audience lies in the possibility of giving feedback to the content creator. And that is what the content creator ultimately seeks and drives: comments on his work, so he will know if he is on the right track or has to make adjustments in his content creation method.

Fig. 10: Audience Feedback
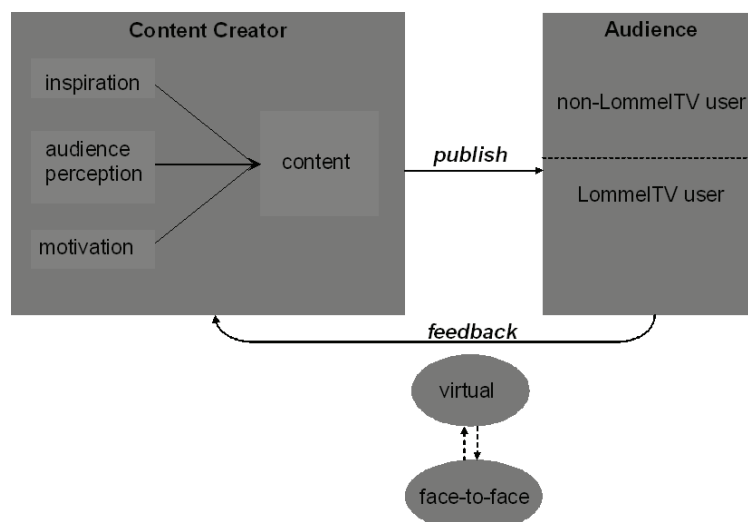
We can distinguish two kinds of audience feedback: virtual and face-to-face. Ratings once or twice a month and a counter on each movie clip are examples of virtual feedback. These are hard facts: how many times has my movie clip been watched; where do I stand in the top 10 of most watched movie clips; who are my 'rivals'? This kind of feedback influences the user in his next content creation process. For example, he can find inspiration in the themes of three most wanted movie clips. He can be inspired to do better than his rivals. The audience perception of the content creator will benefit from receiving this kind of feedback.

The audience is, of course, also able to give face-to-face feedback. The LommelTV users can do this at the monthly meeting of the LommelTV council. This is a meeting place for all the LommelTV users where problems and initiatives concerning LommelTV are discussed. It is of course also possible for both the LommelTV users and the non-LommelTV users to encounter each other on the street or at events and give feedback on their work. For the moment, coincidence has to be on your side however to meet the right persons at the right places.

Face-to-face feedback will also have an effect on the user's content creation process. As already mentioned: whether the audience of LommelTV consists of 300, 3000 or *only* 30 persons, if a few people address a user on the street and say "Nice work", then he gets what he needs to continue LommelTV and his audience perception has improved.

This key element of the model has also some attention points which will be discussed in the next section.

Attention points

For every key element in the model, the research team has placed attention points to stress out current issues and opportunities of LommelTV (Fig. 11). These points have surfaced during fieldwork, at the LommelTV councils and in the feedback interviews. It is input from the users themselves. Each attention point will be explained and illustrated by one or more fragments of the feedback interviews.

Fig. 11: Attention points
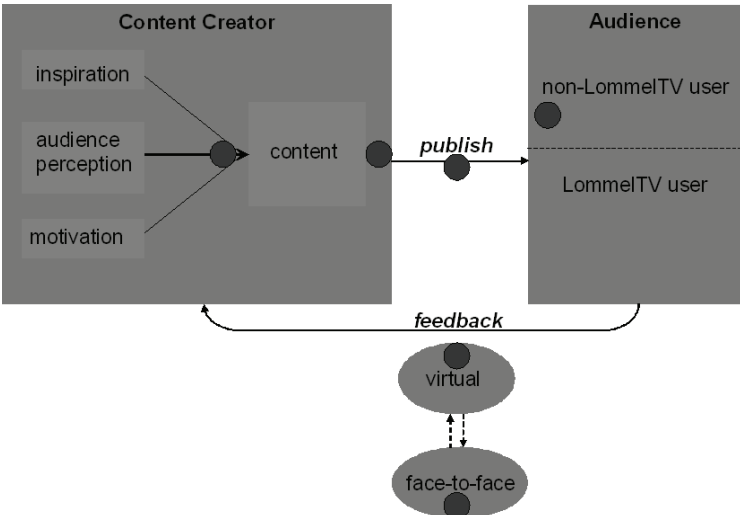
Before content creation

Three psycho-social processes are at play before a participant decides to make content for LommelTV and before a user goes for the next round of content creation. A clear inspiration and (internal as well as external) motivation is necessary.

"If it is being commercialized, and it would stay the way it is, then you are a part of it from the very beginning. Imagine that this would happen within two years, we will have already a lot of content. When you have to start from scratch and make the first movie, at that time we will have like fifty movies."

Becoming an innovator is a driving factor for some of the users of LommelTV. For a larger group of users, the motivation for participating in LommelTV is promoting their community.

"That is the only reason why I participate in the project [promoting our community]. If it is purely community TV in Lommel, and if it stays a labyrinth like today, then it is not worth it. There has to be a more obvious structure. Now the names of the channels are chosen voluntary, we are also wrong about that."

Feeling inspired and motivated is not always enough to start creating content. Why put all your effort and time in creating some content when, in your perception, no one can watch it?

"LommelTV is a nice initiative but why would we publish our work on it if no one can see and judge it, except the 30 users? People do not go to the city hall to watch LommelTV. Furthermore, it is a place for the elite."

Having the perception that there is no audience out there is a major obstacle in the content creation process and needs to be given full attention by the research team in order to convince already inspired and motivated people to start generating content.

After content creation, before publishing

It seems a logical process: after a user has made his content, he can not wait to publish it on LommelTV. This is rather different in the field. There are users who consider the quality of their movie clips as an important factor, technically as well as content-wise. In some cases, this will lead to a form of self-censorship:

"Because there are only 50 users right now, you impose censorship on yourself. You think it is not good enough for LommelTV, you look at what is missing on LommelTV, so you can try to do it yourself. There are users who do not impose censorship on themselves and just do their thing. When their movie is uploaded, they are very proud of themselves, because everything you do yourself is always very good. I impose censorship on myself, not that it is not allowed, but that the movie is not good enough, e.g. the music. It is the same as on the internet, when I design a website I make sure there are no spelling mistakes for instance. It is a tendency I have."

Publishing

Once a user is satisfied with the way his content looks, he is ready to publish it on LommelTV. Problems that can occur at that moment are mainly of a technical nature. The process of encoding and uploading the movie clips takes a lot of time, after the user has

already put a fair amount of time into editing the movie clips. This may in turn have an impact on his motivation.

Audience of non-LommelTV user

Content creators need an audience. An audience will give them feedback and that feedback will help them to improve, alter or even remove their content. Even if they all have a perception of the audience that does not match reality, they need to know that there is at least a potential audience. From the point of view of the research project, one can ask: why ask people to make content for a digital local television channel if the majority of the citizens is left out?

This problem was pointed out by a number of users:

User: "The problem for the non-participants is that they have to go to a place or room provided with a settopbox. It would be a lot easier if it is possible to watch it on the internet."
Interviewer: "Would you rather watch it on your pc?"
User: "Not me, but I can imagine that this is interesting for the public."

Interviewer: "Imagine that every citizen of Lommel can watch LommelTV, what would be the big advantage of this expansion?"
User: "More people will be interested in LommelTV that is what is going to happen. If you talk about LommelTV to others, you will easier find someone who understands what you are saying. This is not the case right now, because there are not enough people involved. You still have to promote it to the public."

This attention point is a crucial one: not only can an absence of audience discourage the current users in generating content; ignorance of LommelTV in the daily life of citizens will inhibit new candidates to participate in LommelTV.

Feedback

If users reach out to an audience, that audience needs to have the means to fulfil its powerful role: providing feedback. Concerning the virtual feedback, these means are technical. Up until now, only ratings are available as virtual feedback. First they appeared on a monthly basis on the public section of the website of LommelTV, now they are put, also monthly, in the private section that is only accessible by users.

"It should also keep you motivated. For example, ratings keep you motivated. When the ratings are published, you know at short notice which movies are interesting. Maybe ratings after two weeks are more interesting because you can anticipate faster. I would insist that the ratings are automatically generated."

There is a need to generate extra technical features that give feedback to the users. For example, a counter of the number of views on each movie clip is desired by most users.

Concerning the face-to-face feedback, it is clear that only a small group of users consider the LommelTV council as a meeting place between the users. The majority of users find the council a useful instrument in the research project, but do not feel the need to participate in it. One of the outcomes of the council is the initiative to organise a public screening event in Lommel. On an evening in December, citizens of Lommel are invited to watch short movies

about their city, whereby movie clips of LommelTV will also be shown. This will be a good moment for the users to get in touch with the public, receive feedback on their work and adjust their audience perception.

Installation threshold

The last attention point is situated at the start of the psycho-social process of content creation: the installation threshold (Fig. 1). Although a number of people do not encounter any problems during set top box installation time, others are confronted with as series of installation issues. The preconditions of having internet close to the television and an internet connection that is fast enough are major obstacles related to the installation. This has without a doubt an influence on the motivation of the LommelTV aspirant user. Although a manual is provided, the concept of *do it yourself installation* is not quite successful. More technical support during the installation process should be provided.

Conclusion

As a general remark we can state that the technical component of the application is a key facilitating element. However, the thriving forces behind these technicalities are the people participating in content creation. It is of crucial importance to keep them motivated and inspired throughout the development process. This may prove a greater challenge than the application's technical evolution.

Furthermore, in order to have a diverse set of people participating in the process of content creation it is pivotal to target technical as well as societal lead users. The latter possess a large social network complemented by a canny ability to motivate newcomers to have a go at content creation, without necessarily being technically savvy. This then implies the necessity of organising a series of workshops explaining how to film, edit and write a storyline.

Different initiatives should also provide visibility to a communityTV project. In this case the old-fashioned way of word-of-mouth is still a highly effective form of diffusion. When people are excited about using an application they are more likely to involve peers into the project.

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From Simple Customer To Warm End-User;
Or, How To Organize The Maintenance Of A Wi-Fi Community Innovation?

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Abstract

This paper arises from an ongoing PhD research project exploring the dynamics of user-initiated community innovations in the domain of ICT networks. It builds on a case-study on a Dutch Wi-Fi community innovation called *Wireless Leiden* (WL). WL is a wireless networking infrastructure, collectively created as a 'communicative assemblage' of cheap consumer Wi-Fi devices, home-built antennas, reconfigured open source software and an 'army' of volunteers.

As the innovation is produced by a grassroots, bottom-up, hobby community it is lacking financial resources for repair or service labor. I thus raise the following central question: How is support of users and maintenance of technology organized and arranged within community innovation such as Wi-Fi community networks?

The argument developed, is that community innovations can only succeed by creating a socio-technical 'infrastructure of support'. Furthermore, stabilization of this Wi-Fi community innovation can be understood as the successful mobilization of local residential end-users willing to perform maintenance work. To capture this new role for end-users, I introduce the *warm end-user* concept modeled after the *warm expert* (Bakardjieva 2005). Whereas warm experts help inexperienced users to properly connect to network technologies, warm end-users help novel technologies to properly connect to user communities.

Key words: Community innovation, Wi-Fi, maintenance work, warm expert, warm end-user

§1 Introduction: Wireless Leiden as community innovation

The central focus of this paper is the organization of maintenance of community innovations. In order to be able to address such a general topic, this paper builds on a specific case-study, part of a larger PhD project on ICT community innovations. Because of space constraints I refrain from an in-depth exploration of the concept of community innovation (for an introduction see Van Oost, Verhaegh and Oudshoorn forthcoming). However, in short one could say that in community innovations, the community and the innovation cannot be separated from each other. The community's central focus is the technology (hence a 'technical community') whereas the technology is fully produced by the community (hence a 'community technology'). Community innovations are initiated and driven by users, volunteers, hobbyists, tinkerers, enthusiasts, amateurs or 'pro-ams' (Leadbeater 2004) all sharing a primarily non-financial motivation for participation. When asked why they are involved in the collective creation of complicated technical systems (such as operating systems consisting of million lines of code) and huge undertakings (such as writing a free online encyclopedia with millions of lemmas) commons answers are 'because it is fun to

solve technical puzzles', 'because it is important to create stuff that is accessible for everyone', or 'because I can learn a lot and develop my skills'.

The interesting empirical finding is that there are many instances of grassroots, bottom-up, initiatives out of which a complete 'community innovation system' emerged that 'works' in the sense that they grew into massive undertakings that are able to handle *all phases* of the innovation process from idea to prototype to manufacturing, distribution and service and support. What is especially remarkable is that resources in the form of financial budgets to pay for personnel and tools are usually lacking. The question then becomes how the necessary maintenance work of the technology is organized and arranged by the community itself. This is an especially interesting question, because the 'users as sources of innovation' literature is currently mainly concerned with the free circulation of information, instead of the blood, sweat and tears of the hard work to not only invent and build community innovations, but to keep them working over a prolonged time. The explicit focus on maintenance work can be seen within the tradition that stresses the importance of 'invisible work'. This research strand foregrounds actors originally deemed unimportant (such as secretaries, housewives, nurses, call center 'reps' or technicians), by further investigating their essential roles in keeping complex systems working (for example see Shapin 1989; Star 1991, Oudshoorn 2006).

To be able to capture the 'invisible' work to get and keep a community innovation working, a case where interaction with physical devices (instead of more virtual artifacts such as software) could be studied was chosen, in this case Wi-Fi technology. Recently, publications have started to explore the emerging phenomenon of Wi-Fi community initiatives (Rheingold 2002, chapter 6; Rao and Parikh 2003; Medosch 2004) or the innovative use practices of Wi-Fi (Escudero-Pascual 2003). However, only Sandvig (2004) focused explicitly on community Wi-Fi as a locus for "diffusion, experimentation, innovation, popularization, and the provision of new features and services". In my research project, I choose the approach of an explorative, in-depth case study (Yin 1984) because no previous no literature described the dynamics of emerging Wi-Fi community initiatives.

In order to improve reliability of the results, triangulation of empirical data was obtained by harvesting different sources (Eisenhardt 1989), while 'following the actors' (Latour 1987) both online as well as offline. First, I explored the publicly accessible Wireless Leiden website, wiki and repository (http://[www; wiki; svn] .wirelessleiden.nl). This site proved to be a tremendously rich source, as – in the traditions of open source communities – full transparency is strived for at both material as well as organizational aspects. Minutes of meetings, discussions and debates were made available online in addition to technical descriptions, guidelines and images. Second, I explored the members-only archives of the volunteer mailing list. Third, I held in-depth interviews with different actors ranging from core initiators of WL to peripheral end-users. Four, I visited WL meetings visited between January 2005 and April 2007. At these meetings I observed discussions, presentations and workshops and I interviewed additional participants. Fifth, homes of people connected to WL were visited to get an idea of specific domestic WL configurations.

Before we can focus on maintenance, first let us have a look at what the Wireless Leiden Wi-Fi innovation actually beholds?

A tentative anatomy of Wireless Leiden

When I started my research on the WL case study in 2005, one of the first questions I was struggling with, was a seemingly rather simple one: what is WL? My first attempt was trying to reduce it to the technological infrastructure by stripping away all the human elements. This approach suits the common-sense thinking of infrastructures best, or as Star and Ruhleder (1996, 112) write:

> "Common metaphors present infrastructures as a substrate: something upon which something else 'runs' or 'operates', such as a system of railroad tracks upon which rail cars run. This image presents an infrastructure as something that is built and maintained, and which then sinks into an invisible background."

Conforming to this image then would be the image of technical diagrams or pictures of artifacts stripped of human involvement. For an example of such a depiction of Wireless Leiden see fig. 1 giving a schematic topology of the infrastructure.

Fig. 1. Wireless Leiden infrastructure: every circle is a Wi-Fi node functioning as an omni-directional 'access point' and the lines in-between are point-to-point 'backbone' connections.
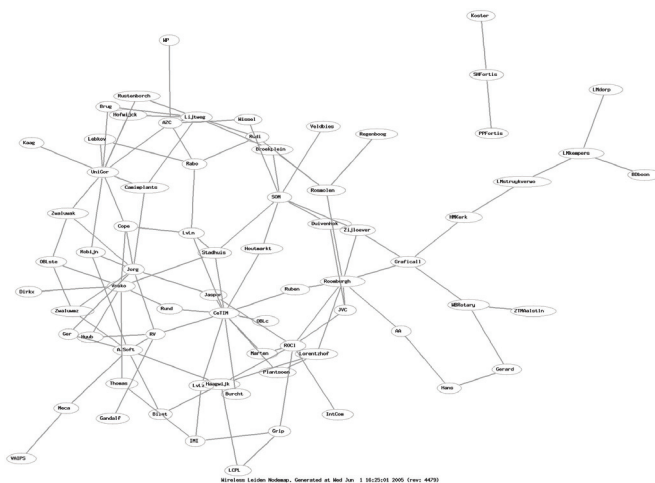
(source: Wireless Leiden website)

The 'technological' part of WL entails a completely wireless backbone computer network. This technological innovation is based on translating consumer-grade commercial-off-the-shelf indoor, short-range, cable-replacing Wi-Fi devices into a dedicated, weatherproof, outdoor, long-range wireless networking infrastructure. The main principle of the network is that where normally the 'backbone' of a computer network is provided by expensive underground glass fiber or by commercially licensed microwave 'backhauls', WL uses cheap Wi-Fi devices in a free unlicensed part of the radio spectrum. For those interested in the technological intricacies, I refer to the original WL whitepaper on its precise configuration (Van Drunen et al 2003).

However, there are two problems with the approach of reduction to technological infrastructure. First, it strips WL exactly of the social 'people' part that is necessary in order to understand how the infrastructure could be built and maintained. Second: the infrastructure does not sink into the background, because for many people their direct and active involvement with the infrastructure as a goal in itself is the primary motivation for their participation.

My second approach to understand the WL Wi-Fi innovation focused explicitly on the people part that makes the difference between WL and a 'regular' commercial computer network. A cross-section of the WL volunteer community is given by the photograph in figure three, taken during one of the many get-togethers. However, looking at the case exclusively from the people point of view, nothing really interesting shows up; just a bunch of people having a drink while chit chatting about their technical hobby.

Fig. 2. Wireless Leiden community: coffee break during meeting in local community centre (Leiden, 2 November 200).

(source: website Wireless Leiden)

When we start to follow the different actors, interesting patterns surface. The 'social' part of the WL innovation consists of the mobilization of the local Leiden community as a commons providing resources for the development of this infrastructure. This is realized by volunteers pooling their time, energy, expertise and money to realize an infrastructure that could normally only be produced by professional companies or governments. The innovative aspect of this process it that the WL community seemed able to transcend the traditional characteristics of a 'technical hobby community'.

Haring (2007) introduces the notion of technical hobby communities related to her research on the technical culture of American radio amateurs from the 1930s to 1970s. She describes these men as precursors to the group of computer hackers that would emerge somewhere in the seventies and then with the advent of the Internet grow increasingly larger. However what is characteristic for these technical hobby communities is that the boundaries of their social group are quite clear in the sense that you either are a technical hobbyist, and therefore group member, or you are not. The community homogeneously consists of 'hobbyists' who all own the 'type X' device which is at the heart of the hobbyists interests (e.g. radio, or motorcycles or computers).

Following this line of thought, WL consists of an enthusiastic group of people with a passion for tinkering with computers and wireless devices, working towards realizing their shared goal of building a local wireless computer network. Initially there was no formal organization, just enthusiasts meeting each other in the evenings in their homes to collectively engage in some 'Wi-Fi hacking'. The collective tinkering with technology by solving practical engineering puzzles while simultaneously drinking some beers provided a means for creating a shared identity as well as a sense of belonging to a social group of local 'computer enthusiasts'. So we can understand WL in its infancy as a technical hobby community, of

which there are many more examples such as automobile or motorcycle enthusiast, radio amateurs, radio-controlled miniature airplane hobbyists or more generally 'brand Y' or 'type X' device user groups.

However what sets apart the WL case in the first place is that although the initiative started as a close group of tinkerers with a strong interest in Wi-Fi technology, from the onset on the group consisted of people with increasingly diverse backgrounds. In the very first beginning, from 2001 onwards, the WL group could be described as a mixture between those with an interest in computers combined with people with an interest in radio. What they shared was an interest in using technology to create digital communication networks over which all types of information in the form of zeros and ones could be transmitted. Admittedly, the focus is still technology, and the cross-over between ham radio amateurs and computer hackers is also not entirely new, as already described by Haring (2007) amongst others. However, although technology itself is still seen as an important topic, for the WL project to succeed as a whole, many more 'softer' social skills and expertise are becoming increasingly important, such as dealing with the press, interesting sponsors, assisting end-users, organizing volunteers, etc.
In the second place, what sets apart WL from a 'standard' technical hobby community is the strategy to actively include non-expert people with no interest in the technology itself, but the possibilities these technologies open up. In the WL case the initiators came up with the 'free Internet' carrot to seduce people to connect to the WL infrastructure. This way Wi-Fi no longer had to be seen as an interesting goal in it self, but rather as a means for accomplishing other uses such as obtaining free access to a fast connection to the World Wide Web.

Wireless Leiden as a community-network

By now, I have reached the conclusion that Wireless Leiden is best conceived as a kind of a 'hybrid' or a 'chimera'. What makes this case so interesting as an example is the fact that we can neither reduce WL to a 'technical' infrastructure (such as those built by telecommunications companies) nor to a 'social' hobby community with or without formal organization structure (such as local ham radio chapters or sports clubs) without loosing what makes WL so innovative. The 'technical' infrastructure of a wirelessly connected broadband computer network is what keeps the WL community together by focusing interests and goals (analogous to how open source software communities function). However simultaneously without the social community of people that feel that tinkering with Wi-Fi under the umbrella of WL is part of their identity and obtain a 'sense of belonging' from being part of a community of creative do-it-yourself technical enthusiast, the technical infrastructure would quickly decay into a non-working state. In this sense the direct messages sent between volunteers when they drink a beer together are equally important for the 'correct' functioning of the network as digital data packages sent between different Wi-Fi nodes.

In relation to this servicing of a 'public' the members of the WL community can be seen as a kind of socio-technical 'bricoleurs' (Lévi-Strauss 1968) creating a local Leiden 'communicative assemblage' (Slater 2006). Currently, the WL community innovation consists of a broadband Wi-Fi 'freenet' ("Wireless Leiden") made up of 69 Wi-Fi nodes, around 90 volunteers, free access to the World Wide Web (sponsored by a commercial ISP) and a few thousand Leiden citizens using WL to mainly browse the web and e-mail. The exact number of end-users is unknown because access is 'free' and an 'official' registration procedure is lacking.

In the case of community innovation both people and technology are 'fluid' and exactly this 'fluidity' instead of stabilized black boxes creates the possibility for a sustainable state of the 'network' as a whole (De Laet and Mol 2000). Where Latour describes the construction of 'immutable mobiles' in order to obtain 'stabilization', I will argue that in community innovations a sustainable degree of stability is actually obtained by keeping things open in a fluid manner. This fluidity through openness as organizing principle is visible in many different places. In this sense the fact that end-users are expected to actively engage with both the 'WL community' as well as the 'WL technology' is what creates the surplus value to choose for the 'community innovation' and not for an analogous commercial alternative.

The interesting thing is that this main organizing principle can be found both in the inner workings of the 'community' as well as in the inner workings of the 'technology'. The network as a whole consists of a whole of more or less loosely coupled elements which together make up the actor-network. In this sense nobody has a 'complete' overview of the 'network'. Depending on the position of the actor in the network the perspective causes another view. For end-users trying to connect to WL for the 'free' internet the network looks completely different than for the programmer located in Boston who as part of his after-work relaxation is tinkering with the optimization of the routing algorithm in the obscure OCaml computer language.

In traditional actor-network literature there is always the implicit notion of the Machiavellian 'project champion' who as a spider in the web is controlling/seducing all the surrounding actors to do exactly as he (because it is almost always a male protagonist) has planned. Although politics and conflicts play an equally important role in community innovations, the centre of gravity is not lying in the centre, but it is distributed over many local small centers that constantly fluctuate in relevance. When I first approached WL volunteers in 2005 I asked them to sketch out the organization structure. What I had expected them to do was to sketch a small inner circle of 'enthusiastic experts' surrounded by a larger circle representing a group of less technically skilled 'volunteers'. However, most participants came up with several small circles of which some interconnected, while others were not. Communication between the different groups was sometimes completely ad-hoc, and sometimes heavily structured. However, according to those involved firstly there was no 'whole' representing the complete Wireless Leiden, and secondly there was neither 'centre' nor 'periphery'. Admittedly some people were more skilled towards the technical spectrum; however those with good social skills were also broadly regarded as delivering equally important contributions. Most highly regarded were those who could navigate through technological and social challenges simultaneously, or as one of the participants said: "We have some people that can play chess many different levels at the time, and these people are the ones who really bring this project further."

Fig. 3. Interfacing the technical with the social and the individual with the collective: domesticating Wi-Fi by a WL volunteer who locates this new technology on top of his house rather than within it.

(source: WL website, 2004)

§2 Framing maintenance within 'infrastructures of support'

Von Hippel termed the nexus of information exchange between those interested in doing so an 'innovation community' (2005). Central to his concept then is the focus on the innovation community as a locus for the exchange of information. However the main point of this article will be that in order for this exchange of information can take place, an underlying infrastructure is necessary. This infrastructure is not an infrastructure in the purely technical sense, but a 'infrastructure of support' which can best be understood in the case of community innovations as a socio-technical 'assemblage'. In order to further work out the 'infrastructure of support' I built on the work of Leigh Star on infrastructures, Paul Ceruzzi who introduced the term in the first place and Don Slater (2006) who described 'communicative assemblages' which function as a telecommunications infrastructure that is not only made up of high-tech telecom technology, but also of people traveling cheap busses on muddy dirt-tracks.

In this section I frame innovations as socio-technical systems that cannot function without maintenance networks. In order to be able to understand how Wireless Leiden organizes its network of maintenance we take a short detour along some theoretical literature helping us better understand the role of maintenance in relation to the emergence of innovations.

Social worlds configuring collective creativity

A common sense thing to do when we think about the origin of creativity is refer to stereotypes such as the 'secluded genius' who through 'divine inspiration' creates a work of true art in the same way as an Aeolian harp plays music fertilized by the (Greek god of the) wind. However, a richer understanding of creating novelties - irregardless if we call them 'works of art', 'scientific facts', 'technological artifacts' or 'quick and dirty hacks' - is possible when we shift the unit of analysis from the individual to that of the social collective.

Becker's seminal 'art worlds' (1982) is an illuminating instance of the richness of the 'social worlds' perspective originally developed by the Chicago School of Sociology. In his work

Becker describes how artists are 'configured' by the support that surrounds them. Artists' possibilities for translating their creative potential into concrete works is enabled as well as constrained by the 'art world' in which they are confined. This means that artists have to live up to social as well as practical conventions in order for their work to be appreciated by the public. For instance, theoretically a composer could compose an eleven hour concerto. However in practice the play's length would cause severe practical problems lowering the chances of actual performance by an orchestra to almost zero. The same holds true for a painter who creates hugely sized works unable to fit a museum's entrance; or a sculptor creating a statue so heavy his gallery would literally be unable to support his work due to chances of it falling through the floor.

Although this paper's empirical 'Wi-Fi networking' domain is different from Becker's 'art worlds', on a more general level a fruitful comparison can be made, namely in respect to the distributed nature of collective creativity and its dependence on infrastructures of support. More banal, just as writers depend on others to provide them with typewriters and papers to express their creativity, and most painters nowadays use ready-made paint, brushes and canvas, the same holds true of the user-innovators in this Wireless Leiden case, whose creative appropriation is based on the availability of commercial-off-the-shelves Wi-Fi devices. The commonality between Becker's artists and Wi-Fi enthusiasts is that their creativity can best be understood as a collective endeavor.

Infrastructures of support

Let us refocus on ICT again. A more applicable comparison tan can enlighten the relation between ICT innovations and users arranging support is offered by historian of technology Paul Ceruzzi. Ceruzzi (1996) describes the personal computing 'revolution', which in his analysis could only emerge because of convergence between interactive conversation computer systems and increasingly powerful computer chips. However without the emergence of a parallel 'infrastructure of support' next to the technological trends of interactivity and miniaturization these trajectories would not have converged.

> "Here is where the electronics hobbyists, cousins of the pocket calculator aficionados, come in. This community had a long history of technical innovation [...] This group supplied the key component needed to make the transition from the microprocessor to the personal computer; an infrastructure of support that neither the minicomputer companies nor the chip makers could provide. [...] Selling a computer for less than 400$ meant that the extensive support and infrastructure that mini and mainframe companies supplied had to come from elsewhere. For personal computer owners, it came from user's groups [...], informal newsletters, commercial magazines, local clubs, conventions--even retail stores." (Ceruzzi 1996, 17-19).

Although Ceruzzi nowhere mentions the term community innovation, I read his account of the origins of personal computing as a distributed community innovation. The 'infrastructure of support' Ceruzzi writes consists of a 'technical hobby community' (Haring 2007) which would professionalize into a complete 'support industry' in the form of computer clubs, magazines, newsletters and conferences.

By defining an 'infrastructure of support' as something consisting of humans, Ceruzzi seamlessly fits into the tradition that understands infrastructure analytically as "a relational property, not as a thing stripped of use" and as something that is "part of human organization"

(Star & Ruhleder 1996, 113). Lindsay (2003) also writes about the phenomenon of users who provide their own infrastructure of support in the case of vintage TRS-80 personal computer users. In her study of users who through the Internet create a community taking over maintenance and support roles when the original manufacturer Tandy abandoned its own creations. Not only does the community as a whole provide support for other TRS-80 users, they also take over maintenance activities and even provide spare parts and repair services, either by supporting do-it-yourself repair through extensive walk-you-through manuals or by other TRS-80 users offering commercial repairs. Here we can clearly see a community's agency taking over maintenance and support roles traditionally provided by commercial services or the original manufacturers.

From 'simple customer' to 'active user'

Let us focus even more on the relation between commercial commodities and the role of the end-user with regard to maintenance and support. A 'classic' work addressing the emergence of creative novelties, although with a focus on techno-scientific innovations this time, is 'Science in action' (Latour 1987). Instead of 'social worlds' the main unit of analysis are 'actor worlds' or more precisely 'actor-networks'. For this paper most importantly is the explicit attention given to the symmetry between the agency of humans *and* non-humans. Innovations can only function when they are simultaneously supported by networks that are built of people as well as of technologies. According to Latour, the innovation exists at the point of intersection where the planes of the 'technogram' and the 'sociogram' keep each other balanced. This paper builds its analysis of understanding the emergence of 'community innovations' as meeting the challenge of creating actor-networks that can withstand resistance successfully. In linear models of the innovation process, such as the 'diffusion of innovations' model (Rogers, 1995) located at the beginning of the chain are the 'inventors' and at the end the users whose only role it is to 'consume' the innovation-turned-into-product.

In the case of community innovations in general, and in the Wireless Leiden case in specific, there is no such entity as an ideal typical 'User' involved. What is distinctive for innovation communities is the diversity of the people involved. In a previous paper on Wireless Leiden the focus was on the user-innovators, who can be best described as hobbyists, tinkers or hackers. In this paper the focus is on the 'end-user' of community innovations, or in terms of diffusion theory the 'simple customer' (Latour 1987, 137). In short: people without technical expertise, hobbyist or volunteer motives, or economic interests in relation to a novel artefact. However, we can ask the same question Latour raises: "how simple is a simple customer?"

According to Latour, the 'customer is "'simple' because he or she does not have to redesign" the technological artefact (ibid 137). However the fact that the user has had no role in the original design of an artifact does not mean that there is no active involvement:

> "[E]ven when the phases of development and innovation have ended, the darkest black box still has to be maintained in existence by not so simple customers. [...] The more automatic and the blacker the black box is, the more it has to be accompanied by people. In many situations, as we all know all too well, the back box stops pitifully because there is no salesperson, no repairer, no spare part. Every reader who has lived in an underdeveloped country or used a newly developed machine will know how to evaluate the hitherto unknown number of people necessary to make the simplest device work! So in the most favourable cases, even when it is a routine piece of

equipment, the black box requires an **active customer** and needs to be accompanied by other people if it is to be maintained in existence."

It is exactly this active customer or active user that we follow in the case of Wireless Leiden. What makes community innovations so interesting is the way in which they differ from 'commercial' innovations that are distributed via the free market to simple customers. The innovation chain is usually depicted as a linear line with at the left side the inventor/innovator who generates the idea, in the middle the producer/manufacturer who transforms the idea into physical mass-produced artifact and at the user/consumer who buys the product. What is important here is that the end-user is a simple customer whose is simple as Latour (1987, 137) states "because he or she does not have to redesign" it.

When a device stops working, it needs someone else to solve the problem. This is what we call 'maintenance'. When a user stops working, he or she needs someone else to solve the problem. This is what we usually call 'support'.

When we are dealing with community innovations (networks in which the community and innovation are intertwined as heterogeneous assemblage) this become more complex. What happens when a community innovations stops working? Who is going to solve the problem? How are both maintenance and support organized? How can a community innovation be 'fixed' to get iworking again? How is the 'infrastructure of support' for both the WL community as well as the WL Wi-Fi infrastructure organized? The specific focus for this paper is how maintenance of a community innovation is organized when the resources of traditional corporate organizations are lacking such as call centers, service and repair personnel and even budgets are lacking. One of the perceived problems of community innovations is that guaranteed service and support are lacking, making the service or technology in the eyes of the users inherently unreliable. Let us have a look at how WL deals with this issue.

§3 Supporting residential end-users

The history of the innovative Wi-Fi use started in 2001 when one person got the idea of changing 'indoor, short-range, cable-replacement' Wi-Fi consumer devices into 'outdoor, long-range, infrastructure'. Instead of trying to accomplish all the work alone, this user-innovator started to actively recruit people from the local Linux open source software community to help accomplish the goal of building a local free wireless communication infrastructure. In 2002 the initiators came up with a name, goals and an official organization structure for what had by now become a 'project'. In the summer of 2002 both a website and an official foundation were registered under the name 'Wireless Leiden'. From that moment on, an active public relations strategy was pursued trying to get 'in the news' as often as possible. To make the local networking attractive for residential end-users, through the partnership with the Internet Service Provider Demon free access to World Wide Web was offered through the donation of three 8Mbit ADSL connections. What had started as a technical hobby club for Wi-Fi hacking had set its goals to the building of a local wireless infrastructure.

The Wireless Leiden organization consists of an 'esoteric' technical Wi-Fi hobby community that takes care of designing, prototyping, testing, building, and maintaining the local Wi-Fi nodes, an exoteric circle of non-experts who connect to the wireless network for (free) internet connectivity or local file sharing. As an 'interface' between the esoteric and exoteric

WL circles and the outside world a non-profit foundation was created in 2002. The WL foundation acts both as a 'front-office' for public relations activities as well as a legal person for creating legally valid agreements with other organizations and companies. Since 2005, the local municipality offered housing for free where volunteers can meet, where 'helpdesk' office hours are held, and where the board can meet. What makes the network special is the fact that many of the Wi-Fi nodes that make up the network are privately owned by individual volunteers, so property of the infrastructure is distributed over the WL members.

Although in consumption studies, the act of consuming in itself is seen as 'active', this is certainly true in the case of the use of a community innovation of which WL in this paper serves as an example. In the case of subscribing to a commercial Internet service the path to be taken is clear. For ordering the 'installation package' as a consumer you can choose between different service channels: filling out a website form, talking with a company representative on the phone number or visit a local shop. In the case of community innovations things get complicated: how to 'buy' or 'subscribe' to Wireless Leiden? What are the 'service channels' when there is neither 'store' nor 'web shop' to order your 'installation package'?

Following a WL end-user

To give a better insight in the users' perspective of Wireless Leiden, we will follow a typical WL end-user, called Linda to see how she managed getting herself and her family connected to the Internet via the Wireless Leiden infrastructure. Linda lives in a small town of approximately 22.000 inhabitants near the city of Leiden. She works at a small law firm as a lawyer, is married and mother of two children of primary school age. How did Linda make the active decision to start using 'Wireless Leiden' and managed to create a working connection?

For Linda the Internet entered her house in the form of a phone line connector at the backside of her computer. Every time she clicked on the Internet Explorer icon on her Windows 98 desktop, the computer automatically connected to the Internet. Because the phone connection in her house was of the 'ISDN' type, her family could surf the web and have phone conversations simultaneously. When in the summer of 2004 she bought a new computer (a special discount offer at the local supermarket) she discovered it was lacking a built-in ISDN connection. In order to restore access to the Internet again she now had several options. Or to frame it differently, .Linda was standing at a 'consumption junction' (Cowan 1987): continue with ISDN, or alternatively organize a subscription to cable or ADSL Internet. In the case of ISDN she would have to buy a new ISDN modem. What bothered her however, was the 'pay per minute' subscription model. Especially now her two children were increasingly using websites such as Wikipedia to complete school assignments, she disliked this idea, because this could turn out to be an expensive affair when considering her children's increasing Internet use. The second option then would be a subscription to cable or ADSL Internet, both available in her town. Then the connection fee would consist of a fixed monthly amount.

But then, serendipitously, a local third alternative offered itself when her father during a weekend visited opened his Wi-Fi enabled notebook computer, and noticed a Windows message that told him he was connected to something called 'ap-omni-hofwijck'. This appeared to be part of the Wireless Leiden infrastructure. After some fiddling with the proper configuration of something called a 'proxy' (for some browsing on the web her father temporarily used his commercial GPRS subscription), the notebook computer was able to surf

the web. And the best thing: it all worked for free. A few days later, when browsing the web at work, Linda finds that a local Leiden hardware store sells all the necessary equipment to connect to WL. In the weekend Linda and her husband visited the electronic shop and for about 150 euros they had a complete 'package' with outdoor Wi-Fi antenna, 'bridge', indoor Wi-Fi access point. In this way, they did not need to install any additional cabling between the rooftop antenna and their PC located in the living room on the ground floor.

From Linda's perspective WL offered a 'free Internet' without time restrictions. Additionally she sympathized with the fact that the local Leiden initiative was based on the idea of 'free access for all'.

> "Of course I knew it was going to be different, because when you subscribe to an ADSL connection, an installer comes to do all the work for you and then everything works. And Wireless Leiden requires a lot more self-activation. You need to install an antenna on the roof of your house, and then you need to install all the indoor cabling or buy an indoor Wi-Fi router. Actually, it was quite a hassle to get everything working. [...] Luckily, when we made a phone call to the shop, the owner was prepared to drop by and fix the whole thing and make it work. He did this for free; I believe it was a kind of goodwill service."

What had assured Linda to try out the 'free Internet' was that when she bought the Wi-Fi set, the shop owner assured her that when the Wi-Fi solution did not work out, she could return the package and receive her money back.

However when some time later new problems arise with the WL connection, Linda could not fall back on the shop owner anymore for support. After some browsing of the WL website she decided to send an e-mail to the WL user mailing list. In the subject heading she framed her problem as "Nitwits want Wi-Fi in the vicinity of Leiden". The first thing that happened was that other people send her a 'debugging checklist'. This is a specially crafted document to guide novice WL users in concrete steps to the procedure of establishing a working connection or otherwise pinpoint the exact problem in case of failure. In Linda's case this strategy failed, and as a final resort one of the volunteershad to come to visit Linda's house to help her solve her connection problem. Although WL is a volunteer organization, there is no such thing as a free lunch. As a favor in return Linda was asked to give a presentation during a general introduction meeting about WL specially targeted to potentially interested users, which she also did. So here we see a pattern of new end-users who are actively helped to get connected by neighboring WL volunteers. In return for this support active participation in the form of helping others is expected.

§4 Maintaining physical Wi-Fi nodes

The preparedness of end-users to actively engage with the technology is of crucial importance for the functioning of the WL community technology. Without maintenance eventually every technology breaks down, however community technologies such as WL depend even more on active maintenance work. The specific problem with community technologies is that the initiating designers of the system often are not interested in the maintenance. This is also true for WL. Most of the technical experts are more interested in experimentation with new technologies that in fixing a wireless node for the hundredth time. When the technical enthusiasts speak about their motivation for participating in WL they often use a 'frontier'

methaphor of 'pioneering' or 'cowboying', however 'caring' for the both end-users or technology is missing from this vocabulary.

This lack of motivation for maintenance and support tasks is something many WL participants have observed themselves as a potential problem for the further growth and development of WL. As a solution for the lack of resources for maintenance work a strategy for delegating tasks to end-users emerged. In order to systematically bring end-users into action to the greater good of the WL network, a specific new 'role' within the community was invented: the so-called 'node-adoption-volunteer'. Interestingly enough in this case the term 'adoption' was introduced to describe the relation between the active end-users and 'their' Wi-Fi nodes. Adoption implies a warm implicit undertone of respectfully taking care of a 'child' who from now on will be a member of the family. The adoption metaphor fits in with the locus of the community. The 'adoptee' that needs help in this case is a geographically close-by located Wi-Fi node. The 'parent' is the end-user who relies on the node for its Internet access. The family is not the household, by the wider WL community.

In this section I trace back the emergence of the so-called 'node-adoption-volunteer' in February 2004. At that time one of the residential end-users of the WL infrastructure decided to add a more positive note to his e-mail complaint about the breakdown of the WL Internet gateway:

> *"I feel like the aggrieved consumer who can only complain ... that is not the position I want to take up. I would like to contribute too, but when I look at the list of vacancies I become disheartened by the level of expertise that is required: project leaders, people who know the ins and outs of TCP/IP."*

What this user implicitly asks is: I would like to contribute something back to WL, but I do not know what or how; can somebody help me to contribute back to WL? With this post he starts an e-mail discussion in which the 'usefulness' of user-contributions is discussed. After several invitations to join one of the "technical meetings" or the "systems administration mailing list" one of the 'technical experts' ironically further sparks the discussion when he states that "unfortunately it is not attainable that every user can contribute something to the network, except for additional data traffic ;-)". One of the initiators responds:

> *"I do not agree with you on this, because I do think anybody can contribute something. You do not any understanding of computers. For example helping organizing meetings or with the maintenance of the website are important activities. One of the most time consuming jobs is powering nodes on/off. Something not to be done very often (sometimes such a machine happily runs for half a year or even longer), however sometimes it is the only solution to bring it back to life. Perhaps it is an idea to let users adopt the specific node they are connected to, in order to monitor its performance, report problems or if necessary reboot the machine on location. Additionally, a yearly inspection if everything is still well connected. The advantage is that they live close-by and immediately notice problems in case of a malfunctioning. Not difficult to do, no special expertise required and it would save the volunteers a considerable amount of time. And above all, this way even more people are actively engaged with the network."*

In the following days several users 'volunteer' to adopt a node, the official term 'Node Adoption Volunteer' is invented, and in April 2004 the first 'node-adoption group' meeting

takes place. One person summarizes the 'gift economy' from the end-user's perspective: "I would like to invest some time into this so I can do something in return for the Wireless Leiden network I am using." This then triggers one 'official volunteer' to react agitated: "Then put some of your time in other WL projects. That way you show that it is not directly self-interest!" Another official WL volunteer relatives this remark by noting that "we should also realize that self-interest is not too bad, because in the end the network is served by it as well: or in modern management-lingo a win-win situation". Another poster agrees as well: "Of course there is self-interest: learning new things and spending your free time useful, but that is true for all WL volunteers".

In November 2004 and January 2005 the WL end-user who signaled he would like to contribute but did not know how, gave a presentation during official meetings about 'the user annex node-adoption-volunteer: his presentation is announced as "a WL user talks about his experiences as user and node adoption volunteer of one the most important nodes of the network".

§5 Informal support infrastructures of warm helpers

Informal support is not something that is confined to community innovations. In her research on the domestication of the Internet, Bakardjieva (2005) noticed a similar phenomenon. The fact that Bakardjieva explicitly focused on domestication of Internet access allows for a comparison of her empirical material with the WL study.

Bakardjieva (2005, 98) noticed that the 'domestication' of the Internet "had been intensively assisted by a close friend". She called this person the 'warm expert' and which she defined as:

> "The warm expert is an Internet/computer technology expert in the professional sense or simply in a relative sense compared with the less knowledgeable other. The two characteristic features of the warm expert are that he or she possesses knowledge and skills gained in the system world of technology and can operate in this world but, at the same, is immediately accessible in the user's lifeworld as a fellow-man/woman. The warm expert mediates between the technological universal and the concrete situation, needs and background of the novice user with whom he is in a close personal relationship." (Bakardjieva 2005, 99).

The 'economy' of the warm expert helping out a close-by person is not a financial one such as the relation between repairmen and customer, but gift-based. In return for helping out, the warm expert is offered for instance "lunch and, as one can imagine, the enjoyment of spending time with a friend." (ibid., 101). In WL we see the same mechanism at work, although the dimension of proximity is organized within the WL community. In WL we see a 'gift economy' in action in the empirical data, and 'reciprocity' towards community members ('tit-for-tat') is how the keeping-it-all-working is organized. When an expert helps a user to get connected, the user then is asked to help other users (by rewriting 'debugging check lists', by giving a presentation in for end-users comprehendible language or by taking over relatively easy 'maintenance' tasks. In this way the end-user also helps the expert with maintenance of the technology and support to the (end-user) community.

A difference emerges between getting connected to the Internet via a commercial ISP or via a community innovation such as WL. In her introduction Bakardjieva writes that:

> "Users are hard to perceive as a social group that shares a common technological frame because of their dispersed state of existence, as well as their diverse cognitive and material resources, interests and ideologies. Users inhabit numerous invisible everyday settings. They have no established forums or channels for interaction either with each other or with the designers of the technologies they employ. In contrast, researchers, engineers, managers and government representatives form distinct professional networks. They share cognitive frames of reference acquired in the course of their training and subsequent participation in a community of practice." (ibid., 13)

In the case of community innovation the relevant difference is the availability of 'forums' and 'channels' in the form of local meetings, mailing lists and interactive wiki's. It is actually through these channels that interaction with the designers of the system is possible, through the aforementioned 'channels' or 'nexus'. This then results in the formation of a 'community of practice' organized around the shared participation of in this case WL. For 'warm experts' to be able to function in the case of community innovation in which people are often no friends or relatives (yet), there is an infrastructure needed through which people can ask for 'help'. This infrastructure then is an 'infrastructure of support' that enables the correct functioning of the users and the devices interacting with each other.

Within a community innovation the gift economy is one of the principles on which maintenance and support work is organized. Examples of reciprocal gifting by end-users in return for help are writing documentation, answering e-mails of other novice users, giving presentations. Warmth then also refers to the gift economy instead of a financial economy. Where in the traditional situation you would pay money to the company that pays the salary of the repairmen, in the case of community innovation, you 'pay' the community of which the warm expert is a member, by donating resources back to it in the form of time, energy or concrete products such as manuals, documents, bug reports, or answers to questions.

In this sense not only the warm expert who with his intimate knowledge of the inner workings of the technology can help the user, but also the warm end-user with his intimate knowledge of how he or she thinks new technologies work can help the experts with supporting the community, but also with literally and figuratively holding the technological devices in order to get connected again to the network in case of a problem. The unit of analysis then is not the individual user, but the community innovation as a whole, consisting of both humans as well as non-humans. If elements of the network for what kind of reason get disconnected they can then be helped by warm end-users to get connected again. In the situation of a commercial Internet access subscription unstable technologies are not forgiven, and the company is expected to fix problems as soon as possible. However, in the case of community innovations, end-users are more forgiving and prepared to 'help' the technology in case of a failure.

Where Bakardjieva (2005, 102) writes that "[t]he learning experiences of new domestic users of the Internet recounted here thus exhibit a profoundly social character" I argue that in the case of WL this social learning is technically organized through wiki's, mailing lists, homebrew 'debugging lists' as well as socially through local meetings and personal visits. In addition when Bakardjieva (ibid) writes:

> "Friends and relatives, and to some degree online helpers, had taught my respondents not only how to navigate the interface but also what they themselves had discovered the Internet could do for them as a communication medium".

In the WL comparison however end-users have learned not only what WL can do for them, but additionally what they can do for WL. Vis-a-vis a model of 'warm expertise' there has emerged a model of 'warm maintenance'. Where support of end-users is organized by warm experts helping people to get connected, the equivalent is maintenance of the technology organized by warm end-users helping devices to get connected again if needed. The underlying goal in both situations is to reconnect elements that got disconnected to the network. The warmth based on proximity and personal physical contact not only applies to humans but also to non-humans in the case of community innovation.

Conclusion: The role of the 'warm end-user' for community innovation

Earlier students of science and technology have pointed us to the importance of 'invisible' actors in the practice of 'doing science'. Shapin (1989) for instance pointed to the importance of the generally overlooked 'invisible technician' in the history of science without whom we cannot understand science as a process. Following this line of thought in the field of innovation studies, I argue that we cannot understand community innovation as a process without explicit attention to the diversity of roles actors such as end-users without explicit technical expertise play within community innovations.

With this paper I hope to have sensitized the reader to the importance of the 'warm end-user' in the practice of maintaining community innovations. By doing so, I hope to have changed the image of a consumer of new technologies as a 'simple customer' into an 'active user'. The difference between a user-innovator and a warm user then is that the user-innovator actually works 'under the hood' of the technological black box, while the work of warm end-users can better be understood as articulation work that remains invisible to outsiders of the community.

The phenomenon of active end-users as an essential part of the 'infrastructure of support' of a distributed innovation are not only limited to grassroots/bottom-up/non-profit/non-commercial ICT network innovations. In the case of Wi-Fi networking interesting models are emerging in many different shapes and sizes on various locations. A very interesting example is the FON initiative (www.fon.com), in which a company tries to mobilize residential Wi-Fi users to share their commercial ADSL or Cable internet access with a global 'community' of 'Foneros'. Users themselves pay for the local Internet connectivity, for the Wi-Fi hardware, the electricity bill and the maintenance of this configuration. Motivation of participation is organized along the line of becoming a 'Fonero', a member of the 'FON community'. Eventually the company hopes to introduce a financial compensation model for the 'Foneros' as well; at this moment it is not yet realized however.

An interesting question is in how far users will be motivated by and are able to identify with commercially organized distributed network innovations in which they are supposed to play an active role. This will depend on finding strategies to mobilize users' sympathy in order to access their resources. In this respect further research is needed to develop a better insight in the enabling and constraining elements that configure the appropriation and domestication dynamics of distributed ICT innovations in which users play a crucial role.

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Cluster Analysis Of Internet Users: A Longitudinal Examination

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Abstract

Different groups of people may use different types of internet connections for different goals. The first objective of this exploratory study is to identify a small number of relatively homogeneous groups of Internet users, based on their usage patterns (for example typical 'gamers' or 'serious information seekers'). Secondly, we aim to identify the characteristics of the internet users that are in the different clusters. We focus on demographics, experience and the connection used (broadband vs. narrowband). Thirdly, we aim to identify changes of clusters over the years (2001, 2003 and 2005). The data were collected by an online questionnaire in the Netherlands, where the first wave of data gathering was in 2001 (N=1072). The second took place in 2003 (N=2325) and the last measurement was in 2005 (N=1102). Questions regard type of internet access, activities on the internet, skills and experiences, wishes and expectations and the reasons for and impediments to switching to a broadband connection.
To identify the groups of internet users cluster analysis was performed. For each of the three years we have identified five clusters of internet users. Based on our analysis form the clusters and developments over the years, we conclude that there are two dimensions in the diffusion process: intensity of use and spreading over (internet) society. This results in different activities that go through different diffusion processes.

Introduction

Someone might use the Internet to look up information like train departure times, telephone numbers etc. Someone else may not see that as the main function of the Internet at all. He might like to listen to online music and rather look at pictures of his grand children. Yet another person may go online to send e-mails and find information, others use the Internet more professionally.
Many different kinds of people use the Internet, for a variety of things. The question however is which kinds of people use which kinds of Internet applications? Can groups of Internet

users be recognized that are for example typical 'gamers' or 'serious information seekers'? And what kind of people are they?

The objective of this study is to identify a small number of relatively homogeneous groups of Internet users, based on their usage patterns and secondly, to observe whether these clusters are stable over the course of time. Adding demographics to the patterns make this information even more valuable. Insights in these patterns make it possible to better understand and predict Internet usage. With this information Internet service and content providers can offer their target groups applications that better fit the needs of each of those groups. More specifically with regard to broadband service development.

The Netherlands has the second-highest penetration of broadband at 22.5 subscribers per 100 inhabitants (OECD, 2005). This rapid adoption process makes the Netherlands an interesting case for other countries. Here, we can look at what people actually do online and the changes these usage patterns go through/

Theoretical background and research questions

Although we consider this research an explorative research, there clearly is a theoretical background for this research. The main assumption is that the use of an innovation is not static, but rather evolves over time. According to Rogers' Diffusion of innovations (1995) it takes time before new technologies spread through society. Innovation does not stop when an innovation is adopted, but continues throughout its use (Johnson & Rice, 1987; Kline & Pinch, 1996; Leonard-Barton, 1988; Rosenberg, 1982). People with different lifestyles are likely to show different internet usage patterns. But also per individual the usage patterns can change over time. Constantly people evaluate how an innovation or technology fits within their daily routines. The usage of a technology can change because of changes in daily routines and activities, but also the usage of the technology can cause changes in daily routines (mutual shaping).

During the implementation phase functions of a technology can change by usage patterns and experiences. This process can be divided into several phases (Rogers, 1995, Silverstone & Haddon, 1996, Agarwal & Prasad, 1997). Silverstone and Haddon (1996) describe how new technologies are incorporated within the daily life of users by means of a process of domestication. The central issue is the interaction between technology and the user. This process of mutual adaptation is called domestication of technology. Other researchers (Johnson & Rice, 1987; Rice & Rogers, 1980) speak of *reinvention* of the technology when the adopted technology is used for functions that it wasn't intended to. For broadband this is very well imaginable, maybe even more so than for other technologies, because there are so many different application and services that are and will be offered through broadband. Every service or application offered via broadband is a change in software, hardware or devices, and therefore an innovation in itself, with its own adoption process. In order to understand the meaning of technology for an individual or household is not sufficient to look at characteristics like income, educations and age. More important is to obtain insight into how people use technologies and how the usage patterns change. In 2001 broadband was quite new and it probably was not incorporated in the daily lives of people as it is now. Therefore, it is interesting to see whether clusters of internet users can be recognized, based on usage patterns, and whether the clusters have changed from the introduction of broadband to the point that broadband became a fully fledged technology with many users. Can we recognize the same clusters over the years or do we see new kinds of clusters emerge and others disappear?

The research questions for this exploratory study are:

1. To what extent can individuals be clustered based on their Internet usage patterns?
2. How can the clusters be characterized (demographics and internet experience)?
3. To what extent can these clusters be recognized over the course of time?

ICET-model

For this research we have identified four needs that can be gratified by the internet. These needs are mainly deduced from Uses and Gratifications research (Katz, Blumler and Gurevitch, 1974, Katz, Gurevitch and Haas, 1973). These needs are translated to activities that can be carried out online. Our ICET-model takes into account Information (gathering), Communication, Entertainment and Transactions. This model is used as an apprehensive way to group 4 distinct, but not mutually exclusive activities.

* The need for information

In research into the needs and uses of internet researchers have mentioned in one way or the other the need for Information. In terms of Katz et al. (1974) this need is a cognitive need. But also McQuail (1987), Rubin (1994) and Papacharissi & Rubin (2000) mention this need. It is often proved that information gathering is an important reason to go online (Maltha, Schuurman, Vermaas, Vandeberg, Bongers, Bekkers & V/d Wijngaert, 2002;Maltha, Bongers, Schuurman, Vandeberg, Vermaas & V/d Wijngaert, 2003). Information is made more accessible by the internet and an abundant amount of information can be found online.

* The need for communication

Social interactive needs (Katz, 1974), social Interaction (McQuail, 1987), social Companionship (Rubin, 1994), Interpersonal utility (Papacharissi & Rubin 2000), it all comes down to the need people feel to be in contact with other people. Also for this need, the internet has brought tremendous changes. It is now possible to be in contact with almost everybody, independent of time and place.

* The need for entertainment

Besides the need for information and communication also the need for entertainment is an important need for many people to be gratified. Other U&G researchers also pay attention to this need: entertainment (McQuail, 1987), escape (Rubin, 1994), affective and tension release needs (Katz, 1974) and pass time and entertainment (Papacharissi & Rubin, 2000).

* The need for transactions

Completing online transactions is an increasing important driver to go online, because of the decrease of economic transaction costs (e.g. finding a physical seller, transportation costs and duration). However no specific attention is given to the need people have to complete transactions. This need might be more like an obligation, but apparently people feel the need to complete transactions online (and not through traditional media). The need to complete transactions is not easily comparable with needs stated by U&G research, but it is an activity that can very well be carried out online.

As stated before, all these needs can be gratified through the internet and can be translated into internet activities. For each of these services (table 1) respondents were asked whether or not they have used it.

Table 1. The functions of the internet

Information	Communication	Entertainment	Transactions
Information via search engines	Communication via messenger	Entertainment via gaming	Transaction via buying service or product from provider
Information via portals	Communication via chat website	Entertainment via watching films	Transaction via online marketplaces for individuals
Information via websites (url or favorites)	Communication via IP-telephony	Entertainment via downloading films	Transaction via auction website
Information via reference works	Communication via Webcams	Entertainment via uploading films	Transaction via tele banking
Information via streaming audio/video	Communication via Reading of a weblog	Entertainment via owning/maintaining a community	Transaction via making reservations
Information via newsletter	Communication via Writing/publishing a weblog	Entertainment via participating in communities	
Information via newsgroup	Communication via e-mail	Entertainment via downloading/watching tv	
Information sharing via discussion groups	Communication via SMS (from computer to mobile)	Entertainment via downloading/watching videoclips	
Information sharing via own website	Communication via newsgroup	Entertainment via sharing videoclips	
Information via information forms		Entertainment via listening to music	
		Entertainment via downloading music	
		Entertainment via sharing music	
		Entertainment via downloading photos	
		Entertainment via sharing photos	
		Entertainment via e-mail	
		Entertainment via surfing (fun surfing)	

Research method and data collection

Longitudinal data
The data for this paper is collected in a longitudinal study that allows us to see how technology use is developing over time. The first data collection was in 2001 (September - November). This resulted in 1072 respondents. The second wave of data gathering took place from January to March 2003. The response consisted of 2325 completed and usable questionnaires. The last measurement was from October 2004 to February 2005 and resulted in 1102 completed questionnaires. The method used is an online questionnaire. The objective of this survey is to obtain insight into current internet behavior. Questions regard type of internet access, activities on the internet, skills and experiences, wishes and: expectations and the reasons for and impediments to switching to a broadband connection.

Cluster analysis
We used cluster analysis to organize the data into meaningful structures. Cluster analysis suggests a classification scheme of grouping cases into a certain amount of classes (Everitt, 1977). Here cluster analysis is used as a pattern recognition technique to summarize relatively homogeneous Internet usage patterns. The collected data from 2001 is slightly different from the data collected in 2003 and 2005. In 2001 respondents were asked to state for every online activity how often they carried it out (5 point Likert scale ranging from "never" to "more than once a day"). Whereas in 2003 and 2005 respondents were asked which three activities they used most. These data are binary: the three activities most carried out, were given the value 1 and those not (regularly) carried out the value 0. Specific items in each scale (ICET) are more or less similar over the years. Therefore, we had to recode the data collected in 2001 to the same detail level of 2003 and 2005. In order to do so, we constructed a top 3 activities from the 5 point scale by taking the highest scores per respondent per ICET element. As a similarity measure Dice was chosen (also known as the Czekanowski or Sorensen measure).

With this index joint absences (0-0 matches) are excluded from consideration. This is important, because only top 3 activities were given and the rest of the activities had the value 0 and so there are a lot of 0-0 matches. Considering 0-0 matches would give a wrong image. The cluster method used is average linkage. Average linkage within groups is the mean distance between all possible inter- or intra-cluster pairs. The average distance between all pairs in the resulting cluster is made to be as small as possible. This method is therefore appropriate when the research purpose is homogeneity within clusters. After examination we concluded that for the data of 2003 the data could be best divided into five clusters. The procedure followed is an examination of incremental changes in the agglomeration coefficient. Fewer clusters would leave out information, while more clusters did not add more information. For the sake of comparison and readability we decided to aim at five clusters for each measurement.

Results

Although in each year five clusters were found, there are some differences in size (table 2, 4 and 6). None of the clusters however, is so small that we considered one of them not to be taken into account for further analysis.
In this section we will first per year describe what the main differences are in usage patterns and characteristics of the internet users in the clusters. In table 2, 4 and 6 the internet usage patterns are shown and in tables 3, 5 and 7 the characteristics of the internet users in the clusters. After that we will discuss a broader view of the developments of different internet functions over the years.
While interpreting the clusters and the developments in usage patterns over the years, it is important to bear in mind that in the different datasets different respondents are reached. No conclusions can be made about the development of one particular cluster over the years. Due to the large quantity of data we focus on the main differences and peculiarities.

2001
Table 2 shows the internet functions the people in the different clusters of 2001 use. The largest cluster in 2001 is cluster 3 (N=342). Like in (most) other clusters in 2001 the people in this cluster use search engines for information, communicate via email and messenger, like surfing the web for fun, download photos and they do telebanking. More than others they enjoy email as a way of entertainment. Also different from other clusters is that this cluster frequently uses portals in order to get the needed information Furthermore, they use audio and video to get information. Summizing, we can say that these people show m*oderate, functional usage patterns*. This cluster predominantly consists of men (91%) (table XX). 51% Of the people in this cluster are under 40 years old, 6% older than 60. Half of the respondents have children. Furthermore, they have a middle to high education (respectively 41% and 36%), but this is lower than the other clusters, except cluster 5. Also, there are relatively many broadband users (90%), who go online frequently (92% once a day or more) for up to two hours (57%). With a mean of 7.4 they rate themselves as experienced internet users, but this mean is lower than in other clusters.

Table 2. Summarizing table 2001: activities and characteristics

	I	C	E	T
Cluster 1 (N=261)	★Search engines ⬈Reference works ⬈Audio & video	✶E-mail ⬈Messenger	★Downloading photos ✦Fun surfing	★Telebanking
Cluster 2 (N=89)	★Search engines ⬈Portals	✶E-mail ⬈Messenger	★Downloading photos ✦Fun surfing	★Buying from official supplier ⬈Online marketplaces ⬈Auction websites ⬈Online reservations
Cluster 3 (N=342)	★Portals ✦Search engines ⬈Audio & video	✶E-mail ⬈Messenger	✦Downloading photos ✦Fun surfing ⬈Email	★Telebanking
Cluster 4 (N=92)	✶Newsgroups ★Newsletter ✦Search engines	✶E-mail ✦Newsgroups	★Downloading photos ⬈Fun surfing	★Telebanking
Cluster 5 (N=288)	✦Search engines ✦Audio & video ⬈Portals	✶E-mail ★Messenger ✦chat websites ⬈SMS	★Funsurfing ★Downloading music ✦Listening to music ⬈Gaming ⬈Downloading / watching films ⬈Sharing photos ⬈E-mail	★Telebanking

⬈ 20-40%
✦ 40-60%
★ 60-80%
✶ 80-100%

The second largest cluster in that year is cluster 5 (N=288). The use of audio and video for information is highest in this cluster, as is communication via messenger, chat websites and SMS (from PC to mobile). With regard to entertainment they show the highest scores of all clusters: gaming, watching and downloading films, listening to and downloading music, sharing photos and fun surfing. This cluster is made up of young, lower educated (probably because they have not finished their education), broadband users, that go online more frequently and stay online longer than those in the other clusters. Maybe these internet users are best classified as *young fun users*.

Cluster 2 is the smallest cluster (N=89) and the internet users in this cluster show differences in the way they use complete *transactions*. They have highest scores on: buying products or services from official providers, transaction via online marketplaces for individuals and auction websites and they also make online reservations more than all of the other clusters, but they are not used to telebanking. The people in this cluster are relatively young (64% is under 40 years old), are high educated and are mostly men (90%). In this cluster there are relatively many narrowband users (25%) and they go online less frequently than people in the other clusters and for a relatively short amount of time.

Cluster 4 (N=92) is different from the other because of the use of newsletters and newsgroups for information as well as for communication. These internet users can be characterized as *serious debaters*. The people in this cluster are higher educated than others and this cluster contains the largest proportion of male internet users, who rate their own internet experience slightly higher than people in the other clusters. 60% has no children.

Cluster 1 (N=261) is quite similar to cluster 3, again using their internet connection for *moderate, functional uses*. Although this cluster does not use portals (most other clusters do), but does use reference works (online telephone guides etc.) to get information. Like cluster 3 and 5 they use audio and video for information. People in the cluster are mainly aged between 20 and 40 (55%), have mid to high education (41%). This cluster contains more women than the other clusters (12%) and there are relatively many narrowband users (21%).

Table 3 characteristics of internet users in clusters in 2001

2001

Cluster		1 (N=261)	2 (N=89)	3 (N=342)	4 (N=92)	5 (N=288)
Characteristics						
age	-20	8%	9%	6%	6%	21%
	-40	51%	55%	45%	44%	53%
	-60	36%	33%	43%	43%	25%
	60+	5%	3%	6%	7%	1%
education	high	41%	43%	36%	54%	28%
	mid	41%	38%	41%	32%	47%
	low	18%	19%	24%	14%	28%
gender	male	88%	90%	91%	95%	89%
	female	12%	10%	9%	5%	11%
household	children	44%	44%	50%	40%	48%
	no children	56%	56%	50%	60%	52%
connection	broadband	79%	75%	90%	85%	93%
	narrowband	21%	25%	10%	15%	7%
experience	Mean score (1-10)	7.7	7.6	7.4	8.0	7.9
frequency online	> once a day	75%	57%	76%	82%	91%
	once a day	15%	33%	16%	11%	6%
	> once a week	9%	10%	9%	8%	3%
	once a week	2%	0%	0%	0%	0%
	less	0%	0%	0%	0%	0%
duration online	<2 Hours	62%	61%	57%	56%	33%
	2-4 hours	25%	25%	30%	20%	32%
	4-8 hours	10%	8%	8%	19%	20%
	> 8 hours	3%	6%	5%	5%	15%

2003

In 2003 the largest cluster is cluster 1 (N=744) (table XXX). The rather *moderate usage* pattern is made up of using search engines (as is the case with all the other clusters), portals an more than in other clusters directly accessing a website by typing in the URL or clicking on the website in a list of saved favourites. Communication is done via email, which is used by all of the clusters. Gaming and downloading music are done moderately, whereas fun surfing is done frequently. Online transaction are only telebanking for this cluster.

The second largest cluster is cluster 3 (N=707). They frequently use discussion groups for information, whereas none of the other cluster does that. This is also the case with sharing information via an own website and communicating via newsgroups. They are the only cluster that does not use portals. Rather they go directly to a relevant website by typing in the URL or via saved favourites. For communication they use messenger and, as do all the other clusters, email. Fun surfing, gaming and downloading music is done by almost all clusters in this year, also by cluster 3. Apart from cluster 3 however, none of the other clusters own, maintain or use communities. Transactions for cluster 3 are buying from a website of an official supplier, telebanking and making reservations. People in this cluster seem quite lively, with lots of *entertainment and discussion/newsgroups*.

Cluster 2 (N=562) is different from the other clusters because of the extensive use of audio and video for information. Also messenger is used quite frequently. This cluster is the only one in 2003 that watches films online. Downloading video clips is only shared with cluster 4 and more than in the other clusters music is downloaded. Entertainment is important to the people in this cluster.

The usage pattern of cluster 4 (N=228) is quite similar to that of cluster 2. It involves quite a deal of information via portals and also reference works are used as a source of information. Messenger for communication is used moderately, as are online gaming opportunities. Fun surfing is done a lot and by this cluster the most online reservations are made.

The remaining cluster 5 shows *moderate usage* and uses reference works more than the other clusters and also portals are used more than three other clusters. Downloading photos and fun surfing are done to a certain extent.

Table 4. Summarizing 2003: activities and characteristics

	I	C	E	T
Cluster 1 (N=744)	✶Directly to URL ★ Search engines ▲Portals	✶E-mail	★Fun surfing ▲Gaming ▲Downloading music	★Telebanking
Cluster 2 (N= 562)	★Search engines ★Audio & video ▲Directly to URL ▲Portals	✶E-mail ✦Messenger	★Downloading Music ✦Fun surfing ▲Gaming ▲Watching films ▲Video clips ▲Downloading photos ▲E-mail	★Telebanking ★Buying from official supplier ▲Reservations
Cluster 3 (N=707)	★Search engines ★Discussion groups ✦Directly to URL ▲Own website	✶E-mail ✶Newsgroups ✦Messenger	★Fun surfing ▲Gaming ▲Owning, maintaining community ▲Participating in communities ▲Downloading music ▲E-mail	★Telebanking ✦Buying from official supplier ▲Reservations
Cluster 4 (N=228)	★Search engines ✦Portals ▲Directly to URL ▲Reference works	✶E-mail ▲Messenger	★Fun surfing ▲E-mail ▲Gaming ▲Video clips ▲Downloading music ▲Downloading photos	★Telebanking ✦Reservations ✦Buying from official supplier
Cluster 5 (N=186)	★Search engines ✦Portals ✦Reference works	✶E-mail	✦Fun surfing ▲Downloading photos	★Telebanking

▲ 20-40%
✦ 40-60%
★ 60-80%
✶ 80-100%

Concerning the age of respondents, cluster 1, 3 and 4 do not differ significant. Furthermore, cluster 2 consists of a lot of young Internet users whereas older people (40-60yrs and 60+) are predominantly clustered in 4 and 5. Difference in education is weak as well as the spread of households (with or without children) and gender; all groups show at least 73% male respondents. Interesting findings are about frequency of being online and duration of Internet use: cluster 1 and 2 are concerned with a high level of frequency (more than once a day) and duration, whereas cluster 4 and 5 show less frequency and duration. Additionally, cluster 4 and 5 are less connected to broadband in contrast to the other groups (table 5).

Table 5. characteristics of internet users in clusters in 2003

Characteristics	Cluster	1 (N=744)	2 (N=562)	3 (N=707)	4 (N=228)	5 (N=186)
age	-20	9%	27%	5%	3%	3%
	-40	38%	43%	38%	34%	25%
	-60	46%	27%	47%	50%	53%
	60+	7%	3%	10%	13%	19%
education	high	40%	32%	43%	49%	37%
	mid	41%	40%	35%	31%	39%
	low	19%	27%	22%	20%	24%
gender	male	84%	87%	73%	79%	87%
	female	16%	13%	27%	21%	13%
household	children	46%	43%	48%	42%	42%
	no children	54%	57%	52%	58%	58%
connection	broadband	79%	87%	72%	56%	60%
	narrowband	21%	13%	28%	44%	40%
experience (yrs)	Mean score	6.2	5.7	5.6	6.0	6.2
frequency online	> once a day	72%	77%	59%	58%	56%
	once a day	16%	14%	19%	15%	18%
	> once a week	11%	8%	20%	22%	21%
	once a week	1%	1%	2%	3%	4%
	less	0%	0%	0%	2%	1%
duration online	<2 Hours	49%	37%	60%	79%	72%
	2-4 hours	33%	34%	29%	18%	25%
	4-8 hours	13%	18%	10%	6%	5%
	> 8 hours	6%	13%	4%	1%	3%

2005

In 2005 the largest cluster is cluster 3 (N=425). This cluster, like all the other clusters uses search engines, email, telebanking and to a lesser extent fun surfing. The people in this cluster use audio and video for information a lot and they are the only ones to share information via their own websites. Also messenger for communication is used frequently. Watching films online is done by no other cluster than this cluster and also gaming is done to some extent. Downloading music is very popular with this cluster. Furthermore, they use a range of online transaction means: aside from telebanking they buy products and services from official suppliers, use online market places and make reservations.

Cluster 5 is also a big cluster in 2005 (N=276). They are the only ones to use information forms for information. Like the other clusters they also use search engines, portals and reference works for information. For communication they only use e-mail. Watching video clips and downloading photos are means to be entertained for this cluster, although they are not very frequently turned to. Funsurfing is a more important way to get entertained. With regard to transactions, they use telebanking and buy directly from official suppliers of services and products.

Table 6. Summarizing 2005: activities and characteristics

	I	C	E	T
Cluster 1 (N=87)	✸Search engines ✦Portals ✦Reference works	✸E-mail	✦Downloading photos ⌃Gaming ⌃Video clips ⌃Fun surfing	✸Telebanking ⌃Online marketplaces
Cluster 2 (N= 129)	✸Search engines ✦Portals	✸E-mail ⌃Messenger	✸E-mail ✦Fun surfing	★Telebanking ⌃Buying from official supplier
Cluster 3 (N=425)	✸Search engines ★Audio & video ⌃Portals ⌃Reference works ⌃Own website	★Messenger * E-mail	★Downloading music ✦Fun surfing ⌃Gaming ⌃Watching films ⌃Downloading photos	★Telebanking ✦Buying from official supplier ⌃Online marketplaces ⌃Reservations
Cluster 4 (N=185)	✸Search engines ✦Reference works ⌃Portals ⌃Audio & video ⌃Discussion groups	★Messenger ✸E-mail ✦News groups	★Fun surfing ✦Downloading music ✦Gaming ⌃E-mail	★Buying from official supplier ⌃Online marketplaces ★Telebanking ⌃Reservations
Cluster 5 (N=276)	✸Search engines ✦Portals ✦Reference works ⌃Information forms	✸E-mail	★Fun surfing ⌃Video clips ⌃Downloading photos	★Buying from official supplier ★Telebanking ⌃Reservations

⌃ 20-40%
✦ 40-60%
★ 60-80%
✸ 80-100%

Special in Cluster 4 (N=185) is the use of discussion groups, which no other cluster does. Also newsgroups for communication are popular with this cluster. Furthermore, there is a varied usage pattern with some use of audio and video, which is only also done by one other cluster (3). Messenger is used a lot in cluster 3, as are the possibilities to download music. Telebanking and buying from an official suppliers site are the most used transaction functions, but also marketplaces are visited and reservation are made.

In cluster 2 (N=129) e-mail for entertainment is popular. Also, fun surfing is done. For information, communication and transactions the functions used are quite conservative (*moderate, functional usage*): search engines, portals, email, messenger and telebanking.

The smallest cluster, Cluster 1 (N=87) downloads more photos than any of the other clusters. Also there is some gaming, watching video clips and fun surfing. Telebanking is done more by this cluster than by the other. Marketplaces are also a way to complete transactions for this cluster. For communication only email is used and search engines, portals and reference works are used for information.

Table 7 shows that in 2005, older respondents are more clustered in 1 and 5 (to a certain extent cluster 2). So, cluster 3 contains more young respondents (< 20 yrs). Concerning education cluster 4 and 5 are highly educated, whereas cluster 2 shows a significant lower level of education, in specific. Cluster 3 and 4 are dominantly connected to broadband: 97 per cent. These respondents (3 and 4) in general started to use the Internet 1 year before other respondents (cluster 1 and 2). The other clusters, certainly the second one (47%), make use of smallband as well. Interestingly, the frequency and duration of Internet use is consistent with that.

Table 7. Characteristics of internet users in clusters in 2005

Characteristics	Cluster	1 (N=87)	2 (N=129)	3 (N=425)	4 (N=185)	5 (N=276)
age	-20	0%	5%	8%	2%	2%
	-40	30%	34%	41%	53%	27%
	-60	54%	44%	42%	42%	53%
	60+	16%	17%	9%	3%	18%
education	high	32%	27%	39%	43%	46%
	mid	40%	39%	35%	33%	34%
	low	28%	34%	26%	24%	20%
gender	male	75%	66%	85%	69%	77%
	female	25%	34%	15%	31%	23%
household	children	43%	38%	46%	46%	41%
	no children	57%	62%	54%	54%	59%
connection	broadband	78%	53%	97%	97%	75%
	narrowband	22%	47%	3%	3%	25%
experience (yrs)	Mean score	4.6	4.6	5.5	5.8	5.3
frequency online	> once a day	53%	47%	77%	73%	58%
	once a day	23%	36%	14%	16%	25%
	> once a week	17%	14%	7%	10%	14%
	once a week	5%	3%	1%	1%	3%
	less	2%	0%	1%	0%	0%
duration online	<2 Hours	66%	65%	42%	45%	66%
	2-4 hours	25%	29%	34%	37%	30%
	4-8 hours	8%	5%	15%	14%	3%
	> 8 hours	1%	1%	9%	4%	1%

Developments of internet functions

In this section some of the most noticeable developments of the usage of internet functions are described. The first thing that becomes apparent in table 8 is that over all years in all clusters search engines are frequently used for information, email for communication, fun surfing for entertainment and tele banking for transactions. There are however some fluctuations that will be elaborated on underneath.

* *Information*: Search engines are used by each cluster, each year. We do however see that the frequency with which they are used increased. The usage gets more intensified. In contrast, portals do not get used more frequently over the years, but do get used by more clusters; it is spreading over (the internet) society. This is also the case with gathering information via reference works. Information gathering via audio and video downloads shows some ups and downs. In 2001 it is used by three clusters, in 2003 by one and in 2005 by two. The usage has not become more or less frequent over the years. What is eye-catching, is that it only gets used very intensively by one cluster. This is an internet function that is some sort of specialty, very convenient for only a small group of internet users. This is also the case for information via discussion groups, but here, even for the only cluster that uses them, they get less used. Sharing information via an own website is not something for many internet users between 2001 and 2005 and it also does not get used very frequently.

* *Communication*: Messenger has been popular from 2001 through 2005. The main changes we see, is that less clusters use it (in 2001 four clusters and in 2005 three), but the usage is more intense. Special website for chatting (chat rooms) were quite intensively used in 2001 by one cluster, but in 2003 and 2005 it is not in the top three of any of the cluster. Webcams and weblogs are lagging behind and did not get into the top 3 of internet functions of any cluster in any year. Email on the other hand is used frequently by each cluster in each year.

* *Entertainment*: With regard to gaming we see that the number of clusters that practice online gaming first increases and then decreases, but that the intensity, especially in one cluster increases. A similar pattern is observed with downloading music. This seems something many internet users have tried, but will only get a true leisure pursuit for a few internet users. Downloading photos was done by all clusters and quite frequently, but over the

years the usage became less frequent and by less clusters. Funsurfing is constantly used by many internet users and quite frequent.

* *Transactions*: In 2001 transactions are, apart from telebanking, were online completed by one cluster, whereas in later years the usage is much more spread over the (internet) society. Buying products and services from a website of an official supplier has gotten more widely and intensively used.

Table 8 usage of internet functions by clusters in 2001, 2003 and 2005

	2001					2003					2004/5				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Information via search engines	★	★	✦	✦	✦	★	★	★	✱	★	✱	✱	✱	✱	✱
Information via portals		⊥	★	⊥	⊥	⊥	⊥		✦	✦	✦	✦	⊥	⊥	✦
Information via websites (url or favorites)	·	·	·	·	·	✱	⊥	✦	⊥		·	·	·	·	·
Information via reference works	⊥							⊥	✦		✦		⊥	✦	✦
Information via audio/video	⊥		⊥		✦	★							★	⊥	
Information via newsletter				★											
Information via newsgroup				★		·	·	·	·	·	·	·	·	·	·
Information sharing via discussion groups	·	·	·	·	·			★						⊥	
Information sharing via own website								⊥				⊥			
Information via information forms															⊥
Communication via messenger	⊥	⊥	⊥		★		✦	✦	⊥			⊥	★	★	
Communication via chat website					✦										
Communication via IP-telephony															
Communication via Webcams	·	·	·	·	·	·	·	·	·	·					
Communication via Reading of a weblog	·	·	·	·	·										
Communication via Writing/publishing a weblog	·	·	·	·	·										
Communication via e-mail	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱	✱
Communication via SMS (from computer to mobile)					⊥										
Communication via newsgroup				✦			✱							✦	
Entertainment via gaming					⊥	⊥	⊥	⊥	⊥	⊥	⊥		⊥	✦	
Entertainment via watching films					⊥	⊥							⊥		
Entertainment via downloading films					⊥	·	·	·	·	·	·	·	·	·	·
Entertainment via uploading films															
Entertainment via owning/maintaining a community	·	·	·	·	·			⊥							
Entertainment via participating in communities	·	·	·	·	·			⊥							
Entertainment via downloading/watching tv	·	·	·	·	·										
Entertainment via downloading/watching videoclips	·	·	·	·	·		⊥		⊥		⊥				⊥
Entertainment via sharing videoclips	·	·	·	·	·						·	·	·	·	·
Entertainment via listening to music					✦	·	·	·	·	·	·	·	·	·	·
Entertainment via downloading music					★	⊥	★	⊥	⊥				★	✦	✱
Entertainment via sharing music	·	·	·	·	·										
Entertainment via downloading photos	★	★	✦	★	⊥	⊥		⊥	⊥		✦		⊥		⊥
Entertainment via sharing photos									⊥		·	·	⊥	·	·
Entertainment via e-mail			⊥		⊥	⊥	⊥	✦				✱		⊥	
Entertainment via surfing (fun surfing)	✦	✦	✦	⊥	★	★	✦	★	★	✦	⊥	✦	✦	★	★
Transaction via buying service or product from provider		★					✦	✦	✦			⊥	✦	★	★
Transaction via online marketplaces for individuals		⊥										⊥		⊥	⊥
Transaction via auction website		⊥													

Transaction via tele banking	★		★	★	★	★	★	★	★	✶	✶	★	★	★	★
Transaction via making reservations		⊥				⊥	⊥	✦				⊥	⊥	⊥	
							1								

⊥ 20-40%
✦ 40-60%
★ 60-80%
✶ 80-100%
. no measurement for this activity in the relevant year

Discussion and conclusion

Different groups of people may use different types of internet connections for different goals. The first objective of this exploratory study was to identify a small number of relatively homogeneous groups of Internet users, based on their usage patterns (for example typical 'gamers' or 'serious information seekers').

It appears difficult to attach such labels on people in different clusters. We do however see cluster characteristics recur over the years, such as internet users with interest in discussion groups and newsgroups (cluster 4 in 2001, 3 in 2003 en 4 in 2005) and people who have a great liking for entertainment. In the first year a group of people distinguishes itself from other groups by performing online transactions more than other. We don't see such a clear difference in later years, as online transactions are more spread over the clusters. Secondly, we aimed to identify the characteristics of the internet users that are in the different clusters. We focus on demographics, experience and the connection used (broadband vs. narrowband). Here we do not see really clear distinctions. Thirdly, we aimed to identify changes of clusters over the years (2001, 2003 and 2005). The rapid adoption process of broadband in the Netherlands (OECD, 2005) makes this country an interesting case for other countries. Results for example show that that over all years in all clusters search engines are frequently used for information, email for communication, fun surfing for entertainment and tele banking for transactions.

Based on our analysis from the clusters and developments over the years, we conclude that there are two dimensions in the diffusion process: intensity and spreading over (internet) society (Figure 1).

Figure 1. Dimensions of changes of internet functions over time: intensity and spreading over (internet) society
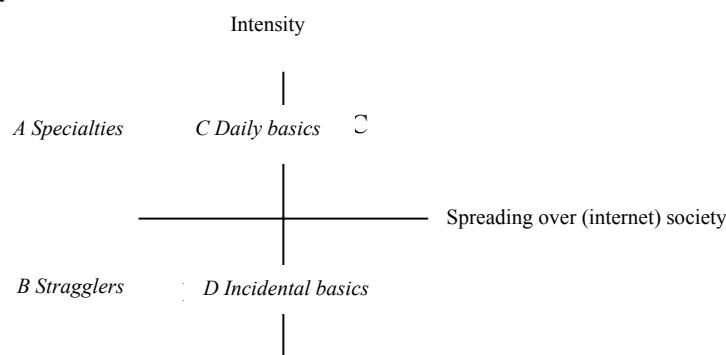
A) *Specialties*: Usage of a function gets more intensive (higher frequency), but this function is only used by one or a few specific clusters (e.g. messenger);

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[1] The exact proportions of each ICET function we do not know, because the respondents were asked to give a top 3 for information, one for communication and also a top 3 for entertainment and transactions. Respondents could not for example state eight entertainment functions and one communication activity.

B) *Stragglers*: Usage is not frequent and also not spread over the different groups of internet users (e.g. communities);

C) *Daily basics*: Usage is intensive and also spread over different groups of internet users (e.g. search engines);

D) *Incidental basics*: This function is used by many different internet users but the usage is not intense (e.g. downloading photos).

We can conclude that some functions of the internet become more intensively used whereas others get less frequently used over the years. Also some functions are more and more used by specific groups, whereas other functions become general functions for almost all internet users.

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Humans as eActors

I, Agent

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"How it is that animate beings can come out of inanimate matter. What is a self, and how can a self come out of stuff that is as selfless as a stone or a puddle?"
Douglas Hofstadter

Abstract

The paper aims at illustrating the broad-band technology potential presenting new challenging ways to "*e-act*", affordable now due to this ICT. The perspective is *anthropocentric* (user-centred, from conception to experimental model) and *transdisciplinary* (involving e-actors from many area of interests).The key feature focused on is *affordability* (the applications should be not just inexpensive, but also convenient as tools for ordinary actors in the broad-band society). The overall undertaking regards self-awareness in agent-based systems, is founded on Hofstadter's ideas [15] and was presented in [6] from a computer science perspective as well as in [8] in a larger interdisciplinary framework. To increase relevance for e-acting, two more paths have been opened: they concern one of the most worrying dangers (ethical behaviour of ICTs, presented in [7] and in a related paper) and one of the most uncontroversial application domains (e-Learning, presented in [23]). The model is embodied by a human-controlled self-aware interface agent, of reduced cognitive complexity. To bridge the gap between this highly abstract feature and agent-based applications meant for open, heterogeneous, dynamic and uncertain environments, the task keeps a definite engineering perspective. Preliminary estimation: the broad-band technology potential seems to allow full scale user-centred development of cognitively *complex*, conceptually *innovative* and practically *affordable* application domains.

1. Introduction. Should Agents Be Self-Aware?

Any contact with GEB [15] is as fascinating now as it was in the eighties and employing Hofstadter's ideas as backbone for basic research in cognetics, psychology, or philosophy is always appealing. However, bringing into play the "strange loops" as foundation for an applied research undertaking intended for agent-based systems (ABS), seems still a very risky adventure. Indeed, the need for self-aware agents in workable software could be a challenging topic in any "Achilles-Tortoise" dialogue. More down to earth: is it suitable to consider self-awareness as relevant agent feature when many other – less abstract and elusive – strong agency characteristics (for instance, emotions) are still regarded as luxury, even in current large-scale ABS? In the context marked by the huge potential of broad-band technology (BBT), a prelude answer is:
- *System complexity* makes it *desirable*. A relevant sign that "self-awareness" is currently highly considered in IT was the very prestigious *DARPA Workshop* [12]. Its *Report* [2] summarises: "The vision of a completely general-purpose theory and architecture for self-

aware systems is certainly not yet the state of the art. It is, however, an excellent long-term vision in that it idealizes a strong thread of ongoing activity that is of both theoretical and practical interest. Machines do not need to be self-aware in the same way as humans do, but some forms of self-awareness seem to be useful. […] Self-awareness can make the system more robust and self-repairing over a period of time."

- *Agent technology* makes it *possible*. The *AgentLink Roadmap* is explicit [1] : "Computational systems that are able to manage themselves have been part of the vision for computer science since the work of Charles Babbage. With the increasing complexity of advanced information technology systems, and the increasing reliance of modern society on these systems, attention in recent years has returned to this. […] aspects of these systems include properties such as: self-awareness, self-organisation, self-configuration, self-management, self-diagnosis, self-correction, and self-repair".

Accepting the twofold claim about desirability and possibility, the next question arises: is such a research *affordable* with quite scarce resources (for instance, within the narrow scope of a PhD thesis [22])? In line with Hofstadter's ideas that "Consciousness is not an on/off phenomenon, but admits of degrees, grades, shades" [15] the answer seems positive, if the starting point for "strange loops" is Gödelian self-reference (the rationale is detailed in [6]). The overall undertaking regarding agent self-awareness in ABS is presented in [6] from a computer science perspective as well as in [8] in a larger interdisciplinary framework. To increase relevance for e-acting, two more research paths have been added; they concern: one of the most worrying dangers (ethical behaviour of ICTs, presented in [7] and in a related paper) and one of the most uncontroversial application domains (e-Learning, presented in [23]); without them the proposed ways to e-act could not be convincing.

Hence, specific objectives are: a) to defend the undertaking from a (future) "*e-actor*" point of view; b) to set up the background – of the overall undertaking – for starting by Gödelian self-reference; c) likewise, to specify an affordable approach; d) to outline very roughly an experimental model and software mechanisms able to uphold the approach (they are described in other papers). The perspective is twofold, both facets being of cardinal weight for COST 298: *anthropocentric* (substantiated in full scale user-centred development) and *transdisciplinary* (involving e-actors from many area of interests).

As regards the language, for the sake of effectiveness and intelligibility, it is "convenient", i.e. anthropomorphous, because of the reasons given by McCarthy: "to ascribe *beliefs*, *free will*, *intentions* […] to a machine is legitimate when such an ascription expresses the same information about the machine that it expresses about a person. It is useful when the ascription helps to understand the structure of the machine, its past or future behaviour, or how to improve it" [18]. Moreover, Dennett coined the term "intentional system" for one "whose behaviour can be predicted by the method of attributing belief, desires and rational acumen" [13] (details about the paramount role of the "intentional stance" for ABS are given in [5]). Because of universally increasing complexity the intentional stance is unavoidable. Hence, "awareness" and first of all "self-awareness" should be interpreted only metaphorically.

The rest of the paper is organised as follows: Section 2 details the rationale exposed here, *explaining and exploiting the title* from an anthropocentric perspective. Section 3 is dedicated to the other perspective facet, describing the *transdisciplinary potential and roots* of the enterprise (its subliminal message is a call to transdisciplinary cooperation). On this groundwork, the key feature focused on in the *approach* (Section 4) is affordability (not just inexpensive, but also convenient as tools for e-actors). The approach is embodied in the *generic architecture* of the *experimental model*, outlined in Section 5. *Conclusions* (both general and factual) and directions of *future work* (Section 6) close the paper.

2. Explaining and Exploiting the Title

The Asimov-like title has three undertones: a) *"I"* is the very *core* as well as *expression* of self-awareness; b) passing from *"Robot"* to *"Agent"* may reduce reluctance, since humans are more afraid of force than of intelligence; c) it suggests *Asimov's laws* (mandatory from an anthropocentric perspective).

a) *"I"*. This word has a huge palette of connotations ranging from the totally irrelevant "I" of an answering machine to the still partially unexplained "I" of an introspective exercise regarding own perceptual experiences. Indeed: "Research suggests that infants are born with a rudimentary concept of self, manifested in such simple things as differentiating a self-touch from the touch of another. At around 18 months infants manifest a more "conceptual" sense of self, supporting the ability to recognize themselves in a mirror" [2]. Somewhere between those extremes should lie the agent "I". According to McCarthy there is hope that agents could have basic I-thoughts, which can generate knowledge: "Developing self-aware computer systems will be an interesting and challenging project. It seems to me that the human forms of self-awareness play an important role in humans achieving our goals and will also be important for advanced computer systems. […] Self-awareness is continuous with other forms of awareness. […] It seems to me that the forms in which self-awareness develops in babies and children are likely to be particularly suggestive for what we will want to build into computers" [21]. In IT, (over)simplifying the picture, it can be considered that the most primitive explicit form of self-awareness is self-reference in recursive functions.

b) *Simply Agent*. "With humans the boundary between self and non-self is pretty clear. It's the skin. With computer based systems, the boundary may be somewhat arbitrary, and this makes distinguishing self-awareness from other awareness arbitrary" [21]. What about bodiless entities? Because of affordability restrictions (complexity, cost-effectiveness, hard-ware, logistics, research capacity and duration, etc.) robot self-awareness is outside the scope of this research. Moreover, replacing *robots* by *agents* may also reduce reluctance to interact with, since humans (both users and researchers) are more worried about (brute) force than about (primitive) intelligence. Though, to avoid undue agent behaviour, the owner should be able to enter a privileged interaction mode ([7] and a related paper). Nevertheless, the price to pay for this advantage is rather high: "the awareness of one's own body, involves many specialized sensors arranged into several distinct information systems" and "at this very basic level, self-representation is bodily-representation, and the self is known as, and in terms of, its body" [3]. That means *robots*. The consequences are major (some of them are given in Section 4; details in [6] and in future papers).

c) *The Laws*. Albeit started as science-fiction, Isaac Asimov's "Three Laws of Robotics" are considered seriously in military studies (even if not following their humanistic spirit in every respect), for instance, in the context of ensuring security of own forces [17]. Even more relevant, they are candidates for formalisation: "The obverse of a goal is a constraint. Maybe we will want something like Asimov's science fiction laws of robotics, e.g. that a robot should not harm humans. In a sufficiently general way of looking at goals, achieving its other goals with the constraint of not harming humans is just an elaboration of the goal itself. However, since the same constraint will apply to the achievement of many goals, it is likely to be convenient to formalize them as a separate structure" [20].

Finally, the most important innovative IT subdomains have their roots in "I, Robot": "Artificial intelligences such as […] the embodiment of such beings in Asimov's robot […] may […] provide inspiration for researchers *'to boldly go where no-one has gone before'*. […] One such line of research is in the realm of affective computing" [24] [4].

3. Transdisciplinary Potential and Roots

The potential is illustrated by examples from three kinds of relevant disciplines ranked relative to their importance to this conference; the roots reflects recent research in the involved area.

e-Activities. For instance, *e-Learning* involves, beside the learning disciplines, *psychology* and *cognetics* – especially when investigating new ways of less algorithmic inductive learning [23]. As regards *Humanities*, the palette is polychrome but strongly related to one of the conference strands are transcultural interfaces with a significant non-textual communication component, based on (partially) visual ontologies [10].

Social Sciences. Self-reference becomes a key concept in the sociological discourse, although intense opinion diversity as regards information, communication and meaning in social systems [16]. On the other hand, because of the major trend to use extensively agents in almost every IT subdomain, artificial intelligence becomes an IT infrastructure component rather than a definite conventional subdomain. However, a much less acknowledged consequence is the need for artificial subspecies of social sciences, like *psychology* and *sociology*, to be able to redress the balance regarding the role of users in the design of anthropocentric interfaces (affective computing is just a blatant example [4]). On the other hand, widespread autonomous and non-deterministic artificial entities increase dramatically the role of (un)ethical behaviour of software components [7].

Metasciences. This fuzzy umbrella term is used here as a category name for the disciplines linked to epistemology. For instance, the research described in this paper is implicitly linked to the *general theory of systems*, *(meta)mathematics* and *logic* [6] [8]. Even more conspicuous is transdisciplinarity where logic has a major and explicit role (e.g., when tri-valent logic is used to handle uncertainty [9]). Moreover, domains as *complexity science*, in embryo until a few years ago, could take off mainly due to the BBT potential: processes like emergence or self-organization in (natural or artificial) ant colonies, cardinal for both science and technology, can be easily modelled due to the big number of simulation instances, affordable because of the computing power now available [11].

4. Approach

To be workable, the approach should be based on backing up the aspects focused on in the aims and rationale of the undertaking and on integrating them into a viable generic architecture:

- *Anthropocentric perspective* means here full scale user-centred development, from conception to experimental model, with special emphasis on *ergonomicity*. Agent *autonomy* can be seen almost as a corollary: unable to manage the system complexity involved by current IT applications, humans must transfer most of this complexity to the system – primarily its cognitive component is addressed: "easy to understand, easy to use". Hence, such a system must work more and more in an autonomous way. There are three main sources autonomous behaviour stems from: living beings, automata, and software. As regards software, in modern IT autonomous adaptive behaviour stems mostly from combining biological and engineering mechanisms [12] and is implemented in ABS [1]. (Details about anthropocentric interface design are given in [5].)

- *Affordable* means not just inexpensive, but also convenient as tools for ordinary actors in the broad-band society. Here "actors" refers to both end users and application developers.

On the other hand, to be convincing, the problem chosen to illustrate BBT potential must be *challenging*: innovative, difficult, controversial, provoking, and so on. Since self-awareness is a human feature par excellence, agent self-awareness is a good candidate to accomplish the task. Nevertheless, when the emergence of self-awareness is expected from Hofstadter's

ideas about "strange loops", there is a significant risk that the candidate could become "too good", i.e., the target could be too far to be affordable in the sense delineated above. Thus, preserving affordability implies:

- *"Plan B" framework.* To save the undertaking as applied research when the basic research target is hard to reach, a "Plan B" is mandatory for real-world application domains: the self-referencing agent must be able to function also in a ABS as an implementation mechanism for conventional architectural features.

- *Stepwise Proceeding.* For both theoretical and practical reasons the approach is based on "micro-continuity". Indeed, inspired by Hofstadter's idea that consciousness emerges gradually, a stepwise proceeding is safer and cheaper. This incremental nature of self-awareness, allows starting with few features and going on step by step. That involves successive prototyping, in this case, experimental models and dedicated software mechanisms. (Details are given in [6].) Hence, initially the architectoniccs should be embodied by a *human-controlled self-referencing interface agent, of reduced cognitive complexity* (a very "small soul" [15]).

- *Modularity.* This macro-feature – already common place in agent-oriented software engineering – is here necessary also for research reasons: micro-continuity implies incrementally extendable functionality of the self-referencing agent. Thus, both transdisciplinarity and affordability are boosted.

- *Adequate Extensions.* The generic architecture should allow easy extensions for "vertical development" (new functions, e.g., switching between various ethical behaviours) as well as for "horizontal development" (new application domains, e.g., less algorithmic e-Learning). Therefore, modularity is a prerequisite.

- *Secure owner control.* The privileged interaction mode mentioned in Section 2 enables the user to take control, deferring agent intentions – or even agent evaluations.

- *Human-compatible knowledge representation.* Agent must interact with humans in human ways (for interface agents it is their very raison d'être). For both theoretical and practical reasons, propositional communication is highly desirable and almost unavoidable. The reason is a speculative "author thesis" [9]: in interacting with their interface agents, humans prefer symbolic communication but would like that their possible sub-symbolic response should be perceived too. Hence, the agent ontology (in its original meaning, i.e., their sketchy world representation) should comprise: *I* (software entity), *You* (master), and *Rest of the world* (context-relevant environment). A vital aspect is to ensure what McCarthy defines as "elaboration tolerance" [19]: "A set of facts described as a logical theory needs to be modifiable by adding sentences rather than only by going back to natural language and starting over. For example, we can modify the missionaries and cannibals problem by saying that there is an oar on each bank of the river and that the boat can be propelled with one oar carrying one person but needs two oars to carry two people. Some formalizations require complete rewriting to accomodate this elaboration. Others share with natural language the ability to allow the elaboration by an addition to what was previously said". This will be the main premise for designing agent dynamic ontologies.

- *Affective computing.* Again, there are both theoretical and practical reasons: a) To catalyse the emergence of self-awareness, agents should manifest stepwise human-like behaviour. Here micro-continuity can help since not the *antropomorphic feature* itself has to be replicated, but its *appearance* – firstly forged, later more genuine [4]. A cardinal such feature is emotivity. (In fact, the role of affective computing is much more wide-ranging [24]. b) Many ABS involve persuasion. For instance, teachers – and coaches even more – to be effective must be convincing, first of all credible; however, that means to deal with emotivity. (The influence of affective processing in education and training was reemphasised in [23].) Hence, self-referencing agents should be able of emotional reactions.

- *Spaceless agents.* As shown in Section 2, because pure software agents lack the awareness of their body, they cannot have any sense of space (crucial for the self-representation

achievable by robots). To compensate partially the major drawback that bodiless agents are also spaceless, such agents should be designed with a considerable sense of time; of course, agent time (and the logic governing it) should be as close as possible to human time [9] and ontologies have to mirror it (for instance, containing rules for active waiting and for changing priorities). (Details are given in [6].)

Finally, since the broad-band society involves (inter)acting in open, heterogeneous, dynamic and uncertain environments, agents – no matter how affordable they are – must adapt to such environments. That means that they: a) are real-time beings, since the agent is a process (recently defined as such by a formal standard [14]); b) have to deal with uncertainty; c) must be highly reactive (most of them driven by environment stimuli); d) must be proactive too, showing flexible initiative. (Details are given in [6].)

5. Generic Architecture and Experimental Model

The model walks *The Road to Self-Awareness* described in Fig. 1. It shapes very roughly and features the basic mechanisms to achieve gödelian self-reference though self-cloning. The model is described in more detail in the context of an application in [23].

Fig. 1. Self-Reference, from Call to Awareness.

A. Recursive Function Call
Complexity: Less
(Involution)

B. Self-Replication
Complexity: Same
(Constancy)

C. Self-Cloning
Complexity: More
(Evolution)
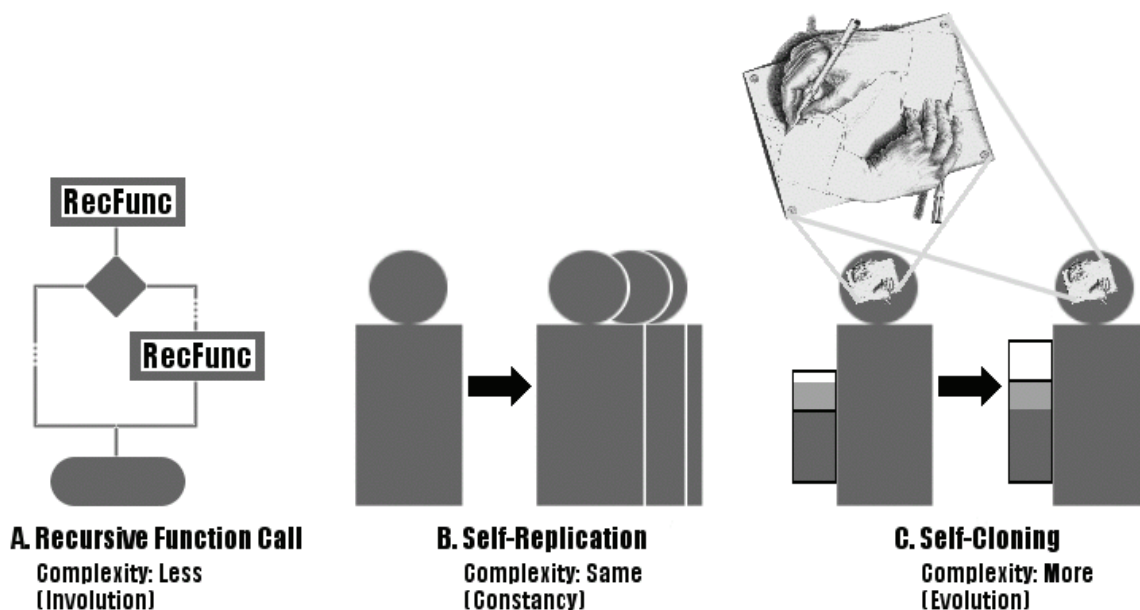
A. The first step towards self-reference is the *Recursive Function Call*. In this case, the problem that needs to be solved becomes simpler with every call, hence the complexity decreases.

B. When considering *Self-Replication*, the agent is able to cast a carbon copy of itself. In this case, the complexity remains unchanged, the new agent being neither smarter nor dumber than the previous one; it is able to solve the same problems and/or handle the same situations as its predecessor. Albeit not achieving an improvement in performance, self-replication is a vital step towards the goal.

C. Self-Cloning is used as mechanism to implement gödelian self-reference. The agent casts an improved version of itself, a "slightly altered alter ego" in opposition to the "carbon copy" from the s*elf-replication* process. The agent decides when it has achieved crucial information

(after a learning process) and clones itself into a smarter one, than that embodied previously. The complexity increases, as the new agent is more skilled than its predecessor.

The improved "silicon copy" replaces the initial agent and the learning process may start over again. This is how the model evolves, increases in skill and is able to handle more complex problems.

6. Conclusions and Future Work

Considering the two-level target, the assessment involves both facets: A) *general* conclusions (regarding the *BBT potential* for developing new ways to "*e-act*") and B) *factual* conclusions (evaluating the *research undertaking* chosen to illustrate this potential).

A1. BBT allows full scale user-centred development of cognitively *complex*, conceptually *innovative* and practically *affordable* application domains.
A2. Such applications are able to become convenient tools for ordinary e-actors.
A3. Since the broad-band society involves (inter)acting in open, heterogeneous, dynamic and uncertain environments, conventional approaches to ICT development become ineffective and should be replaced by new ones (for instance, agent-oriented software engineering).
A4. However, to get acceptance among prospective e-actors, any application – no matter how advanced is the technology employed – must be approached in a genuine and intensive transdisciplinary manner.

B1. From a computer science perspective it is much too soon to claim that agents achieve self-awareness through Gödelian self-reference *per se*. Nevertheless, indices are rather encouraging.
B2. On the other hand, from an agent-oriented software engineering perspective, self-referencing agents provide a workable mechanism for improving agent architecture. ("Plan B" is proved viable.)
B3. The main hindrance imposed by affordability restrictions is the purely software, bodiless, agent nature. To diminish it, the main feature added to usual interface agent architecture is a primal sense of time.
B4. The current agent endorses the model, the approach and, mainly, the anthropocentric perspective.
B5. Being yet in an early stage, the approach could be convincing only if similar self-referencing experimental models are applicable both vertically (i.e., solving key architectural *problems*) and horizontally (i.e., building up applications in well-known *domains*). The *problem* chosen is a deeply worrying one, not only for agent-based systems but for any advanced ICT: controlling the ethical behaviour of artificial entities. The *domain* chosen is very familiar: e-Learning.

As regards future work, it is outlined in the stepwise approach: a) the expected emergence of a primitive "I" should be catalysed through a powerful temporal dimension and an emphasised less algorithmic behaviour; b) improving agent architecture, first of all its dynamic ontology and its reactivity (it should be much more stimulus-driven).

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Communication-Wear: User Feedback As Part Of A Co-Design Process

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Abstract

Communication-Wear is a clothing concept that augments the mobile phone by enabling expressive messages to be exchanged remotely, by conveying a sense of touch, and presence. It proposes to synthesise conventions and cultures of fashion with those of mobile communications, where there are shared attributes in terms of communication and expression. Using garment prototypes as research probes as part of an on-going iterative co-design process, we endeavoured to mobilise participants' tacit knowledge in order to gauge user perceptions on touch communication in a lab-based trial. The aim of this study was to determine whether established sensory associations people have with the tactile qualities of textiles could be used as signs and metaphors for experiences, moods, social interactions and gestures, related to interpersonal touch. The findings are used to inspire new design ideas for textile actuators for use in touch communication in successive iterations.

Keywords: Smart textiles, wearable technology, touch communication, clothing and emotion, user research, prototype as probe.

Introduction

With the downscaling of traditional textile industry in the EU, it is envisaged that, in Europe, a high-tech clothing sector will soon emerge [1]. First applications have already surfaced in the area of sports and health [2]. Looking further out into the future, it may only be a matter of time before some of these wearable and smart textile technologies are adopted within the fashion industry. However, as yet it is unclear what kind of compelling applications might accelerate the uptake of smart materials in the consumer market [3]. Fashion is uniquely placed as a future mediator of technology, in particular within the relatively new "experience economy"; a culture where the human senses, experiences, and emotions are more and more of commercial interest. The *Communication-Wear* concept seeks to operate within, and contribute to, the emergence of a new genre in clothing and fashion, where fashion and ICT converge. This research is multi-disciplinary, drawing on expertise from fashion and textile design, electronics, wearable computing, and user research.

Thus, *Communication-Wear* proposes to marry conventions and cultures of fashion, as being an expressive medium that connects people with the social world, with principles of nonverbal communication as well as with current cultures of mobile communications.

Fashion/clothing and mediated communication technologies have common attributes in terms of how they enable people to construct an identity, to be expressive, to differentiate themselves, and declare their uniqueness, and which enables communication between people allowing them to form communities. People do this through their consumption of these commodities and services. The communication of identity through fashion can be to one's self, or from self to others, the meanings behind which are often ambiguous and open to (mis)interpretation [4]. A large percentage of face-to-face communication takes place via nonverbal means, i.e., through facial expressions, touch, and bodily gestures [5] and the links between expression and nonverbal communication through body movement and touch in human communication have long been identified [6, 7]. Morris [8] for example distinguishes: *Affect displays*, movements of the body and face to show emotion; *illustrators*, gestures which help to reinforce verbal messages; and *auto-contact behaviour* or 'self-intimacies', which are *'touching actions we direct towards ourselves that provide comfort because they are unconsciously mimed acts of being touched by someone else'*. Mobile phones are already *'affective technologies – that is, objects which mediate the expression and exchange of feelings and emotions'.* [9] *'However, a significant amount of human expression and interaction information is never captured, transmitted, or expressed with current computer mediated communication.'* [10] The design framework for *Communication-Wear* [11] is informed by these diverse strands of research.

Rheingold highlights how the notion of "killer application" is outdated and too narrow, stressing the importance of lifestyle research [12]: *'The killer applications of tomorrow's mobile infocom industry won't be hardware devices or software programmes, but social practices.'* Our research locates potential youth groups at the centre of the development of fashion/clothing prototypes by engaging them as co-developers and evaluators using design-led techniques, in order to determine what and how people might communicate through augmented clothing, and how this might fit in with, and support people's everyday communications.

We developed a smart textile system integrated into prototype garments that provides a *menu* of touch expressions encompassing 'hug' and 'stroke', gestures that the garment can sense and actuate. In a way we used the prototypes as a research probe as a means to create conditions in which participants could experience, play and dream, possibly gauging a deeper level of knowledge or tacit knowledge about user's desires, preferences and behaviours, as well as the way the product or experience makes them feel. Our approach aims to gain insight into what some catalysts and drivers of future consumer fashion wearable technology that permits touch communication might be, and to explore methods to design *smart* clothing that is active and dynamically changeable, which people can appropriate. In order to do this we have conducted a series of studies using probes to gain insight into how people might appropriate the functionality and create their own meanings through visual, aesthetic, and/or tactile codes, much like they do today with their own clothing. One aim was to determine whether established sensory associations people have with the tactile qualities of textiles could be used as signs and metaphors for experiences, moods, social interactions and gestures, related to interpersonal touch. This is the second in a series of user studies, which forms an integral part of an iterative design process.

Related work

There is no shortage of technology explorations in this area. Work in the area of remote communication through touch includes 'ComTouch' [13], a vibrotactile communication

device, which augments remote voice communication with touch. The 'Lumitouch' [14] system consists of a pair of interactive picture frames. When one user touches their picture frame, the other picture frame lights up. 'InTouch' [15] is an internet-based concept that aims to create the illusion that two people, separated by distance, are interacting with a shared physical object. *CuteCircuit* is developing its 'F+R Hugs' [16] into a commercial offering. 'TapTap' [17] is a wearable haptic system that allows human touch to be recorded, broadcast and played back for emotional therapy. Our approach differs in the sense that we have elicited and systematically analysed user feedback with the view to inform or inspire designers of fashion from a social science angle.

Communication-Wear **design framework**

We have taken a design-led approach in this research, as we are proposing artefacts for consumption. Design is at the interface between technology or material and the consumer. As we are dealing specifically with wearable technology, fashion and textile design methods play a key role in our process.

The point of departure for most studies of dress and fashion is the consumer culture, a cultural system of making meaning, and of making meaning through what we consume. Consumer culture is, what Raymond Williams [18] and other writers have called, the *"bricks and mortar of everyday life"*, the music you listen to, the clothes you wear, etc. These are all aspects of material culture, which most studies of fashion draw on to look at the way we use it to map out identities for ourselves. Those identities are often equivocal and unclear in their signals. *"Fashion, clothing and dress constitute signifying systems in which a social order is constructed and communicated"*. [4] Meanings can also be generated as a result of negotiations between people resulting from their joint actions, e.g., communication as social interaction through messages [19], which constitutes an individual as a member of a group. In the Semiotic (or Structuralist) model of communication as identified by Fisk, *"it is the process of communication that produces or generates meanings"* [4], in which both sender and receiver are constituted. The designer can be the source of the meaning of the garment, *"a product of the designer's intentions, where intentions are defined as a person's thoughts, feelings, beliefs desires about the world and the things in it"*. [4] Similarly, wearers can attribute their own meanings to the garment, thereby expressing their own beliefs, hopes and fears *"through their use of the garment"* [4].

Textiles have a range of tactile qualities, which textile and fashion designers have always exploited as part of their design method to engineer a look, concept, mood etc. There are well-established descriptors for the sensory associations and *hand* qualities of textiles used in the fashion and textile industry as part of the selection process when choosing a textile for a particular clothing application. There is an industry-standard set of bi-polar attributes for fabric hand, e.g., smooth-rough, soft-crisp, cool-warm, delicate-coarse, hard-soft, etc. There are also surface attributes that include sticky, slippery smooth, greasy, fluffy, granulous, scratchy, hairy, etc. These have been developed through using subjective assessment tests by experts. The descriptors along with other attributes, such as colour, shape, and pattern, are used by fashion designers as a legitimate design method to develop seasonal design collections. The collections can then become trends or genres, which are generally understood in terms of their meanings, as they are a result of fashion production and other forms of cultural production, e.g., media and graphics.

In the same way that youth groups create new languages using SMS, so *smart* clothing will need a design palette or *language*, which users can co-opt, adapt and assign their own meanings to, or make their own meanings with. A range of textile actuation types such as shape change, light-emitting, and tactility, has been designed during the course of this research. The aim of the user studies is to determine whether established sensory associations people have with the tactile qualities of textiles could be used as signs and metaphors for experiences, moods, social interactions and gestures, related to interpersonal touch. By enabling users to feel or experience these sensations, they will be engaged in deeper levels of discussion about their associations, thereby revealing insights into how they would make their own meanings, develop their own language to communicate and express using this sensory textile language.

The first author designed the garments and their textiles according to these sensory associations and design principles, as well as drawing upon her own experiences and associations. Designers often draw from their own experiences. In a first iteration, the touch actuation consisted of heatable textiles, textiles that change from being cool to warm upon receipt of touch communication. A fabric that has a warm handle is generally understood to have comforting associations; synonyms include having or displaying warmth or affection, passionate and psychologically warm, friendly and responsive, caring, fond, tender. If a designer were devising a fashion collection, he/she would start with a concept board that communicated the mood on a visual and tactile level. If a key component of the collection was a *warm* mood, the designer would include in his/her concept board swatches of fabric that were warm to the touch, a warm colour palette, as well as images or photographs which communicated a sense of warm. The selection of swatches and images would be informed by established cultural understandings of them, as well as the designer's experience of these cultural associations. The author employed a heatable textile as a means to engender these feelings in a person when receiving touch messages. The placement of touch actuators, i.e., heatable textiles, is informed by a 'vocabulary of touch' as devised by Argyle [5]. The actuators were placed on the upper back, and front of left and right arms.

Prototype technology platform

In a first exploratory study aimed at mobilising participants' tacit knowledge and their associations of touch and gesture with respect to codes of our material culture, in this instance, textiles and clothing. We generated insights and inspiration for new design ideas around touch communication, and representation, simulation of touch gestures. The main concepts of the study were: A broader range of sensory capability, i.e., the ability to sense and exchange more sensations; to explore the idea of tactile change to represent touch, not just warming sensations; and a visual representation of touch to include colour and/or light. These findings have been used to generate a new conceptual design for the next iteration of *Communication-Wear*, used in the study reported here.

The initial stages of development of the technology platform of the prototype have been reported in a separate article [20]. In short: Each garment is twinned with a mobile phone via Bluetooth. Communication between garments takes place as follows: Both the sender and the receiver (wearer of the garment) carry a mobile phone. A text message from the sender's mobile phone sends an instruction to the receiver's Bluetooth-enabled mobile phone. This then sends an instruction to the recipient's garment. Users can also send touch messages by gesturing them, as opposed to using text. Textile gesture (mechanical stretch) sensors were located on the upper back where the arm joins the trunk of the body, and touch sensors were

situated on the lower parts of the sleeves [20]. Galvanic Skin Response (GSR) sensors were also introduced, which were integrated into the lining of the garment looping around the index and second finger on the left hand. Woven textile circuits carried power and data signals.

Actuation of *hug* messages took place via the generation of a warming sensation using heatable textiles, symbolising the warming sensation felt when touched by another person. The heat pads were located in the upper back of the jacket (on the shoulder blades, figure 1). When a hug or embrace gesture is sent, the heat pads in the back of the jacket heat up.

A tactile actuator that attempted to simulate a *stroking* sensation was engineered using shape memory alloy wire and a pleated fabric insert. This pleated insert was located on the inside of the lower part of the sleeve so that it would slide against the topside of the lower part of the arm (figure 2). The placement of these actuators is informed by Argyle's 'vocabulary of touch' [5].

Figure 1. Prototype jacket (left), inside the jacket, showing the heat pads (right)

Figure 2. Stroke actuator inside sleeve (left), detail of touch sensor integrated into the sleeve (right)
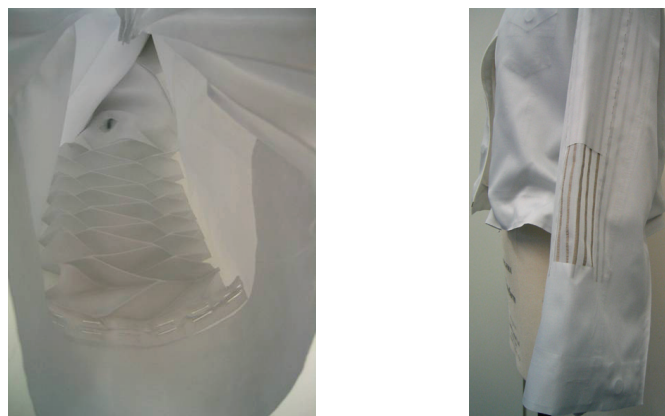
Fibre-optics (figure 3) were engineered into the garment on the underside of the sleeves. Thus, a subject by hugging themselves and stretching the mechanical stretch sensors was able to deliver a warming sensation to the upper back of the partner. An arm stroke by the sender was received as pleated fabric being drawn up the arm. The recipient receives the touch message through actuation, as well as an SMS confirmation, saying 'hug shared', or 'left touch shared', etc. In addition, physiological arousal, as detected by the GSR sensors, was relayed to the partner by light being emitted from the fibre-optic section. The GSR took the form of textile electrodes integrated into a semi-glove configuration at the end of the sleeve in

the garment, which wrapped around the index and second finger. GSR can detect levels of arousal; it cannot detect emotion on its own, but would need to be complemented with other sensor readings such as respiration, heart rate, etc. Using the GSR fits in well with the aims of the user study, in that we are not conducting a scientific experiment on the functionality of the GSR, but we are trying to create conditions in which participants can experience and *feel* the functionality afforded by the technology.

Figure 3. Light-emitting fibres integrated into the sleeve with GSR sensor at the end of the sleeve
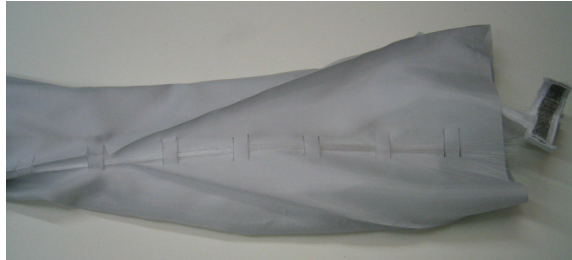
User feedback

Four pairs of participants took part, a total of seven women and one man (aged between twenty and twenty-five), who were recruited locally (in Bristol). The pairs of participants were briefed on the functionality of the garments, which was also demonstrated to them. The participants then spent a period of time exchanging sensory messages or touch communication. Participants were not able to see each other, as they were separated by a partition in the lab. Afterwards pairs were interviewed together. All sessions were video-recorded and transcribed.

The aim of the study was to try to elicit from participants how they made sense of and interpreted the tactile sensations, in relation to their own perceptions of touch. Through having experienced the tactile sensation in relation to its given meaning, participants were asked to describe and articulate the particular qualities the sensation engendered, and compare those with their own experiences and associations. Participants were also asked to relate their experience with the prototype to their current mobile phone communication practices. During the interview we gauged how users experienced the sense of touch or presence, how they related this type of communication to their current communication practices. In addition we asked them to think of other tactile actuation types that would engender such a touch or presence.

Sensations of touch or presence

Some participants thought that the stroke actuator was 'creepy', saying that the creepiness was due to there being a feeling of the presence of someone, even though no one was there: *"When you feel something, and you know the other person is doing something, it does feel quite nice." "It felt like I was making a connection with someone near me." "Felt a bit creepy … felt quite pleasant, but creepy because you felt someone but was there, but there was no one present."*

A couple said that the feeling was akin to a spider or insect: *"It* (sleeve actuator) *did not feel like someone was stroking my arm, it was more like a spider."*

And some thought it was too subtle to make a judgement upon: *"... was very close to a real brushing sensation. It was quite weird." "... it gave me a feeling of electricity going through me ... a warm and tingly feeling."*

The heat pads as metaphor for an embrace touch worked for some: *"The heat worked as a literal, and an abstract. You would of got the idea that someone is doing it to you ... the heat on the back." "The heat thing I liked, a bit like a hug; I felt my whole body heat up."*

One was unsure: *"I don't know whether I would think of it as a hug, but as heat being produced, sent from one person to another, it would have an effect on me."*

The heat pads as metaphor for an embrace touch was thought to be largely dependent upon the location in the garment; with some subjects stating that it would be more effective if located on sensitive areas of the body. The feelings these sensations engender are largely socially constructed: *"I know that I'm not the only one that feels consoled by a hand on my lower back ... everyone that knows me well, would know that that means more to me."*
"I think they (the heat pads) *could come-in more* (further down the jacket) *... the heat kind of wraps around you.*
If there were heat pads on my lower back then I would feel an embrace; that would be something that I would respond to." "... something that could be quite intimate, heat travelling up/down your spine ..."

The majority of participants had a clear preference for the light-emitting fibres. The GSR sensors linked to light-emitting fibres represented an interesting difference between doing something that is intentional (touch), and doing something that is unintentional. They liked the concept of knowing how the other person was feeling though the GSR sensors, a kind of subliminal messaging and mood sensing: *'What was most intriguing was the fact that she's having a reaction; maybe it's not to me, that doesn't matter, it's the fact that it is very personal to see someone's sweat represented by light. It is a personal or intimate thing." "The reason why I like the lights is because it's about how someone is feeling, excited ... it's more than a physical reaction."*

There were comments indicating that the light-emitting fibres were preferable to other types of actuation as it is not something we would normally have access to, whilst the other types of sensing and actuating are trying to replace something we do have access to when face-to-face: *"... it's because it's something that you would never know; you can't read people's reactions in that way; you would never know someone's personal reaction* (under normal circumstances)*, and then suddenly you can read it, it lights up, it's really in your face, the glow. I think it's that contrast between not knowing and then suddenly knowing; and you are the only one who knows." "What intrigues me is that it's* (GSR and fibre optics) *not trying to replace something else, because it's something unique."*

Most thought that seeing what was happening to the other person, *"communicating through your body",* would make them feel closer to that person: *"I like the idea of people's feelings being communicated."*

The majority of participants stated that they would like to choose the location of actuators in the garment, as well as type of actuator. This was expressed from both a sender's and a recipient's point of view, as it might be a good mechanism for maintaining control and ensuring privacy by being able to make their own meanings. *"The absence of a meaning of*

what that (the light-emitting fibres) *meant would be difficult for me."* For example, one respondent said they would like to be able to choose the location depending upon their knowledge of the recipient, or pressure points. This would enable users to express a shared understanding of each other, which would not be unintelligible to onlookers: *"I thought the location (of the fibre optics on the underside of the sleeve) was good, because this is the most emotional part ... this is something that is connected to my body, and it's not visible, it is private, for me." "You would want certain key words, like you could put your phone on 'flirt' mode and certain words or actions would trigger a 'hug' .... To have words that triggered emotions, feelings. You could assign certain key words to the function in the garment."*

Even though there is a limited range of actuator types, some subjects suggested that people might simply "re-programme" themselves and adapt. Similarly, a number of subjects thought the actuation strange at first, and stated that once they knew what to expect, such communication may become an accepted part of people's communications practices: *"I think that you develop your own language. You would re-programme yourselves to make associations with the different types of actuation ... you would end up knowing that that feeling would be someone sending you some love." "....people would think 'oh you are wearing a funny interactive broche', but actually you have just sent something to your friend and they got really excited",* as it wouldn't mean anything to people outside of their group.

With regard to issues of privacy, the majority of subjects said they would like to be in control in relation to the people they are exchanging messages: *"If you were on the phone you could see a physical reaction of what someone just said. I don't think that would be too intrusive ... that would be a good option on the phone ... but I would only want to communicate with certain people."*

Relating this type of communication to communication practices

Comments indicated that it could be used in a similar way to text, or used to augment text. Participants related the use of emoticons in text messaging with tactile communication in on-going conversations, as *"in a text message you can't really read into emotions" "... the fibre optics in conjunction with words or texts would definitely work for me, because it is such an intimate thing; I can imagine doing that. ...but it would have to be used in a similar way to text, where you always know you might be wrong, you might misunderstand this person... words can be used in so many different ways." "... if my partner says "I look forward to seeing you", I send him a 'face', I don't say "yes, I'll meet you at blah, blah", I send him a 'face'. "It would be nice if, at the end of a text, you would get a hug."* One participant suggested that touch communication might work for her as *"I am a very tactile person"*, text is cold and impersonal: *"When you are speaking you have tone of voice, whereas in a text you can't really read into emotions."*

The majority of participants thought that it would be something they would use remotely, over distance, and not with people who are in the vicinity: *"If it was discretely telling you that you had a phone call, like as if there was something pulling on you ... a subtle signal as opposed to your phone vibrating." "Say you both are going into a similar situation, for example, shopping, and you are both wearing the jacket – and you get separated for 6 hours or so, you could communicate to each other and send each other messages about how you are feeling."* You can express yourself, you can touch the people you're with: *"What is attractive about this, is that you are doing your normal day stuff and suddenly you get something which*

is of a different nature than what you would expect, because it has been sent by somebody who is somewhere else."

The idea of using it in a disco-club context arose, in which case subjects thought that this would be a novelty, or lessen its meaning, for example, using it as a means to flirt or tease other people: *"More of a novelty in that context – discos would be fun. I wouldn't send a text in a party – but if you knew someone was at a party it would be fun to tease them."*

Participants thought that simply being able to sense someone's presence would have significant value: *"Just the fact that you are linked, you are communicating through several senses. When you are facing someone you have visual, tactile, spoken word, etc. And when you are remote you can't see that person all you have is text, spoken word, but if you can see things are happening to this person at the other end, you feel closer to that person.". "If you did it in a certain situation, when you know they would need support." "I think distance would be a good context in which to use it. It would be an emotional thing ..." "Family, friends – they do like to know that you are all right ... easy way to say 'hi, love you'."*

The difference between doing something intentional (touch) and unintentional or uncontrollable (GSR), that this clothing concept encompasses, was discussed, and in relation to that the issue of context awareness and a system that had the ability to learn about someone's patterns of behaviour: *"It would be good if you could move it around, depending upon what you're doing." "... when you are watching films."*

One or two participants said they might use it when the person with whom they are communicating is in the same space, or nearby, a kind of *"wink, wink, nudge, nudge"* communication: *"If you see your partner on the other side of the room, you can communicate what you are feeling ..."*

One participant suggested that they wouldn't use it in conjunction with text or voice communication: *"I would use it more after I hang up to show that I was still thinking about them. I am acknowledging about what we just talked about."*

Conversely, most thought they would use this communication as a means to console or support someone in a way they would when face-to-face, and/or in conjunction with voice communication: *"That* (touching) *is something you do automatically when someone is upset. So it would be nice to be able to do that to someone when you can't be with him or her" "If someone were distressed you would send him or her a hug in a certain situation when you know they would need your support." "When you feel very low or happy – important to receive that signal, that you know you are not alone."*

The study pairs were fairly evenly split on the issue of the people with whom they would communicate in this way. All participants stated that they would want to be in control over whom they had this kind of communication with. Approximately fifty percent of the pairs said they would only communicate in this way with partners or close friends, and not close family, i.e., parents or children. This group suggested that it would be with people with whom they have an intimate relationship such as a close friend; and maybe for people who don't have an established level of intimacy with their partner, but are aspiring to it: *"Someone that I had an intimate relationship with, and it was quite new, that might work, or a very good girlfriend, or male friend; someone who you are close to, but not as intimate as with your partner." "It would feel wrong if it was with someone in my immediate family." "My kids*

would use this for sure, more so the girls than the boys. They are very touchy amongst their girlfriends.”

Whilst the other half stated the exact opposite: *“The problem is that I am separated from my family; it would be great to feel that someone is close to me.”*

A number of participants thought that this type of communication was a natural progression for the mobile phone. However, participants generally said they wouldn't want this type of communication all of the time, suggesting that it would be strange at first, but they could imagine that that perception might change. They equated this view with the mobile phone phenomenon, and the resulting impact on social norms, suggesting that if this concept becomes an established part of people's communication practices, then their frequency of use might change. It was largely thought that this concept would be a novelty unless it was widely accepted: *“(The mobile phone is not a gadget to me) … anymore; it was at the start, and that's because it would be if only a few people had them; but obviously, everyone has got them now; it's become a necessity.” “The more widespread it is, the better, as you wouldn't want to share this with just one person.” “It was strange at first; don't know what you are going to feel … once you got use to it, it is ok. I didn't know what I was going to be feeling, the not knowing …” “You would sort of re-programme yourself to make associations with the different types of actuation. If those things became part of clothes and mobile technology you would end up knowing that that feeling would be someone sending you some love.”*

Participants were asked if they would feel conspicuous gesturing to send messages in public spaces, which was discussed in relation to current cultures of self-touching, and nonverbal communication: *“Depends, I mean everyone is talking into headsets now, before I thought it looked odd. The more widespread it is, and then it becomes normal. Perhaps we will see everyone doing this in the supermarket.”*

Other tactile actuation types engendering touch or presence

One study pair talked about the 'goose bump' effect, saying that touch should arouse the user in some way, whilst another talked about tickling sensations, suggesting that sensitive parts of the body could be targeted: *“Goose bumps, that's what I'm always after; you know when your mum brushes your hair, or when you're trying on different clothes, a piece of music …. it's kind of intimate, but it's kind of nice … it's like a tickling feeling.” “Stroking would be the nicest, if it generated a tickling sensation … then it's a real touch; fabrics that are moving on top of each other, that is what tickles.”*

One or two participants said they would like to receive visual messages that communicated someone's mood: *“If you could tell through what you were wearing how your friends were feeling. Like it would come up they were feeling anxious so you could send them a hug.” “I think a mood thing … a colour spectrum maybe … of whether someone is anxious or happy.”* Whilst one participant went even further: *“I was thinking about smell, which is pretty important …”*

This would probably be limited to a small number of aromas. Participants suggested that it would be valuable to build-up a repertoire of possible complements that might be used in particular situations, which was related to text messaging, where there are *“endless combinations”* of words available to us that make it *“a universal thing”*: *“… we have such high expectations of technology now; I think we are so spoiled with so much technology that I*

think the key to success with this project is its multiplicity. It would have to have a wealth of combinations, almost like words; of course, that is unachievable, but as many different levels or levels of intensity, or combinations, that you could possibly imagine." "*Would be interesting if you combined the stroke with the heat, like a real hand, touching ... that would be my preference versus something that is changing colour, light – something visual."*

The participants were asked whether they favoured literal representations, where actuators could yield a pressing or contracting sensation, or more metaphoric ones. They were also asked what came to mind when they thought of touch: *"The feeling you get from someone you love, you get instantly – literal would be better. Abstract is very personal, more difficult ..."* *"The pressure with the 'hug'. Handholding – pressure and presence. Squeezing, reassuring feeling. A hand on your shoulder, a sort of 'stop', calm down, you're 'ok' feeling."* *"Pressure is an important thing ... even if there was a band that would contract."*

Participants were also asked if they would favour an abstract or arbitrary actuation, such as a flower that would open its petals upon receipt of a message. None of the participants favoured this.

Discussion

This study elicited user feedback with respect to smart textiles and clothing: To determine whether established sensory associations people have with the tactile qualities of textiles could be used as signs and metaphors for technology mediated experiences, moods, social interactions and gestures, related to interpersonal touch. We generated insights and inspiration for new design ideas around touch communication, and representation, simulation of touch gestures. In an iterative design exercise, we integrated design recommendations from a first study into the prototype used in the current study. We included a number of new textile sensors in the second iteration, namely galvanic skin response (GSR), touch, and gesture sensors. The touch and gesture sensors would enable users to exchange messages through self-touching. GSR can detect levels of arousal, which yielded interesting results as a kind of *subliminal* messaging, in comparison to the apparent *control* of touch and gesture sensors. The GSR sensor linked to a light-emitting textile actuator was undoubtedly favoured by most of the study pairs, as they liked the idea of feelings being communicated. The GSR was not viewed as trying to replace something we have when face-to-face, such as touch; it provides information we might never gain *even when* fact-to-face. The GSR represented an interesting difference to the touch and gesture sensors to participants, in that it is automatic and uncontrollable. Even though people can engage in self-touching, which is also unconscious (and can be viewed as mimed acts of being touched by someone else, and possibly indicating a desire or need to be touched), perhaps participants were not aware that the other sensors could be just as subliminal.

In response to the issue of a physical pressing or vibration sensation being *"more like something real"* from the first study, we included a shape-shifting textile actuator that moved up and down the arm, to represent a stroking action. We, again, based the design of these actuators on textile sensory descriptors, namely a silky-soft textile. It was interesting to see how participants compared the warming actuation with this shape-change/shifting actuation. It was largely felt the stroke actuator was too subtle, *"like an insect, barely touching",* and the frequency of movement was too sudden to reflect an empathetic touch. Only one participant said that this actuator was like a real brushing sensation. Participants were equally divided on

the issue of the heat actuator, with one half saying that they liked it and that it engendered a feeling of touch, and the other half saying that it was weird, strange and unusual.

In response to the suggestion that colour or a visual display might be a *"bridging"* step between voice and text communication and communication of physical sensations, we included photonic textiles as a symbol or metaphor for a participant's arousal, sensed by the GSR described above. This is a very different actuation compared with the touch actuations, one being intimate and invisible, and the other being visual and public. It is difficult to decouple the apparent meaning of the GSR sensor from the light-emitting textile, so it cannot be said whether or not participants liked the aesthetic of this or not. Only one study pair articulated that they would like clothing that glowed or flashed. The issue of textiles in clothing emitting light or colour for all to see did not trouble participants; only one participant stated that she would not like to show her emotions on her clothing, but there was a shared understanding amongst everyone that such concern can be offset through personalisation.

During discussions with most study pairs, comparisons were made between text messaging and this type of touch communication. It was largely thought that this product should *"embody a wealth of combinations, almost like words"*; to engender multiplicity and universality to allow for personalisation. Touch communication is *"a more primitive way of communicating"*, whereas words are more *"sophisticated"*. Hand-written letters can embody rich qualities, in terms of smell, and the handwriting, which might alter as the letter progresses. In terms of this clothing concept, if technology permitted, it would be interesting to introduce actuation that could change in frequency to convey a sense of intensity in a tactile message. There is an important issue of keeping *"spontaneity alive"*, as one participant commented, *"otherwise it becomes another emoticon"*. Therefore, using this type communication in certain contexts would be key, otherwise the 'hug' would become just a textile warming-up, as users become *"de-sensitised"*. Participants suggested that they would like to move the actuation around the garment, depending upon what they are doing, or upon their knowledge of the recipient, e.g., targeting sensitive parts of the body. One participant suggested that tactile communication could augment text messaging, where key words trigger certain types of actuation, thereby building up a repertoire of possible complements over time and through on-going conversations; this way meanings of such complements would be personally encoded. Conversely, about a third of the study pairs suggested that if sensations received were not what the user expected, you would *"re-programme yourself to make associations with the different types of actuation"*, thereby fostering a common understanding of their meanings.

To summarise, participants generally liked the idea of being able to communicate feelings, particularly through GSR. Many of them suggested that this type of communication seemed like a natural progression. The heatable textiles were understood and seemed to correlate with about half of the participants' perceptions of touch. As in the first study, the tactile sensation of pressure corresponded with people's associations of touch. But we have gained some insights into the potential use of the sensory qualities of textiles in representing intimate communication. What we can conclude is that communication is personal, but just like writing, there is a need for a universal language of sensations that people can configure to make multiple meanings. It can't be underestimated that we are at the beginning of exploration in designing for smart clothing. As textile technology progresses, more options become available with which to fashion new types of sensations and aesthetics. But right now the actuator technology is still in its infancy, which means we, as designers, have to be creative in order to engineer sensations.

Design recommendation for the third iteration

When asked about their associations of touch, participants responded with terms such as pressure, pressure with presence, squeezing for a reassuring feeling, a tickling feeling. One participant suggested that touch should arouse in some way, to generate goose bumps. For the third and final iteration of this research project in order to generate some of these sensations we will design and engineer a shape-shifting actuator in the upper back of the garment to represent a hugging action. The shape-shifting actuator will contract against the skin, which will also pull in the jacket around the upper back of the wearer.

Conclusion and future work

In this article we have reviewed some of the related research around affective communication and wearable technology. There are many different approaches within this space, which perhaps suggests that it is an emerging area of interest. We have employed three different tests in this exploratory study, the findings from which should be taken as a start to try to gain insights and understandings around this kind of communication using consumer fashion wearable technology, as part of an on-going iterative and participatory design process in the *Communication-Wear* programme, of which this article represents the second part. We adopted an experimental design approach in that we're using prototypes as research *probes,* and using the language of our material culture, namely fashion and textiles, as the focus for this research. We were conscious that if this concept is to support their daily lives, then it must look like it would. We have generated data that suggests how people might use this kind of touch communication to support or complement their current communication practices. We have also started to explore people's sensory associations of touch, and to relate those to textile attributes in order to gain inspiration for new designs for the actuation of touch communication. We used a relatively small test sample, because we wanted to carry out an in-depth exploration, rather than general perceptions from a larger body. We have proposed three new design concepts for the next iteration that includes broadening the range of sensory capability to include different representations of touch. The analysed findings from this study have been used to design and produce a third iteration, which is now being tested in a field-based study, during which we will explore the social aspects of this communication.

It is very difficult to forecast what will be the take-up of new products, or how people will respond to them and integrate them into their lives. We think that such foresight is especially difficult to obtain when it comes to putting technology on the body. We, therefore, believe that gaining new understandings about people's behaviour and what they are capable of doing is very valuable for generating new design concepts for consumer fashion wearable technology.

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Assisting Collective Practices in a Healthcare Network, or Designing a Catalyst for a Community Of Action

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Abstract

This paper deals with guidelines for designing a computer-based system to support a healthcare network. A specific healthcare network, the RPM ("Réseau Pôle Mémoire" in French), is presented and its activities described. Based on the results of a one-year study, we suggest that the socio-congitive relations between the members of this community play a useful role in addition to the information-sharing aspects. Some questions are discussed about how a system will be of use to this healthcare network, which is still in the process of being set up. To analyse this community, concepts such as coordination mechanisms boundary or intermediary objects and communities of action are used. Lastly, some guidelines are suggested and illustrated.

Introduction

For the last two years, we have been working with the RPM ("Réseau Pôle Mémoire" in French) healthcare network, which was set up to provide people suffering from memory deficits with complete medico-psycho-social care. The RPM network is a "Community of Action" (CoA), a term coined to name groups who "*actively and thus to some extent rationally pursue explicit goals while relying on a tightly woven fabric of relationships to promote mutual sympathy and the mimetic learning that is assumed to characterize primary groups and communities of practice.*" (Zacklad 2003). In fact, this community is still in the process of being set up.

The RPM network originated from some findings made by health professionals: first they complained about the very slow diagnosis of memory disorders such as Alzheimer's disease, in particular. Since some treatments can efficiently prevent the fast evolution of this condition if they are administrated early enough, professionals must be able to detect the first signs of the disease as quickly as possible. Secondly, many people are now required to care for patients with memory disorders in the later stages of the disease, who used to be entirely dependent on their families and their friends. Nowadays, paramedical and social workers are being brought in, but these professionals are used to working alone and are not accustomed to linking up with professionals specialising in other fields. A group of neurologists and general practitioners therefore decided to set up a healthcare network to reduce the time required to make a proper diagnosis and to form a team focusing on patients with memory disorders. They first drew up a standard protocol for diagnosing patients properly and quickly and thought about ways of working together.

In the present study, it is proposed to examine the role of a computer-based system in a community of this kind: how it might help the community to function, and whether it could serve as a catalyst. We will then look at what the specifications might be for designing a system of this kind.

In this article, we start by describing the members of the RPM network and their activities which we observed during one-year. We then use the Articulation Work Theory (Schmidt & Simone, 1996) to distinguish different phases of work in the RPM, and to define for which phase a computer-based system could be more important. We make then the hypothesis that this computer-based system could be a catalyst for the RPM community. We look at related work in Communities and Technologies and suggest guidelines for designing a computer-based system mediating the cooperation between the members of the healthcare network. These guidelines are illustrated by a scenario providing an example of how the tool with which we are providing the RPM network is intended to work. Finally, the role of this system in the network is discussed.

1.   RPM: the healthcare network

1.1.   Composition of the RPM network and the method used to observe its activities

The RPM network is a non-for-profit association composed of 190 members consisting mainly of private health professionals, hospital workers and other actors in the medical and social fields. The aim of this association is to promote and carry out all appropriate activities such as prevention, care, services, training and research to improve the situation of elderly people with cognitive disorders inhabiting Troyes and the surrounding area. The specialties of the 190 health professionals belonging to this network break down as follows: 4 Neurologists, 3 Psychiatrists, 12 Gerontologists, 98 General practitioners, 20 Speech therapists, 13 Psychologists, 2 Nurses, 1 Auxiliary, 10 Institutional representatives, 4 Users' representatives, 23 Others (representatives of social centers, a mutual insurance company, and a local information and coordination center). One of the main players in the network is the coordinator, who is responsible for supervising the patients' follow-up. The present coordinator is a neuropsychologist who acts in a professional capacity as well as playing the role of coordinator.

The present study was carried out for one year, using a participant observation method (Kawulich 2005). In addition to observing the participants, we actually contributed considerably to setting up the network by being present at the actors' side when they needed assistance, especially at computer level. We also participated actively in the IT commission by proposing a method enabling the participants to specify their needs exactly. Although we joined the network simply as observers, we were therefore also involved in designing the Information System required to assist the members' cooperative work. However, this was rather a difficult position, because we are not the usual actors: only health professionals or social professionals normally take part in the activities of the network.

1.2.   Activities of the RPM network

The aims of the network, as well as the way it works, are defined by its members at meetings of various kinds:
- The practical commission, which includes fourteen people, meets once a month. This commission is currently attempting to define good practices so that professionals can refer to the documents giving these standards and act accordingly. These practices are liable to evolve with time and experience.
- The assessment commission, which consists of four people responsible for defining

quantitative and qualitative assessment criteria as well as procedures for collecting the information needed for making assessments. This commission has not yet met.

- The IT commission, which consists of six people, meets once a month. This commission is responsible for drafting the functional specifications of the Information System. The requirements are determined based on the diagnostic stage (i.e., stage one) in the patient route.

As far as collective care is concerned, staff meetings attended by fifteen people or so on average are held regularly. These meetings give participants an opportunity of discussing any difficult cases which arise. Depending on their specialties, the other participants will ask questions and suggest solutions or give advice about the most appropriate overall care strategies. The composition of the staff can change at each meeting.
Members of the commissions attend staff meetings in just the same way as other members. Whatever the agenda of these meetings may consist of, the aims of the network, its role and its limitations are also often discussed.

Members of the RPM network also meet at vocational training sessions. The content of these training sessions is decided at meetings of the practical commission. For example, twenty-seven participants are now taking part in a scheme for training speech therapists and psychologists to use neuropsychological assessment methods. Three training sessions for general practitioners have also taken place, each of which was attended by ten general practitioners on average. During these training sessions, participants learn how to perform three simple test making it possible to rule out some diagnoses, depending on the signs observed, and to confirm some suspicions or intuitions. A general practitioner trained in this way will be able to decide whether his patient should undergo further investigations.

1.3. Collective activities analysis

In order to understand exactly how the RPM functions, we attended all the meetings (those of the practical commission and the IT commission and staff meetings) held during a period of one year, and watched and filmed what occurred during these meetings. Ten meetings lasting approximately one and a half hours each were filmed and are now being retranscribed. In addition, retranscriptions of ten meetings which took place during previous years before the RPM association was officially set up were included in the corpus.

This corpus was processed using the NVivo[2] software tool, which makes it possible to manage a set of independent documents in the context of the same project. It gives overall results on the whole project, aggregating the analyses carried out on all or some of the documents involved in the project. In order to understand the nature of the oral exchanges between the members of the network, we coded the corpus using the theoretical framework adopted for this study, namely the modes of regulation defined in Symbolic Communicational Transactions Theory (Zacklad 2005). This theoretical framework includes four modes of regulating transactions between actors inside Communities of Action:

- the socio-relational mode of regulation deals with understanding others and their needs;
- the politico-organizational mode concerns the way people share out work;
- the epistemic mode of regulation relates to defining and planning collective patient healthcare management in the case of healthcare network settings,
- the instrumental mode of regulation has to do with the pooling of patients' data.

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[2] NVivo (2002). QSR's software. http://www.qsrinternational.com, July © 2002 QSR International

To be able to understand and analyse the cooperative activities carried out by the RPM network, it was proposed to identify the various modes of regulation involved, to note which modes occurred most frequently, and to note any switching which occurred between these modes. A complete description of the method used for this purpose and the results obtained is to be found in (Bénard et al 2006). Here we present the initial results obtained, focusing on the modes of regulation identified.

Thirteen staff meetings and meetings of the practical commission have been retranscribed so far, forming a written corpus which was analysed as follows (it is worth noting that these various modes of regulation could be observed at the same meeting):

- 37 % of the speech turns corresponded to the instrumental mode of regulation, i.e., they were devoted to working out patients' global coverage.
- 31 % of the speech turns corresponded to the politico-organizational mode of regulation, i.e., defining organizational practices.
- 18 % of the speech turns corresponded to the socio-relational mode of regulation (reaffirming the network objectives, creating a collective identity).
- 14 % of the speech turns corresponded to the epistemic mode of regulation (defining care within RPM).

These initial results support the idea that even **transactions** which are **not directly related to problem-solving play a relevant role** in the life of the RPM network, since 32% of the exchanges corresponded to the socio-relational and the epistemic modes. They should therefore not be neglected when designing a tool promoting cooperation within the RPM network. It means that improvisation and informal discussions are necessary and that they contribute to the efficient functioning of the RPM network, as well as to the achievement of cooperative goals. In addition, network members have to be able to switch quickly and easily from one mode of regulation to another. These healthcare professionals have to be increasingly flexible, in fact because of the fast development of the community which is being set up and the changes it is undergoing.

2.   Understanding the articulation work in the RPM

As explained in the Introduction, one of the reasons for setting up this network was the need to shorten the time required to make a diagnosis. There are several reasons why the diagnostic process often tends to be too lengthy: first of all, since general practitioners are not properly trained to deal with conditions of this kind, they only begin to suspect their presence when the signs are highly visible and the disease has reached a fairly advanced stage. The second reason is that the specialists who are qualified to make an exact diagnosis have long waiting lists. However, many of the people filling up the waiting lists do not really need to be there and could be filtered out by their general practitioners if the latter were more knowledgeable about these diseases.

In view of this situation, the founders of the network decided to design a patient route consisting of the following five steps:

1.   The detection step serving as an initial filter by sorting out patients who require a detailed assessment from those who do not.
2.   Patients who need a more detailed assessment can then choose which of the neuropsychologists in the network will carry out this test.
3.   Depending on the test results, the patient will then choose one of the other specialists, who can be a neurologist, a gerontologist or a psychiatrist.
4.   The specialist chosen then diagnoses the pathology exactly and prescribes an appropriate treatment. The patient's regular doctor, who will continue to follow the

patient, will be free to adapt this treatment as required. This is the end of the first stage of the diagnostic stage.

5. At the end of these steps, the patient is treated by a team of health professionals. For instance, if a psychopathological disorder has been diagnosed, the team will be composed of the patient's regular general practitioner, a social worker or a coordinator of a CLIC ("Centre Local d'Information et de Coordination" in French, which means the Local Information and Coordination Center), the RPM network coordinator, and possibly a psychiatrist or a psychologist. If a neurodegenerative disease has been diagnosed, the team will be composed of the patient's general practitioner, a specialist, a speech therapist, a psychologist, a social worker, a gerontological psychologist, the RPM coordinator, and possibly other network partners. If the diagnosis is an intermediate one, the team will consist of the patient's general practitioner, a specialist, a neuropsychologist, the RPM coordinator, and possibly a psychiatrist. In the case of an undefined condition, the patient's situation is discussed at a staff meeting.

The standard diagnostic stage adopted by the network has reduced the time elapsing between the patients' first contact with a member of the network and the start of their treatment by four months. In order to act fast during the first few steps in the protocol, neuropsychologists and specialists keep special slots open in their schedules. Patients referred by the network can therefore obtain appointments much more quickly than usual. Thanks to the five-step procedure described above, professionals in the network are consulted only by people with real needs.

If we Sum up, in the RPM network, the Patient Route is composed of two stages:
The **first** stage is the diagnostic stage which could also been termed a script (Suchman 1987). This first stage is assisted by tools such as telephones and personal diaries: each patient has to take an appointment with the professional he has chosen. The diagnosis therefore involves deciding which type of professional will intervene at each step in the first part of the protocol. This **first stage on the patient route involves applying a procedure, using several personal artefacts**. Since the procedure has been clearly defined, no common artefact is necessary. We could possibly draw up a workflow chart at this stage, but professionals have not expressed any need for technical aids of this kind for the moment.

The **second** stage centres on the collective care. Once a diagnosis has been made, a specific pool of professionals takes care of the patient; the types of professionals who will intervene are chosen by the patients themselves. This collective care is supported by discussions necessary so that collective decisions can be made. It seems to be necessary for these discussions to take place without the constraints of official pressure. These discussions therefore do not have to be recorded in the patients' files. At this stage, we have a weak coordinative protocol based on common social conventions. In this second stage, **there is no formal coordinative protocol** (Schmidt, Simone, 1996)**, and no artefact**. The only means to care the patients collectively are the meetings. Besides, professionals' discussions often focus on their common identity and what they should do as members of this particular healthcare network.

Our hypothesis is that, when there is no formal coordinative protocol, an **artefact is all the more badly needed**. I**n addition to making real collective care possible, it could crystallize the network**. It could serve to show professionals how to organize collective work focusing on each patient and actually help to shape the RPM network. It could allow improvisation when face-to-face communication is not possible. We therefore suggest that

cooperation cannot be summed up as the interdependency between individual tasks and their articulation, since "improvisation", i.e., part of the work which it is impossible to structure and to define in a coordinative protocol, also plays a role.

3. Designing a catalyst for RPM

3.1. RPM characteristics
1. RPM obtained financial resources three years ago. These resources were dedicated to the building of the medico-psycho-social structure supporting the members of the networks in their collective activities. But these members are not paid for their participation. Moreover, they participate in the network in addition to their own practice. These factors, added to the fact that they are geographically dispersed, lead to a situation where the members of the network cannot spend a lot of time to meet the others.
2. Defining collective care in a network implies several changes in usual medical practices:
   - First, general practitioners become the mainspring of the team which takes care of a patient (which we called the pool).
   - Professionals can share the information about patients (instead of having a different patient file for each professional).
   - Patients, and/or her/his close circle, take an active part in the care. Professionals involve them in the care in order to provide the best quality of care.
   - Professionals have to coordinate with each others (instead of having an individual activity as usual).
   - Each professional, whatever his role facing the patient (general practitioner or specialist, nurse, social worker, etc.) has to be free to express her/his point of view about the care of a patient. This is a major point in healthcare networks which is really difficult to achieve because of the importance of hierarchical barriers in the medical domain. The patient, have to be able to speak in an equal way facing other professionals.

3.1. Related work
Our initial findings follow actual researches at the junction of Communities and Information and Communication Technologies. Indeed, they focus more on assisting knowledge sharing, learning, and mediation of social relations, than on data sharing or business processes automating. For instance, about knowledge sharing, we can quote Ruuska and Vartiainen (2003) who discuss sharing knowledge among projects in a multi-projects environment. Our issues are close to theirs, since network members need to share knowledge collected thanks to their experiences with patients. Regarding learning, Josefsson (2003) studied how a tool mediating the interactions between health providers and patients has been diverted from its initial aim; patients became themselves producers of information and discussed via the tool without any intermediary. The Drehscheibe Project (Koch 2003) allows e-learning without focusing on knowledge management, and provides a generic communication and matchmaking medium. Concerning the mediation of social relations, Hooff et al (2003) suggest that connectivity, trust and identity play a relevant role in knowledge sharing. The issue of supporting interactions has also been discussed by Hardstone et al (2004). These authors mention that many informal discussions take place between health professionals, and that they constitute necessary steps towards caring for patients and organizing the caring process. Our results support this idea, and we will now suggest a way of mediating part of

these transactions via a computer-based system.

3.2. Functional Requirements

As said in the introduction, three activities will have to be facilitated by a system:
1. Coordination of actors during the diagnosis stage
2. Global care of diagnosed patients
3. Reflexive work aiming at defining good practices, training and assessment criteria.

As these activities are in the heart of practices of RPM, they have to be enhanced by the system, and so they have to be considered in the design.

Engaged professionals are, for the most, self – taught as for informatics. Moreover, they are volunteer professionals; it means that they participate to the actions of RPM, in addition to their own practice. By consequence, they have no time to devote for training to a new system. So, the system must be easy to use and must be the most intuitive to be used and useful. This is an additional constraint to the design of our system. Finally, a financial constraint is added since the network does not have any budget to pay for a system.

Coordination of actors during the diagnosis stage
This coordination follows a process which allows each of actors to know what others do and act accordingly. This process is an organisational tool for RPM. Moreover, for practical reasons, functionalities like shared calendar, book of RPM professionals' addresses and phone numbers, electronic mail service would favour coordination of actors.

Consequently, following to the different reasons we presented above, we choose to use Gmail[3]. This web tool is free and efficient. The electronic mail service is not secured but people who need a secured one have one yet. This mail service aims at help people to coordinate and do not aim at assisting negotiation about patient.

Global care of diagnosed patients
The collective care does not follow any process. Furthermore, the lack of availability of professionals and their geographical dispersion are brakes to the realisation of this collective activity. Also, a system could favour the accomplishment of this activity. Information sharing about the patient is necessary to the global care. As we demonstrated above, this information sharing is not sufficient to allow cooperation of professionals. Discussion and negotiation are necessary too and should have been allowed by the system.

Moreover, some researches in Computer Mediated Communication relying to the "equalization phenomenon" showed that the use of electronic medias lessens hierarchical barriers (Marcoccia, 2005). For instance, Dubrovsky et al (1991) compared face-to-face discussions with mediated ones within groups where hierarchical barriers could prevent people to express themselves during meetings. They found that groups who discussed through media tend to be more equal in the participation to the discussion. Indeed, people with a lower degree in the hierarchy tend to speak more and their opinions were more considered than in face-to-face situations.

Actually, the fact that anybody can speak equally whatever the role facing patients is one of

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[3] Gmail : ©2007 Google

the goals of RPM since this enhances the collective care. Indeed, hierarchical barriers are strong between health professionals. Often, nurses hesitate to speak with doctors. This feeling of inferiority is reinforced when their opinions are not taken into account. RPM has to minimize these fears and hesitations to function better. Researches concerning Computer Mediated Communication show that the use of media to communicate could help RPM. A computer-based system seems to be a good solution to assist discussions about patients in order to suppress one of the brakes to the cooperation of RPM.

A chat tool could be set up to mediate discussions between professionals who care a same patient, these discussions being linked to the patients' files, but not integrated int it. This intuitive and easy functionality do not need any training period and will be usable as the system will be installed. It still remains to be decided whether we will store these interactions for future reference or whether we will erase them after each discussion. Indeed, everything that is written down can pose problems for the following reasons:

- In France, patients will soon be allowed to have access to their files. Professionals must therefore be careful about what they write in their files and what turns of phrase they use, otherwise patients might find information that they cannot interpret properly or that they find hurtful.
- The second reason has to do with the legal protection of the professionals. They do not want patients to take them to court for making an error, as sometimes happens.It would probably be worth anonymizing this information and storing it so as to be able to make further use of these discussions.

Reflexive work
Concerning the reflexive work that we observed during the meetings of the practical commission, professionals need, to be more efficient, some functionalities like electronic library and collective writing. They could keep their thoughts going with some reference documents and write collectively some documents which will become references for RPM.
This reflexive work is assisted by Gmail, which allows documents' management.

Lastly, the future computer-based system designed for RPM will have to be flexible enough to allow professionals to redefine their protocols and to assist them in this activity. In addition, it will have to allow professionals to shift easily from one activity to another, as they do in their everyday practice (cf section 3).

3.3.   Technical requirements
As the members of the RPM network are not really familiar with a professional use of computer-based systems, we decided, when it was possible, to offer them an environment that they could have met before. In other words, we tried to reuse as much as possible standard web-based functions. Following the same idea, the secure access has to be based on the health professional card (provided by Social Security) that the professionals use already.

The shared patient file is the heart of the system, linked with different functionalities to answer the different needs of the professionals. To develop it, we used open sources technologies since RPM received, for the moment, no fundings for the informatics development. The patient's data are then stored in a MySQL database, on an Apache server and we used html, php and JavaScript programming languages. The shared patient file has to stipulate the different parts of the file to which the various professionals will access (for instance, social workers do not have access to the medical part of the file). It has also to mediate the cooperative work by providing information about what the other professional participants are doing on other lines: the neurologist will be able to find out what the social

worker has been doing, for example. They will also be able to share knowledge about the patient: health professionals will be able to explain how a disease is liable to affect a patient's behaviour, or psychologists will be able to inform their colleagues about a patient's emotional state. Social workers will be able to inform other professionals about the social assistance to which a patient is entitled.

Two additional modules will be available, the first one providing electronic mail, calendar and contacts management, and the second one allowing documents sharing and collective editing. These two modules, once opened, could be placed everywhere in the screen and be removed whenever, and their size could be shaped too. The system remains easy to use and malleable since the users can interrupt an activity (document editing, e-mail writing …) to make another one in parallel.

3.4. Use Cases and Illustration

Once any of the members of the RPM network is logged on, s/he can access the files of the patients he/she takes care, each patient appearing like a tab on the top of the screen. When s/he clicks on the name of a patient, a shared patient file, made of four parts, opens. Each part is dedicated to a different kind of information: administrative, medical, social and psychological. Each piece of information is alterable. Furthermore, each general practitioner can add a patient. Users have limited access to the various parts, depending on their profession. A private chat is linked to each patient's file, in order to allow only the professionals in the group allotted to that patient to discuss this case. All the usual functions such as smileys or searching the archives which normally go with chat are available and can be used here.

We are now going to describe a situation where professionals cooperate around a patient, illustrated in figure 1:

1. After a consultation with a patient we have called Mr A, the general practitioner opens the shared patient's file and initiates a discussion with the professionals who care for this patient. On the chat linked to the patients' files, the general practitioner explains the problem noted during the consultation with Mr A (for example, Mr A is becoming dependent and it being taken advantage of by door-to-door vendors). The social worker explains that this patient is difficult to manage because of the financial and familial problems involved. The general practitioner, the neurologist, the psychologist and the speech therapist discuss the patient's treatment, and whether it should be changed in view of the evolution of his symptoms during the last few months. Finally, they suggest putting a caregiver in charge of this patient. The social worker proposes to discuss this solution with the patient. It remains to be decided who the caregiver in charge could be.

2. After discussing the case with other professionals, the general practitioner consults the documents defining good practices, which explain how to make the RPM network initiate the procedure for placing a patient in somebody's charge. To do so, the user then opens the "documents" window and retrieves the appropriate text[4]. This document can be called up and read directly on the screen.

3. The general practitioner then sends an e-mail to the RPM network's coordination team, asking them to prepare a request to entrust Mr A to a caregiver and to make the RPM network the official appellant for this purpose. To do so, the general

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[4] ©2006 Google (Docs and Spreadsheets)

practitioner opens the e-mail window[5], and looks for the e-mail address required in the section headed "contacts", before sending the e-mail.

4. After a positive answer from the RPM network's coordination team, the general practitioner checks the work schedule and suggests presenting this case at the next staff meeting, in order to discuss this issue with other network members. The general practitioner sends an e-mail to the group of professionals allocated to this patient and to the RPM network's coordination team.

Figure 1. Environment offered to the members of the RPM network
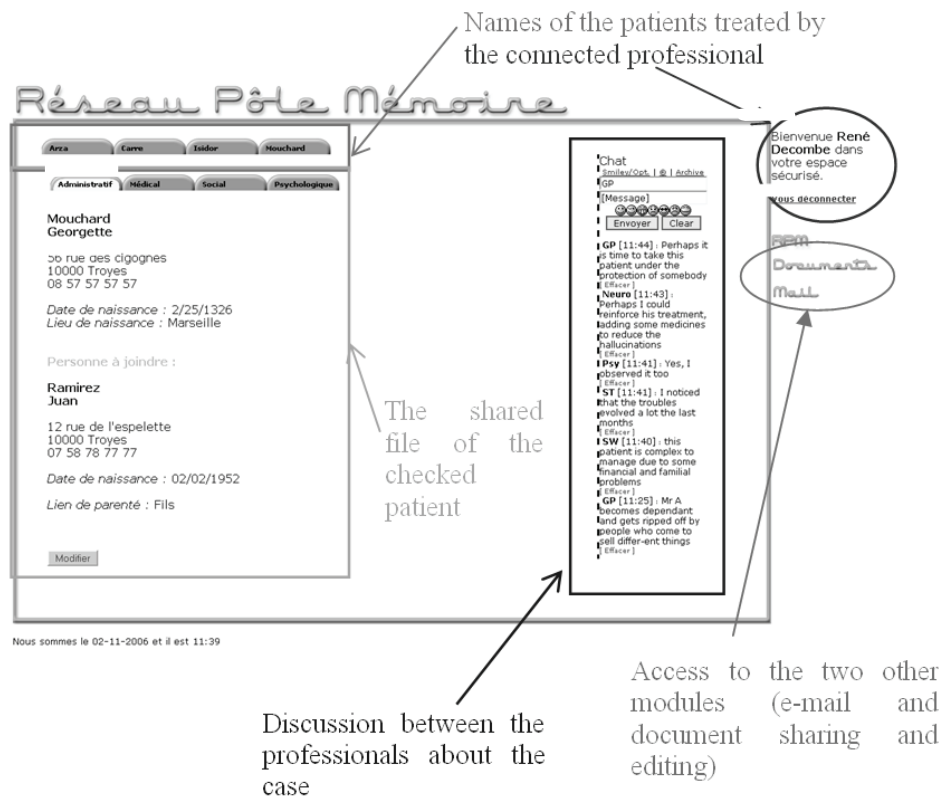
4. Discussion about the role of the tool

To analyse the role of the system in the RPM community, we suggest to look at the shared patient file as a boundary object (Star, 1989), making different medical and social professionals interact. At the same time, this file could provide a common reference frame for their discussions, and could serve the different interest of each professional; neurologists could see it as the means of providing statistical data (epidemiology), social workers appreciate the possibility it gives of anticipating patients' needs depending on the treatment they are undergoing, and psychologists are glad to be able to use this tool to propose a change of treatment.

The shared patient file could also be seen as an intermediary objects. When speaking about intermediary objects, Vinck (1999) has said that they "can be said to form a whole set of

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5 ©2006 Google (Gmail)

media, vehicles and instruments materializing the interactions between players"[6]. Discussions about patients focusing on their files could make the files evolve, and thus make the situation of the patients evolve. The shared patient file could then carry the story of the patient and the decisions of the professionals involved in caring for the patient. Speaking again of intermediary objects, Vinck (1999) has said: "It is shaped by the players as well as being fetishized, i.e., treated as something extending beyond the social context in which it has just been created"[7]. The good practices defined by the practical commission can therefore also be said to be intermediary objects.

In conclusion, the computer-based system seems to play a role in shaping the community, giving it a concrete form by enhancing its social structure. These analyses supplement our previous results on the relevance of providing functions to assist conversations linked to the shared patients' files.

5.   Conclusion

In this article, we question the role of an artefact in a community of action, and so doing what design guidelines it could imply. We make the hypothesis, that, when there is no protocol apart from social conventions, an artefact is all the more badly needed. In other words, we are interested in the artefact, not only for its capacity to assist a work process, but moreover for its ability, as a catalyst, to shape a community. In the RPM network, one of the aims is the collective care of patients. Shared patients' files are so necessary but not sufficient. Indeed, we observed numerous face-to-face situations where, at the same time, the members discussed about their patients and about the identity of the network, (re)defining its aim, the roles of each other, the protocols… As these face-to-face situations are not always possible, conversations have to be part-of a computer-based system for this community of action. Besides, the continual switches between all the possible actions of an actor (sharing patients' data, writing good practices, discussing, and coordinating the collective care …) make the malleability an important feature of this system. Finally, the architecture of the computer-based system is modular, reusing - when possible - existing standard web-based tools.

The next steps (already scheduled) will consist first in confronting the prototype presented in section 3 to a small group of users (1 general practitioner, 1 neurologist, 1 psychologist – the coordinator, 2 social workers, 1 neuro-psychiatrist). After the implementation of possible evolutions which will be requested by these users, we will offer the computer-based system to the whole network. We will then be able to observe how the members of the community of action use the system, if it has any influence on the collective care and on the articulation work done actually during the meetings.

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[6] Translated from the French "Ceux-ci sont apparus comme autant de supports, de vecteurs, de matérialisations ou de médiatisations des interactions entre acteurs. "

[7] Translated from the French "Il est façonné par les acteurs en même temps que "fétichisé", c'est à dire saisi comme dépassant le social qui vient de le construire."

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Social Sciences Information User Behavior and
Searching Strategies in Multifarious Environment

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Abstract

This paper presents a multidimentional approach to the analyses of information users in the field of social sciences, with special attention to their needs and searching behavior for further incorporation in ICTs policy and user involvement. We report on a study concerned with understanding user's adaptation to new information searching environments formed by modern technology in general and on user behavior and search strategies in particular. The search strategies oriented on different categories of users are described. A number of observations of user searching behavior on the Web and various social science databases are offered for discussion.

1. Over the last decade the interaction between society and ICTs is becoming an active area of social science enquiry. The wide implementation of new information technologies has resulted in a growing number of users as well as in the changes of their information needs and behavior. There is a lot of factors affecting the efficient use of ICT connected with the changes in the social science methodology. Modern society has faced many complex problems caused by the rapid rate of technological progress. These problems concern the wider implementation of information technologies of gathering, extraction and analysis of information from the Internet and other sources as well as the improvement of quality of information supply. Digital resources have grown at an astonishing rate during last decade, but social science information users do not yet have the technology to make the fullest use of these resources because generally these resources are not connected to each other and users do not use effective search strategies.

Another factor concerns the pertinent analysis of decision-making process in different spheres. In terms of social science decision-making ICT has a non-negligible impact on changing the society in terms of behavioral and mental patterns. Consequently, new information technology also enhances the adjustment of individuals' adaptability to a higher dynamics of changes in the society. Now when the information load is increasing at a great speed one can feel more sharply the limitation of such a valuable resource as time. However there is a huge desire to find the most relevant resources and to choose an optimal variant for each user. It means that it is necessary to construct the optimal model of information behavior and the most effective search strategy for each situation providing an effective utilization of the information technologies capable to help end-users to solve conceptual or practical problems.

It happens that the sharp growth of new opportunities sometimes gives rise to a user's sensation of chaos, stress or at least confusion when faced with the ready accessibility of a huge variety of information resources. To draw an electronic portrait of social science information users as human actors it is important to define what type of electronic information they deal with and how they collect, store, use, disseminate information as well as generate

new knowledge. We report on a study concerned with understanding user's adaptation to new information searching environments formed by modern technology in general and on user behavior and search strategies in particular. The goals of our research are:

- To advance our understanding of retrieval and use of social science information for research, decision-making and teaching;
- To provide a case study focusing on search strategies relevant for different user groups;
- To support the further development of the social science information system by improving the user interface design (both in Russian and English) and by developing linguistic tools that make scocial science information more accessible;
- To evaluate the ICT impact on user behavior and search modes in multifarious environment of social science databases, to explore the strength.and weakness of current and emerging technologies as well as to look at the full range of tools that information professionals and customers.

Our fundamental premise is to show that the design of social science information system and its databases should be user-centered, iterative and adaptive.

We've done a lot of extensive interviews with science information users about information needs, search goals and strategies as well as their satisfaction with retrieval results. We've used a variety of methods including user queries analysis, search protocols evaluation, user feedback and user testing of different search modes and linguistic tools. This paper is based on the initial findings of our empirical study examining the user behavior and search strategies in various social science databases. It is a part of the long-term research project the INION Center for Informatisation has been conducted for several years. Data gathered via the questionnaires was analyzed using SPSS (Statistical Package for the Social Sciences) and WinIRBIS Statistical Software.

We have studied how users with various degrees of familiarity with information systems, databases and varying models of the retrieval behavior interacted in multifarious environment of one of the largest information system in Russia (www.inion.ru). What is the system's multifarious environment? Each social science database is intended to be searched by a set of potential users or customers. Information on specific topics or multidimensional information on global problems can be available searching all or several databases combined in united one. And there is another way: to download information from different sources and to create a problem-oriented database.

2. The main purpose of our system is to provide users with information on different problems of social sciences and first of all on national and global problems such as terrorism, energy supply, international migration, drug and slave trades and some others which cannot be solved immediately. These problems are complex, intractable and interrelated and often put stress on the decision-making processes and institutional capacities beyond their limits. Social science problems are very complicated, often poorly described and sometimes recognized only after a long period of time or crucial changes occur. The decision-makers, as a rule, rely on experts and information professionals as well as researches, analysts, strategists in order to create a global consensus on how in the best way to respond to these problems. Thus, although anyone can be a user of social science information there are some primary groups (or categories):

- social science scientists and researchers;
- high school teachers, lecturers and professors;
- postgraduates and young specialists, essentially novices with lack of subject-matter expertise;

- professional persons with considerable subject matter knowledge, skilled at interpreting the information in their fields of interests (such as lawyers, bankers, accountants, businessmen, market consultants);
- senior managers, decision makers, leaders;
- journalists, news makers, reporters;
- information specialists as well as information brokers providing information service and assisting others in searching for data and information; they do not create information, but find it and deliver it to other customers.

The analysis of users characteristics might be of some interest: 1) the educational level – 12 % had a Bachelor's degree, 35 % had a Masters, 47 % had or expected to receive a Ph.D., and 6 % - academicians; 2) age distribution –26 % were between 19 and 23 years, while 52 % between 24 and 33, only 8 % between 34 and 50, 12 % between 51 and 60, and 2 % were over 60 years old; 3) gender distribution – 63 % female, 37 % male.

According to the branches of activity the social science information users can be characterized as following: politology, state and law - 29,1%, economics and demography - 24,6%, philosophy and sociology - 17,5 %, history, ethnology, anthropology - 5,6%, linguistics - 5,3%, literary criticism - 4,8%, science of sciences - 3,2% and others, including polythematic queries – up to 10%.

The experienced searchers known as information intermediaries for years skillfully processed queries of large amount of social science information customers as academicians, top managers, politicians to retrieve information both manual and on-line. The advantages of information retrieval in the social sciences databases seem quite obvious to the majority of scholars: access to retrospective information has become faster, more flexible and comprehensive. It is necessary to note that social science researchers have traditionally searched for the information themselves: the information retrieval is the major component of their scientific activity. The new information technologies have substantially changed their information behavior and requirements.

We know discouragingly little what those skills are and how they are developing in new technology environment and it is difficult to define exactly what an experienced searcher should know about information searching that a beginner does not. The analysis of social science information users has revealed several groups with different level of searching skills.There is a considerable body of research on user behavior and searching strategies regarding information retrieval systems although researches on retrieval from the World Wide Web and social science databases in particularly are not as advanced, although surveys of Web usage give some sense of what the average Web searcher is doing.

Our research was focused on such main subjects as the user's work task, their information needs and requirements as well as their searching goals, tactics and strategies which could be named and discussed in such categories as query formulation, database definition, keywords and 'catch' terms selection.

3. The search strategy is one of the most important elements in information retrieval. To satisfy information needs of social scientists and to meet objectives of on-line retrieval, heuristic in nature, it is necessary to choose from the existing alternatives.

Social science information users have several sources of ideas and data to draw on. These information sources include their graduate studies, journal reading and note-taking, discussions with colleagues, listening to presentations at conferences, relevant databases (national and international) and their current research interests. These sources, however, are disparate in time and space and need to be consolidated into a single list of possible topics for exploration. After information searching the resulting stimulus list can be reviewed and up-

dated regularly with certain ideas being deleted and others being added or developed. This list can help to keep the user aware of potentially fruitful areas of query construction and of topics on which future articles or researches may be based.

At every stage of interaction with the information system the user is in this or that state of uncertainty that could be resolved by decision-making which implies a choice from a variety of options and depends greatly on the potential search strategies. There are three main patterns of information retrieval behavior each of which demand different search strategies: 1) on-line searching by end-users themselves; 2) retrieval by an information specialist in the absence of the requester; 3) search by the remote users in cooperation with an information specialist (so called a virtual team). In our opinion the last one could be the most effective with regard to the results, timesaving, costs and benefits. The information specialist's knowledge of search possibilities guarantees high recall, and by the user's verifying results, the search strategy can be immediately corrected to obtain the best results.The major focus should be made on the precision and flexibility of human thinking in query formulation and on the turn from the information technology to the languages that are running it.

Social science information retrieval quite often demands alternative decisions to expand or to narrow search limits, to transfer the query to another database depending on the results received. A lot of search tactics might be employed to build a bridge between the user's query and the information system. At present there are no fully reliable criteria for choosing the best strategies and tactics for each retrieval situation. However our experience of searching social sciences databases shows that the process of information retrieval is full of typical situations. It might be useful first of all to see if the searching, one plans to do, has already been undertaken by someone else. Many of the articles, books or reports covered in online databases are themselves extensive bibliographies or state-of-the art reviews. In order to elucidate the role of the strategy in human information searching it is necessary to define main types of retrieval models that could be used for the scientific purposes of describing, ultimately predicting and explaining the user behavior. Nevertheless, queries which have the same formulation or appear to be the same on the surface are often performed differently in terms of actual retrieval with the help of various information resources and search engines. To some extent the diversity of information included to this or that database allows users to reveal new areas of investigation and unfamiliar approaches. To some other users the greater efficiency of information selection and full literature review allows more time to be dedicated to the research itself. And this is very attractive to the users. Social science users undertaking a search in relevant information systems believe that they can interact with the information resources thus permitting on-the-spot decisions regarding the choice of adequate terminology and play around tentative ideas while also searching for a resolution to a problem.

The content analysis of 4,052 queries from more than 3,500 users processed during last three years allowed to define the routine searching strategies employed by social science users. At least three models of search strategy can be distinguished such as logical searching based on formal criteria of optimality, teaching models that make it easy for users to learn to search and facilitating ones that help users to search information more efficiently or effectively. As an example the social science logical searching models include: a) the menu-oriented strategy designed for novice users which is based on query formation by example; b) the logical construction of retrieval scheme for trained searchers using direct input of 'catch' words (descriptors and keywords) and search field names; c) the so called step-by-step query creation mode providing the most flexible information strategies for advanced users. The heuristic searching mode could be used as the perfect tool for users who fail to find sufficient relevant information. As far as teaching and facilitating models are concerned they are expected be developed in the nearest future. In order to design searching route through the information resources to reach the needed information a user can break complex search

queries down into sub-problems and work on one problem at a time. This is a well-established and productive technique in general problem solving which allows to grid information flows. As each sub-problem is solved, the parts can then be knit into a solution to the whole, larger problem. As rule such binary searching is a more efficient approach than serial or random searching and helps to spot 'hot topics' before they become mainstream. Yet a rigid adherence to this principle would probably be wasteful, since human beings have additional contextual knowledge about different information resources.

4. Term specificity in social sciences is one of the crucial problems that should be solved to make information retrieval optimal. Thus, it is a good idea to try to locate terms to search with that are on several levels of specify relative to the topic of interest. One can expand or alter a search formulation by using different strategies and moving upwards or downwards the hierarchy or to move sideways hierarchically to coordinate terms. The searcher can perform these strategies by looking through a thesaurus or other linguistic tools. Every searcher is familiar with the case where a widely used term mysteriously produces no records, or only a very small number – far fewer than could be reasonably expected for that term in a particular database. In order to search effectively it is important to be aware of the difference between a term and a concept, since the two are treated differently in search formulations. A concept especially in social sciences could be expressed by several synonymous or nearly relative terms, each of which, in turn, may contain several words Combining search terms with Boolean logic is at the heart of online searching. Searches which require exact matches, like Boolean searches, may not retrieve any records. In this case the system should inform and help the user. Several search strategies can be used to manipulate the search formulation until it produces the sort of postings set desired. It is possible to exhaust the search formulation or include most (or all) of the concept of a search topic in the initial search formulation, or to add one or more of the query concepts to an already used search formulation, to block or to reject items indexed by certain terms. It is possible to make the search formulation more precise by reducing the number of parallel terms. The fewer variant terms one lists for each concept, the fewer documents there will likely be that match the request.

One of the main tasks at the early stages of on-line search is to identify 'good' terms to search with. We have managed to develop a number of social science thesauri that can be viewed as matching or translating tools. They are used online or built in the search engines. Vocabulary problems are central to the economics of digital resources processing because an unfamiliar vocabulary reduces search effectiveness. The little bit of effort spent reviewing possible search terms in the linguistic reference databases can eliminate search time. These databases can be used for word-by-word searching of descriptors, keywords and subject category codes. Several strategies can be used to generate additional terms to enrich search formulation, for example, by looking at neighboring terms in alphabetically arranged lists of different terms. It is important to remember that a given topic a) may be discussed in documents wholly devoted to that topic; or b) may appear as a subtopic in a document devoted to a broader topic; or c) may have just part of its content dealt with a document on a narrow topic. Documents of all of three types may be of interest to the requester, but documents of only the first type will be retrieved if the only search terms used are those are exactly descriptive of the topic, and not broader or narrower. Thus, it is a good idea to try to locate terms to search with that are on several levels of specify relative to the topic of interest.

It is possible to expand or alter a search formulation by using different strategies and moving upwards or downwards the hierarchy or to move sideways hierarchically to coordinate terms. The searcher can perform these strategies by looking through a built-in thesaurus or other linguistic tools (if any). Every searcher is familiar with the case where a widely used term

mysteriously produces no postings, or only a very small number – far fewer than could be reasonably expected for that term in that database. Usually this occurs because the database uses the spacing or spelling variant other than the one that occurred to the searcher to use.

Another strategy is to reduce the number of concepts of a search topic in the initial search formulation, or to subtract one or more of the query concepts from an already used search formulation. Next, any given conceptual element can be broadened by entering additional variant terms or through the use of truncation. It is important to stress that the social science databases are continually being expanded with user participation, notably through the addition of more specific terms that are aspects of those already included.

5. Observations of the average Web searcher point out that ineffective use may be caused by lack of understanding of how a search engine interprets a query. Thus it can be seen that there has been a shift towards the introduction of search features that appear to respond to the ways in which users actually search these systems, e.g. search assistance, query formulation, query modification and navigation. It can be assumed that most users do not use advanced search features, or enter complex queries, or want to interact with search systems. As a consequence, systems such as search engines are now trying to automate query formulation, shifting the burden of formulating precise or extensive terminology from the user to the system and to develop the multicultural complex of linguistic tools.

In general a comparison of the typical retrieval strategies of our searchers shows a strong similarity in routine user behavior. However, the ways in which they used, for example, relevance feedback and other new system features varied. These different patterns of information behavior suggest that it may be hard to predict, based upon descriptions of routine strategies alone, how searchers will behave in multifarious environment. Some factors appear to remain constant across searchers, no matter what their experience are, but others seem to change in what might be regular ways.

Finally, we have tried to specify characteristics of social science information users as eActors and predict just how they will adapt to the new information technology. We have tried to define some searching strategies which could be useful in understanding user behavior and improvement of the databases design as well as linguistic tools. And that is good, because it leaves lots more scope for further research.

During experimental researches various levels of user self-realization of information search have been found out: first, routine - the sanction of search problem is carried out by analogy to earlier mastered algorithms of activity. Users constantly address to the information intermediary for a detailed explanation of requirements of a research task, algorithm of search, aspire to reception of "fast results" with the least intellectual expenses. They do not aspire to mastering by various strategy of search. Second, adaptable – users spend search on the basis of one of available logical models. This level assumes the absence of steady user aspiration to personal-valuable self-determination and self-realization during searching. Third, reflective – users do not only try to define the essence of a research problem, aspire to simulate various situations and different ways of their sanction. Using a reflection, they critically analyze search results, using simple and complex strategies and trying to determine the barriers interfering search of the necessary information. And the last one – creative - allowing not only to use various strategies of information search, but also to generate the new knowledge on their basis, new approaches to the problem decision.

Traditionally the social science databases were intended to be used by scholars themselves. Nevertheless, it is important to stress that end-users, while often familiar with the literature in their field of interest, are not aware of the existing thesauri, access methods, structure and content of one-line databases and search aids that are well-known to information specialists.

They often have difficulty grasping Boolean logic, revising ineffective searches and interpreting computer responses. End-user tends to search infrequently and hence to forget even command sequences. Furthermore, they usually can not specify their information requirements in ways appropriate for search formulation. It is necessary to note that the majority of our respondents reported searching through the Internet sites once or twice a week using no logical operators, and the remainder (11%) reported daily use. Most of them are searching only for themselves and 21% for themselves and others (for patrons, professors, top managers). Not more than 15% employ the Internet in their everyday searching environments. In most cases end-user searches tend to take as much as 50% longer than those of trained intermediaries. Experienced on-line searchers, we hope, avoid all these problems through training and frequent practice. But still of all the factors involved in searching databases, the cost of the services are what users are most concerned about – not the recall or precision of their search.

6. We conducted a study in which social science information users responded to an interactive survey in which they were asked about their search topics (or research problems), intended query terms (as a rule very specific), search frequency in various databases. Search topics were spread across 10-12 subject categories in each social science database. Most respondents searched on a single topic as determined by their query terms. The mean number of terms in a query was rather high at 8.5. The most frequently searched Web sites that provide data and information of interest to the social science users include the INION databases, the EBSCO databases with thousands of e-journals containing millions of articles, the Social Sciences Virtual Library, Social Sciences Full Text (the most important English-language journals published in the U.S. and elsewhere with full text and page images), theEINIRAS Database Network (a virtual Pan-European system of databases for international relations and area studies), the DARE database at UNESCO Social and Human Sciences Documentation Centre that provides access to world wide information on social science, peace and human rights, the SOLIS database with information on approximately 370 social science periodicals, the PROEastE database (Social Science Research PROjects in Eastern Europe), the ASSR database of the Arab Institute for Studies and Communication (in English and Arabic) as well as the Informaworld electronic resources of Taylor & Francis, Routledge, Psychology Press and Informa Healthcare in one searchable interface and a lot of others. It's worth to note that Social Science Information Gateway (UK Intute: Social Sciences) combining the resources of two services - Altis and SOSIG - offers an easy to use and powerful tool for discovering the best Internet resources in wide range of subjects, including social sciences, arts and humanities. It provides free Internet tutorials to help users learn how to get the best from the Web for their education and research.

We put forward a number of observations from our experience of user searching behavior on the Web and various social science databases. These findings can be summarized as: 1) social science information users search the Web using 2-3 searching engines and as a rule not more then two databases; 2) they spend not more than half an hour searching for the information in Russian language and less than one hour searching information in foreign languages (first of all English, German, French and Spanish); 3) searching skills vary and users often assess themselves as being more skilled than they actually are (particularly searching foreign databases); most participants considered their levels of satisfaction with the search results to be 'good', having no clear idea of how search engines use the queries to search for information; 4) they random use linguistic tools such as thesaurus and subject headings lists to enrich the output; 5) users are not comfortable with Boolean operators and other advanced means of searching and their search behavior follows the principle of least effort.

One of the fundamental issues in search strategy is when to stop. How does one judge when enough information has been gathered? How does one decide to give up an unsuccessful search? When is the optimal time to stop searching in one source and move to the next one? As a rule the lack of time or finance shortage are the main factors stopping the user searching.

7. Dealing with ICT the impact on information retrieval the technical and economical aspects are usually taken into account. The impacts of cultural, linguistic and interpersonal factors on information behavior are often neglected. Nevertheless information is created by a man and is requested by him. The important focus of our research was to look at the impact of ICT in social sciences on two main areas: information users and information needs, information behavior and searching strategy. Thus the ICT impact on social science information searching can be seen as following:

- deepen the knowledge and the capacity of different user groups in information retrieval issues; social science information users needs and their search behavior should be revealed for incorporation in ICTs policy and user involvement;

- assist decision-makers in dealing with information searching issues more effectively;

- enable development of search patterns for various social science information user groups; the meaning of 'relevance' and how it can be achieved should be contested.; as such it is necessary to examine the sense of user needs being portrayed and the interests expressed within current calls for greater user relevance and accountability;

- stimulate further investigation of most important attributes of social science searchers such as work task knowledge and its complexity, abilities to reveal information requirements using natural and retrieval languages, knowledge of the available Internet resources, the level of education and motivation, uncertainty of query formulation;

- facilitate exchange of experience on implementation of various search strategies among the information services – national and international - and share their experience in this field;

- development linguistic tools for large-scale data management in different branches of the social sciences and sharing of data provided by the information grid technology that seems to be a vital means of meeting the present grand challenge to e-social science: how to locate, access and integrate the content of information resources that embrace text, still and moving images and sound, encoded and described using different standards, and often incomplete, fuzzy, and complex. It is important to create closer links between research and practice and to combine more fundamental, small scale research or research focused on specific ICT tools with research that is much more linked to practice.

It is important to note that modern information systems are rapidly being replaced by radically different types of systems that encourage the use of nstructured natural language queries and facilities for automatically (or semi-automatically) reformulating queries through relevance feedback with users. Search engines as one of the primary ways that Internet users find Web sites are spreading at fast speed. That's why a Web site with good search engine listings may see a dramatic increase in traffic. Unfortunately, many Web sites appear poorly in search engine rankings or may not be listed at all because they fail to consider how search engines work. In our opinion, we are in great need of search engine optimization in ways that help social science information users to improve their searching skills.

There is, of course, still much to be done before we reach our long-term goals in implementing modern ICT in the field of information retrieval and formation so-called e-social science. First of all, we need an intelligent multilanguage information interface and flexible linguistic tools. In order to design such a system, it is necessary to understand what happens in the human-human information interaction, and why it happens, and to exact from this the functions that are required for any effective information searching. Efficient searches

require users who are highly familiar with the relevant information resources and how to manipulate them. Efficient searches require practice. Unfortunately social science information users are all too likely to be pleased with the results of their fast searches – no matter what they retrieved. It is quite possible that the spread of the ICTs would improve end-user searching and would stimulate the demand for teaching and facilitating tools as well as experienced intermediaries capable to help them online.

With The Eyes Of A Bee
An Incoming Vision

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Abstract

For around ten years, a group of photographers from different regions of Italy, named Photomeeting, has been sharing ideas and images on an everyday base. They could remain in contact with each other also during journeys – while were in charge for work reasons or as care givers, e.g. grandmothers, for some weeks. In these cases they could participate in the written exchanges but not as easily send&receive images in attachment as used to do in everyday routines.

How an "ICT mediated community", which main aim is photo and video art, has developed common strategies to cope with technical difficulties and/or "media misunderstandings"? How may these e-actors play in the scene of e-ping pong art? How did and do these long daily e-acquaintances and e-friendships work on personal self-determination, autonomy and reflexivity as lovers of photography - considered as a medium of creativity and exchange? How human bodies, faces and minds evoked by mutual words and images would construct webs of relations eventually tested via direct meetings at art openings or around a table rich of prints, wine and fruits? Does really the medium (world wide web) make any real difference in building confidence and relationship among participants, in empowering them, in creating new knowledge and new uses for web/computer based software and tools?

As the digital dimension changed perception of time, work,…, daily exchange in the web might provide new open air studios in a intimate wide web world. It is thus possible to 'reflect' on this theatre of shadows where - like in that mythical cave - our lives flow.

Based on archive research of a rich data-base collected by a member of the group, the research will explore the two ways inter-relation between photo/video construction and broadband communication, focusing attention on the potential power of the involved e-actors.

Introduction

The rapid diffusion of Information and Communication Technologies in the last decades has proved to be a challenging and intriguing phenomenon for scholars interested in the intertwining between ways of knowing, thinking, experiencing new possibilities, on the one hand, and social practices and their underlying artefacts, on the other. On this vein, in previous work Contarello and Fortunati (2006) turned to the theory of social representations considering this theoretical approach particularly suitable for research. The aims were to study how the internet and the mobile were perceived and metabolised in the course of their ever-growing diffusion, in relation with appreciations and enthusiasms, but also caveats and concerns, expressed mainly within the sociological debate. The relations of these

technologies – together with health and well-being ones – and the human body were further analysed with the purpose of supporting with empirical data the answer given by "social thinking" to the progressive penetration of the latter by the former (cf. Fortunati, Katz and Riccini, 2003). Explorations of knowledge and images linked to the mobile phone, along time, were carried out (Fortunati and Contarello, 2005; Contarello, Fortunati and Sarrica, 2007), as well as to the internet and its relation with subjective well-being (Contarello and Sarrica, 2007). An extension involving young adults from five countries – Italy, Romania, Russia, Spain and the Netherlands – showed some interesting difference but substantially reaffirmed general trends across the respondents (Contarello, Fortunati, Gomez, Mante-Meijer, Vershinskaya, Volovici, 2005).

Within these years we had the fortunate chance to monitor early phases of diffusion of the technologies, with participants – university students – still showing a wide span of responses as regards uses and practices, mainly related to the internet. Asked to produce free associations, in brief questionnaires, the respondents offered nouns, adjectives, short periods which were submitted to quali-quantitative procedures and analyses. It was thus possible to explore the content and semantic field of representations of the internet and the mobile phone.

Empirical research conducted from the perspective of social representation theory ran parallel with the theoretical debate enhancing the co-construction and mutual incorporation of technical projects, cultural meanings, bodies and objects (cf. Callon, 1991; Latour, 1992a, 1992b, Mantovani, 2001). A social representation is defined as "a system of values, ideas and practices with a twofold function, first to establish an order in which to enable individuals to orient themselves in the material and social world and to master it, and second to enable communication to take place among the members of a community by providing them with a code for naming and classifying unambiguously the various aspects of their world and their individual and group history (Moscovici, 1973, p.xiii)".

Following the opportune synthesis provided by Flick (1998; 2002) they are forms of social thinking which are shaped in the "space in between" the emergence of new social "realities", practices and psychological processes. What we think has clearly an effect on what we do and how we act in everyday life, but this has in itself an effect on our thinking and feeling, as well as on the way these "realities" are perceived, accepted, but also constructed. The recurrent loops between the three points of the triangle are clearly stated in the theory, as well as the need of taking into account different scopes and strategies of research.
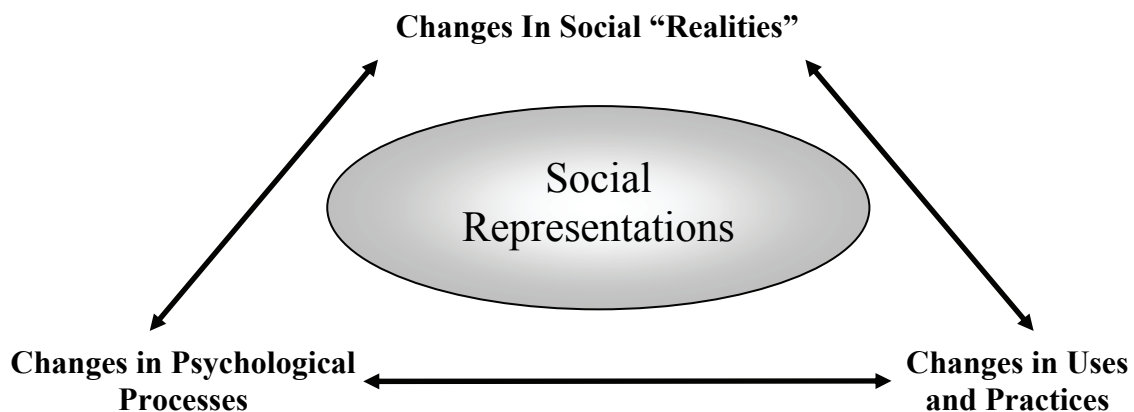
To state it with another helpful triangle, we can only tackle the rich thread of a social representation combining studies aimed to deepen the inter-relations among overt behaviour (through observation), conscious cognitions (through interview data) and shared knowledge (through interpretive efforts as members of the group/community) (von Cranach et al., 1982; 1992).
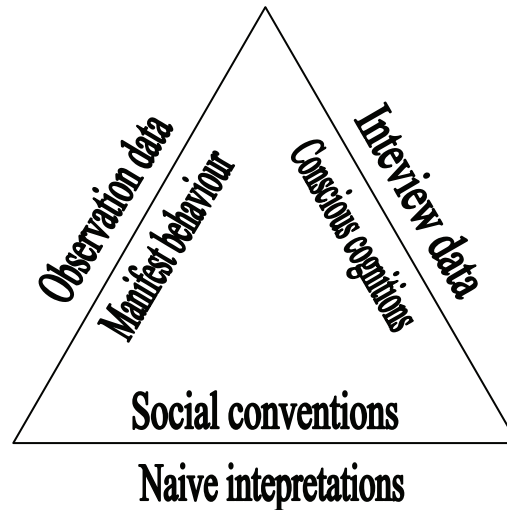
The range of literature on the spread, adoption and integration of Information and Communication Technologies in everyday life from different groups, i.e. the segment of the triangle relating to practices, has been expanding on different grounds (Katz, 2003; Mante-Meijer, 2003; Vershinskaya, 2003; de Gournay and Smoreda, 2003; Haddon, 2003; Ling, 2003; Mante-Meijer, Haddon, Loos, forthcoming). At the same time, the relation of ICTs' uses and practices with well-being (Contarello, 2003; Hamburger, 2004; Contarello and Sarrica, 2007), as well as the negative consequences of their diffusion, such as lack of trust (Huang et al., 2003) have been widely investigated.

Different interpretations and concerns with such exponential diffusion of ICTs have been suggested along time enhancing positive and negative effects of these "tools" (cf. for instance the already classics volume by Wallace, 1999, and Joinson, 2003, reviewing the psychology of the internet; in Italian cf. also Mantovani, 1995; Paccagnella, 2000; Marinelli, 2004).

In the present study, we had the opportunity to have access to a rich data bank consisting of the exchanges produced, for around ten years, within a group of photographers from different regions of Italy, named Photomeeting. With the purpose of sharing ideas and photos/images on an everyday base, they could remain in contact with each other also during journeys – while were in charge for work reasons or as care givers, e.g. grandparents, for some weeks. In these cases they could read the written exchanges but not as easily send&receive images in attachment as used to do in everyday routines.

The form of communication the group chose since its beginning has been a mailing list, thus an asynchronous form of communication in which every participant shares messages and attached-photos and images with everybody else within the community. The declared aim is to foster any visual expression, to facilitate exchanges, and to diffuse photography through free authorial voices. This choice of the list allows the participants to store a rich archive of images and/or texts and this facilitates the reuse and the re-thinking of images and words as time goes by. It is an intimate space, a protected room with an open window. A sort of ""Hortus conclusus". Parallel to the mailing list, there is e web-site open to outsiders (http://utenti.lycos.it/photomeeting).

'Reflecting' on this theatre of shadows where - like in that mythical cave - lives flow and intertwine, based on archive research of a section of this rich data-base collected by a member of the group, the research aims to explore the *two ways inter-relation between photo/video construction and broadband communication* – as well as the *two ways relation between image construction and written dialogue* – focusing attention on the potential power of the involved e-actors.

We are then in the position of formulating our research questions focused on practices in this specific context and on the relation between practices and "verstehen". More specifically, they can be summarized as follows.

Uses and practices. How, when, how much is shared in the flow of communication which links the members of the group? How could we monitor this flow? Our first question thus regards forms and contents of communication, with particular attention to the methodological choices we might adopt.

Communication strategies. How an "ICT mediated community", which main aim is photo and video art, has developed common strategies to cope with technical difficulties and/or "media misunderstandings"?

Relations between online and offline communication. How may these e-actors play in the scene of e-ping pong art? How would human bodies, faces and minds evoked by mutual words and images construct webs of relations eventually tested via direct meetings at art openings or around a table rich of prints, wine and fruits?

Social networks. As the digital dimension changed perception of time, work and leisure, daily exchange in the web might provide new open air studios in a intimate wide web world. How does this new environment co-work in terms of group dynamics?

Relations between practices and social psychological processes. How did and do these long daily e-acquaintances and e-friendships work on personal self-determination, autonomy and reflexivity as lovers of photography - considered as a medium of creativity and exchange? Does really the medium (world wide web) make any real difference in building confidence and relationship among participants, in empowering them, in creating new knowledge and new uses for web/computer based software and tools?

Method

Participants

The time span we consider in the present paper is one month: December 2006. In this period 35 photographers – some professionals, most of them amateurs, from all over Italy, particularly from Rome - exchanged 875 emails and a total of 557 photos. The participants' age range between mid-thirties and almost eighty, with a high prevalence of over fifty. The mailing list has no official moderator; it has been launched and is actually ruled by an Art Director (bfi-afi) and is mainly composed by men (30 on 35).

Procedure

Our method and procedures oscillate between virtual ethnography (the second author is a long term member of the group), web usage mining and social network analysis. It owes also a lot to grounded theory, its main aim being to discover unexpected trends more that testing pre-existing views and models. Consequently, the material submitted to exploration was coded, by the third author, with the help of Atlas.ti (www.atlasti.com): a visual qualitative data analysis software, specifically designed for grounded theory, which proved to be an asset in terms of flexibility of coding, retrieving, comparing and matching bits of information. First of all, sent and received messages were coded considering both sender and (explicitly

addressed) receiver. Time of delivery was taken into account as well as contents which were assembled in the following categories/topics: compliments, general information, texts referring to photos, requests, thanks, wishes .The category " Other" refers to messages overlapping one or more of the previous ones.

Then Bales' coding scheme (IPA) was taken into account and adapted to extract the interactions among the participants.

While reading and coding the massive original documentation, it was possible to note that some "conversational styles" called for attention, so it was decided to "scan" deeper the messages of five participants – particularly active in the considered period – in order to let their styles emerge.

Results

Uses and Practices

Times
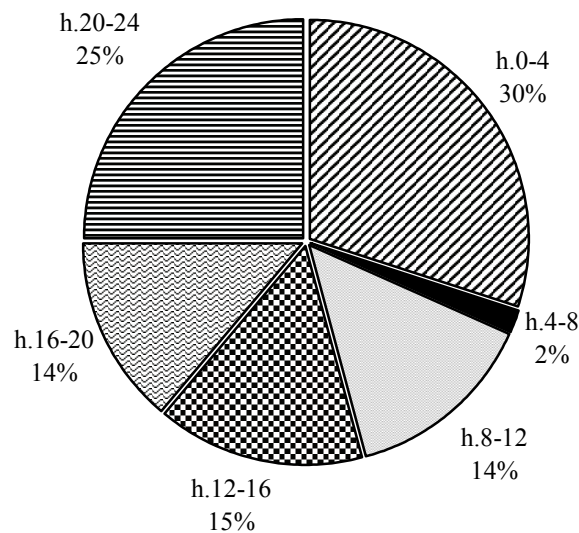
As underlined in official brochures (cf. Photomeeting, "All Tastes but One", 2005) communication is alive 24 hours a day with a strong prevalence during evening and late night hours.

Messages
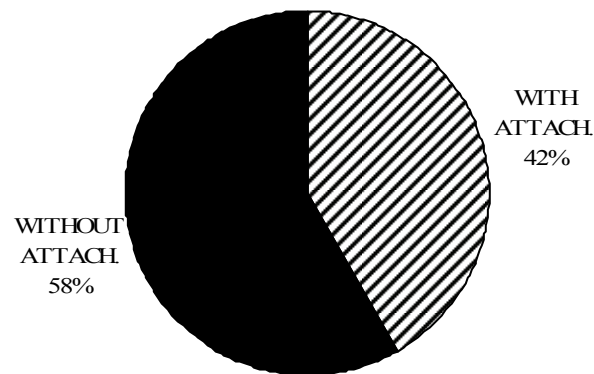
Almost 50% of e-mails are accompanied with attached images which, as we will see later, are very often ping-ponged by the participants, re-launching themes and suggestions.

Topics
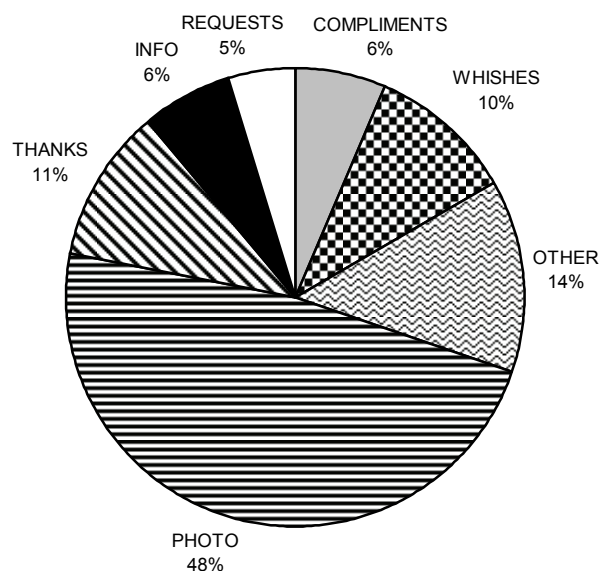
As we could expect, the conversation is basically addressed to share ideas and opinions related to photos and images, as well as to look deeper into them benefiting of the chance of this multiple perspective. But a great many of the communication exchanges run about positive and rewarding aspects of daily life, greetings, compliments and wishes. We remind, however, that it was Christmas time.

Communication Strategies

The interaction process analysis shows a minimum presence of negative remarks (5.4%) which are almost always anticipated or followed by positive buffers. In the considered period only one flaming episode occurred. Positive messages take different forms as reported in the following figure.

Positive Relations
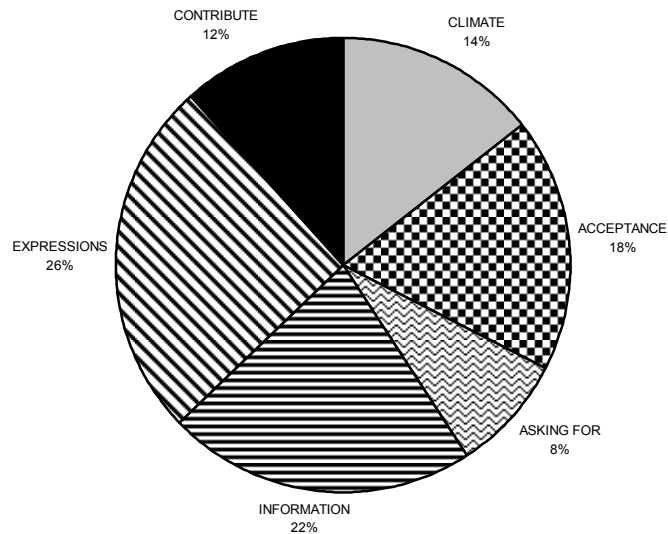
Opinions and information exchanges play the main role, but also contributions and supporting remarks (even greetings show affection and embodied tones) create a sort of net where care and attention appear to provide good and safe terrain to expose oneself and one's works in progress. A strong image of acrobatic exercise played safely thanks to an underplayed net seems to be evoked.

Greetings
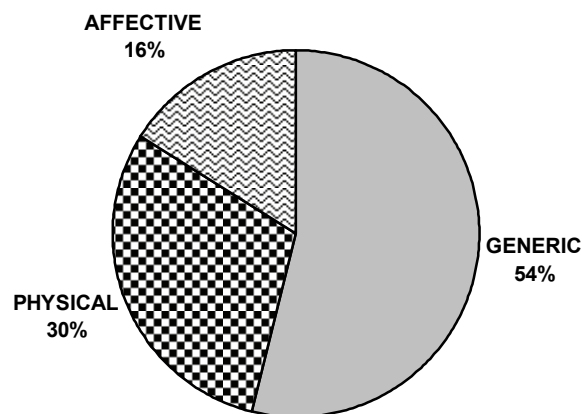
Relations between Online and Offline Communication

In several cases, messages refer to real-life meetings and exchanges among some of the participants. Also telephone calls are mentioned. Presence to openings and exhibitions of one or the other is not rare.

Social Networks and Communicative Genres

The most active participants in the considered time – four women and twelve men – are reported in the following figures in a sociogram-like display.
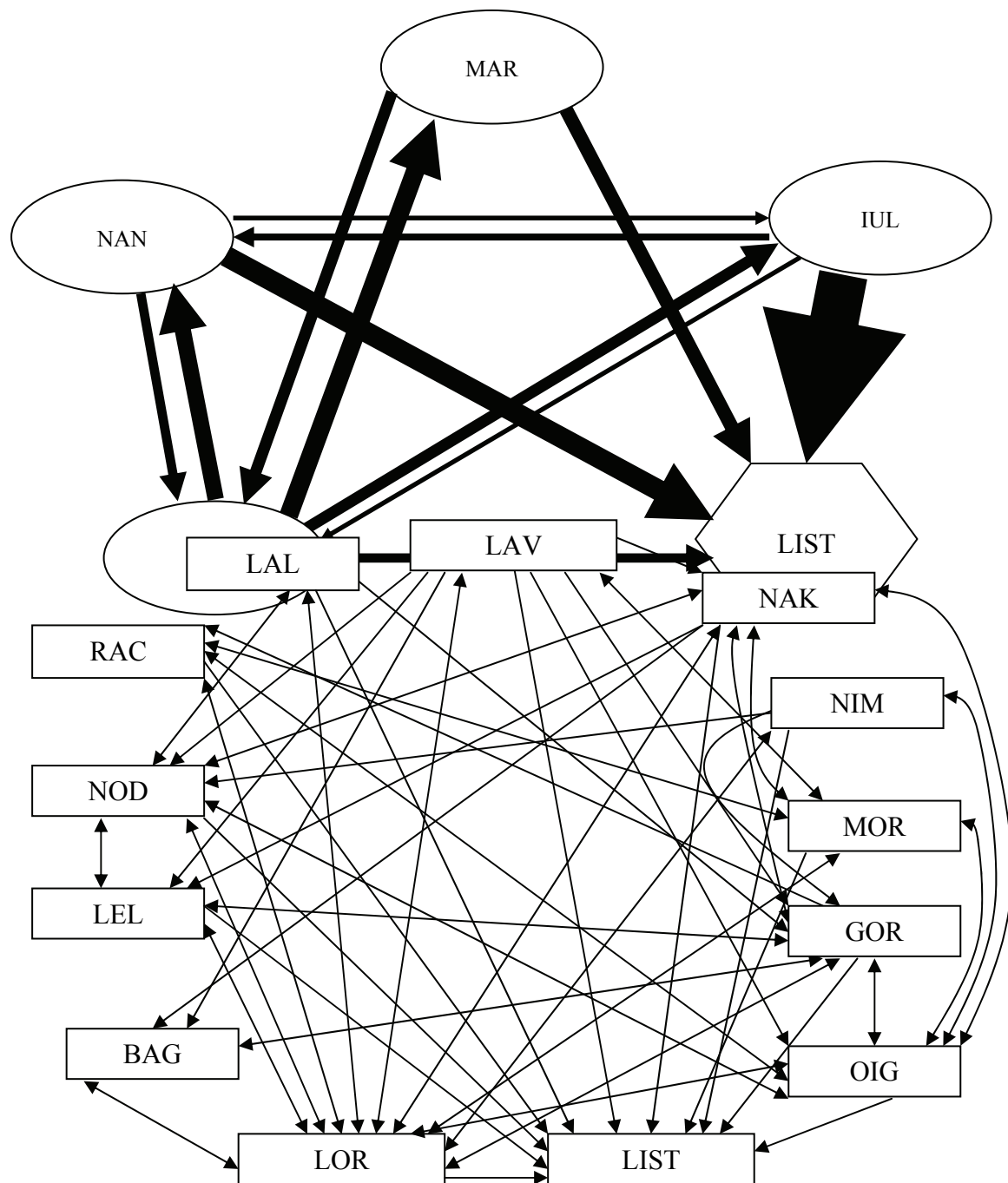
Pseudonyms were used in order to guarantee privacy, very much valued in the group. Although every message reaches all the participants' mailing boxes, it often happens that an email is explicitly addressed to one or another member of the list, shaping a kind of a dialogue, held by two persons but potentially "heard" by all. On this base the graphs have been constructed. In the first diagram the relative frequency of messages is also taken into account, while this was not possible in the second diagram in terms of readability of the figure. What appears clearly is a wide use of the network: the communication structure tends

to optimize the opportunities offered by the technology reflecting an almost complete network of interaction.

The functioning of a typical mailing list can be represented by the following model:
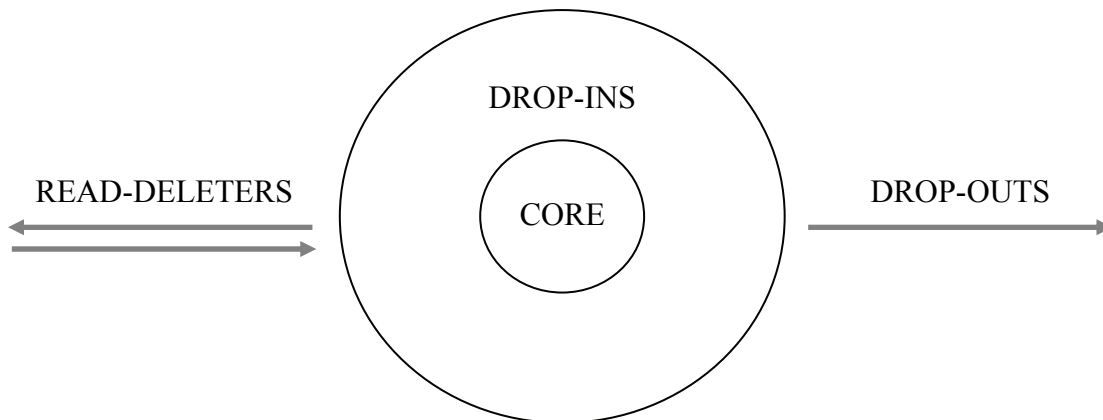
The "Core" represents the group of the most active users, the ones who usually give sense to the e-mail community and are also part of an off-line/real group, while the "Drop-ins" are less expert and active but still involved in the group's discussions. "Read-deleters" are official members but rarely participate and/or contribute to the group's life. Finally "Drop-outs" are persons that, after signing-in, decided to leave the list mainly because they discovered, after a short period, it was not of their interest (cf. Tidwell, 1999). How does this apply to our specific case?

Lets just focus on the "Core" and the "Drop-ins". Analysing the messages, contents and relations among the most active participants, we noted the presence of:

- High relevance of emotional scaffolding (encouraging, approving, positive feedbacks, etc.)
- A kind of personal networking interaction, typical of a group of friends (cf. Ravitz, 1995)
- The use of the mailing list as a "polyphonic arena", where all members - not only the experts - can show their images putting them on a round table but also "read" and comment them, asking and giving information, creating a sort of open on-line writing (cf. Calvani and Rotta, 1999).

We also found of particular interest some "communicative genres" or styles (cf. Zucchermaglio and Talamo, 2003), all more oriented to an artistic and emotional sharing of photos and images rather than focused on technical aspects: The first is "free exposure" of one's photos, using a reply to a previous individual message (sometime posting a new one) as an opportunity to offer a photo to the public attention; the second is a "narrative style" used to make explicit the artistic purpose of a photo or an image, commenting or presenting it also using poetry to suggest the feeling of an experience occurred (and photographed); the third is "ping-pong" were photos are re-used and modified by others, joking with them and interpreting them with almost no use of words to explain why or, reverse, where words are used to "contaminate" an original to suggest new interpretations of it.

Then we could conclude noting that the group's communication is oriented to facilitate interaction and confidence and, at the same time, to push each member to research his or her

own artistic identity in order to distinguish one from the other through a collaborative narration and safe self-exposure.

Concluding Remarks: Old-New Questions

Much more should and will be said regarding *relations between practices and social psychological processes* such as personal self-determination, autonomy and reflexivity as lovers of photography as well as on the *two ways inter-relation between photo/video construction and broadband communication* , on the one hand and *between image construction and written dialogue*, on the other.
But also from these preliminary hints we think we can draw some preliminary conclusions.

The specific context we analysed shows a group of first generation users of the internet and the facilities it provides. They seem to maintain in the web some habits from the past: using emails in a similar vein than letters, appreciating switches between the online and offline (mainly photographical) worlds. Yet, the virtual macro-context provides something very special: *distance*, which appears to "matter" in a positive way (reverse echoing Olson and Olson, 2000) and an *internal-external* dimension in which the two poles appear to play as two faces of the same coin: perhaps it is just because the internal space designed by the group seems to be so 'safe' that it allows – maybe requires – openness to a wider exposure. This particular context of communication seems thus to allow its actors to fairly cope with the dialectic opposition between desires to belong and need of uniqueness (cf. Brewer's optimal distinctiveness theory, 1991).

Various strategies are put forward in order to prevent possible misunderstandings, the always–present peril of computer mediated communication. Courtesy-moves are highly present and helpful. Several dialogic exchanges almost between all the actors – although frequently very short - construct a thick thread of relations. Silence, or better the absence of negative feedback, also play a role: sometimes positive and empowering, sometimes expressing – or being perceived as – lack of interest or disapproval. This deserves more attention. Other themes, as well, mainly the search & practices of individual artistic authorship appear to have in this context specific nuances and effects: this theme is perhaps the most important to investigate.

Like honeybees, social animals who look at the world through compound eyes made of hundreds of small simple eyes, the observed e-actors appear to re-launch different gazes and perspectives, through daily natural vision as well as through camera lenses.

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Advantages And Risks Of Internet Health-Information

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Abstract

Internet is changing how people receive health information and health care. It is a rich source of information, but it is unregulated. Some information is wrong, while other information is confusing for vulnerable people. Online support and discussion groups can provide comfort and valuable information, however, the Internet cannot replace face-to-face contact with health professionals. These risks are currently raising important cultural, social, economic and political issues which merit a comprehensive investigation involving social and technological sciences.
The MIDIR project considers the role of the Internet to the access and diffusion of the health information. In particular the project studies this theme using an integrative and multidimensional approach.
The study examines the risk related to the access and interpretation of health information. The study spotlights the importance to understand how patients utilise this information. Some patients actively search information to assume more responsibility for their health, others search information in consequence of confidence failure in health care provision.
Afterwards the study intends to develop new theoretical frameworks and methodologies:
  - to explore the technology-society relationship in the context of health care settings;
  - to analyze the risk relative to Internet health-commerce.
The research results will contribute to the debate about the education needed to support health care consumers.

Index Terms: Internet, health information, patient-physician relationship, e-commerce

1. Introduction

The concept of e-Health has been in use since the year 2000, it includes much of clinical informatics, but gives priority to the delivery of medical information, services and care rather than the role of technologies. No single common consent exists towards the definition of this concept because it comprehends a "series of characteristics specified at varying levels of generality and detail" [1].
But despite that e-Health is a global topic. E-health systems and infrastructures are now considered as central to the future of efficient, safe, citizen-centred health care and high quality in different key application areas:
  - Electronic Medical Document (including clinical administration systems, patient records, digital archiving systems);
  - Telemedicine;
  - Internet-based services and technologies.
E-health represents an opportunity for increasingly consumers that are using the World Wide Web to get information about health.

It offers the advantages that include:
- the possibilities for improving the accessibility, efficiency and quality of care: e-health provides the care-provider at the specific time and in the specific place with the information she or he needs for performing their task;
- the opportunities to improve the patient/physician relationship: the evolution of patient-physician communication shows that new technologies have a relevant impact on the way in which patients and medicals interact.

There are many potential benefits for patients and physicians who use Internet:
- patients may feel more comfortable in addressing sensitive, complex or personal issues;
- Internet can solve problems related to large distances or patients' disability;
- patients can influence physician prescribing decisions by presenting product information they find online.

Internet has the potential to educate health consumer, by giving information on health and health services, supporting patient choice, guaranteeing convenience, anonymity, and quantity of information.

Apart from advantages, there are also threats.

Many attentions have been aimed to the quality of online health information, and the negative effects that poor information has on health. The information is sometimes incomplete and often inaccurate. For this reason it is necessary to examine the quality of health-information, and to consider the Internet as radically different respect to other information sources.

In this paper we illustrate, fist of all, the patient- physician relationship and afterwards we describe how patient utilise health-information underlining the advantages and the risks of Internet use.

The use of Internet in the healthcare [2] has a variety of advantages (support for interpersonal interaction and social support, accurate information, anonymity), but has also several disadvantages (unequal access, cost, technical language), obstacles (extreme variability in the quality of the information, commercial interests that influence content, no-preservation of personal privacy; disorganization, complex medical language, impermanence), and dangers (lack of peer review, inaccurate information, risk-promoting messages, online reinforcement of pathologies).

With the World Wide Web a new media has appeared, which has enhanced the risk associated with information, interactivity, free accessibility, and with e-commerce of health products that raise many questions involving what sort should be expected by extensions of the medical Internet.

2. The Patient-physician relationship in the era of Internet

The World Wide Web is rapidly changing the physician-patient relationship [3]. By access to medical information, it is possible for patients to assume much more responsibility for their health care.

However, in doing so, patients challenge the traditional role of the physician in providing care. How they use online medical information influences their relationship and influences health outcomes. If correctly used, in the "Internet Age" physicians and patients have a technological resource to make better the patient-medical relationship. In fact if the physician assists patients in the information-gathering process, an enhanced relationship may result.

The patient-physician relationship is fundamental to provide and receive excellent care, and in the process of healing. Rather, using the Internet, physician utilizes a different way to communicate with patients through e-mail. E-mail communication between patients and

physicians is becoming part of medical practice. For incorporating e-mail consultations into routine medical practice it is necessary to proceed on the basis of secure evidence.

It is important to understand the following aspects related to the communication between physicians and patients: how the communication by email can be integrated with other modes to communicate; what are the patient and physician preferences in the use of emails; how to identify people that most likely can benefit from email communication.

The first step for this study is to value the potential risk and benefits of email [4]. It is certain that this instrument presents very clear advantages in different area:

1) Convenience:
   - advantages in time and space for physician and patient. Emails can be sent and received at any time from anywhere - mobile phone, via computer, personal digital assistant or digital television;
   - email reduces the need for face-to-face consultations;
   - email is convenient for information that patients have to remember or to write down.

2) Access
   - email facilitates the access to care for patients with physical disabilities or patients that live in a remote area.

3) Information sharing
   - the opportunities for patients to use friendly medium to ask clarification after a face-to-face consultation;
   - the opportunities for patients to discuss the content of messages with friends or family to improve the understanding of the care.

4) Satisfaction
   - traditional barriers of social differences, age, and non-familiarity dissolve in the informality of electronic communication;
   - free style of writing;
   - anonymity for patients;
   - speed of communication;
   - opportunities for groups that are difficult to reach by face-to-face contact.

5) Quality of care
   - physicians can easily consult other professionals to verify the decided care.

6) Efficiency
   - opportunities to improve the diffusion information on healthy behaviour to several people simultaneously;
   - cost savings.

Patients see e-mails as a convenient way to interact with physician who is important to them [5].

With the continued increased develop of Internet, the email can be a simple, valid, convenient and inexpensive mechanism for communication. It can support the health care distribution process by allowing written follow-up clues, test results, as well as, a means for patients to easily contact their physician.

But what are the risks?

The potential disadvantages of email use in delivering health care can be tied to:
   - the social disparities by permitting preferential access to young middle class adults;
   - the fact that the scope of non-verbal communication is very limited;
   - the impossibility to have a direct contact with the patient;
   - the risk of communication or diagnostic errors;
   - the impossibility no has quick responses to requests that need of prompt actions;
   - the patient privacy.

The second step is to understand that the revolution in communication exchange between individuals is most evident in the area of virtual communities. Virtual communities benefits come from the absence of traditional barriers to access. Online anonymity can be helpful for those who have embarrassment and can support all users to draw their health conditions. However the lack of professional facilitation or moderation in most virtual communities may lead to inappropriate use or to the diffusion of inaccurate messages. There are also risks that participation in virtual communities may become an addictive drug for some users. The risks of Internet use are most commonly associated with the interactive functions of the Internet. An uncontrollable Internet use can determine a detriment of other activities such as social life or work.

Finally we can assert that Internet instruments offer to physicians an opportunity to improve the consciousness of patients and enhance their satisfaction, they give the opportunity to increase the involvement of patients in their care, moreover they improve access to health care information and communication possibilities between patients and physicians, but must never replace the interpersonal contacts that are the basis of the patient-physician relationship. Actually, the idea of "virtual physician" or "virtual interaction with physicians" can disturb most patients. These patients believe only in interpersonal contacts with physicians and they assign a relevant role to a face-to-face communication. This negative vision is tied to the absence of a very important element: the trust, that is a fundamental component of the patient-physician relationship; without trust, this relationship may not become established. Good communication between patients and physicians is important not only to reduce the risk of misunderstanding but as a part of the healing process. The vulnerability of patients and their need for care force them to trust physicians. When this trust is created, it can generate an interactive process that increases satisfaction, adherence to treatment, and continuity of care.

3. How Patients Utilise Internet Health Information

With the development of the Internet, more people use their computers for searching health information advice. But it is very important to understand what types of health advice are consumers getting from the Web [6]. Studies in different countries demonstrate that the kinds of health information searched online are:
  - information about a specific medical problem;
  - information about a certain medical treatment;
  - information about nutrition, diet, or nutritional supplements;
  - information about alternative medicines or treatments;
  - information related to health insurance;
  - information about stress, depression, anxiety or mental health issues;
  - information about a particular hospital or physician;
  - information about experimental medicines or treatments;
  - information about environmental health hazards;
  - information about vaccinations or immunizations;
  - information about problems with alcohol or drugs;
  - information about how to quit smoking.
These kinds of information underline that today patients want to become better educated about healthcare. Internet represents an unprecedented opportunity for patient self-education; for this reason patients see the Internet as an important information resource.
In addition, access and age barriers are rapidly disappearing and patients express the need in using the Web to develop: consumer-oriented health care models; the increase of health

information; actions that increase the possibility to access to best care; importance of self-care and prevention.

However, patients have a misplaced faith in the quality of health information available on the Web. Several questions remain unsolved. How health professionals guarantee the quality of information? What kind of health-information is on the Internet? But especially what are the risks of Internet health-information?

4. Health Risks And Benefits: The Role Of Internet

Internet that provides information about diagnosis and treatment, health promotion and health risk assessment are proliferating [7]. But we have to consider that the new world of e-Health represents many new opportunities to assure high quality of information, products and services but also risks.

The very clear advantages are that e-Health can:
- represent a helping support for health management;
- increase people satisfaction;
- guarantee fewer calls concerning administrative information;
- allow interactivity and interpersonal communication in any time and any where.
- furnish the possibility to specify tailored messages in a variety of formats. Users can select links, sites, and specific messages based on language level, educational and preferences for format and learning style, often at lower cost;
- allow anonymity. Users may access information on sensitive topics without the face-to-face relationship.

For this reason it is very important to understand: what kind of health-information is available on Internet; how much it can be considered reliable; how can we tell the difference between safe and unsafe health information [8]. These are very important questions when we consider that many people trust in the Internet to learn about medical treatments or make decisions about care. However, increasingly Internet users and medical professionals have to take into account and carefully consider the quality of online health information. Several criticisms define health information on the Internet bad and even dangerous, erroneous, inaccurate, fraudulent, incomplete and misleading.

For example, Internet diffuses information about suicide methods; moreover several evidence indicates that Internet use promotes sexual risk taking, in particular, people who uses Internet to find real-life sex partners are more likely to contract sexually transmitted diseases.

For users with high cultural levels, Internet has become an efficient facilitator of practices and behaviours. These consumers have confidence in health information provided by some objective sources. They know which information sources can trust, and how to search other objective source to improve their knowledge.

Many authors show the difficulty to define general criteria for the classification of quality standards. Fundamentally, health websites should be qualified by the quality of health information. The following criteria are being recommended as necessary for guaranteeing the quality of health-information:
- credibility, that comprises: the source, currency, relevance/utility, and editorial review process for the information;
- content that comprises: accuracy; disclaimer; completeness;
- disclosure that underlines the importance that patients are informed about collection of data about them, and how the data is used;
- external links that lead patients to other authoritative sources;

- design: that encompasses accessibility, logical organization (navigability), and internal search capability;
- interactivity: the possibility of interactivity provides a unique opportunity to establish direct contact with experts;

These criteria represent a base set that patients should consider finding good quality health information in this rapidly changing field, however they are not sufficient to solve a problem, due to the fraudulent behaviour of some websites.

5. Internet Health-Commerce

The World Wide Web emerged in the last years as an interactive channel, owning all the characteristics to be utilised as a self-service. It permits real time answers to patient' requests, because it is an impressive source of health information, 24 hours available.

Internet permits consumers to obtain extensive medical information to help them understand health treatment options. For these reasons the use of Internet to buy health products is growing rapidly. Many peoples benefit from the convenience of this new instrument. Drug sales over the Word Wide Web can provide benefits to consumers. These benefits are many and include:
- access to drugs beyond national border;
- opportunities of shopping 24 hours a day; and a wide set of pharmaceutical products;
- privacy for users who don't want to buy their medical products in a public place.

These benefits help to develop a health-market on Internet, where it is possible to identify consumers' preferences, tailoring the offer according to individual predilection in micro market area.

Several pharmacies on Internet allow the user to search drugs specifying a measure of convenience, safety and privacy, offering detailed information on drug interactions, and utilizing the e-mail of customers to give information about orders. Frequently these pharmacies sell drugs for less than traditional pharmacies. Finally, the use of information and communication technology to transmit prescriptions from physicians to pharmacies can reduce errors in prescription.

Online shopping for health products offers many benefits for consumers, but it also presents a number of serious risks.

In fact, consumers are now being threatened by the fraudulent Internet businesses that trade products illegally. In particular, trading medical products or buying some medical products from another country online may be illegal in some countries, therefore, before buying a product, it is necessary to understand if it is legal.

Moreover there are many reasons why health-products bought through the Internet could represent a danger to health. For example some health-products could be:
- fake;
- strong or weak;
- out of date;
- composed of dangerous ingredients;
- stored not correctly;

Also:
- efficacy may be lacking: the Internet use can determine difficulties to distinguish between products that met the requirements of consumer' government and those that does not met;
- instructions for use could be inadequate: this is a very grave risk because to be used properly, medical products need to be accompanied by accurate instructions;
- quality may be not assured: the product could contain dangerous ingredients;

- health products sold through the Internet may circumvent the regulatory protection provided by authorities and government for the health of citizens;
- reimbursement could not be possible;
- seeking health treatment through the Internet, can determine a waste of valuable resources because the treatments may not help;
- products may not be allowed in the country of the consumer, moreover it is possible that health-products that are available only by prescription in one country are available without prescription, can be without rules in another;
- medicines with the same name may be different in different countries and countries may have different standards for the quality of medical products and their manufacture;

Internet is a valuable source of health information on several topics such as therapies, health-products, and medical organizations [9]. When properly used, it allows quick and easy access to such information from online medical libraries, health associations and government agencies.

However, the quality of health and medical product information on the Internet varies, and it is often difficult for the Internet users to identify the true source of the information and to determine whether it is reliable and complete.

6. Conclusion

Today people are more active than in the past making decisions about their own health care. Internet can help to access health information. In fact, patients often use Internet to validate and extend upon information they have heard or read elsewhere.

However, there is little knowledge on consumer's searching behaviour, on how he/she is influenced by the on line information and on its reliability.

There is a growing attention on Internet as a means to improve health and health care delivery, but it is fundamental to consider the impact on the use of Internet, in particular discussing the privacy issue and the quality of information connected to the development of e-health.

There is some concern surrounding privacy of health information on the Internet. Many health sites permit patients to create a personal web page where they can obtain health information tailored to their age, anamnesis, gender, and so on. Frequently people that access to these web sites are not anonymous, and health sites sometimes do not adopt the necessary privacy policies.

Frequently consumers, which increasingly turn to the Internet for health information, find health sites that provide only basic and inaccurate information.

One of the key roles of the medical professional in the past was to include and regulate a base of health knowledge. Actually the possibility to provide and use distributed knowledge and to have many sources of information is deeply influencing and characterizing society. Obviously physicians will continue to have a key role in the health knowledge, but we have to understand that they will have a different manner to communicate with patients. In fact, one of the most important advantages of the Internet use is that it promotes the opportunity for users to interact with more health professionals than in the past.

On discussing about the impact of online health information and online interaction on the traditional physician-patient relationship, we emphasize that Internet are transforming such relationships.

Internet does not have the capability to reproduce the traditional relationship because of the impossibility of the physical presence. In fact medical practice includes complex processes as diagnosis, treatment, prognosis and these processes require the presence of the patient for several activities. Therefore, in conclusion we can observe that Internet can modify and

integrate the traditional physician-patient relationship but, at the moment, cannot replace this relationship.

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Russian Teachers' Attitudes about Media Education *

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Abstract

The year 2002 was marked by the important event in the history of the Russian media education movement. The academic-methodical institution of the Ministry of Education of the Russian Federation has registered the new university-level specialization (Minor) "Media Education" (03.13.30) within the education area. In other words, for the first time in its history media education in Russia has gained an official status.
However are the Russian teachers ready for the implementation of the media education ideas? What is their general attitude to the problem of media education in school and university? What objectives are the most important for them? To what extent do they use media education elements in their lessons?
These are the questions that we tried to answer by the questioning of 57 teachers of secondary schools. The analysis of the conducted questionnaire among teachers of secondary schools showed that realizing the great importance of the media in the contemporary information society, three quarters of them support the idea of media education at schools and 58% believe that a new major for pedagogical institutes needs to be introduced - "Media Education". Most of teachers justly think that the combination of the autonomous and integrated media lessons is the most effective way today for the development of media education in Russia, and therefore - for the increase of media literacy of the young generation.

In the UNESCO documents "*Media Education*
-deals with all communication media and includes the printed word and graphics, the sound, the still as well as the moving image, delivered on any kind of technology;
-enables people to gain understanding of the communication media used in their society and the way they operate and to acquire skills using these media to communicate with others;
-ensure that people learn how to
* analyse, critically reflect upon and create media texts;
* identify the sources of media texts, their political, social, commercial and/or cultural interests, and their contexts;
* interpret the messages and values offered by the media;
* select appropriate media for communicating their own messages or stories and for reaching their intended audience;
* gain or demand access to media for both reception and production.
Media education is part of basic entitlement of every citizen, in every country in the world, to freedom of expression and the right to information and is instrumental in building and sustaining democracy" [Recommendations Addressed to the United Nations Educational Scientific and Cultural Organization UNESCO, 1999, pp.273-274].
Therefore, media education in the modern world can be described as the process of the

development of personality with the help of and on the material of media, aimed at the shaping of culture of the interaction with media, development of the creative, communicative skills, critical thinking, perception, interpretation, analysis and evaluation of media texts, teaching different forms of self-expression using technology. Media literacy, as an outcome of this process, helps a person to actively use opportunities of the information field provided by the television, radio, video, film, press and Internet [Fedorov, 2001, p.8].

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These are the questions that we tried to answer by the questioning of 57 teachers of secondary schools (schools NN 12, 27, 36, 37, 38 and others) in Taganrog, Russia. The information on age and gender of the teachers is in the Table 1.

Table 1. The Number of Teachers, their Age and Gender

Age	Number of teachers in this age group	% of teachers	Number of female teachers	Number of male teachers
21-30	10	17,54	7	3
31-40	12	21,05	8	4
41-50	11	19,30	7	4
51-60	12	21,05	7	5
61-70	12	21,05	10	2
Total	57	100	39	18

Undoubtedly, my survey cannot claim for the total representativeness. On the other hand, its results seem to us characteristic of the media education process in general, the more so as many of its issues reecho with the findings of the research of media education tendencies in 12 European countries [Hart & Suss, 2002].

The results of the survey are presented in the Tables 2 - 6.

Table 2. The General Attitudes of Teachers to Media Education

Age, Gender of teachers	Attitudes of Teachers to Media Education of Pupils and Students									
	There is no need in media education of pupils	Media education must be part of the curriculum	Media education should be in an elective or a club in Schools	There is no need in media education of university students	Media education should be part of the curriculum in the pedagogical institutes & universities	Media education should be an elective course for university level students	A new area of qualification (Major) –"Media Education" should be introduced into the pedagogical institutes	Media education of pupils and students should be integrated into traditional obligatory courses	Media education in school and university should be autonomous, as a matter or a course	Media education in school and university must be a synthesis of autonomous and integrated lessons
	Number of teachers (in %) who chose this variant of the answer:									
Age 21-30/total	0,00	60,00	30,00	0,00	80,00	10,00	40,00	40,00	20,00	60,00
21-30/men	0,00	66,67	0,00	0,00	100,00	0,00	33,33	33,33	33,33	33,33
21-30 women	0,00	57,14	42,86	0,00	71,43	14,28	42,86	42,86	14,28	71,43
Age 31-40/total	16,67	83,33	33,33	0,00	83,33	25,00	83,33	41,67	25,00	50,00
21-30/ men	0,00	50,00	25,00	0,00	50,00	25,00	100,00	50,00	25,00	50,00
21-30/women	25,00	100,00	37,50	0,00	100,00	25,00	75,00	37,50	25,00	50,00
Age 41-50 /total	9,10	72,73	36,36	0,00	54,54	45,45	72,73	45,45	27,27	63,64
41-50 /men	0,00	50,00	50,00	0,00	75,00	75,00	100,00	50,00	25,00	75,00
41-50 /women	14,28	85,71	28,57	0,00	42,86	28,57	57,14	42,86	28,57	57,14
Age 51-60 /total	25,00	41,67	50,00	8,33	50,00	16,67	58,33	50,00	25,00	41,67
51-60 /men	20,00	40,00	60,00	0,00	60,00	20,00	100,00	40,00	20,00	40,00
51-60 / women	28,57	42,86	42,86	14,28	42,86	14,28	28,57	57,14	28,57	42,86
Age 61-70 /total	16,67	58,33	33,33	8,33	33,33	8,33	33,33	50,50	25,00	41,67
61-70 /men	0,00	100,00	50,00	00,00	50,00	0,00	50,00	50,00	0,00	0,00
61-70 / women	20,00	50,00	30,00	10,00	30,00	10,00	30,00	50,00	30,00	50,00
All age groups/total	14,03	63,16	36,84	3,51	56,14	21,05	57,89	45,61	24,56	50,88
All age groups/men	5,55	55,55	38,89	0,00	66,67	27,78	83,33	44,44	22,22	44,44
All age groups/women	17,95	66,67	35,90	5,13	56,41	17,95	46,15	46,15	25,64	53,85

The analysis of Table 2 shows that the majority of teachers believe in the necessity of media education of pupils in the form of a mandatory subject (63,16%) or as an elective (34,84%). The same is true concerning the obligatory (56,14%) or elective (21,05%) media education for university students. 57,89% of the teachers questioned (83,33% of men and 46,15% of women) have also expressed their support of the introduction of the new pedagogical Major "Media Education" in higher education institutions. In addition, the mandatory media education for pupils/students and the suggestion for Major in "Media Education" have gained the strongest support in the age group of teachers between 31 and 40 years (83,33% of voices in all questions).

The teachers that took part in our project, think that media education of pupils/students should

be integrated into the mandatory courses (45,61% without any noticeable gender or age differences), autonomous (24,56% without any major gender or age differences as well), or the combination of both (50,88%).

Only 14,03% of the teachers oppose media education for pupils claiming its uselessness. There are 3 times more of the women's voices here then of the men's, and older generation predominates (in the age group between 21 and 30 years there is no single person who is against media education for schoolchildren).

However, even the teachers' opposition changes its point of view when it comes to the status of media education for university-level students. Just 3,51% of the teachers reject it. By the way, this group consists entirely of women older than 50 years, who are probably too conservative to change their traditional opinion about the teaching process.

In general, more than 75% of the teachers in this or another way do support media education for pupils and students, and 58% of them believe that it is high time to introduce the new area of expertise for universities - "Media Education". It proves the point that the intense development of the media evokes the adequate reaction of Russian pedagogues - they realize that life in the world of IT s and mass communication boom is demanding media literacy to the extent not less than it is demanding the traditional literacy.

It seems interesting to me to compare several positions of Table 2 with the results of the questionnaire of 26 experts in media education around the world (media educators from 10 different countries participated, such as O.Baranov, R.Cornell, A.Korochensky, B.MacMahon, J.Pungente, S.Penzin, L.Roser, K.Tyner, E.Yakushina, and others) that I conducted for UNESCO in 2003 [Fedorov, 2003]. The difference in the opinions of teachers and experts featured most strongly in their attitude to the autonomous media education. In contrast to 25,64% of Russian schoolteachers, only 7,69% of the experts in the field think that media literacy should be taught in separate courses/lessons. There is no significant difference between the support for the integrated media education: 46,15% of Russian teachers vs. 30,77% of the experts. The number of advocates of the combination of the integrated and autonomous media education in these two groups is even closer: 53,85% of teachers compared to 61,54% of the experts. On the whole, majority of Russian teachers and international experts agree on the point that the most promising way for the development of modern media education is the union of autonomous and integrated lessons with schoolchildren and students.

The results of the teachers' answers to the questions about their attitude to main aims of media education are systematized in Table 3.

Table 3. Teachers' Opinions about their Attitude to Main Aims of Media Education

Age/gender of teachers	Encouraging the development of the aesthetic taste, perception, evaluation of the aesthetic value of a media text, appreciation of masterpieces of media culture/медиакультуры	Development of the critical thinking and critical autonomy of the personality towards media texts.	Protection from the harmful influences of media.	Satisfaction of different needs of the audiences	Teaching practical work with media technology	Development of the audiences' skills for political, ideological analysis of different aspects of media.	Development of the skills of perception, understanding and analysis of media language.	Development of the audiences' skills for the analysis of media texts in the broad cultural and social contexts.	Preparing young people for living in the democratic society.	Development of the communicative skills	Development of the ability for self-expression with the help of media technology, creation of media texts.	Teaching and learning the knowledge about the history of media, media culture	Transmittance of the knowledge about the theory of media, media culture	Development of the skills for the analysis of different aspects of media, media culture in terms of moral values, and psychology.
	Number of teachers (in %) who chose this variant of an answer													
Age 21-30 total	60,00	100,0	20,00	40,00	30,00	50,00	20,00	60,00	10,00	40,00	0,00	20,00	20,00	30,00
21-30 /men	33,33	100,0	33,33	33,33	0,00	66,67	0,00	66,67	0,00	100,0	0,00	40,00	20,00	60,00
21-30/women	71,43	100,0	14,28	42,86	42,86	42,86	28,57	57,14	14,28	14,28	0,00	28,57	14,28	42,86
Age 31-40 total	58,33	41,67	41,67	33,33	58,33	58,33	41,67	41,67	33,33	25,00	16,67	8,33	8,33	16,67
21-30 /men	50,00	75,00	25,00	25,00	50,00	75,00	25,00	50,00	25,00	50,00	25,00	0,00	0,00	25,00
21-30 /women	62,50	37,50	50,00	37,50	62,50	50,00	50,00	37,50	37,50	25,00	12,50	12,50	12,50	12,50
Age 41-50 total	45,45	72,73	36,36	27,27	27,27	36,36	63,64	36,36	45,45	18,18	45,45	9,10	0,00	27,27
41-50 /men	25,00	50,00	25,00	25,00	50,00	25,00	75,00	25,00	75,00	50,00	50,00	25,00	0,00	0,00
41-50/ women	57,14	85,71	42,86	28,57	28,57	42,86	57,14	42,86	28,57	0,00	42,86	0,00	0,00	42,86
Age 51-60 total	66,67	33,33	33,33	33,33	50,00	58,33	25,00	50,00	50,00	33,33	16,67	8,33	8,33	41,67
51-60/men	60,00	40,00	20,00	40,00	40,00	40,00	20,00	60,00	80,00	40,00	20,00	20,00	0,00	40,00
51-60/women	71,43	28,57	42,86	28,57	57,14	71,43	28,57	42,86	28,57	28,57	14,28	0,00	14,28	42,86
Age 61-70 total	58,33	66,67	41,67	33,33	41,67	50,00	33,33	33,33	33,33	25,00	8,33	25,00	0,00	16,67
61-70/men	100,0	50,00	50,00	0,00	50,00	50,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
61-70/women	50,00	70,00	40,00	40,00	40,00	50,00	40,00	40,00	40,00	30,00	10,00	30,00	0,00	20,00
All age groups/total	57,89	63,16	35,09	33,33	43,86	50,88	36,84	43,86	35,09	29,82	17,54	14,03	7,02	26,31
All age groups/ men	50,00	61,11	27,78	27,78	38,89	50,00	27,78	44,44	44,44	50,00	22,22	11,11	5,55	16,67
All age groups/ women	61,54	64,10	38,46	35,90	46,15	51,28	41,02	43,59	30,77	20,51	15,38	15,38	7,69	30,77

The analysis of the data of Table 3 leads us to the conclusion that the teachers support the following theories of media education (in descending order):
- Development of the critical thinking (the main aim is to develop the critical thinking, personality's autonomy towards the media/media texts)- 63,16% (without significant gender differentiation, but with the dominance of younger generation of teachers);
- Aesthetic (the main goals are to develop the "good" aesthetic perception, taste, abilities for the efficient evaluation of the aesthetic quality of a media text, for understanding of media texts; propaganda of the masterpieces of media culture)- 57, 89% (there are about

11% more of women's voices here than men's);
- Ideological (the main aim is the development of the skills for political, ideological analysis of different aspects of media/media culture) – 50, 88%.
- Cultural Studies (the main aim is to develop the audiences' skills for the analysis of media texts in the broad cultural, and social context) – 43, 86%;
- Practical (the main goal is to teach the audience practical skills of operating media technology) – 43, 86%;
- Semiotic (the main aim is the development of the audiences' skills for perception, understanding and analysis of the media language) – 36, 84% (there are 14% more of female than male voices);
- Inoculatory/Protectionist (the main aim to protect the audience from the harmful affects of media) - 35, 09% (women's votes dominate by 11%);
- Development of the democratic thinking (the main goal is to prepare young people for living in the democratic society with the help of media/ media culture)- 35, 09% (there are 14% of men's voices, than women's);
- Satisfaction of the audience's needs- 33, 33% (the main aim is to satisfy the needs of the audience in the area of media/ media culture).

Herewith, teachers consider the following to be important: development of the skills for moral, psychological analysis of different aspects of media, media culture (26, 31%, the women's voices are twice as many as the men's); communicative abilities (29, 82%, men's voices are twice as many as the women's); skills to self expression through media, creation of media texts (17, 54%). Such objectives as the knowledge about the history of media/ media culture (14, 03) and theory of media and media culture (7, 02%) got the smallest rating, though in the latter case it is not quite clear how one can develop, for instance, critical thinking of the audience or teach about the media language without reliance on the theories of media.

Comparison of these data and the results of the questionnaire of the international expert group [Fedorov, 2003] shows that the opinions of Russian teachers are close to those of the experts' in many cases: the teachers (though the percentage is smaller) place the aim of the development of critical thinking on the top, as well as the experts (84, 61% of experts, 63, 16% of teachers). The difference in attitude towards aesthetic (57, 89% of the teachers, 46, 15% of the experts), ideological (50, 88% of the teachers, 38, 46% of the experts), practical (43, 86% of the teachers, 50% of the experts) and "consumerism" (33, 33% of the teachers, 30, 77% of the experts) objectives of media education is not crucial, as you can see from the figures above.

Yet the comparison with the experts' rating of the objectives reveals that Russian teachers tend to over estimate the role of "protectionist" (35, 09% of the teachers vs. 15, 38 % of the experts) objectives of media education, to the detriment of the semiotic and cultural studies aims, which got 57 to 70 % of the experts' votes.

Almost twice less rating was made by such a popular with the experts (61, 89%) category as the development of the critical thinking. The same is true for the communicative aim (57, 34% of the experts vs. only 29, 82% of the teachers) and for the development of the skills for self-expression through media (53, 85% of experts, 17, 54% of teachers).

The importance of the knowledge about the history and theory of media/ media culture turned out to be also underestimated by the teachers, compared to the expert group. There are 37 to 48% of supporters of these aspects among the experts, while only 7 to 14% among teachers.

All of this leads us to a conclusion that in spite of the general support given by the experts and the teachers to the priority of the development of critical thinking on the material of media culture, there is no sufficient understanding among the in-service Russian teachers of the importance of several other media educational objectives. For example, the potential of the media education lessons aimed at the development of the democratic thinking of the audience are clearly estimated too low, while the weight of the protectionist objectives is exaggerated.

So, the figures of Table 3 offer some idea of the "theoretical" background which influences the teacher's work. However, we needed to find out, to what extent the teachers really implement elements of media education at their classes. The results of the answers are presented in Table 4.

Table 4. Teachers' Use of Media Education Elements in Schools

Age/gender of teachers	Elements of media education are used during the lessons	No elements of media education are used during lessons	It is hard to answer this question
	Number of teachers (in %) who chose the answer		
Age 21-30 /total	70,00	0,00	30,00
21-30/men	100,00	0,00	0,00
21-30 /women	57,14	0,00	42,86
Age 31-40 /total	41,67	25,00	33,33
21-30/men	50,00	0,00	50,00
21-30 /women	37,50	37,50	25,00
Age 41-50/total	36,36	18,18	45,45
41-50/men	25,00	25,00	50,00
41-50 /women	42,86	14,28	42,86
Age 51-60 /total	25,00	33,33	41,67
51-60/men	60,00	20,00	20,00
51-60/women	0,00	42,86	57,14
Age 61-70 /total	8,33	25,00	50,00
61-70/men	0,00	0,00	100,00
61-70/women	10,00	30,00	60,00
All age groups/total	35,09	21,05	43,86
All age groups/men	50,00	11,11	38,89
All age groups/women	28,20	25,64	46,15

Let's remind ourselves that the analysis of the figures of Table 2 showed that about 75% of the teachers think that media education of the schoolchildren is the essential component of the modern educational process. At the same time figures of Table 4 tell us that in reality only 35, 09% (50% of men and 28,2% of women with the majority under 51 years old) of the questioned teachers were confident to say that they use elements of media education during their lessons.

21, 05% of the teachers (11,11% of men and 25, 64% of women, the majority belongs to the elder generation) confess that they never use media education elements at their classes. The rest of the teachers are not sure what to answer. We can see the reason for that: the analysis of the following tables (Table 5, Table 6) reveals that about half of the teachers use media material during their lessons very seldom, because they feel that they lack knowledge about theory and methods of teaching media (the latter, to our mind, is another serious argument for the introduction of the new university-level Major- 'Media Education'' in pedagogical

institutes).

Data about the frequency of media educational lessons, conducted by the teachers are presented in Table 5.

Table 5. Teachers Opinions about Frequency of Media Education Elements Occurred During their Lessons

Age/gender of teachers	Some elements of media education are used regularly	Media education elements are used occasionally	Media education elements are used seldom or never
	Number of teachers (in %) who chose the answer		
Age 21-30 /total	20,00	30,00	50,00
21-30/men	33,33	33,33	33,33
21-30 /women	14,28	28,57	57,14
Age 31-40 /total	16,67	33,33	50,00
21-30/men	0,00	50,00	50,00
21-30 /women	25,00	25,00	50,00
Age 41-50/total	0,00	27,27	72,73
41-50/men	0,00	25,00	75,00
41-50 /women	0,00	28,57	71,43
Age 51-60 /total	8,33	25,00	66,67
51-60/men	20,00	20,00	60,00
51-60/women	0,00	28,57	71,43
Age 61-70 /total	0,00	25,00	75,00
61-70/men	0,00	100,00	0,00
61-70/women	0,00	10,00	90,00
All age groups/total	8,77	28,07	63,16
All age groups/men	11,11	38,89	50,00
All age groups/women	7,69	23,08	69,23

Figures presented in Table 5 suggest that only 8, 77% (the most active group within it are men teachers aged 21-30) of the teachers use elements of media education on a regular basis. 28, 07% of teachers integrate them from time to time (men are 15% more than women).

Noticeably, 63, 15% of the teachers (there are more women, especially elder ones, about 20% more than men) declared that they seldom if ever use media literacy activities in their lessons. Taking into consideration that 21, 05% of the teachers had previously said that they do not teach about media, this number goes down to 42, 1% of the questioned teachers.

Certainly, I was also interested to know what the hindrances on the way of media education at schools are.

Table 6. Reasons that Prevent Teachers from Integrating Media Education Elements During their Classes

Age/gender	Obstacles				
	I lack knowledge about theory and practice of teaching media education	I don't want to teach media	I don't have the financial motivation to do additional work	I am not familiar with media technology	I didn't get any directions and obligations from the school authorities
	Number of teachers (in %) who chose the answer				
Age 21-30 /total	30,00	0,00	40,00	10,00	70,00
21-30/men	00,00	0,00	0,00	33,33	100,00
21-30 /women	42,86	0,00	57,14	0,00	57,14
Age 31-40 /total	50,00	8,33	100,00	16,67	66,67
21-30/men	75,00	0,00	100,00	0,00	100,00
21-30 /women	37,50	12,50	100,00	25,00	50,00
Age 41-50/total	54,54	18,18	90,91	18,18	90,91
41-50/men	50,00	25,00	75,00	0,00	100,00
41-50 /women	57,14	14,28	100,00	28,57	85,71
Age 51-60 /total	83,33	8,33	91,67	25,00	100,00
51-60/men	80,00	0,00	80,00	0,00	100,00
51-60/women	85,71	14,28	100,00	42,86	100,00
Age 61-70 /total	50,00	33,33	66,67	50,00	58,33
61-70/men	50,00	50,00	100,00	0,00	100,00
61-70/women	50,00	30,00	60,00	60,00	50,00
All age groups/total	54,38	14,03	89,47	24,56	77,19
All age groups/men	55,55	11,11	72,22	5,55	100,00
All age groups/women	53,84	15,38	97,43	33,33	66,67

As we can see from the Table 6 the majority of teachers point to the lack of financial motivation as the biggest obstacle on their way (89, 47%, teachers over 30 mostly, women outnumber men by 25%). Then follow complains about the corresponding guidelines/ directions from the school authorities (77, 19%, among them there is 35% more of the men teacher, aged 41-50). About half of the teachers (54, 38% aged above 30) realize that they lack knowledge about theory and practice of media education. 24, 56% of the teachers (only 5, 55% of men among them, 33,33% of elder women) consider the serious impediment is that they are not familiar with media technology. And only 14, 03% (teachers over 60 years old mostly) of teachers do not want to deal with the media during their classes. There is no one in the age group of 21-30 who expressed a hostile attitude to media education.

Hence, the most significant hindrance of the development of media education according to Russian teachers is the low salary, definitely not enough to become enthusiastic about new technologies and re-writing their usual syllabuses. Though further more we find out that another major problem is the lack of the initiative of the teachers, who do not venture upon the innovation without the directives from the authority. With that, the obstacle, not in the least less, is the insufficient media literacy of teachers themselves.

General Conclusions

The analysis of the conducted questionnaire among teachers of secondary schools showed that realizing the great importance of the media in the contemporary information society, three quarters of them support the idea of media education at schools and 58% believe that a new

major for pedagogical institutes needs to be introduced - "Media Education". Most of teachers justly think that the combination of the autonomous and integrated media lessons is the most effective way today for the development of media education in Russia, and therefore - for the increase of media literacy of the young generation.

However, in spite of the fact that majority of teachers define the aim to develop the critical thinking of the audience as one of the most important, they significantly overestimate the weight of "protectionist" approach to media studies today, and on the contrary, undervalue the goals to develop the democratic thinking of the pupils, their knowledge about theory and history of media and media culture.

Moreover, despite of the general support of media education ideas (in theory) expressed by 75% of the teachers, actually only one third of them use some elements of media education at their lessons (in reality), and one fifth of the group does not do anything about it.
The hardest obstacle on the way of media education into the Russian classrooms is the absence of financial motivation, according to the teachers, though to our point of view, last but not the least is the passive anticipation of the authority's directives and insufficient level of knowledge of today's Russian teachers in terms of the theory and methods of media education.

Thus, the analysis of the teachers' questionnaire has given us additional proof for the necessity of the official introduction of the new university-level Major- "Media Education" (namely, Major because the homonymous Minor was registered in 2002) and media education courses for the students of all pedagogical institutes. Only when the media literate graduates of universities come to work in schools, we will be able to evaluate the position of media education within the curriculum.

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Appendix

Questions on the topic "Attitude of the School Teachers to Media Education of Pupils and University Students" (the author of the questionnaire is Prof. Dr. A.Fedorov)

What is your attitude to media education?

1	There is no need in media education for pupils
2	Media education should become part of the school curriculum
3	Media education should be offered through electives, after school clubs
4	There is no need in media education for university level students
5	Media education should be mandatory in pedagogical institutes and universities
6	Media education should be elective in universities
7	It is necessary to introduce a new Major - "Media Education", in order to prepare the qualified media teachers for secondary schools
8	Media education of pupils and students should be integrated into the traditional subjects (literature, history, biology, etc.)
9	Media education in school and university should be autonomous course
10	Media education in school and university should combine both forms, autonomous and integrated classes

What would you say are the main aims of media education?
(Check 5 most important for you)

1	Encouraging the development of the aesthetic taste, perception, evaluation of the aesthetic value of a media text, appreciation of masterpieces of media culture
2	Development of the critical thinking and critical autonomy of the personality towards media texts.
3	Protection from the harmful influences of media.
4	Satisfaction of different needs of the audiences
5	Teaching practical work with media technology
6	Development of the audiences' skills for political, ideological analysis of different aspects of media.
7	Development of the skills of perception, understanding and analysis of media language.
8	Development of the audiences' skills for the analysis of media texts in the broad cultural and social contexts.
9	Preparing young people for living in the democratic society.
10	Development of the communicative skills
11	Development of the ability for self-expression with the help of media technology, creation of media texts.
12	Teaching and learning the knowledge about the history of media, media culture
13	Transmittance of the knowledge about the theory of media, media culture
14	Development of the skills for the analysis of different aspects of media, media culture in terms of moral values, and psychology.

Do you use elements of media education during your lesson?
(choose one of the following)

1	Yes
2	No
3	Hard to say

If you use the elements of media education during your classes, then how often?

(choose of the following)

1	Regularly
2	Occasionally
3	Seldom or never

If you do not use media education elements, what prevents you from doing it?
(you can choose 1-3 variants among these)

1	I feel I need more knowledge about theory and methods of teaching media
2	I do not want to teach media
3	I do not feel financial motivation
4	I am not familiar with technology
5	There are no directives from school authorities
6	Other reason (what?)

Design And Communication For Local Development: Technological Decisions In Collaborative Scenarios

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Abstract

Design for development is an approach that tries to develop a new conceptual matrix in order to actively face the dissociation between technology and society. It is carried out at the **CAO Center** (Computer Aided Design Centre) of the University of Buenos Aires, sets in motion the experience of design, accompanying local communities in the unfolding of strategies of inhabitability linked to axes of local development: water and sanitation, territorial rooting, creation of satisfactory employment, reconstruction of the productive fabric, food safety, peace, accessibility of the vulnerable communities to the cultural circuits.
Our project[1] thinks the designer as an agent of technological change, who makes it possible to develop a technological-, product-, and communication-culture, starting with an animation device based on the web 2.0, which articulates, connects and/or communicates the requirements, needs and/or resources of the territory where it is located, with other social networks in other geographies. We present our theoretical and methodological frame. We describe some experiences of technological assistance and hosting, from the University to the civic initiatives regarding water and sanitation, satisfactory employment, and territorial

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[1] http://www.investigacionaccion.com.ar/site/

rooting in isolated areas, geographically or socially speaking, in order to promote the technological and methodological contributions of small-scale solutions.

1. Presentation of our project: History

Our project RED[2]acknowledges its origin and expansion in the university's process of aperture towards the community, and took place parallel to the creation of the *CAO* (Computer Aided Design) Center.

The hypothesis behind this initiative was that the forming of a critical mass in research in the field of new technologies[3] associated with a transfer device, created a new agenda for research in design. The projects for the transfer of the new technologies were like "windows to everyday life", serving as devices to unveil the behaviours of local communities, the obstacles for the appropriation of technologies, the ethics that guided their technological and design practices, performing intelligence and tendency tasks within the productive system.

Knowledge problems in technological transfer

When accepting the transfer experiences, the use of new technologies didn't have to be an objective in itself: we assumed that they, as well as design, are in the horizon of any productive unity or community, as a component of their practices. Our task was to find groups, communities and ventures that were traveling this process. The notion of "accompaniment" and "animator" is considered an essential component to this proposition, as an ideological taking stance: we assist in self-management processes, which are generators of autonomy that transforms communities in subjects of development in their territory, and in front of their peers. We consider quality of life as the objective of any experience of technological transfer, and originating in an academic environment we have contextualized the reflection and systematization of the series of problems of endogenous development. These considerations about technology transfer, in peripheral contexts, are based on the accumulated historical experience of technological frustrations due to an assimilation which was incomplete and not very intelligent. We suggest the "appropriation" as the process through which a community develops a proactive relationship between technology and its own objectives. We promote the change of the communication paradigm in Internet towards the generation of local contents in a global scenario.

We consider that "strategic innovation" are those acts of technological creativity, oriented towards the adaptation and adoption of technologies, in relation to objectives of local community development. It is a creativity which is not valued in the field of innovation, but necessary in order to "metabolize" technologies by means of an intelligent learning. Local initiatives, the projects, operate as devices for the restitution of the "social" character of technology as an adjustment factor between aspirations and resources.

This criterion of technological transfer based on projects contradicts the policies of the "top/down" type, which consist of extending the networks, granting credits, and making infrastructures grow, without animating the flow paths in the system, nor promoting local development. Technological animation tends to close this gap. The theoretical premises were

technological change as scenario,

participative research action and communitarian construction as methodologies,

endogenous development as objective,

the designer as the cultural animator

product culture as the structuring axis of social fabric

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[2] *Interfase entre el Diseño y la Comunidad* (Interface Between Design and Community), 1990.
Creación Asistida por Ordenador (Computer Aided Creation*), en 1990.

and territory as a complex system

New technologies have to be animated so that they generate other behaviour patterns, new social and institutional dynamics, and we believe that the designer is a natural agent of technological change. Design is like the "Trojan Horse", which carries the germ of the TICs and their social and productive dynamics into the core of the communities and the productive units. Our research project[4] ***Diseño y Comunicación para el Desarrollo Local***[5], in which we understand territory as a complex system emerging from the result of actions and interactions of individuals and/or groups of individuals, some within institutions, official organisms, non-governmental organizations, in which *local knowledge* is vital. In our proposition, the experience of socialization of the knowledge at the territory is the research unit, which repositions and redefines technique within the context of sustainable local development, favouring its being appropriated by the emerging communities[6].

Authors like Antonio Vázquez Barquero[7] pointed out that the *technological progress presents an endogenous behaviour motivated by the effects that it generates on it, the generation of a better understanding of facts and learning*.

We believe that development goes beyond economic competitiveness, which drives to the destruction of the richness of the socio-cultural weave of a location; we promote development that takes human, social values, such as solidarity, cooperativism, responsibility in the local culture, and generator of citizen conscience.

2. The role of local context.

During the 70's, Argentina witnessed the collapse of the models of imports substitution that had animated the development of its national industry; like other countries in Latin America, it did not possess a project of productive development of an endogenous character. Later, the productive system endured the consequences of the neo-liberal policies of the 90's, which dismantled it almost completely.

In 2001, after almost 20 years of stagnation of the productive system, the destruction of virtuous networks and the disintegration of the social weave, the crisis of the financial system ensued. The abandonment of the convertibility again generated the conditions for an economic reactivation, with the growth of certain dynamic activities. But a large percent of the population was left out of the employment market, unable to comprehend the new productive dynamics, and living under the shelter of State subsidies.

The most significant objective of our project became the reconstruction of the productive fabric, which in turn is part of the social weave of a place. In this direction, we have detected different factors, institutions or productive initiatives, which are linked to social groups:

- Survival initiatives, related to a family group or a group of families with each other.
- Initiative of community action strategies, by means of the associativism in the area of social economy, based on territory on a "neighbourhood" scale.

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[4] http://www.investigacionaccion.com.ar/site/

[5] *Diseño y Comunicación para el Desarrollo* (Design and Communication for Development), Project credited in the Program for Local Development of the *Secretaría de Políticas Universitarias, Ministerio de Educación, Ciencia y Tecnología* (Ministry of Education, Science and Technology), Program 2006-2007.

[6] GALAN, B., MAIDANA LEGAL, A., SENAR, P. NEUMAN, M., *Diseño para el desarrollo: un enfoque en expansión,* (Design for development: an expanding approach) 2006, X Congreso Iberoamericano de gráfica Digital, SIGRADI; 2006, Santiago de Chile.

[7] Antonio Vázquez Barquero, Oscar Madoery (compiladores) "Transformaciones globales, instituciones y políticas de desarrollo local" ISBN 950-808-326-3

- Initiatives that deal with culture and recovery or possession of civil values which rabge from the demand of housing improvements, to the recovery of cultural values.
- Initiatives of NGOs that work in the local area and are scattered in each other's knowledge of actions, very frequently overlapping actions.

These initiatives that are actions taken by subjects and institutions were exhausted on a neighbourhood scale. That is why one of its boundaries was its area of influence. Therefore, by means of technological support we managed to connect and place these actions with the activities on dynamic local or regional scales, reducing the digital gap, and starting the reconstruction of the social subject based on the expansion of productive culture. That is, contribute to the formation of social capital, through the reconstruction of the productive weave, as a social property belonging to local communities, that articulates technological resources in order to improve the chances for the integration to new scenarios and global dynamics, but with the logic of a local community.

Relationship between productive unit and territory: the innovation system

In the society of knowledge, in which inputs are not hard technological knowledge, but information and the capability to share, understand and take position in front of other cognitive, symbolic and cultural system, design acquires vital importance for local communities. But design must be reconsidered as innovation. This notion stresses the collaborative and synergic environment of the elements, unlike the design by author, which has no validity beyond the restricted circuits of the elite culture.

The endogenous growth takes impulse on a scenario where the knowledge accumulation variable is the determining factor of progress, associating design with knowledge, the basic characteristic of this contribution is not to consider technical progress as a factor that is determined in an exogenous manner, and accumulation as generation, organization, and socialization of knowledge. That is why, the larger the level of human knowledge accumulated and socialized, the quicker the development; therefore, productive growth will always tend to be faster, making an impact on the local social weave. That is why we have to tend to these situations:

- to have a large magnitude of the population educated and sensitized in technological issues, and
- an economic-productive environment that is favourable for the generation of human knowledge.

The movement established on the territory has two directions: one, which transmits knowledge and transforming energy from the productive unit to the territory (bottom-up), generating a productive atmosphere, and another one that tends to transmit the dynamics of the territorial institutional system to the productive units (top-down).

It is during the development and maturing of the productive units in which isolation is broken, and local scale is overcome. The representation of territory is altered, since the networks of resources-inputs-opportunities-threats, are on diverse scales. It is at this cross point, between local and contextual, in which globalization is consummated: that is, the individual incorporates the context and its threats, together with its resources and assets, and accesses a complex interpretation over which alternatives can be imagined, trajectories can be outlined, and strategies can be defined. Product management generally forces to have several scales that are systemically related by means of a double movement, bottom-up and top-down: at a scale of the productive unit, of local, regional and global contexts.

Design management is the reorganization of resources, whether material or symbolical, in order to improve the positioning of a group, community, or company, in order to improve their performance in a productive and social context[8].

This social capital, as Fukuyama[9] defines, is "the capacity that arises from the predominance of trust in a society or in determined sectors or actors. It may be personified in the smallest and most basic group of society, the family, as well as in the largest group of all, the nation, and in all its intermediate groups, among them, the productive units".

Communitarian construction: design and cultural democracy

On the globalization scenarios, the productive units, the organization of civil society and the communities are forced to confront their possibilities and resources, to reorganize their material or symbolical patrimonies, in order to face transcultural and complex contexts. Strategic management of design is a structural coupling[10] between a local reality, which is the object of management, and an external context, represented by the scenarios of globalization in which it is necessary to credit the local assets. From this line of investigation, we have developed a network as a device for the animation of transfer experiences[11], which provides a relevant empirical basis to support a process of reflection about the voids and limitations generated by the policies of productive development designed "from above"[12].

The approach to communitarian construction

The approach to communitarian construction is based on the concept of social capital, but it imposes a participative construction on the community's side, which implies a task of overcoming the dependence on subsidies: self-esteem, generation of feelings of community, and becoming aware of the individual and collective assets of the neighbourhood. There are various methodologies under certain common patterns[13]: it is an oriented approach, the assets (not the shortcomings) support the reconstruction of social relations and structures, weakened by decades of migrations, uprooting, disinvestment and isolation. It promotes the formation of local leadership. It considers poverty as a complex weave of factors, a net of intertwined

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[8] SIMON, H., Las ciencias de lo artificial, translate by Francisco Girondella, Original Tittle: The Science of the Artificial, The Massachussets Institute of Technology, Editorial ATE, 1978.

[9] Fukuyama, F ., "Las reglas del juego", La gran ruptura, Editorial Atlantida, 1999; Fukuyama, F., "Social capital and civil society".

[10] D. I. Beatriz Galán, *Diseño estratégico y autogestión asistida en Buenos Aires: casos y cuestiones teóricas, en Universidad y Comunidad* (Strategic design and self-management in Buenos Aires: cases and theoretical issues, in University and Community), *Primer Congreso de Transferencia de Diseño: Diseño y Territorio*, (First Congress on design Transfer: Design and Territory) Universidad Nacional de Colombia, Bogotá, May 2006.

[11] *Formación de una red de transferencia de diseño, como dispositivo de animación, fortalecimiento y prospectiva del sistema de innovación*, (Construction of a network of design transfer, as a device for the animation, strengthening and prospective of the innovation system) *Programación Científica UBACyT*, (UBACyT Scientific Programming) 2004-2007.

[12] BOSCHERINI, F., POMA, L., *Mas allá de los distritos industriales: el nuevo concepto de territorio en el marco de la economía loca*l, (Beyond the industrial districts: the new concept of territory within the frame of local economy) in *El rol de las instituciones en el espacio global* (The role of institutions in global space), BOSCHERINI, F., POMA, L., compilers, Universidad de General Sarmiento, Buenos Aires- Madrid, Miño y Dávila Editores, 2000, (pp. 23-38).

[13] Jorge, E. E., Censi, F., Bertuchi, J., *Capital Social y pobreza : casos y métodos en la "Construcción comunitaria"* (Social Capital and Poverty: cases and methods in "Communitarian Construction"), www.cambiocultural.com

problems, pertaining to health, to environment, to employment, and it is necessary to untie the knot of the problem. Part of that problem is ignorance regarding the productive dynamics and the restrictions to the narrow boundaries of locality. The approach of "communitarian construction" is based on the following principles:

- To be focused on specific initiatives.
- To be conducted by the community with a broad participation criterion.
- To have an entrepreneur-communitarian approach.
- To rest on the assets of the community
- To set out from the local scale, towards society. To link local scale with the territory.
- To attack with a strategic vision, conscious of the barriers that create exclusion.

The role of design

The valorization and organization of the resources, competences and beliefs, even of the resilient attitudes[14], of each community lead to a project-program that implicates the unfolding of activities. These involve means which get defined within the framework of communication and product policies. Seen in this perspective, as mediators of interactions, products or interfaces must comply with patterns of cognitive and symbolical as well as technical and economic[15] performance. This process suggests to us a rereading of the contribution of design, bringing in specific resources:

- By means of productive mappings and social cartography[16], it contributes visibility to the territory networks, which intertweave resources and opportunities.
- Through elements of communication it enables consensus.
- As a systematizer of visual systems, expressing local identities, it is an agent of institutionality.
- As a systematizer of the offer of local products, articulating them into the dynamics of demand, it helps mature the chains of value.
- By granting visibility to the innovation networks, it is an agent of understanding and appropriation of territory, of its structure, of its possibilities, contributing to the construction of social capital.
- By means of the addition of new technologies in social practices, it transforms local communities in producers of contents, subjects of information society, and agents of development, on a broader geographical scale.

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[14] TOSCANO, S., Spinadel,V. W de, (supervision), *Utilización de los parámetros de resiliencia de la planificación del desarrollo local*, (Using resilience parameters of local development planning) lecture at the *Jornadas de Investigación de Diseño para el Desarrollo Local* (Research Conferences on Design for Local Development), 2006, Buenos Aires, Facultad de Arquitectura, Diseño y Urbanismo, Universidad de Buenos Aires, http://www.dide.investigacionaccion.com.ar. The author considers poverty as the main factor of contamination, and relates the success of development projects to their implementing resilience, considered as the "capacity of an individual to react and recover in the face of adversity, which implies a set of qualities that promote a process of successful adaptation and transformation in spite of the risks and misfortune".

[15] Galán, B., Orsi, L., *Diseño para la gestión ambiental: decisiones tecnológicas en escenarios participativos* (Design for environmental management: technological decisions in participative scenarios), in the Acts of the *IX Seminario Iberoamericano de Gráfica Digital* (IX Iberoamerican Seminar on Digital Graphics), 2005, Lima, Perú.
[16] NEUMAN, M, ORSI; L., GALAN B. , *La cartografía social como elemento de mediación para el desarrollo territorial*, (Social cartography as an element of mediation for territorial development) in the *Jornadas de Diseño para el Desarrollo Local* (Conferences of Design for Local Development), FADU, UBA, 2006.http://www.dide.investigacionaccion.com.ar.

New technologies in Argentina: Some indicators

According to the annual ranking prepared by the World Economic Forum, the nation went from the 71st place to the 63rd place, in the period 2006/07, most of the countries in Latin America showed an improvement in the use of the information technologies in the last year. This study, developed by the Forum in collaboration with the International Business School INSEAD, bases its conclusions on the application and the use of the information technologies as one of the factors that are taken into consideration in order to determine a country's competitiveness. Among other factors, we find regulatory frameworks; infrastructures; preparation of citizens, governments and firms to take advantage of the resources and their real use of cutting-edge technology.

Another factor is the amount of accesses to Internet, specially broadband. Around 1.583.713 connections to Internet through broadband were registered in Argentina by the end of 2006, showing an annual growth of 66.2% in high-speed connections, as shows the third edition of the Cisco Broadband Barometer.

Based on the analysis performed by the Cisco Broadband Barometer, the main results were:
- In the second semester of 2006, the Home segment experienced a 31% increase and the Business segment, an increase of 17.7%. According to data from the INDEC of 2005, there are in Argentina 10.07 million homes. If we considered the current amount of broadband technology connections in the Home segment, 1.58 millions, we can conclude that only about 15.7% of these homes have an Internet connection with Broadband technology.
- A fact to take into consideration in the numbers recently surveyed is the growth in the broadband connections in the Education segment, which reached almost 29%. During the June/December semester, the total penetration in the Education area was of 14.7%. In this period, the increase occurred mainly by individual initiatives of the educational units in the country.
- The ADSL access technology grew 76% during the last year, which makes it the type of connection with the highest increase, followed by Cable Modem connections, with 49% increase.
- Dedicated Lines increased 24.4% during the last semester, mainly in the segment of small and medium sized businesses. As far as satellite technology is concerned, it grew 12.7% during that same period mainly in the segments of Government and Education.
- In the Metropolitan Area of Buenos Aires, connections increased 23.4% between June and December 2006. Outside this area, connections increased 57.4% during the same period.
- Although the Optical Fiber Corridor - formed by the City of Buenos Aires, the provinces of Buenos Aires, Córdoba, Santa Fé and Mendoza - keeps concentrating 90% of the connections, a higher increase begins to be noticed in the tourist and productive areas of the country, outside the Metropolitan area.

Tics and social inclusion

An urban strategy for technological inclusion must turn to the "bottom-up" model, Castells [17]points out that "Disconnected areas are discontinuous culturally and spatially" it must have a combination of political strategies and social software, we could mention the following:
- Promote web 2.0 in which citizens and politicians take part.
- Open access to Internet: generalized and inexpensive telecommunication networks.
- Broad and diverse basis of knowledge.

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[17] ″ La Sociedad Red (The Rise of Network Society), La Era de la Información, Volúmen 1, 1996. Alianza

- Use of open and flexible licenses for the knowledge and the "cultural products" (ranging from Copyleft to Creative Commons), which favour reusing and recombining software.

Challenges for Internet on a territorial scale are the hyper-local networks where the power of digital networks and physical networks come together, what is local and what is global. We believe that Internet+Tic are an innovative means that relate to local development and animate the system of social, productive, institutional, economic and territorial structures, creating the conditions for a generation of synergies, and these move the production processes that originate in these synergic capabilities, both for the production units that are part of these innovative means, and for the community as a whole. We no longer think in economic equations, nor do we reinvent concepts about development, instead, we must tend to achieve a balance between sustainable social growth and the development of human capital.

3. The construction of cases:

Experience 1: Design and technology for the generation of environmental citizenship. New technologies and their role in the formation of social capital.

Experience: El Riachuelo Foundation[18]

Current situation:

The work of the foundation The Riachuelo, has been developed more than for 20 years in Villa Jardin, this area this located on the one he/she laughed Slaughter- Riachuelo, in the conurbano from Buenos Aires. It is located on a margin of the one he/she laughed Slaughter. Riachuelo and this, plow the polluted in Latin America. The foundation achievement with success to implement in the area a strategy to spread the nets of drinkable water until the neighborhood, with a methodology that he/she goes from the individualization from each family group to the pursuit of the contractors. This working methodology that was socialized, to other entities mires, by means of visits and consultantships that were materialized in meetings and discussions on the application to the case in short. Let us remember that the alone conurbano from Buenos Aires has 67% of its inhabitants drinkable water[19] and 40% sewers *, in the same one they inhabit 8.600.000 [20] of people.

Objectives

In the area, Villa Jardin, the index of people's informatización is very low, but this contrasts, with the will of giving to know its experience, this will is observed in people that have lived and they have participated of the same one. their population would originate, you/he/she continues living and the place, achieving that there are already two and up to three generations living in the neighborhood and until in the same lot. It is characteristic it facilitated that, the adults, relate to the smallest envelope like it was the neighborhood before there were drinkable water and the same one they were summoned by neighbors of other neighborhoods to collaborate with their experience, to other projects to be carried out or in march.

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[18] http://www.investigacionaccion.com.ar/fr
[19] http://www.metropolitana.org.ar/publicaciones/lgc_05.htm
[20] Fuente: INDEC, Censo Nacional de Población, Hogares y Viviendas 2001.

- Development of a repository for citizen initiatives regarding water strategies + sanitation in Internet.
- Development and transfer of an informatics system for the maintenance of the repository by the dwellers.
- To promote the use of informatics as a tool of communication.

Series of problems that were detected

In the area, ***Villa Jardín***, the rate of informatization is very low, but this stands in contrast to their will of making their experience known to others. The original population still lives there, reaching already two and even three generations living in the neighbourhood, and on the same plot of land. This feature enabled the elders to narrate to the younger ones what the neighbourhood looked like before potable water became available; they were invited in by the dwellers of other neighbourhoods to collaborate with their experience to other projects which would be carried out, or were already under way. The following were points taken into consideration at the moment of designing an information system for the Foundation.
- Ease of maintenance and updating.
- That it possessed the possibility of incorporating young people as well as older adults to the informatics work.

The solution that was put into practice

We worked with the concept of webpage, taking its graphic interface and array of elements. We reduced texts to a minimum, and we introduced sound as an element of communication. Sound was presented by means of narrations of experiences, in the voice of those who had taken part in them, thus managing to make the site appropriate, as an element in which each one would portray how introducing potable water to their homes had affected things. We took resources from social cartography in order to identify in the territory zone-milestones, and these could be presented by the dwellers themselves.

The item of maintenance and updating was solved by means of the web 2.0. All the steps that will be described were carried out with free, open source software. A graphic piece, as quality seal (Figure 1) was proposed to the Foundation; with it other entities would be invited in to discuss, reach consensus and write down the norms that would rule the publishing of experiences or projects into the repository.We worked on a neighbourhood brand, where we developed an experience so that dwellers may have an image of the neighbourhood that will nourish their sense of belonging both to the neighbourhood as to the rest of the city (Figure 1).

Final comments:

- The decision to make use of voice in the narrations has also got a symbolical connotation; the fact of passing on the word or the voice to those that are directly affected by the problems in development, allowing them to take part directly in the spreading of the experiences
- We acknowledge that reality is mainly a social construction. We draw from that that it deals with longer times, and many hands that shape it. It is there where the designer takes the role of the agent of change and group cohesion from which new actions to be carried out can be born, according to their perceptions and their needs.
- The idea of a quality seal was not to "impose" an image, but rather, that it would favour dialogues with the entity that were so far unknown.

- There is no adequate universal informatics formula for each situation presented, and therefore the production, putting into practice and/or design of the software has to be appropriate for the cultural, social and economic context in which it performs.
- And lastly, we understand that people and processes are necessary to enable the transmission of knowledge with the objective that the latter may produce positive results. In that sense, the means of communication and technology are means and not an end in themselves.

Experience 2 : Moreno: Pre-feasibility of a fair of neighbourhood productive units.

It is a project on a neighbourhood scale[21], the objective of which is to identify, mobilize and articulate the competences and resources of the neighbourhoods *Santa Elena*, *Satellite II* and *Evita Obrera*, attempting[22] to reconstruct the productive weave. The local context is lead by activist civil societies of three soup-kitchens, with whom some working bonds had already been established based on the presence of a local group of PROMEBA[23]. The project explored and proposed to mobilize the competences of these soup-kitchens in the gastronomical area, which had surged from their need to face the food necessities of the child population. The initial objective was to study the feasibility of a fair that would settle in an ad-hoc space projected by the PROMEBA.

Moreno specially revealed the advantages of the neighborhood, its adequate scale as a first link to the territory, to detect and incubate productive units. This supposes to step from the domestic or communitarian productions onto productions from productive units of social economy. It also showed the limitations of this neighbourhood scale for this purpose, since the market is located in a context that is external to the neighbourhood itself, and the resources and dynamics of which the dwellers ignore. The gap between domestic productions and micro-businesses of social economy leads to the necessity to reproduce in some way a device of "incubation", inserted into their local practices. The profile of the productive units in the gastronomical area surged from a double outlook on the neighbourhood competences and over local opportunities, since the IMDEL promotes a gastronomical corridor in the city council.

Parallel to that, we attempt to introduce knowledge of new technologies, in order to promote, through the web, the incorporation of resources in a scale other than the one of their neighbourhoodand acces to the market.

This experience will try to go deeper into the concept of incubation, inserted into the communitarian practices and strategies, using the resources of the local institutional system. In order to accompany these productive initiatives, the support of TICs is vital, since the market for their development is in the centre of the city. The articulation in the web would enable to win clients in a larger area, more distant, with a higher purchasing power, while doing without the own elaboration installations. Since the productive units are small, and their chances of investment are nil, they should share the installations for food elaboration, available on a local scale, by agreements with local communitarian institutions. This project and others took us to value the role of the intermediate associations as devices for the incubation-maturing of productive units the final insertion of which will be the private economy, but which for a long period lack the capital and the knowledge that are necessary for their full autonomy.

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[21] NEUMAN, M., RUFINO, J. P., *Animación territorial de emprendedores para la organización de una preferia barrial*, (Territorial animation of entrepreneurs for the organization of a neighbourhood pre-fair), lecture at the *Jornadas de Comunicación para el Desarrollo Local*, (Conferences of Communication for Local development) FADU, UBA, 2006.
[22] Neighbourhoods located in the district of Moreno, Province of Buenos Aires.
[23] Programa Mejoramiento de Barrios (Program for the Improvement of Neighbourhoods), National Ministry of Infrastructure. The Program developed an urbanization project under a participative and interdisciplinary methodology.

Experience 3 : Productive transformations in the Delta of the Paraná.

Delta of the Paraná is the name given to an area of territory in the final portion of the Paraná River system, with an overall surface of 17,500 km^2. It is the second in importance in South America, after the *Amazonas* one (Bonetto, 1986). It spans from the city of *Diamante* (province of Entre Ríos) to the mouth of the rivers *Paraná* and *Uruguay* in the estuary of the *Río de la Plata*. In the year 2000 it was declared World Biosphere Reserve, promoted by Argentina at the UNESCO, with the aim of protecting the natural riches of the area, and of stimulating economic activities with a sustainable ecological profile. The first section of the islands -an area strongly dominated by agricultural activities in older times- is nowadays an area where tourist and sports activities concentrate. The 2nd, 3rd and 4th Sections are still areas of a predominant primary productive activity, where forestation of salicaceae, for paper, constitutes to date almost a mono-production, although there are also producers with wicker plantations for handcrafted products, and a growing cattle farming activity in large producers. The change in activity determined that many of those who had been small fruit producers had to abandon the Delta or turn to working as employees, since forestation began to demand a substantially larger economic unit. Those who could not have access to new land lost their quality of independent producers, and had to migrate to the City, proceeding to become a part of the labour circuit linked to the recreational activities, or of the unemployed sectors.

Manos del Delta (Hands of the Delta).

Hands of the Delta is an artisans' cooperative that congregates 21 family micro-businesses in the area of the Tigre district, who work in the production and commercialization of objects manufactured in rush, wicker and willow. All its members were born on the islands located between the second and the third sections of the Delta of the Paraná.
Each family of artisans manufactures original products based on raw materials that they grow in their homes and fields, and which are transformed in their workshops, using their own production techniques. They know technologies and possess basic tools for this transformation. In order to commercialize these products, this organization has a location at the **Puerto de Frutos del Tigre** -a commercial space of great diffusion in the area of the Autonomous City of Buenos Aires and the Province of Buenos Aires-, which was assigned by the local city council in 1996.
The active policies for the reconversion of areas of the population of the Delta, from the production of fruit and vegetables, to the production and transformation of wicker and its byproducts into products, remarkably broadened the capacity of sustainability of the families and small and micro productive projects with a behaviour that is respectful towards the natural and social resources of the region. *Manos del Delta* was established as a cooperative in 1996. As an intermediate organization it has since covered the role of link between the delta population and the markets, contributing to the sustainability at each productive enclave.

The rol of new technologies.

Online cataloguing[24] of the complex offer of products, which was developed in our projects, enabled access to the national market, allowing the response to orders coming in from different parts of our broad country. This gave the Cooperative projection, and positioned it as a productive referent of the region, preserving its lifestyle and territorial rooting. It is

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[24] http://www.manosdeldelta.com.ar/catalogo.htm

necessary to remark that the sales-point works in the continent only, for three days a week. The web site is seen to by a member who was trained in the modification of prices, and this generates a permanent technical assistance of our project. The habitat of the artisans' lacks layouts of optical fiber networks, and broadband is still inexistent. An intermediate Development Agency *Arroyo Felicaria*, will soon introduce broadband by means of an agreement with Microsoft, and this will enable the incorporation to our Conferences of sensitization web2.

Experience 4. Sensitization about web 2.0 technologies.[25]

The interactions and transmission of knowledge are vital for the construction of a space of communication in which individuals establish relationships, share their experiences, learn their practices collectively and give them sense. This space, constructed materially, symbolically and as an experience, is what we call "**Workshop in the Sensitization of Web 2.0 Technologies**". In these workshops we develop and test methods, processes, systems, procedures, digital artifacts, that is, technologies, aimed at increasing the capabilities to produce value in people and in organizations, based on inclusive outlooks of the technology, and towards a technological democracy.

In very schematic terms, the technology we gradually develop and apply is supported on the following items: To simultaneously achieve productivity and quality of life, and capacity to undertake and innovate locally; we encourage the capacity of people to individually -but socially responsibly- take charge of a self-generated design which holds values belonging to the individual and to his community. Figure Nª2

The capability of an organization of people, which we will call Social Capital[26], will be dependant on:

- The capability to produce value in the individuals that are part of it, Human Capital.
- The capabilities of individuals to cooperate among each other, Relational Capital.
- The environmental conditions in which the individuals act and relate to each other. Environment.
- The lining up of the people in these organizations with a common purpose, which is debated in this environment. Objectives.

4. Prospective:

Access to web 2 enables the productive initiatives in isolated areas, with different types of exclusion and isolation, to reach distant markets and to win resources that are available in the web. Intermediate associations are naturally the organizations that allow an approach to web 2 technology.

It is possible to scale a management model, which would combine an incubator with accessibility to web 2, based on intermediate entities that act as incubators of local initiatives. We believe that this would be a powerful device against exclusion.

This lead us to establish a procedure systematic, consisting of a hosting service and technical assistance to communitarian initiatives, which is administered by means of local associations, complementing the projects and actions of animation of the communitarian action strategies. The proposal values and strengthens intermediate entities, as devices for the incubation-maturing of communitarian undertakings. The idea of the incubator implies that the technical

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[25] http://www.investigacionaccion.com.ar/jornadas
[26] JEROEN, H., ICTs Quality of life and social capital, in the Field of Scientific an Technical Research (COST) ICT Capabilities en action, 2004.

assistance should tend to be limited in time, that the initiatives take off and become autonomous, generate their own resources of hard and soft. This takes us to additionally define a policy for the domain that ensures the ethic-environmental guidelines of the University of Buenos Aires.

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INDEC: Censo Nacional de Población, Hogares y Viviendas 2001.

Figure 1

Figure 2

Teenagers On The Net : Generational Divide, Autonomy, Liberty, and Responsibility

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Abstract

This paper is based on recent qualitative observations made within the framework of the research project **TIRO -Teens and ICT, Risks and Opportunities**[1]- sponsored by the Belgian Science Policy Office (BELSPO). The main topic of this research regards the rules and regulations shaped and used by teeangers (12 to 18) to guide their practices and their attitudes in the Internet sphere. In a first part, the paper questions the generational divide that shapes the teenagers' ICT practices and its impact on the youth's socialization and regulation. Based on these sociological and cultural observations, the second part analyses the traditional legal frame that should regulate this teenager's sphere, and questions its appropriateness.

Introduction

This article is based on recent observations made within the framework of the research project **TIRO -Teens and ICT, Risks and Opportunities**[2]- financed through the Belgian Science Policy Office (BELSPO). Observations, made over two years of virtual communicative practices with young people on the Internet, particularly the activity of blogging[3], are also taken into account.

TIRO research has begun more than a year ago. This project is focused on ICT uses (Internet, video games and mobiles) by the 12-18 old teenagers. The central objective of this project is to **understand the social praxis around ICT use shaped by young people**, to question them concerning the risks and opportunities for their socialization. One of the political issues of TIRO is **the implementation of regulatory tools concerning risky activities well representatives of their reality** and to elaborate these tools via detailed observations of young people's common practices. TIRO research has a multi-disciplinary approach : sociologists, researchers from the communication sciences and legal experts work together to better understand the practices of teeangers in order to elaborate appropriate regulation. The methodology is multipolar with a quantitative survey[4] and several qualitative approaches[5]

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[1] Cfr the website http://www.ua.ac.be/tiro

[2] Cfr the website http://www.ua.ac.be/tiro

[3] In the context of a particular study (cfr *Je blogue, tu blogues, nous bloguons,* Clémi, France, http://www.clemi.org/medias_scolaires/blogs/article_blog_ACO.pdf) and certain projects in education concerning the media (BlogoMag, the magazine of blogging edited by *and* for young people, ACMJ).

[4] Survey made by Professor M. WALRAVE and Sunna LENAERTS, University of Antwerp, partner of the project. This survey is based sample of 1300 teenagers.

[5] The qualitative phase includes 8 focus groups of boys and girls classified by age, gender and teaching background and a diary research made on a panel of 20 teenagers.

which complete each other: the quantitative survey has a large scale but is based on declarative datas[6] decontextualized, without subjective meaning. On the other and, interviews, focus groups and blog tracking are contextualized and give detailed and comprehensive description of these practices. The particularity of this research is that it is not only a research on young people but with young people, that requires a high degree of participation and cooperation from young people themselves.

From this fairly large research framework, we have decided to narrow the focus in this article on the generational divide observed in our preliminary observations.

The generational divide is not new but seems to widen and harden with ICT use by young people. The adolescents of the 21st century occupy the space offered by these new media. They express themselves, they chat, consume, play, surf, read, listen… This new social scene seems to be entirely shaped by teenagers outside the world of the adults. Rare are the parents who manage to enter in these « new spaces » developed by their children. First, we will study the generational divide as it has been observed in our empirical work. Then, we will contextualize this generational divide with some sociological elements. We will take up the example of weblogs or "blogs" which illustrates on the one hand, the individualization of web practices of youths and their autonomy and on the other hand, the frantic search for the peers approval. Finally we will examine the impact on the socialization of young people of this increased autonomy or of this generational divide.

After those first observations, we will turn to the law in order to ask questions regarding the legal situation of ICT teenagers' practices. The increasing autonomy of young people has poked breaches in their legal incapacity. Theses breaches are founded on their supposed capacity discernment. Thanks to new technologies, young people have access to the sphere of public expression and find themselves practically on the same footing as the press. Are young people, within the framework of this enormous power, well served by self-regulation pure and simple? Is their freedom of expression as wide in this regard as the one of journalists? After having examined these questions we will consider the limits of freedom of expression, based on the principle of respect for the rights of others. Two limits appear to us to illustrate questions in the context of a confrontation between adolescents and the new trends in freedom of expression, concerning cyberteasing and copyright. Here freedom shows its hidden face: liability. Adolescents are by definition in a legal state of incapacity. Does this also mean they don't bear any liability? The underlying goal of the civil liability system is one of compensation of the damage suffered by the victim. What is the status of this liability as regards minors, their parents, and teachers, and does the current system of liability measure up to the underlying goal? Would civil liability be clarified and made more workable if it were detached from the notion of guilt, which in any doesn't benefit the cause of the victim? With regard to each of these themes, we will discuss pathways for reflection concerning regulations and we will underline the fact that when someone's rights are violated over the Internet, a right of reply offers perhaps an avenue of redress more adequate than litigious procedures.

The tone of this article is still quite exploratory, sign of a research project that is still in progress and which has taken up a fairly radical position to work with young people toward understanding and regulating their practices.

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[6]Young people have great difficulties to write their practices or to describe gestures that seem spontaneous to them. They have a "procedural memory" (T. De SMEDT, A. KLEIN & L. ROMAIN, 2002).

The Internet, a catalyser of the generational divide

The generational divide shaped by ICT use has until now received **little interest in the sociological literature, even** in sociology of family[7]. Nevertheless, ICT use by teenagers reveals deep logics that mark currently the family structure. The French studies which have analyzed youth ICT practices, put little accent on the generational divide, rather on two principal topics: identity and sociability constructed through theses practises. This focus on this twofold theme can be explained by the fact that adolescence has been for a long time defined by psychologists by its identitary characteristics (an age of mutations, construction of self) and its intense and particular sociability (peer pressure, conformism). The sociology of youth is recently appeared and the adolescence[8] begins to be considered like a social category in relation to others (VIENNE & DELFORGE, 2006).

It is striking to see that Internet use by youths clearly fits into a perspective of the *among-ourselves* (in french: entre-soi), tribal and without adults (TREDAN, 2004 & METTON, 2004 & MARTIN, 2004 & Médiappro, 2006). Studies agree on this point but few worry about it. Concretely, we observe that the adult or the parental figure is absent in youth Internet use. The **Internet is learned alone, « is experienced » among peers, without recourse to adult**. Teenagers, especially the boys, have confidence in their learning capacities, S. LIVINGSTONE speaks about a *confident generation*. They consider themselves as experts much more than their parents, even if this expertise seems to be more on the order of talk than that of a real Internet literacy. A teenager builds his digital world alone, in an autonomous and individualized way. He personalizes his "my computer" (backdrop, welcome message, contact classifications, emoticon…) like personal territory, a sort of prolongation of his personality. He revindicates the right to be the only one to use the computer, to manage its navigation, to develop his relational networks, his leisure's and tastes with Internet independently of family norms and parental control. Like 12 year old Janis who surfs with her neighbour, *"but next year when I start the lycée, I think I'll want to go on the Internet alone and have it at home"*. Discussions between adults and youths about the Internet are very rare, *"actually, no discussion at all!"* add Mathieu, Lionel and Gregory, 16 - 17, during a focus group.

This adult absence in youths' ICT use can be related to the **wider context of a generational divide**. D. PASQUIER talks of *generational discontinuity* as a major social factor in juvenile socialization today. The first factor in this divide is the transformation of the family cell and parent/child relationships. For F. de SINGLY, the contemporary family has evolved towards two major transformations, the atomization of the family regarding the kinship and the autonomization of the individual regarding the family. The **contemporary family lacks intergenerational horizons** (De SINGLY, 2004); generations are autonomous from one another, not without ties but on free relationships, respectful, independent and based on logics of individual choices. The second factor is the prolongation of adolescence and its generalization to all social groups thanks to a longer and a massive scholarization and to the growing youth unemployment (GALLAND, 2006). As a third factor, we note the rupture in cultural transmission between parents and adolescents, reinforced by a double process of individualization and privatization on the level of leisure activities, which has been going on since the 80's. Activities which formerly were exercised in the public sphere have shifted over to the domestic sphere and have been individualized. The two adult and youth spheres

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[7] In anglo-saxon literature, some authors in tradition of cultural studies analyse this youth culture via case studies of computer practices, for example, the research of Diane PACOM and Sonia LIVINGSTONE.
[8] Cfr FIZE, M. (1993) "Contribution à une sociologie de l'adolescence" in Revue de l'Institut de Sociologie, 1993/1-4, P.253-268

each henceforth have their practices and territories[9] without really ever having a time or a space in common. The corollary to this process of individualization that we observe in the contemporary family and leisure activities is that **autonomy is becoming a « form of self-discipline »** (De SINGLY, 2006) with in counterbalance, a devalorization of authority, also observed in the Internet use by youths. We have noticed indeed few activities or moments shared by youths and their parents, which are often limited to the evening meal . Two youths on the panel have chosen "the fridge" as the object symbolizing their family! S. LIVINGSTONE has analysed this dual process -individualization and privatization- in the anglo-saxon context as a parental reaction: by favouring leisure at home and by providing youths with a whole digital and cultural environment, the parents intent to protect their children from the dangers and the insecurity of the street, even if those dangers are more imagined than real. Our observations confirm this « bedroom culture » phenomenon, which seems more prevalent among young girls[10]. Two remarks must be made on those observations: the first is that this norm of autonomy in ICT use does not mean that young's want to take power thanks to ICT or to be independent, an image prevalent at first glance. Rather, they want to build themselves their individualized digital world. Secondly, this divide does not mean that youths and adults are in conflict. It's rather a matter of **"indifferent and peaceful cohabitation"** (PASQUIER, 2005 & 2006), a remoteness including from parents. These two spheres seem "to drive along different highway lanes at different speeds" but are not running into one another[11].

The internet, a learning stage

Fundamentally, **the pattern of youth socialization is changing.** It is no longer founded on the transmission and identification, whereby young people walk in their parents footsteps (HERSENT, 2003, p.23) but on *experimentation* (GALLAND, 2006, P.159). This **experimentation** is also a central characteristic of adolescence, a period of expectation authorizing experiences (VIENNE & DELFORGE, 2006). Young people's Internet use seems to be indeed an experimental field and, in that sense, the Internet is not a place where youths « flee » reality but a first stage for learning the life, for better adaptation to their daily existence. **This learning stage appears as a middle-land between the public sphere and the private sphere,** sometimes "for lack of something better": for lack of public space for youth, they express themselves on the blogs, for lack of seeing they "*hang up*" (BOYD, 2006) together on instantaneous messenger services, for lack of going out to discover the world, like 17 year old Melissa who is kept home by her mother after two years of silliness in her village, they chat with unknowns. The 14-16 year boys, Bruno, Gary and Aloïs explain that they 'meet' girls on the instantaneous messenger services for not knowing how to proceed in the "real life". They have no desire to stop there but say they learn their tastes and reactions. Or like12-13 year old Charline, Emmanuelle and Janis who regularly assume the identity of older young women in chatting with others. C. METTON (2004) illustrated this phenomenon well, for in chatting one can infiltrate other worlds, experiment the opposite sex for instance and understand scenes from the adult world.

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[9] This phenomenon of individualization affects social milieu differently. One example on the level of possession of electronic equipment, 14% of adolescents from privileged milieu have a television in their room against 52% of under- privileged children (PASQUIER, 2006).

[10] This may have maybe to do with the Belgian collective unconscious marked by numerous moral affairs which jolted the entire country.

[11] For Michel FIZE, adolescent culture is not a sub-culture or a counter-culture but another culture; which has never so escaped out of the control of adults and been so organized by the commercial universe (PASQUIER, 2005 & 2006).

More simply, the offer on Internet is massive and diversified and often renders adults powerless facing the demands, activities and desires of youths. Parents know less about the web than their children, especially in lower class (LIVINGSTONE, 2004) and it is hard to control contents without being seated next to the adolescent.

The weblog, an autonomous and reflexive experience

An obvious example of the increasing autonomy of the young and this generational gap is the weblog. Above all, it represents for youths a space belonging to them. Based on the website's technological offer[12], the young blogger creates his online world, where the tribe finds or assumes its place. This tribe moreover participates in the construction of that personal space and, hence, in the online personality of its author. That personality is incarnated in the pseudonym, the most symbolic mark of identity on the Internet but it is also expressed via the graphic appearance of their blog: the colours, the choice of photos, the arrangement of the notes. Relations, **contents and aesthetics thus work in the construction of the blogger's virtual identity, in reflecting sometimes deforming, his personality**. Hence it is not uncommon for the young blogger to change the design of his blog or even create a new space from one day to another in order to modify how he presents himself or the self-image he wants to put forward. For example, the weblog "le-jardin-du-bruit-envolé", in a note entitled « *I'm off to a new start* », informs his readers that « *here, this is no longer me… I don't identify with this anymore. [...] I'm beginning a new me* » elsewhere, at another address[13]. In existing as a personal space, the blog rapidly becomes a *territory* with its marks, its codes and rules, that any dissidents are invited to leave. Among the latter, figure the parents, doubly strangers in the adolescents' weblogs: strangers to their contents on the one hand and strangers from online practice on the other. This position of allochtone is also maintained by the parents themselves, little inclined to explore the practice of their adolescents. That disinterest or **non-interference of adults into the ados' blogs makes the youths' blogosphere a Terra Incognita**.

This practice of personal and individualized blogging, with the aim to be connected with his peers, is not lived by the young as a "subjection" or a conformist practice. The youths' reflections about their own blogs testify to this. This **reflexivity takes place on three levels**. The first is based on the contents of their digital world. This putting his life online, in the form of narrations or images, leads the young blogger to reflect upon himself. Like a world in construction, always under building, the blog is transformed through the events of the adolescent's life, and the young blogger testifies to this quite explicitly: his blog can be renovated, interrupted, done away with, moved, pursued elsewhere, depending on the hazards of the adolescent's life. Monsieur-b for example, announces in the month of September a change in his blog : « *new ideas for a new blog and a new year. New things to discover, to read, to see, to share. A bit of everything, nothing, the strange, the logical, the interesting, nice, special, sad, about me, about you, about us, about the world around us and again many other things for this new blog placed under the sign of change, of novelty, ...* »[14]. Theses triggers of reflexivity about contents are often externals of the practice of blogging but take place in the face-to-face with oneself that the blog supposes and the confrontation with a third party it imposes.

The second target of the young blogger's self-awareness is precisely, this third party. In putting a blog space online, the youth exposes himself to the view and comments of others

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[12] A website often chosen by relational affinity rather than by technical opportunities and which plays on that community sociability to increase its list of members. Example: the French website Skyrock Blog.
[13] A note of 24 September 2006, http://le-jardin-du-bruit-envole.cowblog.fr
[14] A note of 27 September 2006, http://monsieur-b.skyblog.com

blog members. Often sought out and encouraged, the presence of the other manifests itself by means of comments. Greeted in the territory, the visitor (often a peer frequented in the youth's real life) is thus entrusted with the mission of making remarks that reinforce the host, flattering him and describing their friendship. The important thing is maintaining contact not cutting communication. Tripping up in this mission (insults, tag-comments[15]) thus becomes the occasion for brushing up on the territory's implicit rules. Aside from this going beyond the limits, the youth's reflexivity about the public visibility of his personal space can also be triggered by the presence of an « intruder », an unexpected visitor or, again, a "persona non grata" on the blog. In this situation, frequently, the admitted, unmasked or visit of parents on the blogs of their adolescents triggers an awareness of the public nature of the blog. These unwanted presences astonish them (*"how did my parents know my blog address ?"*) but above all, make the author feel uneasy. This is the case with Mima, a 15 year old blogger who testifies in her blog that *"what I was doing there, I really have no idea. In fact... I began to fear that too many people come happen upon my blog...it's so simple to type on Google such and such a highschool, such and such a town... dumb things. And in fact, people have already happened upon my blog a few times, by chance. And that really scares me. [...] I want to preserve my anonymity...And then when I saw the commentary by Clic, maybe that pleased me but at night, I go to thinking ... Imagine that this Blogomag got to be a little popular. And I lay out my life without a thought, without seriously thinking an instant that someone might it. In reality, I'm saying that I really don't want someone to meet me in the street and recognize me as the writer of such things but it's especially the looks from the people in my entourage that scare me…"*[16].

The third level of reflexivity of young bloggers is situated in the blogging activity itself. These moments of reflexivity are far from being systematic; they are even rather rare among daily Web- users. On the contrary, as the other two levels of reflexivity, there are trigger situations which set this self-awareness process into motion. « Blogging anniversaries », notes commemorating the first, second and third … year of the blog are opportunities to raise critical question on one's activities, and on the tool itself, its potentialities, inconveniences and limits. The composition of the first note of a blog or the closing one also reveal the relationship that the young blogger seems to maintain vis-à-vis his blog. Finally, a last online upset incites the young person to re-position himself in his Internet activity: the virtual notoriety. This notoriety can progress gradually by « word of mouth » on the web, or in a more brutal way by making the youth a Blog Star on the website homepage[17]. In the latter case, the youth's sudden notoriety provokes a more or less critical self-awareness. These three levels of reflexivity with their trigger situations could illustrate well the self regulation process and tools shaped by the youth in their practises.

Generational divide and youth socialization

Few parents really worry about this generation gap, seeing it as something that has always existed. Some adults speak about this gap positively as the mother of 15 years old Aloïs saying : *"let them to make theirs lives, they have the right to be autonomous"*. **On the contrary, the older youths deplore** this parental indifference. They would have wanted more shared moments, discussion and regret their lack of interest on the part of adults. For all interviewed youth's, family value is important and they say that they get along well with their

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[15] By tag-comments, we mean « publicity » commentaries (Come see my blog, come and leave your com's on my blog), impersonal and left everywhere in the commentaries of adolescent blogs.
[16] A note of 12 December 2005, http://c0xynell.canalblog.com
[17] On this subject, the SkyblogStar phenomenon of the French website Skyblog Rock is notorious in French-speaking Europe.

parents. But, in practice, they only talk with them, in average, a quarter of hour a day. And this remoteness, separation seems to grow even wider for the *adonaissant*[18] generations: the lack of understanding that the older adolescents have lived through between themselves and their parents appears to them less worrying than what they perceive between their parents and their younger brothers or sisters 12 or 13 years old. *"My little sister is on another planet of clothes and girlfriends and she hardly sees my mother and father. They never talk to one another and I try talking to her but she doesn't care"* says Matthew, 18 years old. They say that they have had another education, have been more watched over than their younger brothers or sisters, who are on their own and their parents do nothing about it[19]. As 18 year old Isabelle says, *"the difference between me and my little brother is that my parents prefer to leave him alone with his playstation games or in front of the computer rather than educating him, for me, my mother always was always behind me"*. They say that they feel themselves to be very different from those teenagers, whereas only 5 or 6 years separate them. **Those older youths testify of a growing generational divide between parents and** the generation of youths now reaching adolescence, **the generation born in the MMB (Mobile, MSN, Blog) era**. According to those older youths, this a worrying question raised for the future.

This generational gap is questioning, regarding the role the adults traditionally play in the youth socialization. In the majority of traditional societies the passage from childhood to adulthood is characterized by an initiation rite. This ritual is composed of tests and oral teachings intended to bring about a radical modification in the religious and social status of the initiate. The child learns behaviours, techniques and institutions of adults and discovers his or her role in society. Nowadays, initiation rites are more and more disappearing but the search for meaning remains.

More pragmatically, from a sociological point of view, this generational divide observed in Internet use seems to have **three major impacts on the youth's socialization**. The first is the growing influence of what the literature qualifies as the « tyrannical » regulation made by peers but also by the commercial sphere on the social practices of the youth's. The second is a trend of "withdrawal on the self" including on one's own gender. The third is a weak connection with the past, which raises question particularly regarding the scholar culture.

D. PASQUIER underlines the **influence of the commercial sphere and peer pressure on juvenile socialization**. If the family no longer dictates codes and conduct, if the mechanisms of cultural transmission by parents and schools are blocked, then the entourage (the peers) and the commercial sphere take up the slack. The codes of juvenile sociability are particularly, D. PASQUIER even speaks of a *tyranny of the majority*. For this author, finally, what the youth has gained in autonomy regarding his parents, he has lost it with his peers. This peer pressure in Internet use of youths must be more studied. But in pushing this reasoning to the extreme, a youth today doesn't exist without permanent group approbation, without this horizontal sociability ceaselessly in activity even into their bedrooms. This questions Olivier TREDAN who shows that *the permanent gaze of others has a structuring power for these online identities* (TREDAN, 2004, p.45). Where the final freedom for a youth is to disconnect himself...[20] From a regulatory point of view, it means a self regulation quite binary, radical and without deliberation. This pressure seems to be a conformism pressure. *We can with difficulty imagine that there are no relation between the fact that parents transmit less of life instructions and the development of a generational culture which manifests a strong intolerance to individual differences* (PASQUIER, 2005, P.165).

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[18] Title of the last book of François De SINGLY, cfr bibliography

[19] The older brothers take up the torch, especially for the little sisters, sometimes via closely space surveillance calls by short messages during party's.

[20] Even if, paradoxically, Internet and chatting specifically allow to escape of this tyranny of the majority. Internet use of youths show us many paradox which are in many cases, just two faces of a same reality.

A second impact related to this generational divide regards a phenomenon of fragmentation and of **withdrawal on itself**, underlined for example, by the Mediappro research: *"expression, communication and games between peers will maintain relatively isolated networks for a long time, forming a mosaic of small, similar tribes that turn in on themselves"* (Mediappro, 2006, P.58). We have seen for weblogs, the visitor flatters the blogger for fear of confronting difference. 16 year old Gary on My Space, only looks for profiles that fit his own profile. A Belgian forum, «barakie.be», functions on contempt of "the other different of me" and the exclusion. In this vein we have observed, even if we have to remain prudent and nuanced, that girls and boys have theirs favourite practices, among themselves, acting on traditional masculine or feminine elements (typically, strategic, ludic, violent practices like networks games, jokes or gores websites for male /sentimental and emotional practices like chat, instant messenger services for female[21]). During an interview, the girls lend to theirs activities subjective significance, the boys talk about technology, free programmes and consider technology for its own sake. Could we do a hypothesis of a re-emergence of the traditional gender divide, intensified with the technology? In any case, girls seem to be more "secret" in their practices (webactivities from the domestic sphere, based on restrained relational networks, duos or trios) than boys (webactivities based on extended relational networks). We see clearly that *if the parents have lost a great part of their power of regulation, individualities cannot for all that express themselves freely. The search for authenticity unceasingly runs up against adolescent culture codes as well as an - often masculine - definition of situations* (PASQUIER, 2006, P. 13).

Finally, how a generation which is constructing itself in present, by itself, can project itself in the future? Because this separation between youths and adults means also an **absence of inscription in the past that gives reflexivity, detachment from self and others**. This absence of a clear relationship to the past is very tangible in the world of school. The literature approaches this problem by pointing out the difficult coexistence between youth culture and school culture. Young's are the world of other culture *not defined by a generational belonging, the culture of work* (De SINGLY, 2006, p. 28) and the culture "legitimate" and humanist. That's means for young's*, a certain form of anti-intellectualism (...) and a valorization of eclecticism"* (HERSENT, 2003, p. 12). The Internet use of youth's seems shape indeed a culture of immediacy and the shared emotion with social valorization of the speed, the «feeling » and with values as the authenticity, the self-expression and the "always on" communication. **This webculture clashes with the traditional humanist culture of the school**, which is linked to a past and founded on bodies of knowledge. Professors have to teach cultural objects like history or literary currents which no longer make any sense in the youths' cultural universe. More fundamentally, the "time" of school, a "metronimic society", founded on the historical time, biographical and linear*, invaded by disciplinary like subjection to schedules, delays, buzzers, duration and order of courses, class days and vacations* (LASEN, 2001, p. 99) is no longer the time of youth, who lack in their social life of temporal self-discipline and emprise of historical time. Theses young's who *do not feel themselves to be "artisans of their destiny" (...) experiment with zigzaging trajectories (...) and imagine a range of virtual choices and not a single linear route* (LASEN, 2001, p.285).

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[21] More generally, the cultural female universe remains little studied. One could point out the Diane PACOM research about Canadians young's girls. In this research she observes that young girls, like every social group, create their own universe of significations, values and symbolic representations, different of young boys and women.

The adolescent facing the law : between incapacity and autonomy

From a **juridical point of view,** the minor is in principle considered to be in a state of general **incapacity**, which means that he can not validly pass juridical acts alone[22]. In Belgium, majority, which ipso facto involves full capacity, is attained at 18 years of age. But is the under 18 year old minor really incapable ? The rules on the incapacity of minors date from 1804, the year the French civil code was edited. It tends to protect minors and their potential patrimony against unwarranted acts. There are some exceptions to this rule. Notably, it is accepted that the minor only accomplishes the acts considered those of daily life. For that, the minor must possess **capacity of discernment**. Capacity of discernment is a factual element which is concretely evaluated by the judge in terms of particular circumstances. In general, courts and tribunals estimate that adolescents do possess capacity of discernment. Since 1804, the autonomy of youths has never stopped increasing. Likewise, the domain of acts considered as forming part of daily life and able to be accomplished by the minor alone has considerably widened, so that it would seem wiser to speak of restrained capacity[23] than of incapacity.

Changes brought about by ICT in adolescent autonomy and freedom

Messages circulated by means of traditional medias, for the most part, emanate from professional journalists, bound to respect the deontological rules of the profession. On the other hand, the new medias allow **any adolescent** who so desires to become a **broadcaster** of contents potentially accessible to all internet users, as any journalist. Thanks to ICT, the adolescent has attained a public space and a power of expression heretofore unknown. For the adolescent who is a broadcaster, a question arises as to the awareness and knowledge which would allow him to exercise this power in a free, enlightened and responsible way. In a State of law, all freedom ends where that of others begins. It is hence inextricable from liability. How are we to think through the liability of adolescents in knowing that it is the other side of the coin of freedom, all the while taking into account the goals of protecting minors, translated by their juridical incapacity? We shall return to this. Where the adolescent has attained a potentially large audience, the need for a transmission of knowledge and values on the part of parents and teachers makes itself that much more urgently felt.

If he has become a broadcaster, a full-fledged actor on the net, the adolescent is also a **spectator, a potential reader of everything found on it.** The great advantage is that now, no matter what his centres of interest are, the adolescent can satisfy his curiosity rapidly and easily, without spatial nor temporal limits. The problem is that if he has access to the best, he also has access to the worst (racist propaganda disguised in various real events, games inciting hatred, violence, pedopornography…) in passing through the mediocre and everything that can distract him from his initial research. Search engines deliver it all helter skelter, without sorting or preliminary description of the goals of the material's authors. This early confrontation with illicit, dangerous or simply harmful contents makes the necessity of having adequate parameters for verifying the origin and veracity of documents, for sorting and choosing those which nourish research and for avoiding what he is not ready to confront that much more keenly felt.

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[22]For a detailed analysis of the question of the capacity of minors related to electronic commerce, see M, DEMOULIN. (2007) « Les mineurs et le commerce électronique: besoin de protection ou d'autonomie ? », *J.T.*, n° 6255, p. 105-116.

[23] H. de PAGE (1990) *Traité élémentaire de droit civil belge*, 4ème éd. by J.P. MASSON, Bruxelles, Bruylant, p.1125.

Youth autonomy and self-regulation

From the outset, European and international authorities have favoured self-regulation where new technologies are concerned. This is the case both for texts issued by the European Union[24] and by Council of Europe[25].

While it presents certain advantages, such as being more flexible, more adapted to the context of the new medias than State regulation, self-regulation nonetheless runs the risk of accentuating the divide between parents and children. Adolescents surf far from parents who, hypothetically, are reassured in knowing that all sorts of self-regulatory organizations are on guard and that network actors impose their own rules on themselves. Yet in a breach between parents and children which keeps on widening, commercial sector actors are rushing in, seeing youths as potential consumers, infiltrating by *educating them* and *initiating* them into becoming 'good consumers'. In this regard, the Mediasmart site[26] is an edifying example. It defines itself as 'an educational site on medias' for children from 6 to 11 years old, created by announcers in collaboration with teachers' associations. It notably includes a set of exercises, brought to the teachers' attention, permitting 'the formation of a critical spirit in students'. The exercises stimulate creativity and are all developed around commercial choices, ways of being convinced about these choices, budget management, etc, stressing uniquely the consumer dimension of children beginning at the age of 6 ! All the other dimensions of being, which are essential and structuring and which should be transmitted well before 'the capacity to be a wise consumer' are consigned to oblivion. It is significant that precisely this site is pointed to by authorities of the European Union as being an excellent example of education aimed at medias. Youths thus see themselves reduced to their commercial dimension with the benediction of all. They themselves often measure their freedom and their autonomy in gauging their capacity to purchase online.

From a juridical point of view self-regulation, and particularly educational initiatives, should be assessed in terms of legitimacy: has the norm be elaborated by those who represent minors' interests? Shouldn't minors or at least adolescents themselves participate in a way or another in the elaboration of self-regulatory norms?

Autonomy , freedom of expression, press and democracy

In Belgium, freedom of expression is a right guaranteed by the Constitution. For that matter, this right has been explicitly recognized for children by the International Convention of children's rights (article 13). Yet this right is still wider for the press who, given its mission, is granted specific guarantees. This involves the explicit interdiction of censorship, the interdiction of bail, the exclusive competence of Assize Court for press violations (except for press violations inspired by racism or xenophobia) and serial responsibility. Since the Goodwin case[27], we know with certainty that journalists also enjoy rights to secrecy of

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[24] Let's point out, for instance, the various texts concerning the 'Safer Internet' program: Decision n° « 276/1999/EC of the European Parliament and the Council of 25 January 1999 «instituting a multi-year community program aimed at promoting the safer utilization of the internet and new online technologies in the fight against messages with illicit and harmful content, principally in the domain of the protection of children and minors », OJ n° L33 of 6/2/1999 ; Decision n° 854/2005/CE instituting a multi-year community program aimed at promoting the safer utilization of the internet and new online technologies, OJ n° L 149.

[25] We notably point out Recommendation n° R (2001) 8 of the Committee of ministers to the member States on the self-regulation of cyber-contents (the self-regulation and protection of users against illicit and harmful content distributed on the new communication and information services).

[26] www.mediasmart.org.uk

[27] Eur Court. H.R., Goodwin v. United Kingdom, 27 March 1994, *A&M*, 1996, p. 351 and ff., obs. D. VOORHOOF.

sources. The press's mission is to inform the population on questions of public interest and so exercise a function of control on public authority (its mission of being the « watchdog » of democracy).

The question that arises is knowing whether one can transpose the notion of 'press' and, consequently, the specific guarantees of freedom of the press to Internet applications and, notably, to adolescent blogs.

If the Belgian Supreme Court's ('Cour de Cassation') interpretation of the notion of press, which restrains the application to media to the written press via the printing process, appears to go against the will of the Constituent, we do not think that an interpretation as wide as the French interpretation[28] is desirable. In Belgian law, the press should be defined in relation to its mission, to those who exercise it - meaning journalists - and to conditions which are linked to the exercise of journalism (concerted editorial activity, deontological rules, organized distribution). The constitutional guarantees of interdiction of censorship and bail, of serial liability and of the competence of the Assize Court for press violations thus apply uniquely to those who exercise the mission of informing citizens on all questions of general interest, whatever the mode of communication or distribution by means of which they exercise that mission. Consequently, the specific guarantees of the press do not apply to adolescents blogs.

That said, all others expressions by means of the Internet or convergent technologies enjoy the guarantees of **article 10 of the European Convention on human rights**. The Internet and convergent technologies offer possibilities of expression, of exchanges of ideas, of public debate on a planetary scale undreamed of in the time of traditional medias. The debate is substantially widened : it is no longer reserved just to writers, politicians and journalists and each individual can bring his stone to the edifice. Thus adolescents have attained the possibility of making their voices heard in an immediate way. This widening of the debate is of capital importance for a democratic and, consequently, pluralistic society. In the manner of the European Court of human rights, the national judge should modify[29] his evaluation of the liability of he who expresses himself according to the measure of the importance of that expression in the democratic society, being the ultimate reference of the European Convention on human rights. To do this, he should take a series of parameters into account. He **should thus take into consideration the author of the litigious expression, his potential public, and the credibility that the public is liable to accord him.** Thus, the liability of a youth who, on his blog, accuses a person of fantasist and slanderous things is not the same as that of a politician who might express himself thusly on *his* blog. The judge should also take into account the person or the organization targeted by the litigious expression. If it is, for example, a question of the government or one of its members, the judge should permit more severe, or even more provocative critiques than if a teacher is in question. Generally speaking, if the person or organization targeted wields power – and we are not just talking about political power - the critical remarks may be more virulent than for a person or organization who does not wield power. Finally, judges should take the goal of such communication into consideration. Thus, a message of a commercial character benefits from less protection than a message criticizing governmental politics.

Thanks to the direct effect of article 10 of the European Convention on human rights and of the strict conditions that have to be fulfilled by exceptions to the freedom of expression in the Belgian juridical order, one need not associate all non-private expressions with the press in order to guarantee a freedom of expression worthy of the name in a democratic society.

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[28] France has opted for an evolutive interpretation of the notion of the press. Thus, the recent French law « *for confidence in the digital economy »* of 21 June 2004 (abbreviated LCEN) extends the notion of press to every expression of thought whatever the media chosen. The sole exceptions to what is described as press are messages intended for a « a closed group of users ».

[29] Most of them do it in a more or less implicit way.

Adolescents facing certain limits to their freedom of expression : cyber-teasing

Among adolescents, the personality and identity are in development. Their place in the group and group recognition are points of crucial importance for them and take part in their identitary construction. One can certainly anticipate a reduced power of resistance in facing attitudes of harassment from a group 'leader': to maintain their place in the group, to appear 'plugged in', adolescents tendency to go along with the teaser, to join together against the chosen victim, the 'scapegoat' of the band, or even to go further in an attempt to be 'cool'.
Yet this behaviour can have a much more profond impact, in that the victim, with his identity in construction, is more fragile. Exclusion or rejection phenomena, be it only temporary and apparently harmless, can leave indelible traces on the victim without the authors being aware of the scope (or sometimes even of the existence) of the disaster they've caused.
Whenever the teasing is committed by means of ICT, it is not face to face. This absence of direct confrontation removes inhibitions: hidden, one is more daring, one goes further in aggression, in rejection, in exploitation of the victim's weak points. The fact of not being confronted with the distress he causes allows the blogger to hide his face, to be unaware of what he's doing and, a fortiori, of the consequences that may ensue. ICT also allows a very wide distribution and an almost universal accessibility to what, in former times, would remain in closed committee or, at worst, be known to a few witnesses.

How to react to teasing situations among adolescents? Of course, the (penal and or civil) liability of one or more teasers/harassers can be tested before the courts. But judicial procedures present a certain number of inconveniences, such as slowness and an awkwardness which are in flagrant opposition to the ICT world. Moreover, if sufficient proof of harassment is not brought, the victim may see himself as once again thwarted in his suffering and may live it as an aggravation consequent upon the harassment phenomenon.[30]
It seems to us that an interesting response may be found in **mediation**. Beyond the fact that such a solution is faster and less burdensome, it reintroduces a face to face, facilitating the author's becoming aware of what the victim has endured (the consequences of his acts) and teaches respect for contradictory debate. Mediation initiatives for solving problems between youths by youths, like 'SJAPO'[31], which is present in many schools in Flanders, should be encouraged, favoured and developed. In fact, some youths in schools take a rather long training course to become mediators and form a mediation committee within the school. This training involves education in the principles of respecting others, of openness of spirit, of contradictory debate, of respect of rights of defence, of human dignity … These principles, which found democratic societies, also inspire most legislation in the area of contents regulation. Beyond the fact that the 'mediators' benefit from a rich formation which is a great help to them in learning about life in society in general and about ICT in particular, the whole school, where this system is applied, is made aware of these essential values of democratic societies. We add that this response to conflicts stimulates creativity and reflection as to the types of reparation most appropriate for making amends in these problem cases, solutions which will be different from the payment of damages and interests (inappropriate for minors) or judicial penalties.

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[30] This is called secondary victimization.
[31] Acronym of 'Samen Jong Anders Problemen Oplossen', could be translated as: Solving problems together, young and differently.

Adolescents facing certain limits to freedom of expression : copyright

Unlike the case of Anglo-saxon law, in Belgian law (as in most continental juridical systems) the very act of creation gives rise to copyright, with no particular formality having to be enacted. This means that a design, a logo, a photo, a poem or a song, accessible online, is not always free of rights, even if no particular system of protection prevents their reproduction. How often have we heard: « *I found this on the Internet. Why can't I just recopy it onto my blog?* ».[32] It seems that, generally speaking, these rights are rather unknown to adults and even more unknown to adolescents. **Respect of these rights requires educating teenagers, but first of all adults.** Beyond information and education regarding the law itself, we need to inform and educate as to the goals justifying it. The initial goal is to offer recognition, on the one hand, and a remuneration for the creation, on the other. This also supposes, on the part of courts, an **interpretation in conformity with the goal**, so as not to denature the right. For if it is interpreted too broadly, it will lose its meaning and tend not to be respected. In general, youths are responsive when they themselves are victims of a violation of author's rights, when one of their poems is recopied on another blog without mentioning the author's name, for example. This sensibility can be the point of departure for **education in reciprocity**.

Adolescents, liability and guilt

Searching for the liable person can be envisaged from the viewpoint of the youth who is the victim of an illicit act or from the viewpoint of a youth who commits an illicit act by means of ICT.
Whenever a youth is a victim of an illicit act committed by means of information and communication technologies, the question is one of knowing who is liable, given the number of actors using the net. This question refers notably to the **liability of network intermediaries**[33]. We shall not develop this aspect in the present report. We shall simply point out **article 299 of the Belgian penal Code,** which requires the mention of a liable editor for all 'written matter'. Unlike what is the case in France, this measure has no **equivalent in the new medias**, so that it is sometimes quite hard to identify who's liable. Extension of this obligation to the new medias seems desirable both from the viewpoint of the identification of liability and from the viewpoint of the exercise of the right of reply.
Whenever a young person commits an illicit act, the question can be examined from the angle of both penal liability and civil liability. In this report, we share a few thoughts concerning **civil liability**.
Civil liability regulation, dating from 1804, has the principal goal of ensuring compensation to the victim for damages he has suffered.
A minor can be held liable for his own acts from the moment he has attained the age of discernment. In the view of juridical security, certain authors favour the legal determination of the age from which the minor is presumed conscious of his acts, whatever the particular circumstances. By means of ICT, adolescents can cause particularly weighty damage in that they may potentially reach a large audience, without always being conscious of the public character of their expression.

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[32] It seems that a certain consciousness exists for the musical sector, but that it is largely insufficient in the other sectors.
[33] This matter is dealt with on European level in the Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce in the Internal Market, O.J.E.C., 17/7/2000, n° L178/1.

The notion of wrong which involves liability requires the capacity of discernment on the part of the author. But the complexity of the matter, the multiplication of actors and the generational divide accentuate a general unconsciousness. While nobody should ignore the law, we should envisage, beyond **education in juridical rules, education in the values underlying them.** Education of youths necessitates the education of teachers and the awareness raising of parents. Only if this education is set up systematically in educational institutions before a certain age (13 years of age for example) can one suppose that such a discernment will be attained from that age onwards.

If the minor's liability be justified by the autonomy he benefits from and if the liability is proportional to the freedom, the problem of his relative inadequacy for meeting the goal of guaranteeing compensation to victims remains, given the insolvency of most minors.

To make up for this lack of adequacy in compensation to victims suffering damages, **the minor's parents' liability** may be invoked. Whenever the minor causes damages to a third party, the parents are presumed to have acted wrongfully in the education or surveillance of their child. This presumption of wrong is justified by parental authority and is based on the rather unrealistic idea that if the minor had had a good education and had been watched over correctly, he would not have committed an offence (or an objectively illicit act). Unrealistic from the outset, this idea is getting more absurd all the time and even more pointedly in ICT use, not only given the evolution of principles of education but also the empowerment of youth and the generational divide. Moreover, this system links liability to guilt. The extent of the guilt born by the parents is further accentuated by this present-day tendency, transforming victims into heroes[34]. Yet given the goal of compensation, the system is inefficient insofar as the presumption can be reversed: if the parents can offer proof of good education and diligent surveillance, they won't be held liable and so the victim is not compensated, whatever the extent of damage he's suffered.

The **teacher's liability**[35] can also be invoked in case the student acts wrongfully during the period when he is under the teacher's surveillance. This is founded on the authority the teacher exercises over the student. The teacher is thus presumed to have acted wrongfully in the student's surveillance. The pertinence of the teacher's liability and authority over an adolescent student can be seriously called into doubt in an era where the latter may be on the Internet or using his mobile phone at school. Even if the teacher is protected by immunities (his responsibility is guaranteed by the educational institution or by the State in terms of the type of institution he exercises his functions in), the same critique can be voiced here as it was in case parental liability. Since the presumption may be reversed, in case of reversal, the goal of victim compensation is not attained. If **educational institutions** are not considered teachers, their liability can nonetheless be invoked in case of teacher's wrong. Thus, in the **'free education system'**, the educational institution (committing the infraction) is presumed to have acted wrongfully in case of a wrong of one of its teachers. This presumption is undeniable and is hence more capable of responding to the goal of victim compensation.

In the **'official education system'**, the teacher's wrong, he being an extension of the State, ipso facto involves the latter's liability. Of course the **own liability of institutions** (educational or for the protection of youth) can also be invoked. Thus the burden of proof rests on the victim: it is up to him to show the institution's wrong and the chain of causation between the wrong and the damage. So a bad organization of the surveillance to be exercised regarding the minor or a bad execution of that surveillance may constitute such wrongs. In the ICT domain, institutions which place computer materiel in the hands of students or

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[34] See in this connection, the excellent study by Caroline ELIACHEFF and Daniel SOULEZ LARIVIÈRE : *Le temps des victimes*, Albin Michel, 2007.

[35] A teacher is conceived as any person charged with a mission of instruction, a mission which has been interpreted very broadly by the 'Cour de cassation' (Cass., 3 Dec. 1986, Pas., 1986, p. 410).

adolescents they are in charge of have every interest in being able to show that they make them aware of the risks that the use of this materiel may involve, for example in making students sign a code of conduct regarding use of ICT in school, in putting in place precise rules for use, in using filters to avoid access to violent, pornographic or other harmful contents,…

As we see, in regard to the goal of victim compensation, the formulations involving parental and teacher liability are poorly thought out in that the presumption can be reversed. Moreover, they are inextricably linked to the notion of guilt of those 'presumed liable', which is no more realistic (and never was) and puts a heavier burden on their shoulders. Rather than connecting civil liability to the notion of wrong (and thus of guilt), we should foster an **evolution towards a system of objective liability of parents or educational institutions founded on the notion of risk**. This would discharge those liable, as well as the minor himself, from the burden of guilt while in any case ensuring reparation for victims. This objective liability might then be linked to obligatory insurance. For educational institutions or youth aid organizations, this insurance might be paid by the subsidies they benefit from, thus distributing the 'risk' to the community.

Contradictory debate and the right of reply

If freedom of the press is an essential component of a democratic society and allows an exercise of control on the powers in place, it is only right that it should be in turn controlled by the citizen to avoid having to cope with an all-powerful press.

The right of reply has its place here and offers a very interesting reaction to any person designated by a media in that it guarantees the contradictory character of debate, enhances respect for others and does so without entering into court procedures nor posing the delicate question of liability. Existing legislation in the area of the written press and in the audiovisual area also applies to the new medias, but the **need for regulation adapted** to the latter is making itself felt for, in practice, the periodicity condition of written media notably risking to pose problems. The adoption of legal measures for introducing the right of reply into online medias is recommended by both institutions of the European Union and the Council of Europe and is seen by the latter as a measure ensuring better protection of minors and human dignity in all online services.

In a context where support very often includes spaces for response, reaction and commentaries, one might wonder whether the right of reply still has a 'raison d'être'. We hazard a guess that it is less useful than in the traditional medias, insofar as numerous spaces for response and reaction already exist due to the very nature of public spaces on the net. We are doubtlessly witness to a greater number of spontaneous rectifications or reactions in the spaces set aside for that than ever. Yet, the freedom of spontaneous response is not total: there are always closed sites or closed parts of sites, or moderated sites, etcetera.

But in order that this right might allow us to ensure a better protection of minors and human dignity in all online services[36], there should be among youths **awareness of values like** respect for others, freedom of expression and the contradictory character of debate, as well as consciousness of the existence of a right of reply as a guarantee of these values. How should this right of reply be exercised by the adolescent minor? Could he act alone or should he have recourse to services and/or consent of an informed adult ? To the extent that he expresses himself without parental consent for the contents he puts on the web, it seems to us that an adolescent having gained capacity of discernment can also respond alone to critics or inexact

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[36] Recommendation of the European Parliament and the Council of 20 December 2006 (2006/952/CE) on the protection of minors and of human dignity and on the right of reply in connection with the competitiveness of the European industry of audiovisual services and online information, J.O.U.E. 27/12/2006, n° L378, p. 72-77.

allegations without for all that having parental consent. On the other hand, he should have the possibility of talking with an informed parent, teacher, educator or family member, to consider together the best way to answer and learn about the legal conditions of the exercise of that right. Hence the need for information, education and awareness raising of parents, teachers, educators and youth aid organizations concerning the rights and obligations of adolescents using these new medias and, notably, concerning the right of reply.

To conclude

Such is the paradox of the Net: it is supposed to build bridges between individuals and communities but at the same time, exacerbates tensions between gender, increases individualization within families and acts as a catalyst for division within tribes based on the self. Adolescents and adults appear to evolve in parallel worlds, each following its course with little regard for the other. Older adolescents themselves invite us to build bridges between these worlds and to re-establish a dialogue so that transmission from one generation to another might carry on: transmission of knowledge, transmission of the way to be and the way to act in society; transmission not unilateral (from adults to adolescents) but reciprocal (including what adolescents have to teach adults); transmission allowing opposition and construction of identities.

We have chosen the example of cyberteasing, a common phenomenon among young people that well illustrates the impact of the generational divide. The cyberteasing expresses well the power of peers, the tyranny of the pressure to conform, and the recrudescence of anonymized aggression (anonymous in the sense that there is no physical confrontation) that is part of this phenomenon. Mediation offers an especially interesting response to cyberteasing. In mediation, young people are trained by adults to become mediators by training to democratic values (respect for others, initiation to contradictory debate, open-mindedness, respect for the rights of the defence). By this means young people are taught to remember the principles that underlie legislation that applies to content regulation. Such training of young people by adults constitutes a bridge between the two worlds by re-establishing the existence of mutual transmission. Transmission creates confidence and autonomy, since young people who are mediators fulfil the role of conciliators within society (represented by the school). Transmission can stimulate the natural creativity of young people who, after having heard both parties to a conflict, look for solutions that can satisfy the interests of the offending party and the victim. Decisions made by mediators are supervised by adults: a new bridge is created because adults can learn from the restorative creativity about how to solve their own conflicts, and can pick up ideas on how to understand young people. By raising the question of copyright, we invite parents to get involved in the blogosphere of adolescents, and to take an interest in their many creations on the Net. By exploring these, adults create a bridge that is one of respect for the creativity of the generation of teenagers. This bridge built out of listening and respect can be the source of the beginning of education in reciprocity, as it well known that respect creates respect. The question of civil liability for the acts of adolescents also creates links between adolescents and their parents in terms of failure in education and in surveillance. These guilty links, which do not benefit the victim, are not of a constructive nature. Could we not imagine liability as an invitation to shared creativity: if a teenager is at fault (or negligent), this involved youth should have to go with his or her parents in search of a remedy in terms of the victim. In that case, one positive bridge could be constructed between the youth, his parents and even the victim (in the reestablishment of face to face contact). The possibility of the right of reply is something along the same lines, a creative solution that does not involve to find a guilt. This possibility does require education about respecting others, about freedom of expression, and about the contradictory nature of debates

in democracy, including a guaranteed right of reply as one of the basic values to be upheld. This educational initiative would build yet another bridge which could be crossed in both directions. Mediation and right of reply constitute creative answers to infringements of the rights of persons that demonstrate everyone's creativity. These responses creating confidence and autonomy allow a positive and solid construction of identity. The same cannot be said of the system of civil liability based on the culpability that causes rejection and ill will, attributes that have never been part of bridge-building.

This research creates interesting interactions between sociology, law and communication science showing the force of this cooperation in the elaboration of regulatory tools that are well adapted and able to be appropriated by young people. It gives an empirical evidence of the necessity of anchoring legal reflection in detailed and comprehensive sociological and cultural observation of teenagers' practices.

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iGDSS – Software Framework For Group Decision Support Systems

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Abstract

This paper emphasize an innovative approach within the area of Group Decision Support Systems (GDSS) by using tools based on intelligent agents. It introduces a software platform for business process management, electronic decision support and collaboration implemented within a EU co-founded project (FP6-DiFac) and a national one (research of excellence-CEEX)

On a technical level iGDSS focuses on developing a conceptual tool where any third party can contribute with creative ideas for modeling the decision process. It also focuses on designing and developing an innovative method for distributed collaboration, and realizing a working methodology using a software platform for group decision assistance.

On a social level, it refers to incresing the transparency, creativity and democratization of the decision making process by means of selecting the participants to this kind of processes, delocalization and decentralization.

Keywords: Group Decision Support Systems (GDSS), Multi Agent Systems (MAS), anthropocentric interface, decisional tools, decision support system (DSS)

1. Introduction

Modern globalized economy has forced public and private organizations to use ICT not only for increasing the personal productivity of individual employees (traditional approach), but also for enhancing the collaboration among the members of various kinds of teams (both co-located and remote ones) and for increasing their collective effectiveness. Thus, teams are considered as collections of co-located or remote individuals working for a common goal, who must interact extensively in order to achieve this goal (Loukis and Kokolakis, 2003). Value is created in whatever way is appropriate, no longer dictated by organizational relations and boundaries.

The latest trends in distributed and mobile collaboration technologies allow people to move across organizational boundaries and to collaborate with others within/between organizations and communities. The ability to query the company's distributed knowledge base and to cooperate with co-workers is still a requirement, but new paradigms such as Service-oriented computing (e.g. Web Services), increased pervasiveness and mobility enable new scenarios and lead to higher complexity of systems.

Due to their incompleteness, the rigidity of the actual decisional models employed in GDSS has been criticized on a number of grounds (Whitaker, 1992). The main inconvenience refers to the fact that actual GDSS cannot foresee all the steps required for reaching a consensus, nor can support in a flexible way a wide range of group decisions for the latest emerging organizational phenomena (i.e. work group autonomy, responsibility of professional roles, the flattening out and decentralization of organizations (Zamfirescu, Cândea and Luca, 2001). This can harden their use, leading to the users' rejection. Therefore, it is of major importance

for every organization to be able to customize a decisional-making system so as to map its own needs as well the users' ones (employees, middle and top management).

A GDSS is more than just a single informatic product implementing a certain method for assisting group decisions. It is supposed to integrate both the corresponding software modules for the decisional methods and techniques, as well as other general informatic and communication-related components (Filip, 2004).

In order to accomplish the premises stated above, the system refered to within this paper was built as a decision support framework, where besides the already existing tools any third party member can add its own custom-made ones. The framework enhances the decision assisting tools to run within a context made up by entry data, participant members having certain rights and a repository database for storing the results. At the same time, one can also refer this solution as a MAS (Multi Agent System); this paradigm offers a new dimension with respect to GDSS integration with complementary services, making it easier to build complex and flexible architectures suitable to organizational settings. MAS are software systems composed of several autonomous software agents running in a distributed environment (Zamfirescu, Cândea and Luca, 2001). During a decisional process the participants follow a workflow in which they are guided by the multi-agent system based on the path that they choose through that workflow.

Therefore, few of the main units of the currently described platform are the following: intelligent agents, workflow, collaboration, decision making tools, data storage and security. The remainder of this paper is organized as follows. Section 2 depicts the main characteristics of the framework and the reasons for which it has designed. It is followed by section 3 which gives a glance upon the anthropocentrism of the system. Section 4 presents the idea of an intelligent workflow composed of decisional steps.

2.   The Framework

Decision-making is a knowledge-based behavior. iGDSS is designed to be a collaborative decision-making support system with safety, utility, efficiency, effectiveness, and usability. The development of iGDSS is based on the principles of GDSS, interactive software and related development techniques. By taking advantage of abundant information on the Internet, networking and database technologies, iGDSS provides decision-makers: comprehensive information access to internal and external data, communication facility, and friendly interface with multiple-user access. On a higher level, iGDSS focuses on developing a conceptual tool where any third party can contribute with creative ideas for modeling the decision-making processes – "third party" tools.

The main concepts of the framework are: *decisional sessions* or simply *sessions* and *decision assisting tools* or simply *tools*.

Decisional sessions are virtual places through which the decision maker actually participates in the decisional process and basically, they are placeholders for *decision assisting tools.* These *tools* are the pieces of software that support collaborative activities like brainstorming, voting, discussing on certain topics, etc. Thus, decision makers will take part in brainstorming sessions using a brainstorming tool, in voting sessions using a vote tool, and so on.

From the point of view of the decisional process, inside the iGDSS every process is composed of decisional sessions which are well temporaly determinated – including the starting and finishing time as well as the list of participants, the topic and the basic documentation. The session's parameters can be altered by the participant with the necesary

rights as long as it hasn't started yet. After a session is finished, its results can be used as input data for another session. There are a set of rules that have to be respected by all the tools in order to run inside the framework and to be part of a session succession. Section 4 will detail this succession in therms of a workflow.

iGDSS is made up of few initial tools aiming to assist the user in the decision-making process:

- *Electronic brainstorming* is an idea–generating tool that allows participants to share ideas simultaneously and anonymously on a specific question posed to the group.
- *Categorizer* assists groups in three common group activities: generating lists of ideas, brainstorming comments that elaborate on or support the ideas, and creating categories for the ideas.
- *Group Outliner* help teams generate and / or organize ideas into the familiar hierarchical structure of an outline.
- Topic commenter helps groups comment on a list of topics. Participants can also be given the ability to add topics.
- *Vote* is an evaluation tool capable of providing the basis for a group decision. This tool is also commonly used to determine the degree of group consensus. A vote activity in which users grade different issues with grades on a 1 to 10 scale is shown in Fig. 1.
- *Alternative Analysis* is in many ways similar to vote, but with added power and flexibility. In addition to handling straightforward, single-lists of ballots, this add-in tool allows rating a list of alternatives against a list of criteria.
- *Survey* allows gathering information from a group on any topic at any time.

Fig. 1. 10-Point scale voting
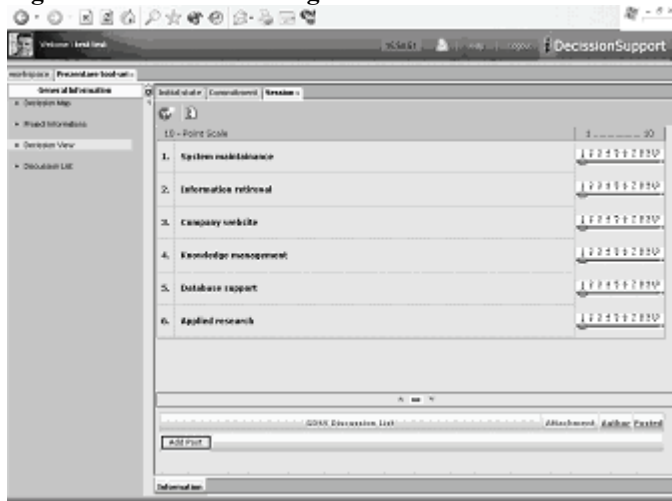
The system was designed and developed so as various decisional processes can easily be implemented without needing any alteration througout the application and can answer the users' requirements and decisional flows. In this way, an open architecture was obtained, which can be integrated with other systems such as a collaborative platform (used for managing the users, user groups, individual or group agenda) or other decisional tools (i.e. ERP finanicial reporting tools.). To facilitate a flexible integration with the collaborative platfrom and with different tools the folowing architecture is proposed. (Fig. 2).

Fig. 2. System's architecture
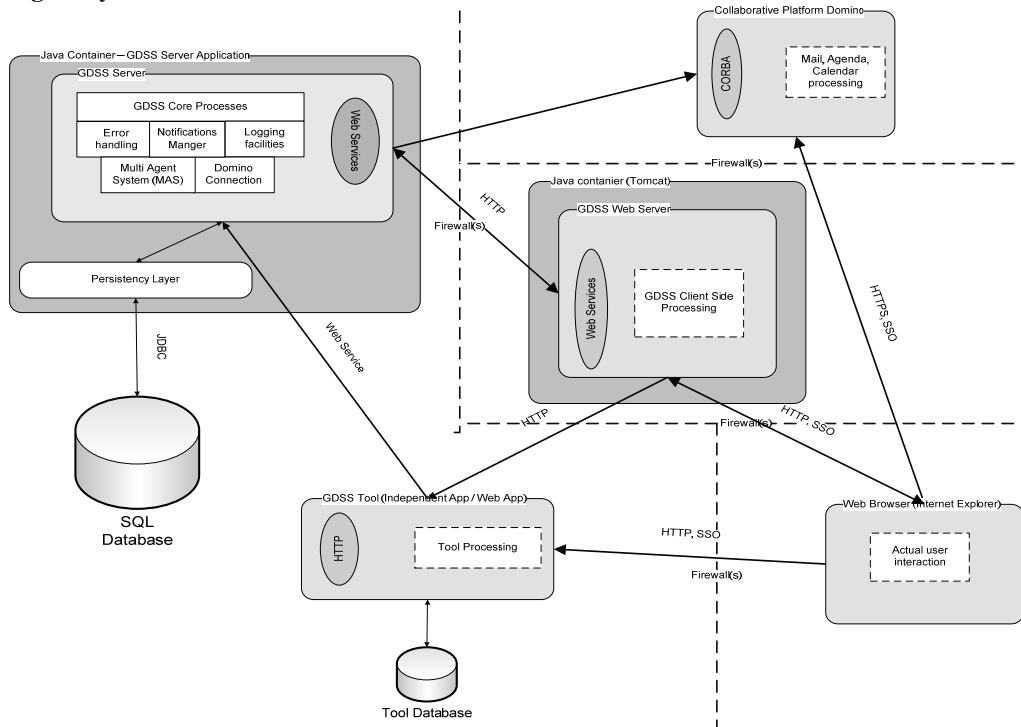
As depicted in fig. 2. the iGDSS sytems is composed the folowing: a) a main server which supports the basic functions and manages decisional processes logic, b) a relational database (Postgre, MySQL, SQL Server or Oracle) c) the web-server that runs the user interface, d) the collaborative platform (which comunicates with the main server through CORBA) e) the iGDSS tools. The entire solution is build using Java J2EE technology,

The strong side of the framework and it's architecture is the fact that this decision tools can reside on a computer anywere in the world. They do not have to run on the main server. In this way the availability of the whole system is not bound to the availability of any tool. Each tool's results (which are in fact the containg tool's session's results) are stored on the main server so if a certain tool becomes unavailable the system can still use its output. The main reason for choosing this architecure is to enable any third party entity to build it's own customized tool and easily integrate it into the system.

Basically each tool runs inside an iFrame of the main application. It is initiated in a session's context using the tool's specific URL, and afterwards the communication between the tool and the server is done one-way (from the tool to the server) using the webservice that the server exposes for the registred tools. Thus the tool is provided with the entry data and the session participants, enabling at the same time to store the results in XML format. The participants rights during the session are enforced by the server on every results' update.

3. Antropocentrism, E-Acting, Interface

The basic design idea of the product is guided by concepts of Human Computer Interaction and decision support systems. The innovation lays in the way in which the facilitation support is actively assisted by the system based on the users' intentional attitude. Users do not need thorough knowledge about the system in order to use it efficiently. Its goal is to help the decision maker to strongly diminish the effects of its own limits (cognitive, communicative/collaborative, and confidential) and of the enforced restrictions (economic, temporal and implementation) that can be found in the decision elaboration and

implementation. These can be routine limits (the decision maker's tendency to reuse almost the same previously adopted solutions), cognitive limits (one's capacity of storing, processing and creating knowledge and information), economic restrictions (they refer to the costs connected to the employment of decision assistants and external consulting experts and to the coordination and communication within the hierarchical decision team), temporal limits (they refer to the sometimes doubtful quality of some decisions elaborated and adopted under the pressure of the time available for solving some emergency situations or when multiple problems appear simultaneously) (Filip, 2004).

Every independent problem or a certain matter that requires a group of users to take a decision is viewed as a project. It is then divided into decision plans (or a single one) each of them containing one or more decision sessions. As stated in section 2, the participation in the decisional process is done through work sessions, using the tool that supports each session. These are the decision assisting tools mentioned in the previous section and each of them focuses on a specific aspect of group collaboration, such as idea generation, evaluation, organization, exploration.

On a social level iGDSS refers to incresing the transparency, creativity and democratization of the decision making process, means of selecting the participants to this kind of processes, delocalization and decentralization. Therefore, there are three main features that apply to all tools that are already or will be added in the framework:

- *Simultaneous contribution* - meaning that everyone is "speaking" at once, which saves time and increases productivity.
- *Anonymity* - meaning that the identity of each contributor is unknown, so participants tend to feel freer to express their opinions and ideas which are evaluated more objectively.
- *Complete Records* - meaning that at the end of a virtual meeting, there can easily be produced a complete and accurate report of all ideas, comments and vote results in any format. This last task is usually performed by the tool's agent or the tool itself but the user is asked for his' acceptance over the final results.

All these features are considered fundamental characteristics by the framework and are mandatory for the tools' structure.

The system's interface is web-based so users do not need to install a client program in order to use the system. This avoids any inconvenience related to OS incompatibility, network protocol etc, the only necessary thing is to have a computer with a web-browser and connection to the internet. The interface is built using AJAX technology. Most of the time users will attend sessions by selecting URL links received on their e-mail as notifications for any changes or event occurred in a certain work session.

Within a session the participant is met with a help screen which will instruct him if he/she is inexperienced. This help screen is specific for every tool and can be configured by certain users.

Hence, the group is able to appropriate the available technology in their own spirit and not the one imposed by the system designers. This will significantly contribute towards extending the acceptance and understanding of collaborative technology.

4.   Inteligent Workflow

In any group decision, the collaborative nature changes as the cooperation moves towards the final outcome and the meeting plan will evolve in time when the group members are able to actively decide the next steps based on the context of the developing action.

In order to accomplish this the framework implements a workflow having decisional sessions as its nodes and uses the Multi Agent System (MAS) to manage them. Because not all actions

belong to a collaborative plan, the workflow and the framework can contain not only group decisions sessions but also individual decisions sessions and simple task sessions. This workflow concept requires that a session's results can be used as input data for another session. Therefore an *iGDSS onlology* is being developed so that each tool/session stores its results in more or less general format and the subsquent session loads them and considers only the fragments that are relevant for it. This fits very well for the default set of tools, mentioned in section 2, because each tool's activity revolves around a list of issues that are discussed upon, voted, categorized etc. If any third party tool has a completly different activity structure (it does not use an item list) and format of storing its results than, in order to be used in a workflow, it must be aware of other tools' result format and provide an set of XSLTs so the server can transform them. In order to easily mantain the system, a XML/XSLT architecture has selected to store and transform the tools' results. If a decisional process has particular aspects in shifting from one session to another, aspects that are not provided by the system, then custom agents can be developed to solve this issues.

The system must adapt to the users requirements and environment evolution (Filip, 2004). Involving methods and tools inspired by the social and behavioral sciences, users have the opportunity to intervene directly in the decisional process, evaluating and learning the consequences of their actions, and improving the practice and knowledge of the group.

The user folows a continous cicle between plan generating (design decizion phases for reaching the common goal) , alternative clasification (posible actions courses' evaluation towards the existing context), plan monitorizing (estimating the new opportunities implicatios as they appear), envolvement, plan development (plan extension and modification) and plan fulfiling (completing the established decision steps). This will encourage a creative use of the system in order to discover new and efficient collaborative models.

5.   Implementatin And Future Trends

iGDSS has been developed at Wittmann&Partner Computer Systems and is on process of implementation for public administration and academic areas. In the next period we expect to finish these implementations that suppose decisional tools development, validation with different user groups and for different decisional problems. In academic area iGDSS is used to build a decisional web-portal with propose of supporting the process of elaborating and evaluation of a research work. With this portal all interesting stakeholders of process can collaborate and use the decisional support from idea generation to final work evaluation. One direct usage of this will be implemented to Lucian Blaga University from Sibiu, for diploma work process evaluation.

Within the DiFac (Digital Factory for Human – Oriented Production System, contract no 035079) research project it is being investigated the way that iGDSS can be used as framework for industrial decisional processes - new tools will be developed and new type of processes will be investigated.

In near future we will open for research community our decisional tool architecture and API to develop new and more challenging models. With this we propose iGDSS as a possible framework for testing and future development for a wide range of applications.

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Revealing Users.
How To Discover User Contexts And Interests And Apply This Knowledge To Broadband Innovations.

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Abstract

Three examples from a program of consultancy and academic work over ten years are discussed to illustrate the benefit of applying ethnographic methods to the creation and evaluation of innovations in online services. The research was conducted for the Australian Library and Information Association, The National Museum of American History, Washington and the Centre of National Research on Disability and Rehabilitation Medicine, Queensland Australia.

The research draws on communication perspectives and methods to gain an in-depth knowledge of the everyday contexts of users. The paper emphasises flexible, multi-stage research designs and gives details about three methods used; Insite Mapping™, observation/in-depth interviews in user contexts and scenario-based testing, also in user contexts.

This presentation argues for close detailed studies of particular user/content relationships as one basis for broadband innovation. It also suggests that knowledge-sharing at the conference may identify Communities of Practice that could intensify the work of COST298.

Internet services appeared as a formative presence and possibility in public life, without the lead time to discuss, theorise and plan for new methods to judge their effectiveness or best uses. The continuing technological and social innovations associated with broadband now call for some sharing of knowledge and wise direction of resources to make the best of what they offer.

My own part in this story has been to build on the experience of research into children and television (Palmer, 1986), then people and telephones (Gillard et al, various) and apply ethnographic methodology to users of Internet services. At first this was in a policy and academic context, then as a consultant. Looking back, what happened was an application of ideas to online communication and to organisations that had been very productive in studying the relationships of audiences and media. In *The Lively Audience* (Palmer, 1986*)*, children's different forms of engagement with television programs within their family context were reported, based on interviews and participant observation.

These methods have since been applied within critical ethnographies of the ways people use ICTs as part of their everyday life. Moores (1996) for example describes the ways households 'accomplish' their viewing of satellite television within different neighbourhoods by

negotiating the 'taste cultures' of different members of the family and their immediate neighbourhood. Silverstone and Hirsch (1992) emphasise the way ICTs are 'doubly articulated', so that they express the particular values of the one family - its 'moral economy' but at the same time open it to the globalising influences of an international market.

In Australia, ethnographic interviews of women's uses of the phone for kin-keeping was conducted by Moyal (1989) and then extended to the use of the phone in family contexts in a program of work of the Telecommunications Needs Research Group (See Gillard, Bow and Wale 1998, 1997, 1996, 1995 and Williamson 1996). As the Internet and mobile phones became part of family life in the mid 1990s this group applied the methods of in-depth interviews, observation and survey to predict patterns of use based on values about controlling or welcoming communication into the home. A separate study placed user activities in the centre of an analysis of the home uses of TV, video, computers and telephones (Singh, Bow and Wale, 1996). Using in-depth interviews and observation this study discovered intricate hierarchies of ICT use, depending on the technologies available as well as family formation and values.

The subject of this paper, 'revealing users' refers to the work of making visible the different forms of engagement of users with the contents and technologies of online environments and applying this knowledge systematically to create or improve them. The use of methods originally designed for mass media foregrounded the importance of research design. The requirements of user research were different with every organisation but with increasing experience and confidence three elements distinguished our approach. The first was gaining the detailed knowledge of their users that people *within* organizations already possessed, often without being aware of it. A structured group discussion, Insite Mapping™, was developed and used for this purpose.

The second element was understanding the communication contexts and purposes that users brought to their engagement with the organisation's services. Interviews in user contexts, sometimes including scenario-based testing, were employed, though we have also used web-based surveys or focus group discussions where the brief required this.

The third element was reporting the rich, contextual information about audiences in ways that addressed the organisation's main purposes and contributed a sense of possibilities for creative or productive work that was grounded in knowledge of actual uses. The design, methods and reporting were adapted to each organisation, revealing its existing knowledge of users and providing detailed information about audiences that had not been visible. The research enabled more strategic use of the organisation's communication resources and could be the first step in a cycle of development and improvement, based on user feedback. In 2002 the Australian National Audit Office commissioned a description of this approach for one of its booklets, 'Monitoring and Evaluating Government Internet Services', part of the series *Internet Delivery Decisions* (ANAO, 2002) produced by that agency to assist managers to prepare for performance audits of e-government services.

This paper is an account of three projects which produced unexpected findings and suggested further innovation. The paper also illustrates the creative possibilities of applied ethnographic research with broadband users. The three projects were:

- Development of an ICT Strategy for the Australian Library and Information Association (ALIA)

- Evaluation of *History Wired* (www.historywired.si.edu) for the National Museum of American History, Smithsonian, Washington

- User Requirements Study for development of a disability database portal for the Centre of National Research on Disability and Rehabilitation Medicine (CONROD)

1. An ICT strategy for the Australian Library and Information Association (ALIA)

Purpose:
In 2001 ALIA commissioned extensive user research to provide knowledge of the ways members and non members perceived the organisation, the services they were using and the future services they were most likely to find useful. The research was designed to gain an understanding of the current perspectives of staff, members and non-members as a basis for developing a detailed information and communication technology strategy for ALIA.

The research was to address the needs of different types of members and non-members, with the expectation that online services would be used increasingly as an element in communications and service provision.

Research design and methods:
The research design created stages of research to define the types of engagement of members with ALIA and how the organisation's products and services supported their everyday work and fitted into their work context. Expectations for the future of current members and especially by students and those entering the profession were sought. Research methods were:
- Literature review
- Insite Mapping™ with staff and with information management students (non-members)
- In-depth interviews with six members
- Survey of individual members
- Survey of institutional members

This research would be used to guide the redesign of their website as a central point of connection, information and membership. An outline of results from the qualitative stages will be described here.

Insite Mapping™ is a systematic process developed by User Insite to 'map' the uses of contents and services, and to describe the different audience groups who are being served. The discussion works from the particular to the general, asking each individual to recount examples from their own experience of user engagement with a particular service or content. The dynamics of knowledge-sharing within the group usually reveal some common experiences of users so their interaction and purposes can be well described. Usually, the discussion shifts to more general issues in the provision of services including 'difficult' clients and all of this information can be used to create or improve online content. The method was developed as a kind of applied ethnography where the members of the group tell their own stories from everyday experience.

For ALIA, the two workshops were designed to give different kinds of information. The staff workshop gave an account of routine contact with members from the perspective of those within the ALIA organisation. The workshop with students had a different purpose. It

explored the ways students saw themselves and their future careers and how this may relate to a professional organisation.

In-depth interviews were conducted with six individuals, carefully chosen to cover the major user groups indentified in the workshops. Three of the six people interviewed worked outside of conventional libraries. One student member desired to work in 'the technology side of information management, technical systems. Not a traditional library'.

Pattern of results from the Insite Mapping™ and in-depth interviews:

An outline of some findings is presented here to give a notion of what could be revealed by these methods and its uses for innovative work.

Staff workshop

Most of the examples given were of members seeking information using the phone or email and a number of the examples described a mismatch between the service ALIA offered and the expectations of members. This provided opportunities for rethinking both services and communication to members. The great diversity of member activities that were described provided a basis for considering alternate ways of offering member services. Much of the activity related to the creation and sustaining of professional interest groups and communities.

One major discovery from the 'mapping' of member contacts with staff was the identification of issues that were being handled across the whole office and taking staff time on a regular basis, for example the planning of Library Information Week.

Student workshop

The students in the workshop were asked to envisage their work in the next five and ten years as a context for later discussions about ALIA. Only two of the ten students had a clear idea of where they would be working. In ten years time they felt that the industry would be influenced more by global issues as opposed to local. Globalisation would also affect specialist libraries, which would need to be aware of and work in conjunction with other specialist libraries worldwide.

The students saw ALIA as a key player in providing them with access to a community of like-minded professionals. They preferred 'natural' forms of mentoring, where they would meet people they liked and the mentoring relationship would grow naturally.

It became clear as the student workshop proceeded, that students viewed ALIA as an organisation which facilitated relationships between members rather than a single entity which produced information and services. ALIA's members, rather than the ALIA head office or organisation, were seen as the experts and ALIA was viewed as a facilitator of communication between students and members.

Interviews

The metaphor that was repeated in a number of ways through the interviews was a desire for 'connection' with the ALIA organisation, with some disquiet about any lack of active engagement. One person who had previously been very active described herself as 'worn to a

frazzle' with little time to devote to professional development. This was from the demands of her position, and the complexities of her life. Others gave examples of being 'connected' to a professional group; in person, through online forums or through more conventional communications.

The six interviewees had positive views about ALIA's future and the activities which would make its work more visible and relevant. Half of those interviewed emphasised the importance of engaging professionals from allied information management fields, and informing members of technology and systems developments within the field.

As an exploratory and diagnostic exercise, the workshops and interviews revealed the need to adapt to a changing profession or, as one interviewee suggested, a different kind of professional. The 'new professionals' were likely to be attuned to new practices, technologies and non traditional ways of working in information management. They were likely to be recent graduates but not just younger people.

Discussion:

The qualitative stages of this research created new information about users from a variety of sources, and some common themes between them. The workshop with staff highlighted the importance of shifting from 'on demand' phone and email contact with members to more strategic uses of a website/portal. The student workshop and the interviews articulated the pressures arising in new definitions of information management and global developments in professional practice and network technologies.

The need to re-imagine the nature of the organisation was affirmed in this research and called for an ICT strategy that would make their expertise and resources available, to be shared and applied more widely. ALIA developed an extensive portal of services, including more visible communities and activities as a result.

ALIA's strategy would now be theorised in terms of Communities of Practice (Wenger et al. 2002) – voluntary groups who meet to share knowledge and improve their particular practice – with the ALIA organisation facilitating a community of communities. According to this framework the knowledge resource resides in the network itself and continuing engagement creates social capital through a spiral of developing expertise as well as social /professional relationships.

2. Evaluation of *History Wired* (www.historywired.si.edu) for the National Museum of American History, Smithsonian, Washington

Purpose:

This paper presents the results of an evaluation of *History Wired* conducted at the National Museum of American History History (NMAH), Smithsonian Institution, Washington DC, prior to its launch in August, 2001. The creators of the site wanted to present and describe objects in ways that would appeal to broad and non specialist audiences, including those who were not visitors to the museum itself. The innovative nature of the website interface also raised questions about how it would be put to use by different audience groups. It was decided to use naturally occurring groups of visitors to the NMAH itself as the basis for the research. Its purpose was to describe the variety of ways that visitors to the museum engaged with the

History Wired interface and its contents and to seek visitor suggestions for changes or improvements.

Research design and methods:

Methods were designed to discover how users created their own experience from the many possibilities of navigation and content. The research methods were:
- An observation session, where the researcher sat alongside visitors as they explored the website. The observer made notes of actions by participants and noted new content pages. She would answer questions and show features if visitors asked or stayed 'stuck' for some time.
- An in-depth interview, where questions were asked of the visitors about content, navigation, favourite objects, missing features, likely audiences and responses to the name.

Eleven groups of visitors (31 individuals) viewed the History Wired site which was in development at the NMAH. Visitors were asked to use the site together for five to ten minutes, and then to answer some interview questions. Observation of their uses of navigation, as well as choices for more information and general movement around the site were noted. Their comments during the session as well as the interview were taped for later analysis.

Participants were selected from those in attendance at the museum at different times of day. The test site was available on a laptop computer, and participants made their own decisions about who would use the mouse. Sessions varied from 13 minutes to one hour, with larger groups taking a longer time. More than half came from other states, or were on holiday or on a school trip.

The following were involved in the research:

- Father and adult son (20s), visiting to follow up father's war experience
- Four friends from college, visiting during college break
- Six 8th grade students (13/14 years) on a school excursion, (2 boys, 4 girls)
- A retired couple and their adult daughter, a teacher
- Mother (40s) and son, (20s) visiting from Texas
- Three 8th grade girls, friends, touring Washington (with school) from Alberquerque
- A couple, late 20s, Washington
- Family of 4 from Texas, first time in Washington. Son 15 or 16, daughter 11or 12.
- Male college lecturer and former high school teacher, social scientist
- Mother (30s) and daughter, 6th grade
- Two female friends, (20s), health professionals

The observation sessions and interviews were taped and later transcribed. The transcriptions and observation notes together gave a full description of the session, and these accounts formed the basis of an interpretive analysis.

Pattern of results:

In the observation stages, everyone began by moving the mouse across the map. Only one person tested the site by himself; the others were with friends or family. Perhaps as a result of this, comments and talk accompanied the use of the website. The talk was sometimes quiet and directed and other times noisy and expressive. Many unsolicited comments were made about the interface during the observations. From the beginning all the comments were positive, even glowing. Examples were:

That's really neat

This is really something. Very impressive

In three of the sessions, people mentioned they could spend 'a lot of time' or 'all day' looking at the site.

In most sessions, one person would read out the titles of the boxes or images, or they would read them out together. When they saw an image, for example 'Inside the Lone Ranger's Mask', or read a description there was often laughter or personal comment.

The recording of user behaviour was undertaken to reveal the activity of 'audiencing', that is, the audience-text relationships that were formed as people engaged with the site. In this approach, users were defined primarily by their activity and interests, not their personal characteristics. Indeed, it could be argued that the 'audiencing' was a group phenomenon in this study, not an individual one. The following are the distinctive patterns of use that were observed.

Using the mouse to travel left to right across the map, returning to the left and reading across again

This approach mirrored conventional 'reading' and was only observed in one session. As her cursor moved, the user read pop up labels but did not click and explore further images and information. When this possibility was pointed out towards the end of the session, she tried it a couple of times but mainly continued to read the map left to right . The woman was visiting the museum with older parents and was a grade school teacher, probably in her forties. She did not use the Internet at home, only at school in connection with teaching.

Quickly exploring the dimensions of the content, both the surface geography of the map and the information pages behind it

One group of six 8th grade students did this with great enthusiasm and speed, with statements of 'cool!' accompanying their discoveries. The person with the mouse, a girl, began by exploring in circles within the main concept groups, in this case 'Home/clothing' then added selections of keywords at the top. They discovered there were categories within categories.

Once the back pages were discovered, which happened after a few minutes, they combined fast exploration of the map with clicking on back pages, and further information pages whenever various members of the group indicated an interest. This group did not find the timeline or zoom features, but when they were told about them late in the session, they were so excited, it began another round of fast exploration.

Careful exploration of the website to answer particular interests

Three of the visitor groups, who were with family members, including adult children, used the site in this way. One example of this was a father and son who looked at the site then discussed an author, Stephen Ambrose, associated with military history. They spent most time on directed activity, selecting the keyword, 'Military' as well as moving around the relevant

sections. They quickly discovered and used the page links in these thematic areas. As they explored the site (the adult son used the mouse), they commented to each other about what they were finding and what they wanted. They didn't find specific information about '101st Airborne', which was what they had come to the museum itself looking for that day but they did find objects of interest to them.

A second family grouping who used the site in a similar way was a school age daughter and her mother. They were remarkable for the intense interest in reading every word of all the information about particular subjects such as the 'Star-Spangled Banner'. They scrolled down to do this. Again, they were unhurried and talked about the subject matter as they went.

Experimenting with the navigation functions

A fourth approach was not guided so much by thematic content or personal interest as by selection of particular functions that people found interesting to use in themselves. One adult son with his mother explored the site mainly using the zoom function, the topic menu on the left hand side and the enlarge function. It took them some minutes at the beginning to find these and use them, but then they enjoyed the interface itself, choosing back pages for familiar content such as Kermit, Benny Goodman and the Gutenberg Bible.

Seeking the visual experience of objects

A fifth approach seemed to focus on inspection of the variety of visual images, yielding a close engagement with the objects. Two women friends in their twenties found the zoom and enlarge features early and systematically viewed objects of interest by reading out the titles in the zoom display, clicking for the information pages, reading the first paragraph (they didn't scroll down) and then enlarging the image. They talked about the objects themselves as they did this.

Discussion:

The different patterns of engagement showed that *History Wired* provided a variety of possibilities for different audiences. Even those who had little experience with the Internet could explore the site systematically, gaining pleasure from the thumbnail images and the labels on the map. The intention of the designers, to provide direct experience of a large number of objects, and to place in the hands of users many different ways of driving their own experience met with very positive responses. Some enjoyed the 'driving' itself while others were more focused on content, or hopped from image to image. This is a feature which is not characteristic of most websites. While the content may vary, based on user selections, sites rarely provide different 'driving experiences'.

There was an immediate engagement with the written descriptions, though most users read the first few paragraphs only. There were no difficulties with the reading, and three groups read all of the text for some of the objects they chose.

The site was very flexible in providing different reading experiences. Some of the functions, such as the zoom, timeline and drop down menu were not used by many. However, they were all used by some, to support their exploration of the site. With confident users, experienced with scrolling and drop down menus, their own purposes or personal preferences for image or written text determined the ways they used the site.

There was one 'bad' feature of the site, and that was its original name, based on a clever pun of 'bites' and 'bytes'. A number of those interviewed objected to the name as being disrespectful or insulting to the nation. This had been entirely unexpected. The name, *History Wired* was used instead.

The website was launched in August 2001 and attracted the largest audience of any Smithsonian exhibition up to that time, judged in terms of press coverage across the United States and website visits. It did indeed create new audiences for the museum and different forms of access to some of its vast collection.

3. User Requirements Study for a disability database portal, Centre of National Research on Disability and Rehabilitation Medicine (CONROD)

Purpose:

With the intention of building an innovative website that provided the information needs of people with disabilities in Queensland Australia, CONROD commissioned a User Requirements Study in 2001. Previous research had established that there was particular need for information in the days and months following hospital treatment. The report was to provide research-based recommendations from a detailed knowledge of the ways people with disabilities were using current databases. There was very little research which discussed user requirements from a customer perspective for a broad range of disability types.

This research sought differences between users as well as common needs to encourage web designers to provide for the various groups within their customer base of people with a disability.

Research design and methods:

Gunela Astbrink of GSA Information Associates worked with Patricia Gillard of User Insite to consult closely with major providers of disability services in Queensland and to design the research. The methods were:

- Insite Mapping with 11 service providers
- In-depth interviews with ten people with a wide range of disabilities to scope their requirements for a new online database resource

The workshop brought together representatives of eleven Brisbane-based organisations. The workshop participants drew on the day to day experience of service providers to describe clients of disability services and their use of a broad range of services. Their comments were invaluable in sensitising the researcher to the variety of requests made by people with disabilities and the importance of human experience and perceptiveness in deciding what lay behind seemingly straightforward requests. The workshop also led to the inclusion of a carer and a disability support person in the interview stage. The following report will focus on results from the interviews.

The interview was conducted in the following sequence:
1. Observation/demonstration where the user showed the researcher what they often did in terms of access and use of disability related information and more general sites.

2. User exploration of suggested sites with disability information and response to scenarios and tasks which were requested by the researcher.

3. General discussion regarding preferred content, ways of searching and other issues arising.

The methods adapted usability testing within the contexts of users, asking them to use specified online databases. It extended this with questions used in ethnographic style research to examine the everyday routines, purposes and content interests of participants. The research was conducted with people with a wide range of ages and disabilities including vision, motor and hearing impairment and Intellectual disabilities.

The interviews lasted from 45 minutes to one and a half hours. They were tape recorded and later transcribed. Structured observation notes were also taken of the user's environment and disability, as well as other relevant features. Ten individuals in Canberra, Sydney and Melbourne participated in the study.

The following disabilities and demographics were included within the interview group:

- Physically disabled
- Intellectually disabled
- Deaf
- Blind
- Carer
- Age range from early twenties to late forties
- Four male, six female

The particular databases to be explored and the tasks and the questions for the interview were designed in close co-operation with Gunela Astbrink. The interviews were conducted in the natural environment of the person with a disability. This meant that every situation was different to every other. Interviewers had to be very flexible, find appropriate places to sit, and suitable ways to communicate effectively.

Both the interview process and the transcription process were much more challenging than in more conventional studies. The combination of sound tape and written observation record were adapted to the circumstances. For example in one interview with a person who was deaf, the interviewer recorded observations by speaking aloud on tape because she was continually writing to the participant, in order to conduct the interview. The participant could not lip read or sign. Recording comments on tape (which were not heard by the participant, and so did not hinder the progression of the interview) was unique to this situation, and quite different to the usual procedure.

The ethnographic approach, which documents unique environments and uses this information as part of the analysis seemed to be a good match with the subject matter of unique uses of databases, which varied according to the person's circumstances and their disability.

Pattern of results of the interviews:

There were marked differences between participants in their experience of the Internet and their knowledge of how to browse Internet sites and conduct searches in databases. This was

further influenced by the assistive technologies they used to gain access to the information and the influence of their disability on the contents they were able to access and use.

Results from interviews were presented in two main ways:

- Case examples which gave a description of individual uses related to the personal context and particular disability of each person

- An analysis of the main findings across all of the interviews

Case examples were used in the full report to describe the circumstances of each of the participants and their ways of using online databases. The case examples showed the unique adaptations that each person made, in using online communications to enhance their access to information and services. The following describes 'Tom' (a pseudonym), 24 who has an intellectual disability. He said that while he had a good long-term memory, his short-term memory was not very good. He received a disability pension.

Tom - Personal Background. Tom has used computers since the early 1990s and began using the Internet on 'December 15, 1996'. He uses it for a variety of purposes. He has his own website, which is connected to a local church, and he has helped others set up websites. Tom has two computers set up at two desks in his home; a PC and a MAC. He usually uses the PC but during the interview used the MAC as the PC was not working. Tom does not use any specialised equipment.

Communication. Tom has a number of email addresses and communicates with people via email and chat rooms. He likes 'to chat with people' on the Internet and spends up to 10 hours daily participating in chat room discussion.

Online Information Seeking. Tom enjoys using the Internet and is a very experienced user. He doesn't often seek information on the Internet, using it primarily for communication purposes. He seems at ease with sites that he knows well. He appears to read well, but missed key information on unfamiliar databases, and was slow at navigation. When Tom browsed unfamiliar databases, he worked through them quite methodically, reading much of the content rather than quickly scanning.

Before using a database, Tom will guess an organisation's URL. If he does use a database, he will immediately click onto a hyperlink that takes him to a webpage he feels is relevant, rather than taking time to scroll down and read through the search results.Tom looked at a number of websites over the course of the interview:

- Startlife Online - www.start.com;
- Friend Finder - www.chat.com.au
- Chatropolis - www.chatropolis.com
- Australian Football League - www.afl.com.au;
- Community and Information Referral Service ACT - www.cirsact.org.au;
- DIRC Access - db.dircsa.org.au;
- Telstra – www.telstra.com.au;
- Yahoo search engine – www.yahoo.com;
- Independent Living Centre NSW - www.alcnsw.asn.au;

- Centrelink – www.centrelink.gov.au.

Searching. Tom uses Yahoo as his primary search tool.

Database Design. Tom prefers to visit databases that have easy-to-remember domain names and are simple in layout with minimal linkages. He finds multi-layered databases difficult to navigate. He especially likes databases that provide graphics, particularly in relation to products on offer, so he can distinguish between the different models and designs. Graphics help him choose between products. Tom preferred the search results that were listed on the www.alcnsw.asn.au database when looking for telephones, rather than the Telstra database, because it provided images and pricings of the telephones on offer. Tom would also like to see graphics being used with links.

Interview findings

The following is a broad summary of results. The full report detailed experiences of the databases tested, especially search functions, using quotations and examples. Three headings were used to organise the presentation of results: terminology, content and design.

For over half of the participants, the effect of the Internet had been profound and rewarding. Comparison across the interviews revealed widespread uses of the Internet for searching out information about disability and medical issues, accommodation and travel. However, the disability databases explored were not very useful for accommodation and travel. Participants used a combination of browsing and searching, usually beginning with a scan of the first page opened. They especially appreciated sites where the approach to information made sense to them or seemed 'natural'.

In response to the usability tasks they were asked to do, most used the search engine Google and were experienced at conducting searches and guessing search terms or even urls for organisations they chose to visit. However, participants varied widely in their practices of choosing broad or narrow search terms and success at searches was very uneven. This was partly due to the great inconsistencies between databases.

The content needs of different disability groups were found to vary, with people who were deaf or intellectually disabled wanting simple text, with explanatory images and pictures carrying much of the meaning. People who were blind or physically disabled, on the other hand, liked detailed information, especially if it were unavailable from another source. All participants benefited from a simplified structure which clearly prioritised information and gave good contextual clues and information about where users were in the database, and where they could move to.

Use of different and confusing terminology by databases was one of the most important issues to emerge across the study. This was even for the search function, which was labelled 'find' in one database and therefore missed. For people who were blind, spelling which is a play on the sound of words was particularly misleading.

Participants accepted terms such as 'physical disability' to designate information relevant to their own disability. However, some terminology offended them. Karen, for example was unhappy with the use of the term 'access', and much happier with the term 'enable':

…they haven't thought much about it. I mean it's [access] an obvious thing that you don't have. People don't understand when they stick that label on it, I don't think, because [they] don't realise how much access you lose. … They're only giving you access to this little tiny pie anyway.

Discussion:

One of the unexpected findings in this study influenced a change in thinking about the scope of the project. Interviewing in the homes or work spaces of participants made clear significance of the Internet for communication between people with disabilities. This was used especially for discussion of medical issues or travel, and to check on government entitlements and support. The website that was developed on the basis of this study broadened its focus as a result, adding a Discussion Board to facilitate such communication.

The basis for making evaluations

In the three examples discussed above the basis for making evaluations of ICTs has been the knowledge of patterns of interest and use gained from close study of existing forms of engagement in user contexts for those contents/services being evaluated. More conventional, quantitative methods such as web statistics or online surveys can be used in a multi-stage research design. However, contextual detail provides the most important knowledge base for evaluating ICTs and online services.

The implications for the future design of broadband services

Studies based on ethnographic research are unique to their context, content/technology and time. This directly challenges the assumption that universally applicable methods that provide direct comparisons between different broadband services should be the goal. Instead, we should begin by looking at the dynamic interplay between particular users and services as the focus of research. The contribution of this paper has been to describe studies that apply this approach and to suggest the ways they can be used as a basis for innovative broadband services. New kinds of knowledge are likely to be discovered when researchers are seeking users' own perspectives. If this is reported in their words and related to particular interests, it is more likely to suggest unexpected directions for future design.

Directions for future research

A major influence on the methods described here has been the writing about knowledge-sharing, Communities of Practice and innovation (Wenger et al, 2002). This conference is seeking to generate innovation in research about broadband by sharing knowledge across researchers, countries, technologies and academic representatives. We form a possible Community of Practice or multiple communities and may benefit from defining the major approaches emerging at this conference and their particular strengths and contribution to development of broadband societies. The communities could form and continue application of their knowledge while making links with adjacent communities. According to the theory this will intensify expertise in each distinct area and create innovation in the contact between them.

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The Question Of The Embodied User Facing The Web Praxis: How To Make A Body In A Virtual 'Biosubjectivity'?

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Abstract

How does the user manage an "embodied" identity in the Web case? How can we understand the links between body and identity build in the relation with the Web? The paper will study those questions in trying to clear up the problems related to body, embodiment, subjection and identity. Therefore, the case of Web produces some specificities: user, facing the Internet, is in a position of inaction: sitting in a chair, he only watches the screen and activates the mouse and the keyboard. We can compare this static position to an immersion of the body in a virtual and immaterial world, as the body was extended by that virtual reality. User's body is investigating the virtual interface, until it becomes the nodal point between virtuality and reality. We will explore the concepts of Body without organs (Deleuze & Guattari) and biosubjectivity (Andrieu) to understand those contexts of virtual world. Finally, we will extend this theoretical approach to a further analysis of what Deleuze called the societies of control, following the societies of discipline.

How to make oneself a body in front of a computer, surfing on Web? What does it mean, to have a body, and from there, a subjectivity, in the virtual space of Web where the identity owes be negotiated again and again?

We will speak first about the embodiment, and we shall define this one in an immanent centring, that does not force us to a definition of the body, and the embodiment, as an object or a substance. The Body without Organs - that we shall understand at first as *a limit of the lived body* as the body goes to it when it is crossed by affects or by becomings - of Deleuze and Guattari will lend us assistance in this practical meaning of a word of the embodiment, and we shall see how the proposition ' To make oneself a body ' takes its sense in a theoretical approach of the representation of the body as inventor of biosubjective standards (according to Bernard Andrieu [1]).

This first part will lead us to consider the context of Web praxis to propose the body as virtual biosubjectivity. This understands a process of deterritorialization and ceaseless reterritorialization between a virtual Body without Organs, registered in the smooth space (or haptic space) by the worldly virtuality of Web and the stratifications produced by the biosubjecticals and biopoliticals standards.

Finally, we shall carry this proposition towards the strata that the contemporary society settled as sediment and that Deleuze called the societies of control. Indeed, the biopolitics, arisen

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[1] Andrieu, B., *La représentation du corps, inventrice de normes biosubjectives*, www.staps.uhp-nancy.fr/bernard/docpdf/normesbiosubjectives.pdf

from a disciplinary society, go to a reorganization of its foundations in the new contexts of surveillance, video-surveillance and Ambient Intelligence.

1. Embodiment ('To make oneself a body')

We choose to consider the body neither as a substance, nor as a transcendental value attached to this substance. Our first option is that the body is involved in a whole of practices, and not as an essence, an object, in opposition to the substance, the soul or the spirit would unceasingly come to be opposed. Not at all, to have a body, to make a body, it is to be implied in an assemblage of *practices*, movements. It is to learn to be affected, to be moved, put moving by other entities, human or not human. [2]

The body, considered as an object or a substance requires a theoretical discussion from an holist or dualistic point of view, in which we will not enter here. The body, escaping definition of a substantial type (the question of what is the body by *nature*) enables us to considerate it as a 'interface' which would become increasingly describable when that interface learns how to be affected by various elements, human as nonhuman. We do not give a sense to define the body as an essence or a substance, and it is not either the residence of something of superior, as such as thought or soul.

It is necessarily, in our optics, to make a body, to create it, to try it out and insert its own subjectivity there. It is from an active point of view that we conceive it, `in process' with the world, which surrounds us, populated of human and nonhuman.

How, consequently, to consider the body requiring at the same time the externality of human and nonhuman, and at the same time a whole of practices to be understood as affected? About which types of practices do we discuss?

Actually, the contribution of Deleuze and Guattari, who proposed the concept of Body without organs, could be useful for us. What is a body without organs? Initially, it should be not regarded as a concept, but as a set of practices.

It is non-desire as well as desire. It is not at all a notion or a concept but a practice, asset of practices. You never reach the Body without Organs, you can't reach it, you are forever attaining it, it is a limit. [3]

Then, BwO is not the opposite of the organs, but the organization, i.e. `the organic organization of the organs', which must be understood like the strata, stratifications imposed by the standards, connections, normative transcendences organized, social and political formations.

Dismantling the organism has never meant killing yourself, but rather opening the body to connections that presuppose an entire assemblage...[...] You have to keep enough of the organism for it to reform each dawn;... [4]

The organism, it is not organs on a body. Organism, it is coding or combinative (it is even in the sense that one will speak about a genetic code), organs on the body without organs. The organism is a stratum. The strata, it is a species of formation on the body without organs, which will involve it, to fold back itself, to yield, to form bi-univocal relations. The body without organs taken in a strata yields, is folded up, form a folding back, which produces standards and regulations. Therefore, the first stratum is the organization. The strata of organization is very simple, it consists in making with the body without organs an organization, we organize it according to the principle of the output of the useful energies, for example, of energies of work. The strata of organization take in account what occurs already

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[2] Latour, B (2005), *How to talk about the body? The normative dimension of science studies*, in Body & Society, Special Issue of Bodies on Trial, 10, pp. 205-229.

[3] Gilles Deleuze et Félix Guattari, *A thousand Plateaux,* Minnesota University Press, 1987, p. 149-150.

[4] Ibidem, p. 160.

on the body without organs in a system, which will direct it in an other direction. It will divert it.

The second strata, are the strata of significance. The third strata, that one of subjectivation, can say that there is no reality dominating without a point of subjectivation, and this point is not at all the point where the subject emerges, it is the point from which is organized the angle of signifiance and the variable opening of this angle. It is always starting from a point of subjectivation that the division of dominating realness is made, and it is always starting from the point of subjectivation that the machine of significances will take place, and then, the machine of organization. There is no organization of an organism, no significance of significations, no determination of a dominating realness without a corresponding point of subjectivation.

The BwO is a practice of perpetual tension; it is a process, an experimentation. That means that one is always making a BwO, there are not a completed process. The immediate effect of the body without organs, that makes only one with the experiment, the experimentation of a depersonalization. The BwO must be understood as a biosubjective constitution of the body, which would raise of a process of singularization of oneself counters domestication representational of the social formations. In other words, undifferentiated and not stratified, the body without organs brings to the idea of a subject, which is spread out over the circumference of the circle from the center, which the self has deserted.

Between the BwO and the stratas or sedimentations, effectuating movements of ceaseless deterritorialization and reterritorialization, it proceeds tensions: we can consider sedimentations as standards, here biosubjectives standards, on whom are tested experimentations, deterritorializations and reterritorializations of the BwO. I will name that tension, borrowing the term from Bernard Andrieu, biosubjectivity.

What biosubjectivity [5] ? The subjective representation of the self defines a body standard of liveable while allotting to the judgement on the form and the matter of the aesthetic and functional criteria: that means that the body itself becomes a producer of standards for itself.

Normally is not only any more incarnated in the subjectivity (understood here as a mental metaphor), but in the body matter, it is even incarnated in the subjectivation. To take again the terminologies of Deleuze and Guattari, I will say that the movements of deterritorialization that produce virtual BwO settle as sediment strata of subjectivation.

It is necessary to understand the body as producer of biosubjectives standards - and in that point Andrieu and Deleuze & Guattari meet themselves -: the biosubjectivity is the tension which is born between virtual BwO from haptic space and the biosubjectives standards.

More classically, it is a new form of body subjectivity, which wants to be carried out in the biomaterial matter of the body. Biosubjectives from our constitution, it is from now on consciously a realization this biosubjectivity in the matter of our body that is aimed. The `biosubjectivity' is a setting in culture of the body: the body is not only anymore the cultural object of the subject, but the identity matter of the self, mobile and alive. [6]

The invention of the body by the subject initially was a conquest of the feminists, the gays and lesbians, patients, immigrants, prisoners, disabled people: the right to have its own body testifies to ideological fights, of desires of marginal modes of existence. They are instituting

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[5] Concept of Bernard Andrieu, notably in *La représentation du corps, inventrice de normes biosubjectives*, op.cit. et *Somaphore et corps biosubjectif*, in *Multitudes* n°14, Philosophie de la biologie, Ed. Charles Wolfe, p.59-69.

The term biosubjectivity remains obviously the foucaldian concept of biopolitics, which is built all along his works. For an achieved historical panorama of the biopolitics, we refer to that very relevant paper of Bernard Andrieu, *La fin de la biopolitique chez Michel Foucault : le troisième déplacement*, in Le Portique, *Foucault, usages et actualités*, pp. 190-203.

[6] Bernard Andrieu, «Faut-il respecter le corps humain ?», in Le Portique, *Le Respect*, mis en ligne le 15 décembre 2005. URL : http://leportique.revues.org/document553.html.

biosubjectives standards, in resistance to the shapes of normative domination of the social body, lived like ideological by the minority modes.

We can take as example the cyborgs of Haraway[7] who legitimate the existence of these biosubjectives standards. Haraway says that because we have already accepted that the technologisation of our bodies through the intervention of medical science – immunisation, pacemakers, transplants, ultrasound, the human genome, etc. - we are already biotechnological beings. We are cyborgs, cybernetic organisms.

2. A virtual biosubjectivity

Which type of biosubjectivity is built in Web practice? How to renegotiate its virtual identity as a body, as a body matter? It is the questions that we will try to answer in this second part.

The interrogation on the identity compared to the identification with the alive body thus comes from the body lived, reflected, informed and asserted, from now on, a biosubjective construction of self, like process in constant movement of deterritorialization and reterritorialization. The BwO that meets the virtual space of the Web is particular: it lives in the smooth space of the Web praxis. Smooth space, haptic space or nomadism are also concepts of Deleuze and Guattari. Mireille Buydens [8] confirms us a very relevant vision of smooth space to think the space of the Web.

The concept of space smooth constitutes a particularly fertile model to think various contemporary phenomena characterized by a valorization of the dissolution of the borders and structures, fluidity, not planned and the spontaneous one. In this direction, it is an excellent tool to conceptualize cybernetic space. Doesn't Internet function indeed precisely like an adirectional space, non-polarized and not cartographic, where the images are tied and untied on an also close level? Doesn't one speak besides about surfer on the network, as one sails with the liking of the waves, slipping without compass on the dust of pre-formals pixels? The Net surfer is a nomad, controlling at sight in the proximity of the pages, without possible prospect. Also Internet is space smoothes par excellence, like spaces intoxication and of fata morgana, as full and vacuum to him as the Sahara, also near and also plugging. Striated space would be then, on the contrary, the paradigm of the traditional media, with their linearity, their construction, their depth and their setting in prospect: the readable orography of the vision moved away, reflected and panoramic, opposed to the pervasive proximity of the haptic vision in smooth space.

The virtual BwO of the smooth space of the Web, how to build it? If the Net surfer is a nomad, it creates a subjectivity in a body which is expressed only in one static of the screen, the keyboard, the mouse. We are far, in this position, to believe in the nomadism of the e-user registered in a biosubjectivity. However, he can make a BwO, deterritorializing himself and reterritorializing himself in this non-tangible space.

The forums of discussions invites us to the pseudonyms, the webcams to the dressing-up, the role games in network to the creation of a narration of a protagonist in which one can believe, one can steal an identity of player to another, divert it, cheat, etc.... The e-users are done of BwO virtual of all kinds, they try out, follow lines of flight, take along, then create for themselves identities, without being affected in their majority identity.

In what that does affect our body, our embodiment? The answer is very simple and joins the assumptions of Bruno Latour [9] about the body. It is because our body is affected, is touched,

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[7] Haraway, D., 1991, Simians, Cyborgs and Women: the reinvention of nature, Routledge, New York.

[8] Mireille Buydens, « Espace lisse / Espace strié » in *Le vocabulaire de Gilles Deleuze* (sous la dir. Robert Sasso et Arnaud Villani), Les Cahiers de Noesis n° 3, Printemps 2003, pp. 134-135.

[9] Latour, B (2005), *How to talk about the body ? The normative dimension of science studies*, in Body & Society, Special Issue of Bodies on Trial, 10, pp. 205-229.

put and moved onto this Web world, to which we take part, in which we surf, that we are making a biosubjective body. Our biosubjective body belongs to the Web, as much as the Web belongs to our biosubjective body.

3. From an embodiment towards a virtual biosubjectivity: considerations about the society of control

We could widen the concept and wonder how this biosubjectivity works beyond a ' restricted' and personal virtual space (the e-user in front of its screen as a model). Indeed, the invasion of ICT's in the contemporary societies takes several forms and invades our every-day-life. We assist, often without none possibility of contesting, to the growth of a multiplicity of ICT devices, presented almost as *natural* and necessary objects or needs.

The policy representatives often promote that ICT's development, and try to encourage their acceptance inside the society. A recent example is the case of the new technologies raised by the projects of Ambient Intelligence (AmI) and their visions. The AmI is a notion of computing engineering including a set of technologies sharing common features. The European Commission, through the 6th Framework Programme, supported largely the developments of those new pervasive, ubiquitous technologies. AmI results from the convergence of three domains:

- *Ubiquitous Computing*, who consists in integrating microprocessors into the objects of the every-day-life.

- *Ubiquitous Communication*, who allows these objects to communicate between them and with the user.

- *Intelligent User Interface*, which allows the users to control and to interact with these objects in an intuitive way.

The AmI promises us a world strewed with small electronic, cheap, interconnected, autonomous elements, sensitive to the context and having certain degree of intelligence, all this in our daily environment (in our cars, in buildings, in trees, in the streets). Their utilities would be multiple: from the prevention (from fires, accidents) towards the assistance (guide, control at distance) by way of the comfort. One of their high quality would be their total transparency: they would be present, but completely invisible for us, the interaction with them that must be also transparent. One of the applications of the Ambient Intelligence is 'to make a couple' with the devices of video surveillance. These control mechanisms would thus be strengthened due to the invisibility and the intelligence of the technologies AmI, and it would contribute to make the social control more dependent on technological artefacts.

Foucault has showed in which the disciplinary devices of Panopticon contributed to lead a control of human bodies envisaged as mass [10]. However, the concept of biopolitics is a concept fundamentally static and a category fundamentally historic. It is connected to the history of the disciplinary societies that took place in 18th and 19th centuries, with their highlight at the beginning of the 20th century. They proceed with the organization of the big circles of confinement. The individual passes from a closed environment to another one, with their owns laws: at first the family, then the school, then the barracks, then the factory, from time to time the hospital, possibly the prison, which is the environment of confinement par excellence. Already at the end of the World War II, we were not living anymore in these societies of disciplines; we pass in another shape of society, which Deleuze named 'society of control'.

We observe, following Deleuze in his article *Postscript on the Societies of control*, the passage of a surveillance centred to the human body (it is the modern biopolitics) moving

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[10] Notably in Foucault, M.,1975, *Surveiller et punir*, Paris, Gallimard.

towards the control of the virtual identity, and from then of its subjectivity and virtual biosubjectivity.

The conception of a control mechanism, giving the position of any element within an open environment at any given instant (whether animal in a reserve or human in a corporation, as with an electronic collar), is not necessarily one of science fiction. Felix Guattari has imagined a city where one would be able to leave one's apartment, one's street, one's neighbourhood, thanks to one's (dividual) electronic card that raises a given barrier; but the card could just as easily be rejected on a given day or between certain hours; what counts is not the barrier but the computer that tracks each person's position--licit or illicit--and effects a universal modulation.[11]

To understand why the contemporary biosubjectivity is connected to the society of control, we must evaluate once again the concept of biopolitics. The production of subjectivity, which was determined by the biopolitics, was still a production of subjectivity, in that case, almost always neutralized. The enormous foucaldian effort to bring back the networks of biopolitics to the determination of the subjectivity never ended. It is a theoretical lack that we may fill in. Several things could be underlined to understand the societies of control. First, from the dispositives of surveillance points of view, the panopticon of Bentham is 'rhizomatizing [12]', it means that it bursts his unique eye in a non-organized eyes multitudes. For example, a downtown area stuffed of CCTV does not obey only one supervisor-agent, but it also obeys a multiplicity not organized of supervisors behind the cameras: representatives of the city itself, tradesmen, and unquestionable particular. Moreover, other eyes can record as video amateur by familial cameras, mobile phones, and become another eye or surveillance in the case of security needs, for example. This bursting has several consequences: we can observe a reinforcement, on the one hand, of the dispositives of the data collected and monitored, and on the other hand, of the processes of data protection, which involve an unlimited and perpetual movement from the causes towards the consequences. Indeed, because of the incredible quantity of the data to be collected, monitored and protected, it is necessary to control more and better, and reciprocally, it is because control is invading and omnipresent that we must take care of us as a person.

Therefore, Deleuze says that if in the societies of discipline, one did not cease passing from confinement to another, in the societies of control, the environment itself acts as a distorting universal. What is essential in the societies of control is the exercise of power as massifiant and individuant at the same time (it is biopower or biopolitics), the signature indicates the individual, and its number (of national register, of identity card) indicates its position in a mass. In the societies of control, the essential is not anymore an administrative numeration or a number, but a code. The numerical language is made of codes, which give access to information: one is in front of samples, data ad infinitum, in perpetual growth. The individuals become `dividual'. The biosubjectivity is folding into the codes and can profit from them to build it.

It is thus following the foucaldian and deleuzian studies in connection with the societies of control that some questions concerning the body are formulated. One can wonder what it means to say, to have a body, in this context of control? On one hand, we can encompass logically the body as passive, subjected to the standards and the normalizations raised by the new dispositives of surveillance. Nevertheless, the new productions of subjectivity, notably the one releated to the biosubjectivity, make us hope that those ones are producing new forms of resistance, and that the person ' dividuel ' can act in that new way of constructing identity, which we called biosubjective body.

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[11] Deleuze, G., *Post-scriptum sur les sociétés de contrôle*, in L'autre journal, n°1, mai 1990.

[12] For the concept of rhizome, see Deleuze and Guattari, *A thousand Plateaus*, op.cit.

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The poetics of delay: mobile media, pervasive technologies and notions of place

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Abstract

In a period marked by the rise of the mobile media and social software, the rhetoric around the prosumer (consumer as producer) seems endless. The shift into web 2.0 user-created content (UCC) overdrive has seen much discussion around the so-called democratising of media. However, this phenomenon has given rise to examples of users being interpellated as 'consumers' rather than citizens and one is left to question just how 'participatory' these new forms of media are. In particular, projects involving pervasive (location aware) mobile technologies seek to remind us of the growing importance of place and sociality in the politics of participatory media and forms of 'networked individualism'.

One of the marked features of the Internet is that as a 'global' technology its adaptation at the level of the local is far from homogeneous. This is particularly the case with pervasive mobile projects. The growing interest in conducting mobile location aware projects – where participants negotiate the online and the offline – demonstrates perhaps one possible "future" for ICTs; one that is marked by a straddling between online and offline spaces. The role of pervasive mobile gaming reminds us that global ICTs are still very much subject to the contingencies of place. Moreover, despite the tyranny of rhetoric around the hype of ICTs being about 'immediacy', these projects evidence that the reality is more about delay.

This paper will explore the immediacy/ delay paradigm of mobile media through discussing some examples of experimental mobile media projects such as collectives such as UK's *Blast Theory*, UK's *Proboscis'* 'urban tapestries' project, and Korea's Art Center Nabi *Urban Vibe project*. These projects are examples of some of the socio-temporal variables that are evitable when outlining the difference between an "imagined future" and a "lived future". By drawing on examples of mobile media projects, this paper will reflect on how we can conceptualise the "future" of mobile media and its relationship between co-presence and a sense of place.

Place on hold: Introduction

One of the interesting things to note about the rise of mobile media over the last ten years has been its size variations that make Oprah's perpetual yo-yo dieting seem normal. When mobile phones first graced mainstream in the 1980s they were associated with yuppies and conspicuous displays of wealth as demonstrated in the iconic 1980s film *Wall Street*. Then, as mobile phones were adopted and adapted by youth cultures, the phone shrunk into a complex

creature adorned by user-generated customization from phone straps to sticker faceplates and screen savers. Then, as the phone became more than *just* a phone and started to emanate this century's Swiss army knife, it bloated in size (Boyd 2005: 28). It is with this size change that we moved into an epoch of mobile multimodality whereby convergence became synonymous with contemporary mobility; whether we liked it or not. Along with this rise in multimodality and corporate smoke and mirrors around the so-called user-created content (UCC) comes an antidote – location-aware gaming, often dubbed 'big games'. Here the notion of big isn't so relating to the gadget's gluttonous size but rather more to do with the role of people and the gravity of place in the navigation of co-presence.

Now, under the influence of mobile, pervasive, and ubiquitous technology, games are undergoing another transformation — one that will continue to change how we think about them. Computer-powered games are slipping off the rectangular screens of our monitors and video displays and escaping back into the real world. Imaginary places, constructed from code, are now being represented not just as pixel grid windows into synthetic 3D environments, but mapped onto the actual 3D environments in which we live (Lantz 2006).

As Frank Lantz, a New York based game designer who has been involved in such seminal projects as *PacManhattan* notes, the importance of location-aware mobile gaming – or "Big Games" – definitely plays an important role in the future of gaming.[i] Citing examples such as *PacManhattan*, UK's blast theory, Geocaching, and Mogi, Lantz emphasizes the importance of these projects in testing the notion of reality as mediation. As Lantz observes, the precursors to Big Games and the 1970s New Games Movement were undoubtedly the art movements of the 1960s such as happenings. In this way, this can be paralleled with the trend in contemporary art from 1990s that French curator and critic Nicolas Bourriaud dubs 'relational aesthetics' (2002). As an extension of minimalist notions of the 'death of author' type paradigm, the 'relational aesthetics' artwork is always 'incomplete' without the audience. Frans Mäyrä also pushes the importance of big games (or pervasive gaming) in exploring the psycho-philosophical dimensions of what it means to be co-present (2003). Mäyrä's approach is 'remediated', that is, as Bolter and Grusin argue (borrowing from McLuhan), the content of "new" media is always of older media (1999). One of the key factors that Mäyrä emphasizes is the important of *context* to provide *content* in an age of web 2.0. It is the significance of context that brings marries mobility with gaming. As Mäyrä observes,

Mobile terminals are by their nature context-aware: the service provider gets information both about who the user is and where she is. That kind of contextual information is at the core of all traditional games, but has mostly been missing from digital games. The game that is relevant at the football stadium is different from the game designed for the children's bedroom. If the player is an old lady in her seventies, the game should probably be a bit different from

one for a player who is sixteen. The current generation of digital games is not adaptive in this sense – taking a space shooter or an ice hockey simulation, the game product is always the same, no matter who you are or where you are. The next generation of mobile games will be a bit different (Mäyrä 2003).

The significance of context to inform types of culturally specific notions of game play has not been lost on the global gaming industry. For example, the success of Korean MMO's has been ensured by the government support (Korea is the most broadbanded country in the world, OECD 2006) and the corporate introduction of *PC bangs* (PC rooms) that function as a 'third space' between work and home (Chee 2005). The uptake of certain types of game play and aesthetics can be noted in the adoption of certain games in specific cultural contexts. For example, the playing Korean MMO's games such as *Lineage*, rather than Japanese games, in China and Taiwan are overtly tied to socio-cultural politics and associations with the games' nation of origin (Chan 2006). As Mäyrä notes, in the exploration of the location-aware gaming there are two oppositional possibilities. One, the utopian, sees community-driven and open source projects being established and maintained with surprising results; the other, the dystopian, sees indivisibility between 'the game' and 'reality'. As Mäyrä cautions,

It now appears that in order to understand the principles of the design of mobile pervasive games we first have to study ourselves. What is reality? How can we create and maintain multiple worlds or realities simultaneously in our minds, and negotiate between them as we cross from one context to another? How much of such multitasking can we tolerate and even enjoy before the associated cognitive demands change from refreshing and stimulating into stressful and confusing? Research into the ethics and information ergonomics for pervasive mobile games is still at an early phase, but it looks like the investigation into the future of entertainment will yield some important lessons about human nature (Mäyrä 2003).

For John Chasey, the future of mobile gaming is multiplayer games (2003). As Chasey observes, the first MUD (Multi User Dungeons) games were in 1978 at University of Essex. Whilst Chasey notes the buzz around trying to make "serious" MMOG (Massively Multiplayer Online Games) converge with "casual" mobile games, the reality of MMMOG (Chasey's acronym for Mobile Massively Multiplayer Online Games) becoming anything more than a niche market is unrealistic; especially considering the current costs that would be associated with such an activity and the fact that for many fans of MMOG, the stationary PC – especially in the case of the social space of Korean *PC bangs* – would not be easily replaced (Chee 2005; Hjorth 2006). For Chasey, much of the most creative and innovative games will be in the area of mobile gaming because of the lack of financial expense, corporate regulation and time needed to conceive and complete a game title.

Just like gaming is by nature, as Mäyrä observes, *contextual by nature*, so too is mobile telephony. As one of the most ubiquitous and essential items in everyday contemporary culture, the mobile phone connects us on many levels – from *actual* communication between friends and family to *symbolic* in the form of operating as an extension of one's identity, signifying modes of lifestyle, cultural capital (knowledges) and emerging forms of individualization. The mobile phone is not just a technology; rather it is a marker of tastes, values and status subject to local nuances; so much so that one could argue that the mobile phone is much more a *social* and *cultural* artifact than 'just' an ICT (Information and Communication Technology). As a "domestic technology" (Haddon 1997, 2003), along with telephone, TV and radio, the mobile phone has been dubbed the ultimate form of what Raymond Williams (1974) called 'mobile privatization' – the reconfiguring of public and private, being here and there, get reconfigured via modes of technology (Morley 2003). So what is the future for mobile gaming?

If the history of mobile media is anything to go by, when the domestic and personal gets mobile it reinforces the cultural and social specificity of what "home" and "intimacy" entails (Bell 2005; Morley 2003). While the mobile phone may be ubiquitous in many contemporary cultures, it is far from homogenous in its adaptation and appropriation. The history of the mobile phone is also the history of the rise of the empowered 'user'; much of the mobile phones adaptation by users has subverted industry expectation (i.e. the unexpected high uptake of SMS). As ethnographic studies such as Mizuko Ito's (2002, 2003, 2005, 2006) in Tokyo and Kyongwon Yoon (2003) in Seoul demonstrate, the mobile phone participates in traditional forms of co-presence and helps maintain – rather than substitute – actual social contact. This makes the mobile phone far from a humble symbol in current contestations about individualism, self-expression and social formation in the politics of everyday life.
The mobile phone has been touted as a symbol of democracy as in the often-sited downfall of Estrada in the Philippines and its pivotal role in the Rise of democracy in South Korea (Kim 2003). As noted in the recent London bombings and the Korean "cetizen"(net citizen) website, the everyday mobile phone user has become a journalist or photo-journalist.[ii] Does the mobile phone really afford "voice" and self-expression/ representation for the everyday user? And what possible contexts do mobile media present for artists (Davis 2005)? How do the key characteristics of mobile media – mobility, co-presence between the virtual and actual, intimacy, personalization, interactivity and miniaturization – inform its multimodality across textual, visual and most importantly aural discourses? How far should mobile media extend from its initial role as a communication device?

The politics of delay: contemporary constructions of place and locality
If the wireless experience is basically a street culture thing, lived by youth expressing themselves and communicating by any means available, including changing language by

merging visual and text messages, for example, should we – those who are in the art field – feel threatened or enlightened? Maybe what we are seeing is the beginning of a new epoch in which the conventional meanings of the terms "artist" and "audience" are losing significance, not in a theoretical sense, but based on real situations in an everyday context. The potential for wireless creativity and "art" being a critical and creative engagement with the intimate and the everyday context is here today (Chung 2003).

As Eunhye Grace Chung (coordinator of the Art Center Nabi's *Resfest's Wireless Art Competition)* notes in her article on Korean wireless experience, the potentialities of mobile media to challenge conventional relationships between artist and audience, user and producer are endless. Over the last few years, with the shift from 2nd generation to 3rd generation (i.e. mobile phone with internet) there has been much focus on the possibilities of mobile media. As a remediated (borrowing from other media traditions) and yet emerging medium that is now intertwined with the growth of the Internet to encompass social network software (SNS), we are seeing UGC becoming increasingly determined by context.

Practitioners have investigated the dimensions of mobile media through key portals such as "interactivity", personalization, miniaturization, and co-presence (being simultaneously here and there, virtual and actual). Interdisciplinary collectives and incubators such as blast theory (UK),[iii] Proboscis (*urban tapestries*, UK)[iv] and hypermedia lab (FIN)[v] have sought to explore the role of pervasive mobile technologies; these pervasive mobile projects have investigated the socio-geographical reality "behind" the hype around mobile media's "immediacy" and "intimacy". Collectives such as aware (FIN) and the-phone-book-ltd (UK) have sought to explore the new emerging social, visual and textual genres within the scope of mobile media. Thus we are left to ask – how will the *context* of mobile media inform the *content* art practices? And what will be the dividing line between the 'artist as producer' and the 'user as producer'?[vi] Is the mobile phone the ultimate Duchampian readymade legacy whereby *context* becomes the key factor in determining *content?*

Location-aware gaming serves to remind us that co-presence has always involved mediation and delay. I experienced this while participating in Nabi's *Urban Vibe* project *Shoot me if you can* (a chasing game involving camera phones and MMSing).[vii] In this game often I found myself fluffing around with the technology when it would have been easier to catch the other team by hand. But this defeats the point, one is meant to experience frustration, to become even more mindful of the politics of delay involved in so-called immediate technologies. This frustration around abilities, co-presence and time can be found in much of the immediate technologies such as email, texting etc. Delay is intrinsic to the politics of co-presence. Delay is intrinsic to the desire to be immediate. With the rise in the multi-modality of mobile media, rather than freeing up time, paradoxically, users are spending more time (especially under the

umbrella of UCC) than ever before. In particular, in ethnographic research I have been conducting in the Asia-Pacific region in such "techno-savvy" locations as Tokyo and Seoul, users have lamented the "chore" of customising, documenting and sharing the present often results in being unable to experience the present at that moment.

Devices such as camera phone can entice people who have never been interested in photography to take pictures, but they can also make users feel 'useless' unless they are continuously participating in mobile media. More and more one feels compelled to document an experience to render special or worthy of collective memories. But, as Lisa Gye notes, this desire to record has its history in the rise of vernacular photography (19th century) and the petite bourgeois rhetoric of writing (or imaging) oneself and one's family into history (Gye 2005). The conundrum of new mobile technologies is that they are *supposed* to free us up and yet, as a good existential crisis would have it, the freedom is a leash. Work becomes mobile, labour is on a perpetual drip. As the tool of social labour (Fortunati cited in Wajcman and Haddon 2005), mobile media makes us rethink relationships between consumption and production in an age that requires what Misa Matsuda has defined as 'full-time intimacy' (cited in Ito 2005).

We are supposed to available at all times, perpetually connected. Rather than free us, the 'immediacy' logic of mobile technologies makes us feel like we must be quicker and must achieve more. On the one hand, everyday users can become creators of images and explore modes of visual expression that are then shared with others; and, on the other hand, users can become trapped in the need to continuously record to legitimate or realize experiences. This conundrum can be seen as the compulsion to feel the *reel* (or mediated) to experience the *real*. As Lev Manovich observes, whilst the analogue may disappear in the age of the digital, the digital perpetually makes reference to, and fetishises, the analogue (2003).

In this force of fast-forwarding present, *presence* becomes *co-presence* as mobile users attempt to record the present that can be savoured and experienced after the moment. This fast-forwarding present means that users are often documenting and sharing *whilst* experiencing; sometimes the documenting mediates the experience so much that users are only able to experience the moment *afterwards*. This was particularly the case with events such as music gigs where users are too busy trying to get the "right" shot that they could only experience it *after* the event. In this way, to be co-present jeopardizes a relationship to the present. In sum, co-presence can often put the present on hold. This is what Daniel Palmer has dubbed as the illusion of 'participatory media' (2005).

Rather than saving time, applications such as camera phone image making – and the attendant customising and modes of sharing/ distribution – mean users spend a lot of time sharing and

editing the so-called immediate. The tyranny of immediacy as heralded by the ICTs industry (especially prevalent in the use of mobile media) becomes part of the users' legacy whereby users can spend much time and effort to create a feeling of immediacy and candor. Far from being immediate, these processes are about making time in order to monument a moment that, often for the user, is *less* about a participatory moment and more about a mediated observation. Here, the co-presence between participant and observer, especially with camera phone making and sharing, means users live between the moment and their role to memorize it; thus they experience the moment as both the present and past simultaneously. Connecting intimate gestures with place is the preoccupation of mobile media (such as camera phones) with the increasing need to document everyday gestures and events. It is, as Finnish researcher Ilpo Koskinen notes, a mode that re-territorializes place through partaking in the aesthetics of the banal (2006).

If the mobile phone highlights that *content* is c*ontextual*, it is thus subject to the socio-cultural forces of locality. This means that whilst a locative project may be conducted in one socio-geographic space, its re-presentation in another context will produce different meanings and affects. Each time a locative project is preformed, the results are different. The possibilities of the convergent multi-media mobile phone have not been lost on new media artists – with collectives such as the aforementioned The-phone-book Ltd, Blast Theory, Proboscis' *urban tapestries* project, Korea's *Art Center Nabi,* Marc Davis and his *garage cinema group* (short movies made on the mobile)[viii] and Finland's *AWARE*[ix] – all utilising mobile media as a form for experimentation, innovation and social commentary. These projects have been all attune to the subtleties of place and co-presence, serving to provide a space to contemplate the role of mobile media to reinforce the importance of place and temporality. The importance (by way of its ubiquity and accessibility) of mobile media has certainly taken off overseas as identified by the 2004 ISEA that focussed on wireless experiences and the South Korea's Art Center Nabi, conducting the *Resfest's Wireless Art Competition* (2004), *Urban Vibe* (2005) and *Mobile Asia* (2006).[x]

Art Center Nabi has been pivotal in establishing mobile media projects that attempt to question the possibilities and potentiality of mobile media. In the *Resfest's Wireless Art Competition,* Nabi sought to get various International new media artists to make work for mobiles that resulted in little more than screen savers (due to the current generation of phones at that time). In 2005, Nabi had a collaborative group INP (Interactive and Practice) – consisting of artists, engineers and media theorists – working to produce various mobile media projects such as *Urban vibe* in October 2005.[xi] In 2006, Nabi conducted its *Mobile Asia* competition to get mobile media (content made by or for the mobile) and pervasive projects.

If the 2005, INP project is anything to go by, participants will be reminded of the difference between the rhetoric and reality of mobile media as highlighted by Choi Taeyoon's simulation of a FPS (first person shooter) game in the aforementioned *Shoot me if you can*. However, in this game the gun was replaced by the metaphoric gun of the camera phone (i.e. snapshot as a hunting term) and participants need to take a photo – forwarding it via MMS to the Choi – of opponent team members. The winner is the first to get all photos of the opponents (hopefully not being "shot" by the opponents during the process) in the limited game-play time. As a player (and a *very* hopeless one…) the game was fun; excuses to run around the streets of Myeong Dong (unfortunately while being conspicuously chased by the project's documenter) and behave like an awry avatar. Often there were frustrating moments as one grappled with the technology and its lack of instantaneity. In addition, the game also operated to connect strangers (i.e. other opponents) in interesting ways. It was just a pity that this game didn't have more players, especially "non-art" related participants. This element of disappointment is inevitable in location-aware mobile gaming. It is attached to idealistic projections and its incompatibility with the contingency of reality.

Shoot me if you can, like many of INP's projects*,* served to highlight the "mediated" and thus far from immediate mode of mobile media in the "face" of f2f contact. This point illuminates one of the many ironies of technology – often technology can get in the way of actual contact; however, it is important to note that intimacy has always been mediated – by memories, gestures and language (Morse 1998). When we send a SMS, we expect the recipient to be "connected" 24/7 and thus delayed response can be taken personally. The mobile phone "sets" us free (to be "mobile") and yet it becomes a leash whereby people expect one to always be contactable, always "on call". This is just one example of why Michael Arnold (2003) called the mobile phone a harbinger for paradox as symbolized by the notion of janus-faced (two forces simultaneously pushing and pulling).

This pushing and pulling underscored many of the mobile media projects being officially and unofficially conducted – from the work of Rafael Lozano-Hemmer conducted at the Media Centre in Yamaguchi (Japan)[xii] and INP to the everyday user on the street. But can mobile media move beyond a study in the paradoxes of 'immediacy'? Or is the creative potential just a ploy on the behalf of the industry to make everyday users feel less upset about the increasing amount of time taken to participate in the aesthetics of the banal?

In Australia, without a strong local industry (and thus innovation) as can be found in Korea, some media organizations are attempting to get "connected" to the potentiality of mobile media. Media organizations such as dLux and ANAT (Australian Network for Art and Technology), have sought to connect Australian artists through workshops and forums entitled *FutureScreen Mobile*[xiii] and *Mobile Journeys*[xiv] including master workshops for Australian

artists to work with such seminal collectives as *The-phone-book Limited* and *AWARE*. The *Mobile Journeys* forums have brought together two foreign worlds in the form of artists and Telcos (Davis 2005). One can't but rethink what is the *art* of being mobile and 'mobile art' for artists in the context of Telco business ecologies. Despite the new mixings between two different breeds – the businessperson and the artist – one wonders whether they are so different in a period of radical conservatism and whether they should be viewed as diametrically ideological opposed; especially as both are supposedly productively focused on the 'user'.

As David Cranswick (director of dLux media arts) asserts, there are 'two significant strands of practice' one where 'content users can "passively consume" on their mobile (like short video works)' and the second, more productive mode focuses on 'more locative and collaborative applications' with users (Hjorth 2005). Cranswick also sees the future of mobile media as an area whereby the two once-distinct groups – users and producers – can be blurred into a new form of indivisibility. This notion of indivisibility between artists and audiences – or, in the case of mobile media, content producers and users – is something that has been pivotal to the experiential work of new media artists in forging the sentiment that 'art' isn't outside of the practice of culture, rather it is integral. While this all sounds good and well, professional artists and filmmakers may be feeling slightly uncomfortable – and for good reason. The interactivity, portability, ubiquity, intimate and miniature device opens up new opportunities but it also open up room for a lot of talentless crap to jam up the storage of content distributors such as YouTube. Is this the final Bretchian moment when audiences become artists and artists become... disenchanted?

Discourse on the possibilities for experimentation have seen many artists and theorists orientate themselves around the role of mobile media as not just a miniature and mobile version of the conventional gallery space. The-phone-book Ltd have explored the emergent genres of SMS, MMS and ring tones to highlight the conventions and codes (compression, immediacy, intimacy) of these remediated and vernacular-driven discourses. For example, SMS poems being poems restricted to the formats of SMS compression (i.e. 160 characters). In Proboscis' *urban tapestries* project, a section of London is navigated and reorientated through mobile location devices, making one recognise that mobile media helps reinforce place rather than destroy it. Here, we are confronted with this century's *flâneur* in the form of what Robert Luke (2005) calls the 'phoneur'; a postmodern *flâneur* who strolls with mobile phone in hand "whilst stalked by corporate hunters".

As Luke notes, the lines between creativity and corporation have blurred in the global mixing pot of the phoneur phenomenon. And yet, the socio-cultural nuances of locality seek to undermine any homogenising of context as presumed under the 'global village' matrix of web

2.0. South Korea, as the most broadband country in the world, is a key demonstration of this by the fact that while government and corporations are pouring money into the digital, users are still very mindful of the importance of contact over connection (Hjorth and Kim 2005).

One the key paradoxes to mobile gaming is that whilst it can develop greater immersion by way of its specific interactive and simulation modes, it can also highlight the inevitable disjunctive experience around co-presence. Whilst pervasive mobile projects are invaluable in geo-caching (such as GPS – geographic positioning systems) and demonstrating the importance of place and specificity in a period of global technologies, they also serve to highlight one of the greatest residual paradoxes of mobile media as a metaphor for socio-technologies. The more we try to overcome difference and distance, the less we do. 'Undistance' (Arnold 2003). Or put another way, the more we try to partake in the *politics of immediacy,* the more we succumb to the *poetics of delay.*

Conclusion: Back to the future

Convergence is taking place ... officially and unofficially ... within the same appliances – within the same franchise – within the same company – within the brain of the consumer – within the same fandom ... and across national borders.   Convergence involves both a change in the way media is produced and a change in the way media is consumed (Jenkins 2003).

This century's fin de siecle mantra will undoubtedly be that of convergence. One the dominant harbingers for the convergence binge has been the mobile device, often to the dislike and horror of the user. A case example is when convergence expert, Henry Jenkins went to purchased a mobile phone. Jenkins lamented how his attempts to purchase "just" a mobile phone for "just" voice calling were fraught when he was met by a plethora of convergence-packed devices. But as Jenkins notes, convergence occurs across various levels – technological, social, social, industrial; he elaborates, 'Convergence alters the relationship between existing technologies, industries, markets, genres, and audiences. Convergence alters the logic by which media industries operate and by which media consumers process news and entertainment' (2003).

However while convergence might be the name of the game, what are the realities for the everyday user (Kermode 2006)? Location-aware games might be interesting in their phenomenological play but the technological immersive levels are still far away from the reality of the everyday user. The examples of location-aware games have highlighted that far from eroding place, global ICTs – of which the mobile phone is exemplary – are very much subject to the forces of locality. So will MMMOG, Chasey's term for mobile massively multiplayer games, take off? As Bo Kaupmann Walter observes in his apt analysis of

pervasive gaming and the role of networks observes, such games 'raise questions about the notion of time in games' (2006).

It is this concept of temporality which is pivotal to the possibility of this convergence, especially considering the ways in which mobile technologies are 'micro-coordinating time and space' (Ling 2004) that inevitably resulting in paradoxes. And in the case of location-aware gaming, they rely on an imagined notion of immediacy to which the reality is delay. Arguably, it is this paradoxical nature that needs to be considered as part of the aesthetics and practices of mobile gaming in the future. And this is where its strength, rather than weakness, lies. It reminds players of the boundaries, as well as the nuances, of place. It is also the very inherent contingencies of what constitutes "new" media (Bolter and Grusin 1999).

Thus, in order to comprehend the future of mobile gaming, we need to go back to the future. As Greg Costikyan notes, the only way the future of mobile gaming will succeed is through building an infrastructure for cheap online multiplayer games. Maybe, in this future, theorists such Chris Crawford (2005) – under whelmed by gaming's current lack luster interactive storytelling techniques – would picture innovation returning to the discipline. We need to be mindful of the under riding role of the reel in constructions around the real, we need to be aware of the socio-cultural elements of technology and game play that will see that in an age of convergence, heterogeneous modes of mobile gaming will prevail. Not immediately and certainly with lots of delay involved; a game somewhere between the *reel* and the *real*.

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^v http://www.uta.fi/hyper/index_en.html

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^{vii} http://eng.nabi.or.kr/project/view.asp?prjlearn_idx=119

^{viii} http://garage.sims.berkeley.edu/marc.cfm

^{ix} http://aware.uiah.fi/

^x www.nabi.or.kr/, for *mobile asia* see: http://www.mobileasia.org/

^{xi} For a review of *Urban Vibe* (in Korean) by the author see: *aliceon* e-magazine:

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=headnum&desc=asc&no=137

^{xii} http://www.ycam.jp/?lang=en

^{xiii} http://www.dlux.org.au/mobile/index.html

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Lost in Translation? Users & Digital Archives

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Abstract

This paper examines the challenges users face when searching and using primary sources in a digital format. It details the results of the author's previous study and highlights the main problems encountered by users as they struggle with translating information from this domain.

The author's doctoral research agenda is set out through a series of questions. Each of these is examined in turn along with details of a continuing longitudinal study undertaken in the archive domain. The author's search for a conceptual framework and the study's methodology is well documented in order to provide a backdrop to the development of key areas such as the user's active construction of meaning, the importance of archival context and the creation of a model of contextual interaction.

The areas currently under investigation are presented along with a summary of key findings to date. These areas highlight the application of "user pulled" rather than "technology pushed" solutions and offer an insight into how a deeper understanding of the user can be translated into innovative yet simple design solutions. This "user pulled" approach will ensure a major shift in application from access to use, from simple retrieval to real interaction.

1. Introduction

In keeping with the main objective of the conference, "to create new knowledge about users' creativity and facilitate their empowerment in a broadband information society", this paper highlights the challenges users face when searching and using primary sources in a digital format and examines how "user pulled rather than technology pushed" solutions to these challenges can be developed.

2. So What is The Problem With Using Digital Archives?

Over the past five years there has been a large investment in digital archives but early evaluations have shown that many of these projects have not lived up to the over-arching expectation of "access for all" [1]. The research to date has shown that users continue to find digital archives difficult to navigate and search.

The author's under-graduate thesis involved undertaking a summative user-centred evaluation of a large archival digitisation project [2]. This research resulted in the identification of

several problems areas, three of which provided a particular basis for further investigation; they are summarised as follows:

Search Behaviour: Specific types of search behaviours resulted in varying search strategies which had a direct effect on search results and user satisfaction. Searches that focused on the location of a specific item often ended unsuccessfully.

Navigation: Many users found the site difficult to navigate, with 29% of users stating they did not find the site easy to use. (These users had average or above average IT experience)

Context: The principle aim of the project was to improve access to archives; however 70% of participants stated they would not visit their local archive. It appears the main reason for this was the lack of understanding that the digital object represented a "real" object that could be accessed locally. As users did not associate the digital object with a "real" object, contextualisation of the object within a wider perspective was poor.

These research findings have been echoed across the digital archive environment. Where user-centred principles have been applied in the design process, projects boast a superior interface design; however there remains a complexity in navigation and a difficulty in contextualising the digital object. The author's initial research led her to examine traditional non-user groups with an aim to designing interfaces that supported their specialist requirements [3].

To extract the information that would facilitate interface design for specialist user groups, an initial study of the digital archive environment was undertaken in order to gain a "snapshot" of the current position. During this study it became apparent that there is a distinct lack of fundamental concepts and models regarding users and how they interact with the system. Having consulted with various user groups, archivists and academics it is evident that the real challenge of digital archives lies in a major shift in application from access to use, from retrieval to interaction. Conceptual models of users and their interaction are seen as pre-requisite in transforming this problem domain. The findings from this initial study led to a revised research agenda.

3. A Research Agenda

The following questions form the basis of the author's doctoral research agenda:

- **The User**: Who uses digital archives and for what purpose . . what are the motivational factors?

- **The Information Seeking & Retrieval Process**: How do users currently seek and retrieve information within a dynamic digital environment?

- **A Model of Contextual Interaction**: How to model the interaction between the user and the digital archive, capturing the multidimensional context that exists in each interaction?

- **Translation of Information**: How to support the user in translating information to meet their own specific information need

- **The Wider Perspective:** How do the findings from this specialist problem domain fit into the wider theoretical debate within the information science field?

In order to begin to answer these questions a comprehensive study of the domain was undertaken.

4. Collecting the Behaviours of Digital Archive Users

For the past three years the author has conducted a longitudinal study of the information seeking behaviours of digital archive users. The main areas under investigation were:

- How do users with a lack of knowledge search this complex information space and contextualise information?
- How do expert users search this domain and contextualise information?
- What are the common problems encountered by users?
- How do archivists and other information professionals design and evaluate these systems?

The study has encompassed various sites across Europe and North America with the author adopting a multi-method approach to data collection. The primary source of qualitative data was provided via ethnographic observation techniques, supported particularly through individual or group interviews. Web logs, questionnaires and user diaries have also been utilised. In addition to this a series of evaluations has been undertaken evaluating different types of digital archives from a user's perspective. For further details on the methodology used during this phase see Section 9: Methodology.

During the study three main problems continually encountered by users were highlighted they can be summarised as follows:

Where Shall I Look?:
P068: *"I really have no idea where to start this search; I've typed my question in Google and had no joy. I don't know where to look that's the problem."*

What Shall I Say?:
P049: *"I know I'm not asking the right question, I'm just not asking it right as I know the document is there as I have actually seen it. What do I need to type in that box to get the result?"*

What is that?:
P032: *"[laughs] I have no idea what that is, it wasn't what I was expecting put it that way. My goodness I was hoping for a copy of a Birth Certificate of my great great aunt, I now need to decipher all this information. I have no clue where to start"*

These three problem areas encountered by users are a common theme throughout the author's research findings.

Whilst collecting the behaviours of digital users it became evident that areas such as use of language, the use of technology, the hierarchical arrangement of the archive and the archival expertise of the archivist play a key role in supporting archive users. These areas do not neatly transfer over into the digital environment, where the problem is further compounded by deep data structures and an innate difficulty in understanding the representational relationship between the surrogate and the primary source.

P025: *"I know if I was at the archive I could find this document it's just so confusing when you are sitting here on your own without their [the archivist] help. Look at that . . .what on earth does that mean? You need a degree to understand this stuff"*

The problem with digital archives seems to be that users lack the support of archivists in formulating queries, identifying archival sources and interpreting and contextualising the search results. This is corroborated by a recent survey at The National Archives (England), who reported that 98% of their onsite users find information that is useful to them, once they sought out archival expertise [4]. It makes sense then to examine how archivists mediate the interaction between the user and primary sources, with a view to seeing how this can be translated across into a digital domain.

P078: *"I come here [the archive] to do my research as experience has taught me that I do not do well at home on my own. Some days I will not approach the staff once, other days I can be at the desk six or seven times. They know where the records are and what is appropriate for my research interest. I wish I could transfer all their knowledge on to a computer and take it home with me. They say a lot of this is now Online, that's all fine and good if you know what it is you are looking for"*

Butterworth states that digital archive use disintermediates [5]. Disintermediation is where the role that the archivists play in supporting users to make the best use of archival resources is removed. He advocates that digitising archival materials and putting them online does not solve this disintermediation, it in fact compounds the problem. He suggests ways of repairing the disintermediation gap through the provision of Online tutorials and annotation stating what the collection can be used for as opposed to the standard archival description

By collecting the behaviours of digital archive users the author hopes that this "bottom-up" approach, based on a deeper understanding of how users actually seek and use digital archival resources will inform system design within the domain and aid professionals in providing services that users require in order to effectively use digital archival resources.
The author's model of contextual interaction, detailed in Section 6: A Model of Contextual Interaction is based on this "bottom-up" approach and is a direct result of over three years of user behaviour observation. This is one example of how the author has used the rich and multi-facetted data gleaned from the continuing longitudinal study of digital archive use.

Another example will be to provide a searching and retrieval environment that could be easily accessible, actively supporting user orientation and the presentation of contextual information. A recent study by the Arts and Humanities Research Council found that archives, museums and libraries are one of the most trusted information sources, however it was the easily accessible sources, which are least trusted, such as the Internet, newspapers and television that were used most [6].

5. The Users Active Construction of Meaning & Archival Context

What makes searching digital archives different from any other type of exploratory search? The answer lies with the archival context. Primary sources are complex objects; they necessitate contextual interpretation and analysis by the user. This interpretation and analysis requires knowledge of record form by the user, where and for what purpose the records have been kept is a pre-requisite to a successful outcome. Documents cannot be retrieved without

an understanding of their creation and context. An archival document is born out of a function or activity, it has relationships with other document/s, these links or bonds are given a special term in Canada are called the "archival bond". These links need to be transparent; this relationship to others through the archival bond forms the basis of archival context.

The following quote illustrates this:

"the object itself represents the tip of a very large iceberg: the tip is visible above the water only because there is a large mass of complex social relationships 'underneath' it – that generate, use and give meaning to, the digital documents" [7 Rehberger, D. et al (2006)]

For example a professional genealogist will know where all major collections are located. These will contain information that the record was not originally created for, they will have been kept for an entirely different purpose from that of family history. Today these same records may provide a rich source of information to the family historian. So for the novice user, using these types of records will not be readily apparent as they do not have the knowledge of archival sources and of record form to support this.

In a digital format archival context is system dependant, as it is through the system that the user begins to understand and analyse the archival value of the digital object. This need for interpretation and translation by the user is in direct conflict with the whole principle of provenance and archival description i.e. non-interpretation by the archivist. The problem of archival context is further compounded by system provision: all systems are not created equally, some facilitate archival context better than others, a fact which has been highlighted during the evaluation of a number of various digital archives [1]
The author believes that a digital objects meaning is socially constructed through use. Thus one way to begin to understand an object is to understand how people interpret and use the object at a particular point in time. This proposition lies at the heart of the author's research.

When observing user behaviour it became apparent that users actively construct the meaning of a digital object through a strategy of "translation". This strategy is one whereby the user has identified an information "gap" and so has an information need. The user is required to define and articulate this need in order to search the digital archive; this requires translation of the information need into language that matches both the archival domain and the search interface. At this early stage many users encounter the problem of "Where shall I Look?" and "What shall I say?" Once the source and language of the search has been successfully navigated the user can begin the search process. This is where a further process of translation takes place, where the context of the digital object, provided by the system, is identified by the user who then distils and transforms this into a format that "makes sense" to them and their specific information need.

If the user cannot contextualise the digital object, the "What is that?" problem occurs. In order to combat this users consistently and almost without fail actively seek out sources of expertise to aid them in translating the information they discover during their search. The sources of "expertise" range from tapping the person on the shoulder who happens to be sitting next to them to seeking out archival expertise via digital reference or through the traditional reference desk.

In effect the translation is an explicit contextualisation of information intended to meet a defined and articulated individual need. The level of expertise required to support the

contextualisation of data has a direct correlation to the perceived complexity of the information seeking task by the user. From the results of the study to date it is apparent that there is very little research being undertaken to discover how users employ this strategy of translation in actively constructing their meaning of the digital object. How users could be supported in this process is a key part of the author's doctoral research, with social computing, discussion forums, online expertise and intelligent help systems all being investigated.

6. A Model of Contextual Interaction

One of the main outputs of the authors doctoral research is a model of contextual interaction between the user and the digital archive, see Appendix 1.

Created as a direct result of collecting the behaviours of digital archive users this "bottom-up" approach is based on a deeper understanding of how users actually seek and use digital archival resources. As Section 7: In Search of a Conceptual Framework, details the creation of the model was undertaken with no primary conceptual model/framework in place; however the author had identified from the outset the concept of Archival Intelligence (AI) as a key concept through which the model could be developed [8].

Based on the AI study there are three forms of knowledge required to work effectively with primary sources and become an expert user they are domain (subject) knowledge, artifactual knowledge and Archival Intelligence.

"*AI refers to the knowledge about the environment in which the search for primary sources is being conducted, AI is a researchers knowledge of archival principles, practices and institutions, such as the reasons underlying archival rules and procedures, how to develop search strategies to explore research questions and an understanding of the relationship between primary sources and their surrogates*" [Yakel, E. & Torres, D.A. (2003)].

AI can be categorised into **three dimensions**, within each of these three areas, the study has identified characteristics that reveal expertise.

- Knowledge of archival theory, practise and procedures
- The ability to develop strategies to reduce uncertainty and ambiguity
- Intellective skills

Each of these areas has been mapped across the model of contextual interaction. The concept of AI along with the results of the user behaviour study provided a robust basis on which the model was designed. In order to comprehensively test and analyse the model a guiding conceptual framework was required.

7. In Search of a Conceptual Framework

Allen et al have identified "Global Information Access" and "Contextual Retrieval" as the two great challenges for information retrieval and seeking (IR&S) research [9]. The problem of contextual retrieval in a digital archive environment remains relatively unexplored. The problem the author encountered from the outset was that current information seeking and retrieval models that could be applied to this specialist domain would only capture a small amount of the complex contextual factors that exist in the domain. The model of contextual

interaction had to facilitate the incorporation of a robust user model. The problem was further compounded by the fact that there are no universally recognised user models for this domain. The model would also need to include elements such as user goals and context.

An extensive literature review of information seeking models was undertaken in order to identify key areas of analysis and development, particular attention has been given to Bates [10] Ellis [11] Marchionini [12] Kuhlthau [13] Dervin [14] Yang [15] Vakkari [16] Ingwersen & Järvelin [17] Savolainen [18].

In an attempt to find a suitable conceptual framework the author undertook a comprehensive review of conceptual models across disciplines. Kuhlthau states that collaboration across disciplines is essential for future research [19]. She proposes four imperatives for fostering collaboration and continuing to develop the conceptual frameworks, this research incorporates all four of the points in its long term aims and objectives:

- Stay with a problem long enough to verify findings and draw concepts from the findings
- Apply the broad conceptual frameworks to inform the findings of our studies
- Develop research projects that incorporate concepts of interest to more than one area of the field
- Design application of the concepts for implementation into systems and services

As a result of this trans-disciplinary approach Cognitive Work Analysis (CWA) was identified as a framework to support a comprehensive design and evaluation process [20]. CWA is an analysis that examines the constraints that shape information behaviour. It investigates behaviour in context; individual studies provide results which are applied to the specialist domain under investigation. CWA facilitates this by evaluating the systems already in place and developing recommendations for future design.

On implementing CWA it soon became apparent that a single researcher cannot apply CWA to a satisfactory standard. The same can also be said of Contextual Design(CD) techniques [21] CD is a powerful design tool but many of its processes need to be undertaken by design teams as opposed to a single researcher. Rapid Contextual Design techniques will be implemented later this year with another researcher during the design process for a national virtual archive in United Kingdom.

Discourse Analysis was also investigated as a means for facilitating the analysis of discourses in the archival domain providing a practical insight into how discourses can affect the initial information need, the information seeking process and the resulting use of archival resources. To date there has been similar investigations into the digital library sector [22], but no such investigations have been made in the archival sector. The author decided that this conceptual framework was too far removed from main stream computer science and would be viewed with a certain amount of suspicion.

After nearly two years searching for a conceptual framework that would "fit" this domain, the author attended Information Use in Information Society, Bratislava, October 2006, where Professor Tom Wilson introduced Activity Theory as a conceptual framework for rethinking information behaviour research [23]. Following this and further to a vigorous investigation of Activity Theory and interaction design, Activity Theory was adopted as the conceptual framework through which remainder of the doctoral research would be undertaken.

8. Activity Theory & Digital Archives

Activity Theory (AT) is a general conceptual framework; it is not a highly predicative theory. It is a psychological approach based on cultural-historical psychology and was a dominant theory under communism in the Soviet Union. It seems somewhat ironic that the author will talk about the application of AT in the development of twenty-first century digital archives in the place of its birth.

The main rationale for adopting AT is that it focuses on the activities of people using technology rather than on human-computer interaction. This focus on activities enables researchers to extend the scope of their analysis to include higher-level, meaningful tasks.

According to Leont'ev interaction between human beings and the world is organised into functionally subordinated hierarchical levels [24]. He identified three levels Activity, Actions & Operations. Activities, in this research, the interaction between the user and the digital archive, are undertaken to fulfil a Motive.

Fig 1. Activity, Actions & Operations
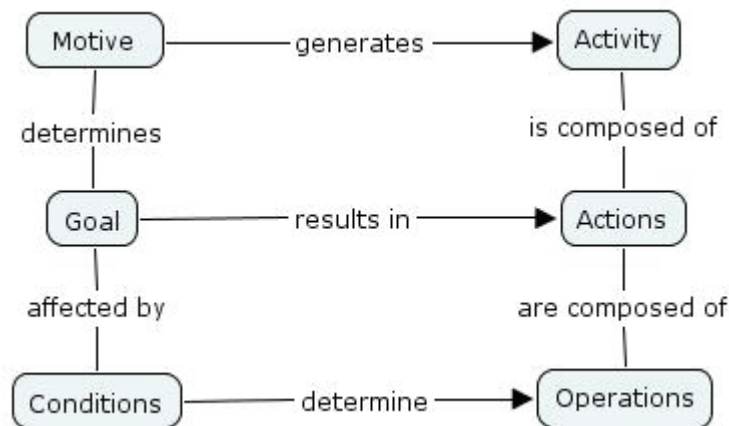
In AT activity refers to a specific level of interaction, the level at which the object has the status of a motive. A motive is an object that meets a need of the subject, the ultimate cause behind any human activities is needs. The object of activity, which is defined by Leontiev as the "*true motive*" of an activity, is the most important attribute differentiating one activity from another.

"*Thus the concept activity is necessarily connected with the concept of motive. Activity does not exist without a motive ; "non motivated" activity is not activity without a motive but activity with a subjectively and objectively hidden motive.* [Leont'ev (1978)]

This concept of motive helped the author to crystallise an area of key findings from the longitudinal study. The users' goals or needs where found to be of hierarchical arrangement with higher level goals driving the user more than lower level goals. For example a user searching for crucial documents to support a legal claim against the State has a higher motivational context than a user who is browsing for details of their family history.

Preliminary findings are indicating that the user's motivational context may provide the key in identifying "user pulled rather than technology pushed" design solutions. Identifying the motive for use early in the interaction process provides designers with an opportunity to place

the user on a pathway that others with similar motives have travelled and have found useful. The idea of pathways to common sources of information based on the user's motivational context is one which has been well received by a number of national repositories and will be developed over the coming months. It is hoped that taxonomy of motivational factors will be produced as part of this research.

Another major factor in adopting AT was its recognition of a special status for culturally developed artefacts, considering them as fundamental mediators that relate human beings to the world and to human culture and history. The tools usually reflect the experience of other people who tried to solve similar problems before and invented or modified the tool to make it more efficient and useful. This concept of tool mediation plays an important role in digital archives, especially with reference to archival context.

The use of tools within the digital archival domain can be seen as an accumulation and transmission of archival knowledge. In this research technology is seen as a tool that mediates the interaction between the user and the digital object. The emphasis is on the contextual factors that exist in the domain and on the interaction between users and the digital object via their system environment.

Because tool mediation is such an important aspect of AT it also takes into account long-term developmental changes in users, technology, their interaction and the overall context of the domain. Once again this long-term development aids the author in setting the scene for what has gone before in terms of tool development, what has taken place during the study and set the stage for what may happen in the future.

9. Methodology

At the start of the study the findings from a small number of studies were available that had been undertaken to examine digital archive users and their information seeking behaviours [25]. In addition to this a series of six evaluations were undertaken in order to gain an insight into the behaviours of digital archive users and produce a pool of data on which the model of contextual interaction could be built. The result was a large source of qualitative data, produced via ethnographic observation techniques, supplemented through individual or group interviews. To date the study has encompassed over 520 users with a series of 38 focus group sessions and 119 individual in-depth interviews across Ireland, United Kingdom and Canada. Web logs, questionnaires, user panels and user diaries have all been utilised to support the analysis of the data collected to date. In addition to this a process of contextual inquiry has been undertaken in order to understand domain and users mental models, with the production of hierarchical task analysis, domain models and personas.

This mutli-method approach to the study has ensured a rich and vibrant snapshot of the domain. It is hoped that this detailed inspection of users and their interaction will yield some suggestions on how best to evaluate digital domains, at present baseline metrics and methodologies that can be shared across digital projects are uncommon [26].

Ax-SNET (Archival eXcellence in Information Seeking Studies Network) [27] As a member of this international group of researchers, this study feeds into the groups over-arching aims which are to improve access to primary sources and explore the ways users seek information in archives. The research group is currently making recommendations on the establishment of metrics that support shared data-gathering and data sets.

The testing and analysis of the model of contextual interaction is being undertaken in a series of evaluations and tests which encompass the following:

- **User Studies:** variety of user types with different motivational factors
- **User Panel:** consisting of all major stake-holders
- **Usability Testing:** including thinking aloud observation
- **Interviews**: both semi-structured & time-line
- **Contextual Inquiry:** to understand domain & mental models
- **Questionnaires:** Both On-line and Paper
- **Web Logs**

The testing and evaluation process is being co-ordinated through the application of The Activity Checklist: A Tool for Representing the "Space" of Context [30]. The application of the Activity Checklist is one of the ways the author has ensured that AT is applied throughout the remainder of the research. One of the by-products of this application will be a robust questionnaire based on the Activity Checklist criteria that can be used by other researchers in this domain.   There are four particular areas under investigation at present (Spring/Summer 2007):

How Do Users Use Digital Objects?: A two part study that asks the users on ending a session using digital archives a series of questions surrounding intended use, motivational factors and satisfaction. A follow-up session a month later asks the users how exactly they used the information and if their original goal was realised. To date no such study has been undertaken in the domain ascertaining use, user satisfaction and the users' motivational factors. This study is to begin summer 2007.

The Formation Process: Do We Need a Helping Hand?: It has become apparent that early intervention will aid the user in problems of "Where shall I Look?" and "What shall I say?. There is very little low-level help available to users who need this type of support. The author is currently working with two national repositories investigating ways that this could be introduced, including virtual reality and animation, speech interfaces, multimedia provision and visualisation techniques.

User Generated Description: The idea of user generated description makes most archivists very nervous! Social computing may offer alternative ways of providing users with information in a way that requires less specialist knowledge or skills, supporting them in their active construction of meaning of the digital object. Various genres of social computing are currently being tested by the author to see what "fits" the domain best. . The National Archives (England) has launched it's Wiki to the public this year and the author will be involved in the evaluation of this project.

Expertise Online?: How can we support the user and close the disintermediation gap? Facilitating a range of expertise online is one way to do this, ranging from simple semi-automated processes using datasets to, "ask the archivist" sessions to the application of artificial intelligence agents. Discussion groups and the application of collaborative software are also being investigated. The author is currently working with two national repositories in investigating ways that this could be introduced. As part of this work it is essential to examine how archivists mediate the interaction between the user and primary sources, with a view to seeing how this can be translated across into a digital domain.

10. Key Findings to Date & Further Work

The main findings from the study to date are summarised below along with plans for future development:

Identification of the Three Most Common Problems Encountered by Users: The identification of the three most common problems encountered by users and more importantly at what stage they encounter them during their search has been fundamental to the study, see Section 4: Collecting the Behaviours of Digital Archive Users. Based on this information current archival systems are currently being re-developed to support the user.

Users Active Construction of Meaning of the Digital Object: This process had not been previously examined in this domain prior to this study, see Section 5: The Users Active Construction of Meaning & Archival Context. Having witnessed this process hundreds of times, it became apparent that there are a number of contextual factors that can affect this process. The current investigation of how different types of technology can mediate this process at different stages is one way that the author seeks to expand our knowledge of this process.

A Model of Contextual Interaction: Prior to this study there had been no attempt to model the interaction between the user and the digital archive. The author's model of contextual interaction was introduced to archival professionals at two of their major conferences in England and Canada 2006. It was well reviewed and the author was invited to a number of further meetings in order to discuss its development in further detail. The model is now the basis on which three national repositories are investigating digital archive use. The remainder of the study will be spent testing and analysing the model, both qualitatively and quantitatively; applying the results of the testing iteratively to it. The development of the model is on on-going process.

Tracking User Behaviors: Since the inception of the study June 2004, there is evidence of major changes in user search behaviors. An example of this is iterative searching; at the beginning of the study users would search iteratively for a maximum of 2-3 times. Today as users are experienced in Google-type search they will search iteratively for 5-7 times. Whilst the search is not sophisticated, with Boolean terms are hardly ever being used, users will change their search criteria in response to search results. As the study of the domain has been longitudinal in nature, such changes in behaviour have been identified and continue to be monitored on an on-going basis. Activity Theory has and will continue to support the analysis of these developmental changes. It is the author's intention to continue to study users within this specialist domain as an element of her post-doctoral research.

Horses for Courses?: The Application of Technology: It has become apparent that different types of technology applied at different stages of the interaction process will be of great benefit to users of all types. Different types of technology such as animation, speech interfaces, and collaborative software social software are all being tested at present to see what effects they have on different types of users during different stages of the interaction process.

The Fruits of a Trans-disciplinary Approach: Working across disciplines such as computer science, archival science, information science, information retrieval, interaction design, HCI, psychology, ethnography and AI has been challenging, however the fruits of this has been a rich and panoramic view of the problem domain. The author has attempted to translate this

into a robust multi-method approach to her research and the application of its results in the domain. One area of planned future development is to emphasise the trans-disciplinary nature of this work by creating a set of tools that supports researchers from any discipline when investigating the use of digital archives.

11. Conclusion: "Still lost in translation?"

To date systems have been designed primarily with archival description and arrangement in mind. Whilst this has proved satisfactory for many professionals, it leaves users lost in a process of translation. So how can this situation be rectified, is there a solution?

Professor of Archival Research at Glasgow University, Michael Moss believes the solution lies in actively engaging with other disciplines that use, handle and exploit information in all its different guises. He states:

"*There is nothing to be gained from remaining in an archival gulag except extinction.*"

He has witnessed the benefits of this type of collaboration on a visit to the Inter-Faculty Information Initiative at the University of Tokyo which brings together specialists from many disciplines to address a raft of information needs and user seeking behaviours. An interesting feature of this initiative is that it pulls information professions out of their "institutional comfort zone" into the hurly burly of intellectual discourse, forcing them to look at their services from different perspectives and explore radically different technical opportunities [31].

If the archival domain is to respond and rescue it's users who are lost in translation it needs to become serious about getting to know its users in far more detail. "User pulled", "bottom-up design" and "user-centred design" are all terms that describe a philosophy of design based on a significant understanding of the user and how they actually use the technology under investigation. This is now widely recognised as a design approach that is more likely to result in high quality, user-accessible systems. The in-depth, ethnographic approach taken in this project is intended to reflect this, but the author has encountered some criticism for adopting this methodology. There are professionals within this domain who truly believe that they know "what is best" for the user and that undertaking real user consultation is a waste of precious resources. However, the author does not support this view and firmly believes that however thorny the discussion may become "user-led" design holds the solution to the lofty aim of "access for all".

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Appendix 1

Model Of Contextual Interaction Between User & Digital Archive March 2007 (Model 12.00A)

Technological Context

Social / Cultural Context

Language Context

Motivational Context

USER

MOTIVE

Motive Determines

GOAL

Information Need

Fomation Process
AI Dimension 3
Intellective Skills Required to Prepare for Search
Subject Knowledge
AI Dimension 1
Awareness of Knowledge

"Where shall I look?"

Seeking Help Process
AI Dimension 2
Managing Unstructured Problems and Ill-defined Solutions
Subject Knowledge
AI Dimension 1
Awareness of Knowledge & Language Use

People

Escalating Level of Expertise Required to Aid User

Technology

"What shall I say?"

Search Process
AI Dimension 1
Knowledge of Archival Language & Rules
Subject Knowledge
AI Dimension 2
Search Tactics & Question Asking

Adopt Iterative Search Strategy

Multiple Searches, Making Links & Connections
Subject Knowledge   Artifactual Knowledge
AI Dimension 3
Understanding Representational Relationships

System

Archival Context

"Data Translation"
Users
Active Construction Of Meaning

"What is that?"

Assessment Process
Analysis of Value as Evidence
AI Dimension 3
Understanding Representational Relationships
Artifactual Knowledge
Subject Knowledge

GOAL

Use & Reuse Process

MOTIVE

Interaction Process Between User & Digital Archive Domain Mediated by Language & Technology

A Patchwork Of Online Community-Based Systems: Can Social Software Be Used To Augment Online Individual Social Capital?

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Abstract

In the first part of this paper I discuss the conceptual differences between *web2.0* and *social software*. I argue that in communication sciences the phrase *social software* is more appropriate than *web2.0* and provide a definition for social software. From there, I develop a typology for social software based on four criteria: contentmanagement, communication, collaboration or community related activities. Each of these dimensions has its own theoretical significance and can be viewed as a key concept in the understanding of social software. Furthermore, these dimensions can be used to visualise types or certain usage-patterns of social software.

In the second part of the paper I explore the relationship between social software and social capital. Social software targets the fulfilment of certain needs (for example the need for online content management) and it tries to do so by means of social, bottom-up processes during which social networks are created and maintained. Social software can widen the experience of community (connecting people with others who have different beliefs or backgrounds) or social software can deepen the experience of community (reinforcing and strengthening existing social networks). This indicates that social software can be used to augment individual social capital.

Introduction

When Windows 95 was introduced on the market some twelve years ago it contained, unlike previous operating systems, a build-in TCP/IP-stack (a software implementation of two communication protocols which enable a computer to make external connections) and dial-up software that made connecting to the internet relatively simple. Some months later, a new Windows 95 service release also included a build-in internet browser (Internet Explorer 2.0). Thus, the introduction of Windows 95 on the consumer market can be considered as an significant moment in time, as a starting point for the consumers' internet.

Nowadays, the internet is an important part of our lives. Online digital information has become ubiquitous and accounts for a major part of the economic and cultural activities in western society. Hence, our society calls itself an information or network society.

A range of quantitative and qualitative arguments can demonstrate this growing significance of digital technologies. For instance, the adoption rate of high-speed internet worldwide furnishes quantitative proof of this. According to the Pew Internet & American Life Project (Horrigan, 2006), adoption of high-speed internet at home in the US grew twice as fast in the year prior to March 2006 as in the same period from 2004 to 2005. In Belgium, the 15th edition of the Belgian Internet Mapping Studies (*Belgian Internet Mapping Studies*, 2006) reports a relative growth of 9 percent (between April 2006 and April 2007) in internet penetration, amounting to an estimated total of 4,9 million Belgian internet users, or a growth of an additional 400 000 users compared to April 2005. A quick glance at our written and oral vocabulary corroborates the growing importance of the digital with qualitative proof. Barely

two decennia ago, internet service providers and software companies had to use metaphors such as *information highway* and *internet traffic* (Stefik, 1996) to represent, explain and promote the internet to the consumer. Today, internet terminology such as *to google*, *to skype* or *networking*, is incorporated in common parlance. Newspapers and other traditional news media try to build a presence online and report upon the internet more frequently. Reuters, for example, recently opened a satellite-office in the virtual game world Second Life in order to begin publishing text, photo and video news from the outside world for Second Life members and news from Second Life for real world readers (see http://secondlife.reuters.com/). Still, it may be worth remembering that the web is just an twelve-year old, considering the introduction of Windows 95 as its 'day of birth', and subject to all the angst, mood changes, and transformations typical for a young teenager.

The end of the dotcom-crisis in 2000-2001 marked the advent of one of these transformations, resulting in new and more interactive and participative models of online communication. Today, the internet is going through a major shift in terms of content and services that it supplies. The blogosphere, websites facilitating true user participation and other forms of one-to-many or many-to-many asynchronous communication such as pod casting are on the rise and appeal to millions of internet users worldwide. This recent shift in terms of content and services that the internet supplies, is referred to by phrases such as *web2.0* or *social software*. One of the characteristics which typifies this new generation of internet services is its 'bottom-up' approach. The content and structure of websites is no longer defined by professional information providers but is determined by the users of the websites.
Social software is about the era of social media where people not only consume media-content, but also create it and where community and collaboration are no longer defined by physical proximity but by common interests. Thus, social software, expanding on the social capabilities of web browsing and email, has inherent qualities for creating and sustaining social capital.

As the Dutch media theorist and net critic Geert Lovink (Lovink, 2005) states: "internet culture is in a permanent flux." Web2.0 or social software services arose just recently on the internet and are reshaping the (new) media field. Consequently relatively little research and analysis on social software and its relation with social capital has been conducted in communication sciences. The aim of this article is twofold.
In the first part of this paper I want to signal this gap in academic literature and distinguish and explore the different dimensions of social software based on a qualitative approach. The second part of this paper places social software in the context of social capital and explores the literature on the impact of internet on society and social cohesion. Web2.0 or social software services appear to be evolving into a patchwork of various independent or loosely connected community-based systems, where the synergetic effects that could emanate are neglected and lost. These and other arguments incited several authors to argue that the internet and social software in particular are inimical to the creation of social capital. Others state that an individuals' social capital can be augmented by the use of social software.

I want to provide a framework and place social software more prominent as a research topic for social sciences and communication sciences in specific. Researchers should realise that a clear research agenda aimed at understanding social software is needed. If we want to model communication online; if we want to understand how this technology will be adopted in everyday life; and if we want to investigate the online creation of social capital, then we must draw our attention to social software.

1. A closer look at social software

1.1 Web2.0 or social software: a semantic discussion?

In 'What Is Web2.0 - Design Patterns and Business Models for the Next Generation of Software' (O'Reilly, 2005a) Tim O' Reilly stated seven basic principles that tried to define the common features of new internet applications that started to appear after the end of the dot.com crisis. In a follow-up blogpost O' Reilly provided a short definition for web2.0 that emphasises the use of the web as a platform. On this platform each user controls his own data and software is delivered as "a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an 'architecture of participation' (…)" (O'Reilly, 2005b).

Although the phrase *web2.0* is quite popular online, the use of the term *web2.0* is problematic on different grounds. Web-developers, venture capitalist, programmers and analysts use the term *web2.0* mainly to underline the technological 'back-end' characteristics, such as the use of data-aggregation, micro content and lightweight programming models, often excluding the social characteristics of web2.0. Moreover, the expression web2.0 delimits its range to internet services using the world wide web (a collection of interconnected documents and other resources) and does not take into account other services mediated by the internet (a collection of interconnected computer networks) such as peer-to-peer-file sharing, email and streaming media. Nor does it describe services mediated through other channels such as mobile phones or interactive television. Finally, the important advantage of the phrase web2.0 – emphasizing a turning point for the web by using the postfix 2.0 – is also its major downfall since it assumes a drastic break with the past (with web1.0) but does not explain were this breakpoint is situated. The phrase social software is not laden with these restrictions and is thus more appropriate to describe interactive and participative models of web services such as Flickr, Del.icio.us or YouTube (http://www.flickr.com, http://del.icio.us, http://www.youtube.com).

1.2 The origins of social software

Although the term was already in use before 2002, the word *social software* gained general attention thanks to the Social Software Summit held on the 22nd and 23rd of November 2002 in New York by Clay Shirky. From then on, many definitions about social software started circulating and it became and still is a much talked about subject in the blogosphere.

Christopher Allen (2004) gives a detailed account of the origins of social software and states that the terminology has moved through a life cycle. He sees social software as the successor to computer supported collaboration work (CSCW) and groupware. Bannon & Schmidt define CSCW as "an endeavour to understand the nature and characteristics of cooperative work with the objective of designing adequate computer-based technologies." (1991, p. 4). Greif (1988) describes the field of groupware as "an identifiable research field focused on the role of the computer in group work".

This focus on the support of groups per se is abandoned in the conceptual approach to social software. Stove Boyd (2005) even argues that social software will come to mean the opposite of what groupware and CSCW-tools were intended to mean. Boyd argues that social software departs from a bottom-up approach, supporting the desire of individuals, and that this is its main difference with CSCW: "Social software is based on supporting the desire of individuals

to affiliate, their desire to be pulled into groups to achieve their personal goals. Contrast that with the groupware approach to things where people are placed into groups defined organizationally or functionally.".

1.3 Defining social software

Desk research revealed an abundant amount of definitions describing social software. However, most definitions seem to have a common ground. They all subscribe the importance of creating networks and relations between people. In addition, most of them acknowledge the bottom-up approach as described by Boyd. Clay Shirky and Tom Coates provided significant definitions for social software. Shirky describes social software as "software that supports group interaction" (Shirky, 2003) and Tom Coates defines it as "software which supports, extends, or derives added value from, human social behaviour - message-boards, musical taste-sharing, photo-sharing, instant messaging, mailing lists, social networking." (Coates, 2005). Using these statements as a starting point I developed a definition for social software which was presented to a group of experts in the field of e-learning, social software and web2.0 in a qualitative survey. The next section briefly describes the methodology and results of this survey.

1.3.1 Methodology

In October 2006, a brief online questionnaire on social software was sent out by e-mail to 43 international experts in the fields of e-learning, web2.0 and social software. The survey tried to determine how social software was perceived by this panel of experts, that consisted of researchers from university departments (such as communication studies, sociology, computer-sciences, pedagogy and psychology) and seminal experts from various international consultancy firms or research and government institutes. Three days after the initial invitation email, a reminder email was sent to those respondents who did not fill in the questionnaire. The qualitative survey was closed after a period of 14 days. A response rate of 58% (25 respondents) was reached.

1.3.2 Results & discussion

First, the participating experts were asked to what extent they agree with the following definition of social software: *"Social software is software that enables communication through digital technologies during which people connect, converse, collaborate and form online networks in a bottom-up fashion."*

Table 1: answers to the question 'Do you agree with this definition in terms of capturing the key-aspects of social software? (N=25)
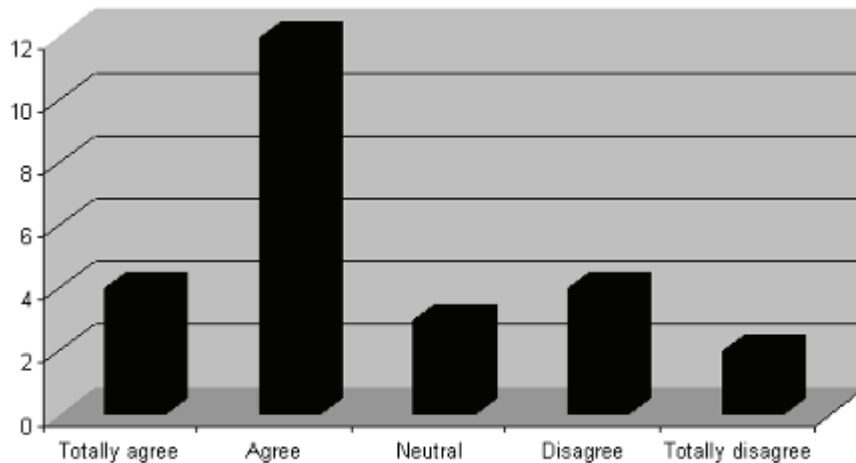
The table above (table 1) shows that the majority of the respondents agreed with the definition I provided and that was distilled from the literature review. Sixteen people indicated their agreement, three people indicated no opinion and six respondents were dissatisfied with the provided definition. Overall, the majority of the respondents agreed with the definition I provided.

1.3.3 A definition for social software

Next, the respondents were asked to give their definition for social software. People who did not agree with my definition placed more emphasis on network effects, social interaction and social data in their definition of social software. On the basis of the analysis of the received feedback, I rephrased the definition for social software to incorporate some of the remarks of the experts. This resulted in the following definition: *"Social software is software that enables communication through digital technologies during which people connect, converse, collaborate, manage content and form online networks in a social and bottom-up fashion."* This definition will be used in the remaining of this paper.

1.4 Typology for social software

In his 1998' speech at a MIT conference on democracy and new media, David Winston (2003) explained how digital technology changed historically. Digital technology moved fundamentally from computing to communications. After the internet had become a reliable means of communication between individuals, online content started to get better, richer and more searchable. In the end, this led to more effective collaboration than in the past and to the emergence of online communities where people can, in new ways, share interest, engagement and knowledge.

Winston regards content, communication, collaboration and community as the new arbiters of culture and political conversations. I want to use these four key concepts as a theoretical foundation for a typology of social software. Social software is not a single service exclusively aimed at creating online networks or communities but is, rather composed of different functions facilitating content management, communication, collaboration and community related activities.

Social software is a complex and multi-dimensional phenomenon consisting out of a mix of these four 'C's' (content, communication, collaboration and community related dimensions). Each of these dimensions has its own theoretical significance and can be viewed as a key concept in the understanding of the term social software or as a basis for making evaluations of social software. I want to analyse the complexity of social software by presenting a synthetic approach that combines these four dimensions. Such an approach helps to explain the multifaceted nature of social software and allows me to visualise the different usage or design patterns in social software by means of a radarplot.

1.4.1 Defining the dimensions

In this section I will briefly describe the four C's that I want to use as guidelines, as a basis for evaluating social software.

I will use the term *content management* to refer to the functions in social software fascilitating users to manage and create content for personal use or gain. This dimension is prominent in social bookmarking software (for example: http://del.icio.us). Social bookmaking software enables online information management as it provides its users an online archive and easy, intuitive and efficient access and cataloguing mechanisms.

The dimension *communication* reflects social software services that assist in the exchange of information between persons. E-mail, instant messaging or most of the weblog mechanisms (for example: http://www.blogger.com) are situated in this dimension as their design is primarily focussed on publishing ideas and supporting the conversations that arise around them.

Social software functions enabling users to cooperate with a person or agency are classified under the dimension *collaboration*. This dimension incorporates software features typical for wiki-websites (for example: http://www.wetpaint.com) such as the ability to look at older versions of a document or to restore an older version of the document.

Finally, social software functions mediating in the creation and maintenance of online communities and networks are placed under the dimension *community* (for example: http://www.linkedin.com). I use Wellman's definition for communities to elucidate communities as "networks of interpersonal ties that provide sociability, support, information, a sense of belonging, and social identity." (Wellman, 2001, p. 227).

1.4.2 Social software as a multi-dimensional phenomenon

Each of the four dimensions - contentmanagement, communication, collaboration and community - is present to some degree in a social software application. In the previous section I gave examples of how some social software services place more emphasis on a particular dimension than others. However, as several authors (Bijker, 1995; MacKenzie & Wajcman, 1985; Silverstone & Hirsch, 1992) indicated, the functions present in software design can not be regarded as the only determinants of their impact on culture and society. It is how these features are adopted and used that will determine their position on the four dimensions and their impact on society.

The dimensions above can be used to visualise certain types of social software. This approach has some important advantages. It allows easy and quick identification of the dimensions on which the social software in question places more emphasis. Furthermore, it allows analysis of the multi-dimensionality of a particular social software service by looking at the surface area the social software service covers in the radar plot. Finally, it enables comparison

between the design of a social software application and the actual use because both can be mapped onto the same radar plot.

1.4.3 Visualising social software

Four communication scholars were briefed in face-to-face sessions about these four dimensions in social software. They were given definitions delimiting the concepts of social bookmarking software, weblogs, wikis and social networking sites. Next, they were asked to indicate how important certain dimensions are for the social software services under consideration. The respondents indicated their opinion on a 10-item scale, ranging from 'not important' to 'very important'. The results were aggregated in the radar plot below (Fig. 1).

Fig. 1. 4 social software services mapped on 4 dimensions
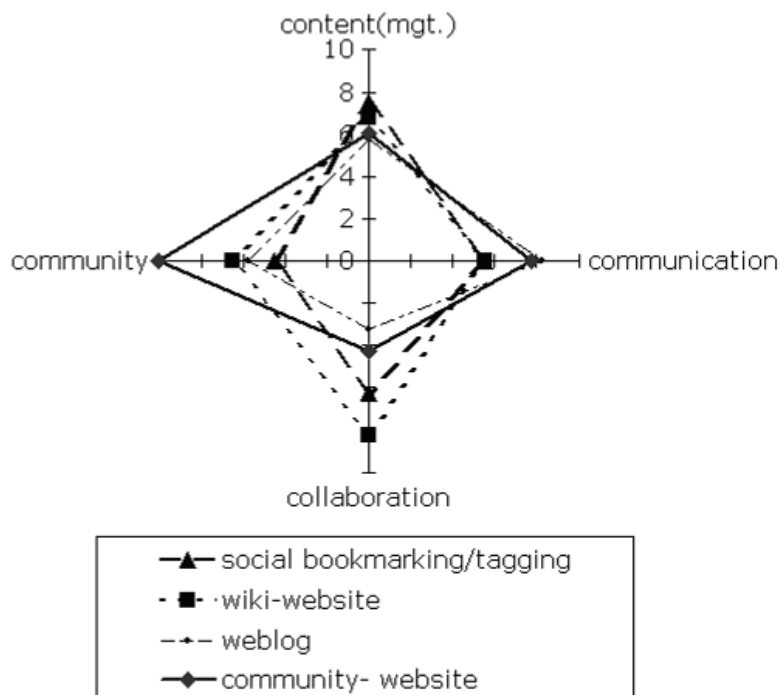
More efforts are needed to develop a questionnaire and other research tools (for example online participative observation techniques) that probe the importance of each dimension in a more subtle and thorough manner. Future research will also include the construction of a toolkit for the analysis of specific social software cases, combining content analysis with methods from the fields of usability and sociability studies.

2. Social software and social capital

2.1 Impact of new media

In general, introductions of new (media) technologies give cause for questions about the effects or impact of this new technology on society (Jankowski, 2002; Williams, 2002). These concerns over the impact of new media technologies are of all times. For example, Socrates bemoaned writing as he foresaw that memory would be weakened by our reliance on text and he warned that "writing allows all manner of strange couplings: the distant influence the near, the dead speak to the living, and the many read what was intended for the

few" (Peters, 1999, p. 37). The possible effects of new forms of mediated communication were examined each time a new communication technology reached the market (radio in the 1920's, television in the 1950's, …) and the same questions were raised in the 1990's when the internet infrastructure became available to the public in general and internet as a cultural practice reached the point of critical mass. What is the impact of internet on our lifes? Does the internet undermine community or does it create new possibilities for its expression?

Conclusions and opinions are diverse. Utopians or boomers (for example: Gilder, 2002; Negroponte, 1995; Rheingold, 1993) believe that the internet can increase social cohesion and that it will allow us to do more. Dystopians or doomers however (for example: Parks & Floyd, 1996), state that interaction in an online environment becomes mechanised and empty. They believe that without the richness of face-to-face communication the internet only creates 'the illusion of community'. Finally, other authors (for example: Anabel, Wellman, Witte, & Hampton, 2002) claim that the internet neither increases nor decreases social cohesion but instead works to supplement it.

Ågren (Ågren, 1997) describes three similar perceptions on the concept of communities and its relationship with new media technologies: 'community lost'; 'community saved'; and 'community liberated'. He believes that the difference between these perceptions lies in the 'relationship' characteristic. 'Community lost' is typified by the absence of informal relationships. 'Community saved' is characterized by few strong informal relationships and 'community liberated' is marked by many weak informal relationships.

An important factor in this discussion is the supposition about how and by whom online access to information and people is controlled. In computer-mediated-communication (CMC) studies, digital information technologies and their applications are often supposed to break through boundaries and hierarchies present in society. Although new technologies can also result in the creation of new boundaries and classes (for example: the digital divide), the idea of more emancipation and freedom returns every time a new technology is introduced. New technologies are often supposed to have an emancipatory feature. Enzensberger, for example wrote about the emancipatory potential of the transistor radio: "For the first time in history the media are making possible mass participation in a social and socialized productive process, the practical means of which are in the hands of the masses themselves." (Enzensberger, 2000, p. 52).

2.2 Networked individualism and egocasting

This emancipatory feature is also present in the discourse and research on social software. The unique properties of social software allow for new forms of participatory culture in which consumers take media in their own hands, through bottom-up processes, to serve their personal and collective interests. They allow cyberspace to become "(…) a new arena for participation in public life… users can act as media audiences … yet users are also authors, public rhetoricians, statesmen, pundits." (Fernback, 1997, p. 37).

This participatory culture enables consumers to produce, distribute and consume online content at marginal or zero costs, and thus enhances our involvement in the 'negotiation of meaning'. This involvement is important because it defines who we are: "At stake is the capacity of the household or the family to create and sustain its autonomy and identity (and for individual members to do the same) as an economic, social and cultural unit." (Hirsch, Morley, & Silverstone, 1992, p. 19).

In a network or information society, the individual occupies center stage. Communities and groups are often no longer based on a specific location but on individuals and their practices: "This is a time for individuals and their networks, and not for groups. (…) The broadly-embracing collectivity, nurturing and controlling, has become a fragmented, variegated and personalized social network." (Wellman, 2002).

The person has become the portal (Wellman, 2002) in an atomised society. Wellman describes this move from densely knit and tightly bounded groups to sparsely knit and loosely bounded networks as a move towards 'networked individualism'. In this networked individualism internet users access almost infinite amounts of information, share their favorite files, communicate and interact with others. The digital information that they handle is hyper individualised and continually renegotiated. It reflects what they feel (for example: entries on web logs or online discussion boards), find important (for example: subscriptions to rss-feeds) or want to share (for example: 'seeding' files in a peer-to-peer network).

In a seminal article "The Age of Egocasting", Christine Rosen (2004/2005) described how technological advances accumulated in the capability to create a personal bubble, inside which we as "content consumers" are the sole masters of what we see and hear. She called this egocasting and defined it as "the thoroughly personalized and extremely narrow pursuit of one's personal taste" (Rosen, 2004/2005, p. 52), where we exercise an unparalleled degree of control over what we watch and what we hear.

2.3 Social software and social capital

In our definition of social software I stated that social software targets the fulfilment of certain needs (the need for content management, communication, collaboration and community) and that it tries to do so by means of social, bottom-up processes. Thus, social software tries to create and maintain social networks.

Most social software services facilitate participation from 'the edges', from the periphery of the group. Users do not have to participate fully, in order to be recognised as a member of the group or network. One can participate from the fringes of the group or not participate at all and merely observe. Thus, getting connected to the internet or becoming member of a social software website often means getting access to a stock of social capital. Social software can widen the experience of community (helping to connect with others who have different beliefs or backgrounds) or social software can deepen the experience (reinforcing and strengthening existing social networks). This indicates that social software can be used to augment online individual social capital.

2.3.1 Social capital: definition

Social capital does not have one precise or universally shared definition but its central thesis can be summarised as 'relationships matter' or 'networks are a valuable asset' (Field, 2003).

The first systematic use of the term was by Bourdieu. In his book 'The forms of capital' Bourdieu distinguished, inspired by Weber, three types of capital: economic, cultural and social capital (Bourdieu, 1985). He described social capital as access to various currently held and other potentially accessible resources that are based on group membership: "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition … which provides each of its members with the backing of collectively-owned capital." (Bourdieu, 1985, p. 248).

A second approach to social capital was provided by J.S. Coleman (1988). In his view, social capital consists of the resources available to an actor by virtue of his or her participation in a social group. Social capital can be mobilized to achieve the individual's interest. Just as Bourdieu, Coleman stresses the role of networks and groups in the formation of social capital. This network-approach differs from that of Robert D. Putnam who emphasises the role of norms and values in social capital. His attitudinal approach describes social capital as "connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them" (Putnam, 2000, p. 19) and states that: "the core idea of social capital theory is that social networks have value" (Putnam, 2000, p. 179).

Lin (2001, p. 29) summarises social capital as: "resources embedded in a social structure that are accessed and/or mobilised in purposive actions" .

The word capital suggests that we can invest time, effort and money and that we can expect a returned value. This returned value can take different shapes. It can be emotional (for example: expressions of approval and respect) or informative (for example: receiving factual information or support in the information seeking process). It can be instrumental (for example: practical help and relief of certain burdens) or assessive (for example: receiving feedback from peers) in nature.

The three seminal authors above can be criticised for their homogeneous and undifferentiated approach to social capital. They downplay the negative effects that social capital can cause and do not differentiate between different types of social capital (see 2.3.2). Furthermore, their approach to social capital and how it evolves over time is rather crude (Field, 2003).

2.3.2 Dark side of social capital

Social software is not necessarily always positive for the health or the common good of the whole. Baron (Baron, Field, & Schuller, 2000) points out that, in general, social capital is referred to in positive terms. This way, social tension, inequalities and discrimination in society stays hidden (Franklin, 2003). Communication, collaboration, community and group-forming processes can however, be disadvantageous for people who are not involved in these activities or who do not belong to that specific network. Robert Putnam describes this as the 'dark side of social capital' (Baron et al., 2000). He tries to explain this phrase by making a distinction between 'bridging' groups (inclusive groups that join different sorts of people into a community) and 'bonding' groups (exclusive groups that join people who are similar to each other). An important distinction because: "(…) the externalities of groups that are bridging are likely to be positive, while networks that are bonding (limited within particular social niches) are at greater risk of producing externalities that are negative." (Putnam, 2002, p. 11). Bridging social capital tends to bring together people across diverse social divisions. Bonding social capital tends to reinforce exclusiveness and maintain homogeneity. Hyper pluralism and overspecialization can be expected to encourage bonding among regular members (Norris, 2004). Too much bonding can result in the exclusion of outsiders, excess claims on group members, freedom restriction and a downward levelling of norms (Portes, 1998). Too much bonding can thus climax in dark or negative social capital: in groups that press - to a dysfunctional level - their uniqueness as being more important than the common good of the whole.

2.3.3 Level of operationalisation for social capital

Although standardisation in the measurement of social capital appears to be still far away (van der Gaag & Snijders, 2002) social capital can be operationalised on a collective (macro,

meso) or an individual (micro) level. On a collective level, it represents the amount of trust and social cohesion within a network. On an individual level, social capital refers to three dimensions: "(…) the (number of) alters in the individual social network 2) the resources these alters give access to 3) the availability of these resources from alters to the individual, of which the willingness of alters is a major component." (Flap (2000), cited in van der Gaag & Snijders, 2002).

2.3.4 The 4 C's in social software

When evaluating social software and its relation with social capital, the typology of 4 C's (see 1.4.1) can be used as a framework. This framework allows each social software application or service to be analysed on four dimensions. A user centric approach to the four C's provides researchers with information on how the social software service is used. For example: a web log is used by person x to create and sustain conversations round a certain topic (emphasis on communication), by person y as a tool to archive online content (emphasis on content management) and by person z as a way to obtain a sense of belonging, a sense of membership to a specific group (emphasis on community). A more functional, design-related approach to the four dimensions provides researchers with information on how certain social software services are designed.

Each of the four dimensions can be used or designed to create bonding or bridging social capital. Each of these dimensions can create emotional, informative, instrumental or evaluative value for the user of the social software application. Communication can take place in closed (invitation-only) environments (for example: an instant messaging application) making the communication process one of bonding amongst peers, or in an open environment (for example: certain parts of the blogosphere) which may result into bridging. Online collaboration or community-forming can happen in peer-groups (for example: certain file sharing networks, also called 'darknets') closed to non-members, or amongst anyone with internet access (for example: wikipedia, myspace or secondlife). It can be inclusive or exclusive. It can join different sorts of people or join people who are similar to each other.

Conclusion

Distinguishing different dimensions in social software and acknowledging the dark side of social capital provides us with a framework that allows a more subtle approach to the analysis of social software services and the complexity of online sociability. The framework does not regard social software as a one-dimensional concept but as a concept that includes different types of use. Furthermore, I argue that each type of use can have different relations with social capital. The complex interplay of content, communication, collaboration and community related use of social software features will reflect in how they join (or divide) similar or dissimilar people online.

How will these two seemingly contradictory tendencies play themselves out? Will the use of social software result in a flowering of the social sphere (bridging social capital), or in the retreat to a balkanized social clique (bonding social capital)? One of the big challenges for social software design will be to incorporate both tendencies: facilitating a dynamic environment for selective associations (friends, communities of interest, colleagues) to operate, while at the same time enabling them to expand and explore their boundaries without loss of identity and cohesion.

The research has been carried out within the framework of research projects of the Interdisciplinary institute for Broadband Technology (IBBT).

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Ethical Behaviour of Self-Aware Agents

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"Ein grosser Vorsatz scheint im Anfang toll"
Goethe, *Faust*

Abstract

The paper develops, in BBT context, the critical problem of ICT ethics, examined in [3]. Thus, its objectives are adapted accordingly: a) To validate ethics as a general design-space dimension for agent-oriented applications; b) To substantiate the urgency of user-driven ethical behaviour of self-aware agents; c) To enable such behaviour by a safe, simple, and ethically uncontroversial agent-oriented toolkit; d) To exemplify the toolkit by an improved version of the "ethical potentiometer" described in [8]. The guidelines are: a) integrate ethics in any agent-oriented design; b) ensure that any misuse is avoided; c) allow flexible switching between various ethics; d) control ethical agent behaviour; e) to become aware of ethical behaviour, agents must have some degree of self-awareness.
The paper presents: 1. *The Ethical Toolkit*. A collection of features that enables the user to control the ethical behaviour of the its agent. 2. *Ethical Replication*. The agent is able to change his current ethical state through replication. 3. *Ethical Self-Awareness*. The agent is aware of his current ethical state and also keeps track of the previous ones, using *ethical replication*. The agent behaviour model is the first step in the development of a more ethically (self-)aware agent.

1. Introduction

The BBT takes human interaction to a new level, where individual are easily represented by virtual peers, which act independently in order to complete the user specified tasks. The problem of ICT ethics becomes critical in the broadband society, where many questions about the means by which agents achieve certain goals arise. If they are very effective, their behaviour may be qualified as *machiavellic*. If their behaviour is *friendly* or *polite* regarding the environment and other peers, they may be considered inefficient. These issues, examined in [3], are the starting point in setting the objectives of this paper.
Since, regarding ethics, not even conventional ICTs fulfill user expectations, it is *mandatory* to take into account ethical aspects when agents penetrate all innovative application domains. Moreover, it becomes *urgent* when their key purpose is to *interact* with humans as well as with their peers, since they act consistently with their own *intentions* – regardless whether they are opponents (e.g., in e-commerce) or partners (e.g., in e-therapy). In fact, they try to *persuade*: from ancient rhetoric to modern advertising, "the power of persuasion introduces additional legal and ethical questions. [...] No simple list could empower agent designers to guide their agent development efforts ethically and legally" [20].

Accordingly, the *objectives* are:

a) To validate ethics as a general design-space dimension for agent-oriented applications;

b) To substantiate the urgency of user-driven ethical behaviour of self-referencing agents;

c) To enable such behaviour by a safe, simple, and ethically uncontroversial agent-oriented toolkit (for instance, the potentiometer applied for an e-Learning application [25]);

d) To exemplify the toolkit by an improved version of the *"ethical potentiometer"* described in [3].

Since intention involves moral responsibility, agent behaviour must show a wise blend between ethical *intransigence* and pragmatic *effectiveness*. Therefore, aspects of ethics as design *dimension* correspond to categories of ethics as *system*, expressing various degrees of rigor. At one extremity, one can situate the strict deontological ethics (total intransigence: standards can never be broken, regardless of causing pain), at the other, one can situate the Epicurean act-based pragmatism ("pro and con" ethics); and somewhere at midpoint one can place the rule-based utilitarianism (rules are set in place only if always following them proves to be beneficial) [14].

2. Rationale and Approach

Like any amplifier, powerful technologies increase the impact of (macro-architectural) application features – including their previously unnoticed side effects – and, hence, the risk of ethical faults. Two such major, innovative, and influential technologies are: *broad-band* (offering huge amounts of information) and *agents* (proposing new ways to process it). Their combined effect: humans act in entirely new environments: open, dynamic, uncertain. In this lawless jungle, the risk of ethical faults becomes huge and therefore agents must behave ethical too.

In e-therapy persuasion becomes commonplace, due to the major role it plays in therapeutics, no matter the technology employed. It also distributes responsibility, involving the persuader's moral liability [8]. The ethical facet of any medical act is of major significance, and persuasion broadens it.

Ethical behaviour is eased through – at least a primitive form of – self-awareness. The agent needs to be permanently aware of its current ethical state and keep track of the previous ones, so that these may influence future changes in its behaviour. To reach such a target, BBT offers an affordable "general toolbox": agent-oriented software engineering [1].

The attempt to examine the ethical facet of agent-based applications and to show – via an experimental model – ways to control agent ethical behaviour is driven by – and filtered through – the following assumptions, criteria, and guidelines [8]:

- Integrate ethics in any agent-oriented design, so that the user may specify the ethical behaviour of the agent representing him;
- Ensure that any misuse is avoided, by taking the necessary safety measures;
- Allow flexible switching between various ethics, the agents behaviour won't be rigid, but it will change and adapt to the environment and the users requests;
- Control ethical agent behaviour, the agent will follow a user-specified ethical path: thou the agents ethical state will change under the influence of the environment, it will always be within the grid specified by the user;
- To manifest ethical behaviour, agents must have some degree of self-awareness: the agent will be aware of his ethical state and will be able to go from one state to another, as specified by the user and as a reaction to the environment; (Self-aware agents are presented in a related paper)
- Because "persuaders have always stood on uneasy ethical ground" [14], so as to prevent unintended outcome, the agent behaviour should be more strictly controlled. (by the application developers who should create good behaving agents)

This approach aims at proposing a test field for experimental models of human-controlled, self-aware agents, of reduced cognitive complexity [7]. On this basis, in later model versions, the level of ethical rigour could be raised or lowered by the user, in order to achieve the desired results.

3. Generic Architecture

Then experimental model has three innovative key features for implementing ethical self-aware agents. Some of these are described in detail below, while others are also subject of related papers [9], [25], [8].

A) Ethical Toolkit

The *Ethical Toolkit* is a collection of simple tools that help giving the agent an accurate ethical description. The first one in this kit is the *Ethical Potentiometer*, inspired from [8]. The Potentiometer metaphor suggests that the user may adjust the ethical behaviour of the agent, like fine tuning a radio. The number of the agents ethical states, corresponding to the states of the *Ethical Potentiometer*, may vary, from very few to many, a finer division. For instance, as represented in Fig. 1, an *Ethical Potentiometer* may have flowing steps: *graceful, polite, fair, selfish, machiavellic.*

Fig. 1. Switching between discrete ethical behaviours.

The concept of Potentiometer is easy to implement and to adapt, flexible, can be applied in almost any context and also easy to keep track of, this fact being very important for the implementation of the other features.

B) Ethical Replication

Is the ability of the agent to change its current ethical state, as a reaction to the environment. Although *Ethical Replication* is a reaction, it is not a random one. The replication respects an *ethical grid* previously defined by the users, so that they may always be in full control of the agents ethical behaviour.

The agent also keeps track of its previous ethical states, upon which the decision to change the current one also relies. This feature is therefore essential for *Ethical Self-Awareness*.

This feature is implemented using *Self-Cloning,* a process described in [7] and [9].

C) Ethical Self-Awareness

Refers to the agents ability of being permanently aware of its current ethical state, reflected through tools from the *Ethical Toolkit*, like the *Ethical Potentiometer*, but also of its previous ones. It is directly related to *Ethical Replication*, being, next to the *ethical grid*, the key factor in deciding a change of the ethical state.

These tools are closely related and depend one on another. They are also vital in creating an accurate ethical image of the agent and controlling its ethical behaviour.

4. Experimental Model

The *Ethical Potentiometer* was successfully implemented into an e-Learning application. The model is described in [25] and briefly using the simplified Fig. 2.

Fig. 2. Using the Ethical Potentiometer in an e-Learning Application.
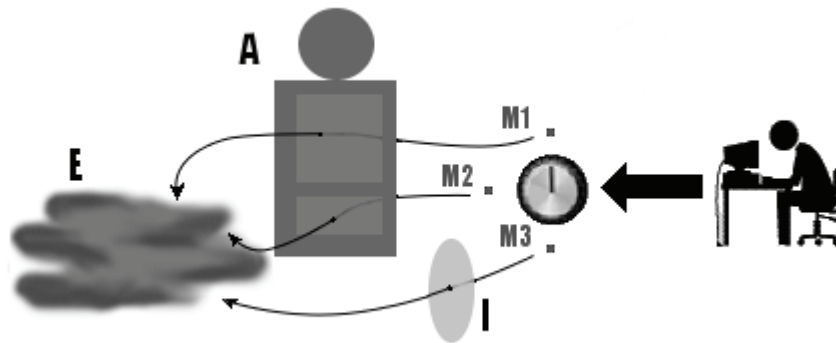
E-Learning environment (E). The amoebic shape suggests its nature: open and heterogeneous (the resources involved are unalike and their availability is not warranted), dynamic (high pace of exogeneous and endogeneous changes) and uncertain (both information and its processing rules are revisable, fuzzy, uncertain and intrinsically non-deterministic stimuli generator). On the other hand, micro-continuity and reusability require also some conventional e-Learning software in the environment. Now it is modelled as a "very proactive search engine" (in the current experimental model it is oversimplified as a kind of "personalised search engine with many messages").

Agent (A). It uses the *Ethical Potentiometer* to chose the appropriate *Working Mode* to the users requests so that it may retrieve the information as accurate as possible.

Interface (I). The unusual situation of having an interface beside the interface agent was justified by security/protection reasons: the user is still in control even when the agent is (in part) out of function.

Security/Protection Work Modes (Mi). "Security" refers here rather to ethical aspects than to technological ones. There are three echelons of application functionality expressed through working modes: M1) Normally, the learning process is conceptualised in line with the modern IT paradigm "computing as interaction", where the coach-trainee communication is intense in both directions (i.e., both parts are proactive). M2) If some agent action or behaviour seems deontologically suspicious, the application performs according to the older "client-server" paradigm, where the learner takes initiative while the agent is reduced to conventional e-Learning software [24]. M3) In critical situations, the agent is totally cut short and the learner uses a conventional interface to interact with the environment or to access the ontology. Switching between modes is carried out with an *Ethical Potentiometer* (implemented first for virtual therapy [8] and now adapted for e-Learning).

The current model describes a self-referencing, exception-driven agent, carried out as pseudo-avatar, able to: *learn* (mainly from environment stimuli, through inductive inferences); *assess* "Simon-learning" of humans and agents (by the task duration derivative); *clone* itself after learning to spawn "smarter progeny" (transferring recently acquired knowledge into their genotype, i.e. into the executable program representing statically the agent). Emphasis moves

towards (parentheses embrace the "rather than …"): interactive (bibliography), adaptive (e-tutorials), knowledge extraction (information retrieval), error-driven (grading test results), trends (detailed facts).

5. Conclusions and Future Work

- Especially for BBT agent-oriented applications, ignoring ethics is unacceptable;
- Despite being "ethically neutral", broad-band technology amplifies the risks of ethical faults, above all in modern applications, where humans and agents interact in open and uncertain environments;
- Users should control the ethical behaviour of interface agents according to "human ethics", ignoring suspicious concepts like "digital ethics";
- The easy to implement "ethical potentiometer", able to model suitably a wide range of ethics and to control agent behaviour from the perspective of the chosen level of ethical rigour;
- Neither research, nor application development can advance without extensive transdisciplinary research (involving not only domain theory and ethics themselves, but connecting them to psychology, sociology, application domains, etc.);
- Agent-oriented approaches based on design-space dimensions (here, ethics) confirm their utility also in medical informatics, for both research and application development (first, in therapy).
- The experimental model of the *Ethical Potentiometer* implemented in the e-Learning application [25] was an easy implementation of the generic architecture and proved to be effective.

Future research objectives are the investigation of the the impact that dependability of the conveyed information (exact, approximate, fuzzy, uncertain) can have on ethical behaviour, the way it is perceived, and the development of the *Ethical Potentiometer* and the *Ethical Toolkit* according to user specifications.

The agent behaviour model is the first step in the development of a more, in particular ethically, (self-)aware agent, but also in achieving general self-awareness. This concept is rooted in two ideas of Hofstadter [21]: "consciousness is not an on/off phenomenon, but admits of degrees, grades, shades" and: the first step is self-reference.

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Mobile E-Actors In Saturated Environments: Patterns Of Co-Construction

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Abstract

This contribution will attempt to identify a set of key-words and discursive frames which lead the design and social shaping of humans as e-actors at the crossroad of mediated mobility and ubiquity. Bodies, actors and environments are increasingly constructed around pervasivity and ubiquity of technologies. Mobility and ubiquity, in this respect, represent two complementary keys to understand how humans as e-actors are imagined, and discursively represented, as intertwined with an environment which is saturated by a wide array of technologies.

Being on the move in their everyday life, humans as e-actors are required to manage the crucial combination of mobility and proximity in order to be skilled users and competent communicators. In this respect, concepts of convergence and saturation help to frame the miniaturization and portability of technological devices as well as the design and projection towards ubiquitous, pervasive computerized environments

How is technological saturation affecting connectivity and connection among social e-actors? How is convergence between the body and the environment under the sign of a ubiquitous communication shaping choices and resistances to models and representations of users as e-actors? Around these questions, some theoretical and literature-based reflections will be carried out.

1. Introduction

The key-argument of this paper draws from the analysis of e-actors as authors of an active shaping of ICTs: e-actors are situated at the crossroad of at least two analytical dimensions which are increasingly technologized, that means the body and multiple electronic environments.

On the one hand, the body is the crossroad of several technological embodiments which make it both more artificial and more transparent (cf. Maldonado, 2002). On the other hand, this body which is transformed and hybridized through technological devices is immersed and surrounded by electronic (e-) environments. E-environments are saturated by technologies defined non only as mobile, but ubiquitous, at disposal anywhere anytime of actors' interaction and eliciting that interaction in a transparent, unquestioned modality (cf. Greenfield, 2006). Mobile and ubiquitous technologies are the theoretical case examined in the paper to illustrate how environments and bodies co-construct e-actors in their relationship with multiple social settings and discourses.

The encounter between e-actors and e-environments textures - and is textured in turn - through a rich grid of concepts, devices and discourses, where materiality and immateriality, opacity and transparence are complexly intertwined.

The aim of this paper is to draw such a grid identifying concepts adequate to navigate the new spatio-temporal patterns of interaction which are embedded and enacted through technologies of mobility and ubiquity (e.g., the mobile phone especially in its 'smart' version;

ubiquitous computing infrastructures). These concepts define characteristics of actors (e.g. their sociality and ability to resist technologies; their hybridity and heterogeneity; their being very much 'on the move') and of environments mediated and saturated by technologies (e.g. saturation, convergence, ubiquity, connection and connectivity). From such a conceptual grid, representations and configurations of how 'idealtypical' (sometimes, stereotypical) e-actors should behave will be drawn, referring to the designers' discourse on mobile and ubiquitous computing.

The paper is structured as follows. First of all, the relationship between environments and bodies as two sides of the coin of an increasing technologization will be articulated through the categories of convergence and saturation.

Secondly, an analysis of the concept of e-actor will be provided using different theoretical frames.

The subsequent sections of the paper will describe environments and mediated bodies using the categories of mobility and hybridity. From all this a 'portrait' based on representations of users of mobile and ubiquitous computing will be discussed, emphasizing the role multiple public discourses (cf. Iacono and Kling, 2001) play in shaping these advanced sociotechnical arrays. Eventually, ubiquity, connection and connectivity will be presented to analyze communication and interaction in the process of co-construction of saturated environments and mediated bodies.

2. From environments to bodies: convergence and saturation

The relationship between environments and bodies is mutual and constitutive of the way technologies and e-actors interact with each other. In fact, e-environments constitute the background where mediated bodies, more and more hybridized by various technologies, play their role as e-actors on the scene. In turn, the body itself becomes a technologized environment where portable, miniaturized technological devices act as its extensions.

In this respect, two key-words describe such an interaction-relationship: convergence and saturation. On the one hand, environments and bodies are 'tuned', find a convergence, on the basis of technological devices and infrastructures which are adjusted reciprocally so to create a continuous texture between them. Such a texture, on the other hand, makes technologies literally saturate and fill up the environment, making ubiquitous (anywhere anytime) interaction at disposal of users as e-actors.

Different types of convergence can be distinguished for analytical purposes. First of all, media history and ICTs evolution can be re-interpreted as the result of processes of convergence which act at an *infrastructural, architectural and market* level. This is particularly evident for mobile technologies here analyzed, where the trend is marked by "(...) the progressive blurring of the traditional boundaries between previously separated fixed and mobile markets which is led by the continuous technological developments, the latter being responsible for a completely new communications network architecture known as NGNs (Next Generation Networks" (Feijoo et al., 2006: 3). In such a process, big emphasis is put on the 'mobile broadband access' as the next frontier in telecommunications infrastructure, along with "the evolution of mobile Internet as a converging process of access platforms, technologies, contents and services (...)" (Ramos et al., 2004: 76).

This process of convergence is accompanied by a strong institutional discourse where rules for the competition, representations of the users' needs along with policies to reduce the digital divide are pursued (e.g. policies adopted by ITU, EU and so on).

Secondly, there is a *material* profile of the convergence, which has to do with miniaturization and portability of multiple, multifunctional mobile technological artefacts (e.g. I-pods, PDAs, and so on). This aspect of the convergence is particularly linked with the body and redefines

materiality and visibility of technology. Size and multifunctionality of portable technological devices make them more and more embeddable, wearable and textured within or around the body.

It is not just the mobile phone which becomes more and more 'filled' with functions and services concentrated in smarter and smarter devices, but also the environment, which becomes increasingly textured and embedded with pervasive, unobtrusive, ubiquitous technologies (cf. Lyyttinen and Yoo, 2002a, 2002b; Greenfield, 2006).

The last point makes convergence also a *functional* process, in many senses. On the one hand, the mobile phone is increasingly a synthesis and a concentration of communicational routines, functions and uses before belonging to different media (e.g. mobile e-mail through blackberry, video download and upload through camera phones, texting through SMS, static and dynamic pictures through MMS and so on). In this sense it can be defined not only as multi-media and multi-function device, but also as "a meta-device (...) establishing the bases for a truly integration of options and services that make the base of the mobile telephony mediatisation process" (Aguado and Martinez, 2006a: 2). Such a versatility and multi-functionality is one of the preferred topics in the media discourse on mobile phone services (cf. Aguado and Martinez, 2006b).

Furthermore, these processes of convergence are targeted towards the environment and the body, in the sense that technologies converge on both these poles. This is linked on the one hand with the concept of saturation, on the other hand with the concept of hybridation (cf. *infra*).

Saturation draws on Bowker and Star's (2000) analysis of classifying and standardizing and refers to the qualification of the mobile phone as ubiquitous technology (Ling, 2004) accessible everywhere/everytime. Saturation defines ubiquity as infrastructural resilience. As Bowker and Star put it: "Classification and schemes literally saturate our environment In the built world we inhabit, thousands and thousands of standards are used everywhere (…) This categorical saturation furthermore forms a complex web. Although it is possible to pull out a single classification scheme or standard for reference purposes, in reality none of them stand alone" (Bowker and Star, 2000: 37-38). According to Bowker and Star, the texture of saturation is "a matter of integration, almost like a gigantic web of interoperability" (2000: 38), and therefore so difficult to see and to grasp in its patterns.

The concept of saturation describes the way our bodies and environments are intertwined into chains of sociotechnical relationships where technology is imagined and represented as a *continuum*: like in the 'everyware' ubiquitous computing, where technology is said 'to colonize everyday life' (Greenfield, 2006). The body is one of the 'intelligent terminals' interacting with such an environment. The electronic body and its dissemination along different organizations/settings is the other side of the corporeal body: both are more and more 'on the move' as this corporeal body carries with it an increasing 'charge' of electronic information which is stored and distributed in the environment.

Saturation has also to do with the way the mobile phone shifts patterns of communication, integrating co-presence in proximity and at distance (Urry, 2002), as well as establishing the oxymoron of "the presence of those who are absent" (Fortunati, 2000: 9). All this contributes to form a 'gigantic web of interoperability' not only from the viewpoint of the materiality of technological infrastructures (the 'cellular grid' with its squared lines, connections and material networks surrounding it) but especially from a symbolic viewpoint.

In the complementary discourse on ubiquitous computing which aims "to augment common structures and everyday artifacts as interaction devices that inherit design affordances from the physical world for interaction with the digital realm" (Schmidt et al. 2002: 1), saturation occurs again in the form of disappearance of the infrastructure, complementing the mobile

phone saturation and enriching it with new ambitions of universal access and convergence (cf. Iftode et al., 2004).

If convergence and saturation constitute bodies and environments in the context of a mutual relationship, what kind of action does take place in this background? What does being an e-actor mean?

3. Conceptualizing e-actors

Conceptualizing e-actors means to configure their constitution towards and through technologies (ICTs namely) which can be seen as more or less 'external', more or less 'embedded' to them.

The concept of actor, in some way, implies an evolution of the concept of user, an enrichment of the potential and ability to interact, innovate and change technologies by using, consuming and interpreting them. Three conceptualizations which connect explicitly humans to technologies will be presented, as paths towards the analysis of the relationship between the social and the technical (the sociotechnical in a constructionist sense).

3.1. Users as social actors and computerization movements: the Social Informatics perspective

This perspective enriches the concept of user drawing from critical Information Systems literature and going through a theoretical integration with sociological and sociotechnological theories, especially new institutionalism and structurational approaches (Lamb and Kling, 2003) as well as Actor-Network Theory (Lamb, 2006).

Contesting a decontextualized, cognitive and abstract model of the ICT user as individualistic entity, these studies emphasize the role institutions and organizations have in constraining ICT use by actors (new institutionalist lens); they try to go beyond the dichotomy structure-agency, looking at affiliations, environments, interactions and identity emerging from the use of ICTs in daily routines and tasks (Lamb and Kling, 2003); they integrate in the framework the ANT concepts of translation, heterogeneity and partial irreversibility of networks (cf. 3.2.) to analyze how people make sense of ICTs in organizational settings (Lamb, 2006).

This theoretical frame, drawing a critical approach to cognitive-rational models of ICTs users, provides a richer contextualization of actors as connected and situated individuals (Lamb, 2006).

E-actors according to this reconceptualization are socially constrained and constituted as their action and use of technology is related to multiple factors: their everyday interactions are ICT-infused and temporalized across organizational settings where project-based identities emerge (Lamb and Davidson, 2005).

The other contribution coming from the Social Informatics field refers to Iacono and Kling's (2001) perspective of computerization movements. In their account of the rise of the Internet and distant forms of work, the authors proposed a theoretical model based on the way meanings of a specific technology are attributed and framed by different groups of actors. These groups defined as computerization movements, whose aims and beliefs are pursued through collective action, constitute an alternative explanation for the rapid emergence and high diffusion of a new technology. Computerization movements consist of processes of societal mobilization around key-meanings (discursive frames) which establish links between a specific technology and a preferred social order. Such a frame allows to point out that e-actors are collective and frame their action through multiple levels: technological action frames, public discourse about technologies, and organizational practice (Iacono and Kling, 2001). The public discourse level is particularly interesting as it is pursued through many

'sites'. As an example, this paper will analyze designers' representations of mobile and ubiquitous technologies to understand how they envision future users' behaviours, prescribing specific models of interaction (cf. Akrich, 1992 and section 6 in this paper).

3.2. Users as resisters/innovators: the work-around concept

If the previous perspective emphasizes the constraining sides and dimensions in the e-actor constitution, other studies put forward the enabling and creative power of users as actors. Ethnographic accounts of technologies in organizational settings often tell us stories of unexpected enactments, what Orlikowski (2000) named as "technology-in-practice (...) to refer to the specific structure routinely enacted as we use the specific machine, technique (...) in recurrent ways in our everyday situated activities. Some properties provided by the artefact do not exist for us as part of our technology in practice, while other properties are rich in detailed possibilities" (Orlikowski, 2000: 408).

This pattern of appropriation of the technology underlines strategies actors enact to make sense of the technological system. More often, they can be observed as literally 'working around it'. The concept of work-around is closely connected with practices of conflict and negotiation in system development and use (Pollock, 2005). Quoting Gasser, Pollock defined a work-around as: "(...) intentionally using computing in ways for which it was not designed" or avoiding a computer's use and "(...) relying on an alternative means of accomplishing work"(cit in Pollock 2005: 497).

Work around means the active possibility 'to do things otherwise' than prescribed through institutional and technological artefacts or arrangements, similarly to what Stuart Hall observed in his encoding/decoding model (Hall, 1980) talking about "oppositional readings" performed by TV audiences.

The concepts of technology-in-practice and work around allow to account for a very important dimension of e-actors: it manifests itself through the emergence of unexpected/unplanned uses of technology, which in a constructionist view depend on the interpretative flexibility of technology carried out by relevant social groups acting and constituting technological frames (Bijker, 1995).

However, the concept of work around stresses too much the separation between systems and users, technologies and actors. To recuperate a dimension of continuity and symmetry, the third and last theoretical perspective (ANT) will be presented.

3.3. From actors to actants: the ANT perspective

Actor-Network Theory helps to draw a configuration of e-actors by putting together people and technologies, and above all attributing an agency to the non-human.

As separation of humans and non-humans is purely artificial along continuous chains/networks where actor-networks emerge as hybrids (Latour, 1992; Akrich and Latour, 1992), the symmetry between the social and the technical is pointed out. Enrolment and translation constitute the very mechanisms through which this symmetry is obtained, or performed: they comprise associations and substitutions which transform speakers and their statements, making arbitrary any division between society and scientific or technical content (Latour, 1991). In Latour's words, 'technology is society made durable' (*ibidem*); actors are defined by the list of their trials and therefore they are actants: "An actant is a list of answers to trials – a list which, once stabilized, is hooked to a name of a thing and to a substance" (Latour, 1991: 122).

Technical objects are actants as they define a framework for action (in Akrich's terms, they are similar to film scripts) and they do this "together with the actors and the space in which

they are supposed to act" (Akrich, 1992: 208). Going back and forth from "the world inscribed in the object to the world described by its displacement" (Akrich, 1992: 209) it is possible to unveil the chain of delegations, distributed competences between innovators and users, and their continuous reciprocal redefinition through objects.

Three are the points we believe relevant in ANT to define e-actors and their relationships with e-environments: heterogeneity, hybridity and intermediaries. Heterogeneity is linked with materiality, as well as with multiplicity (Law, 1997). This means relations are materially heterogeneous, performed in a variety of different media, "words; bodies; texts; machines; buildings. All mixed up. Materially heterogeneous" (Law, 1997). This reminds us immediately of hybridity and its constitution inside networks where the human and the non human are mingled, where different materials and media come together as materially heterogeneous arrays, and where "an actor is an intermediary that puts other intermediaries into circulation" (Callon, 1991: 141).

Actors are actants endowed with a character which is usually anthropomorphic (Akrich and Latour, 1992) and here the body of the e-actors comes as meaningful to define them.

To summarize, drawing from three theoretical perspectives, we have pictured e-actors as institutionally and organizationally bounded in their everyday use of ICTs, but also as collective actors able to mobilize themselves around new technologies (Social Informatics approach). E-actors are also able to innovate and work around the various technological systems they interact with, appropriating them creatively (users as innovators). E-actors are not only human but hybrid, heterogeneous networks displaced along chains of associations and substitutions where symmetry between the social and the technical is achieved (ANT perspective).

4. Mediating the body/mediated bodies: Hybridity

Hybridity as key-concept can be analyzed with reference to the *medium par excellence*, the portal where different languages converge (Fortunati, 2005), that means the body as site of convergence and saturation (cf. section 2 in this paper), hybridation and heterogeneity. Such a complex array, object and author of processes of mediation, is textured into a set of relationships more and more mediated by technical objects. Mediation which is transformative of its participants (actants in the ANT language) is held in place at multiple levels: at the level of the imagery as set of discursive frames where the human body and the machine are constantly compared (cf. Fortunati, 2002); at the level of material heterogeneity where technical artefacts/objects accompany, surround and penetrate the body itself (implanted microchips and so on); at the level of communicational patterns and routines where the model of body-to-body communication does not describe anymore the current patterns of interaction and does not constitute the classical prototype of mediated interaction (Fortunati, 2005).

Mediating the body through these different and concurrent dimensions produces a multiplicity, which means convergence of some processes on the body and, at the same time, its melting down into a chain of actants, associations and substitutions. Heterogeneity is here interpreted as fractionality (Law, 1997): the body multiple, not anymore a singularity but *multiplicity of mediated bodies*.

Mediated bodies lose their perceived naturality as an attribute: they are increasingly fractured across technological lines of evolution (Longo, 2002), prothesized, extended and therefore transparent, less opaque and differently artificialized than in the past (Maldonado, 2002).

On the one hand, therefore, there is an obduracy/plasticity of the body to be shaped by technologies (where technology comprises a wide array of technical devices that can be

integrated and surround the body itself, from medical prothesic devices to personal communication technologies more or less pocketable and therefore portable within or very close to the body). This is a first aspect or dimension of hybridity which refers to the interweaving of the natural and the artificial, the human and the non-human (as in the ANT perspective)

On the other hand, such an obduracy/plasticity to hybridization is confronted with transformation of the body as performing communicational routines and patterns, to the extent that "we are mediated even in situations in which we are in copresence with another person—watching TV together, discussing news-paper stories, listening to radio while driving together, and so on" (Fortunati, 2005: 55). This means analytical distinctions according to which body-to-body communication is prototypical (Fortunati, 2005), as a kind of original matrix to derive from all the other types of interaction (cf. Thompson, 1995) become hybrids in their turn. Such a dimension of hybridity concerns the way communication is experienced through the intermingling of body-to-body and mediated modes of communication, with the emergence of new forms of interaction. The discourse on mobile and ubiquitous technologies, in this sense, questions the ways interaction is performed and experienced by e-actors who are increasingly mobile in their everyday life and expected to manage hybrid interactions.

A *continuum* between mediated bodies and saturated environments can be traced: mobility is the bridging concept which allows to link *technological convergence on the body* with *technological saturation of environments.*

5. Back to environments through flux and change: Mobility

The concept of mobility is the portal to late modernity landscapes, where metaphors of flux, change and flow emerged as powerful discursive frames to account for social transformations linked with ICTs. The mobile phone as sociotechnical artefact, in this sense, is one of the icons of such a discourse. The shift of the mobile phone from work to everyday life – driving its fast growth throughout the world (cf. Castells et al, 2004; Feijoo et al., 2006; Fortunati, 2001) was accompanied and signalled by a correspondent translation in the name of the technology. As naming technologies often means naming the future, it is not trivial to observe how technologies are baptised and change their 'identity' along their history and evolutionary path. Media history offers multiple examples of this 'identity crisis and re-birth' of technologies: the mobile phone, with its 'identity on the move' (Fortunati, 2001) is not an exception in this sense.

Furthermore, the adjective 'mobile' refers to a powerful discourse at the core of contemporary societies where flux, mobility and hybridation configure themselves as core social dimensions of a new paradigm (Sheller and Urry, 2006; Urry, 2002).

 "Mobility has become an evocative keyword for the twenty-first century and a powerful discourse that creates its own effects and contexts. The concept of mobilities encompasses both the large-scale movements of people, objects, capital and information across the world, as well as the more local processes of daily transportation, movement through public space and the travel of material things within everyday life" (Hannam, Sheller and Urry, 2006: 1).

Theories put forward by anthropologists of globalization and the translocal (Hannerz, 1992; Appadurai, 1996) as well as by social theorists (Wellman, 2001b; Castells, 1996; Urry, 2000; 2002) represent the contemporary world as in constant flux. Being this flux composed of loosely-bounded networks (Castells, 1996; Wellman, 1999), global scapes/flows (Appadurai, 1996; Hannerz, 1992) or patterns of different mobilities, immobilities and moorings

(Hannam, Sheller and Urry, 2006) the world is seen as a fictional and material territory variously composed but always in motion.

These different approaches to the world as 'in flux' allow to frame the co-construction of e-actors and e-environments, where ubiquity is a root metaphor for imagining and shaping interaction (cf. Pellegrino, 2006a).

Many of these approaches focus on individual actors, identifying different sources for their action, but all of them emphasize mobility and hybridity as constitutive of subjectivity and action.

Mobility is also a relational concept: "while things are always on the move, they can appear in a fixed and stable manner because mobilities are all different, and we relate to them in different ways" (Adey, 2006: 90). In this respect qualifying the phone as 'mobile' is not unproblematic: the distinction between fixed and mobile technologies is more and more blurred because of the patterns of use, which comprise both mobility and stability (Fortunati, 2001). If we look at the concept of 'relational politics of mobility' (Adey, 2006), the image of the 'mobile phone' as portable, miniaturized and anywhere-anytime device can be restructured so to comprise into it situations of stability, immobility and fixity. This paradoxical constitution reflects the "Janus face of mobile phones": "(...) the mobile phone number is the affordance that provides the nomad with a fixed address" (Arnold, 2003: 243).

6. Actors/artefacts: representations and configurations in the discourses on mobile and ubiquitous computing

Mobility is increasingly subjected to a pervasive technological mediation: being mobile is a condition enabled by different sociotechnical arrays where representations and configurations of e-actors emerge at implicit and explicit level. These arrays are constituted by the mobile phone as progressively convergent on mobile and ubiquitous computing infrastructures.

Adopting the perspective of the public discourse about technology as crucial tool to establish links between artefacts and social settings (Iacono and Kling, 2001), the discourses emergent from the designers' field will be examined, distinguishing three main sub-fields, or settings which are object of analysis and research (ubiquitous computing through augmented environments; smartphones; mobile social software or location-aware software). The hypothesis put forward is that artefacts inscribe and prescribe models of action, interaction and use and they can describe indirectly the actors imagined and expected to use them (cf. Akrich, 1992).

The first setting or sociotechnical array, identified *as ubiquitous computing through augmented environments*, is aimed to built up everyday environments conceived of as surfaces for communicative interaction.

"The key motivation is to yield interfaces that are experienced as familiar, natural and fitting in our environments, to the extent that they become peripheral to everyday activity." (Schmidt et al. 2002: 1). Therefore, the ubiquitous computing setting (Greenfield, 2006; Lyyttinen and Yoo, 2002a, 2002b; Schmidt et al., 2004) shifts the focus from mobility to pervasivity, unobtrusivity and embeddedness of technology into the fabric of everyday life, so that 'technology is not just anywhere any time but in everything' (Greenfield, 2006).

This kind of 'augmented' environments aims to transforms patterns and opportunities of mediated interaction, towards permanent connectivity and ubiquity and through the encounter between saturated environments and mediated bodies (cf. section 7).

The second setting is circumscribed by evolutions and innovations concerning *smartphones*, the so called mobile web, wireless and mobile services. The so called smartphone technology, emerging from the convergence of mobile phone and PDA technologies, represents the bridge-setting towards both augmented ubiquitous environments and location-aware mobile

software. "Smart Phones are the devices that have the greatest chance of successfully becoming universal remote controls for people to interact with various devices from their surrounding environment; they will also replace all the different items we currently carry in our pockets" (Iftode et al. 2004: 1).

This idea of a portable, pocketable, unique device allowing interaction and dialogue with a wide set of environments/computing networks says many things about the way researchers in the design of wireless and mobile architectures conceive mobile mediated interaction. Building a smartphone working at once as a personal server, a personal assistant and the privileged plug-in to the surrounding environment and the Internet, reveals a project of universal, ubiquitous and equalizing communication.

The third setting is constituted by the so called mobile social software with its emphasis 'back to location'. Functionalities of these applications include "awareness of the locations of people who are socially connected to users, ad-hoc organization of people and groups, the creation of virtual meeting places (and) richer geographical environments supplemented by social network information and information gathered through the social network" (Melinger, 2004: 3).

The field of mobile social software, with its emphasis on location, seems to contribute to the re-contextualization of mobile interaction, taking into account how location is a key-cue to the context in the perception of mobile users (Arminen, 2005). Embedding references to location in the technological artefact and allowing users to track their paths and connections in the space, however, is not immune from a subtle technological determinism, based on the idea that technology does drive social connection (cf. Pellegrino, 2006b).

The three settings identified, in conclusion, allow to draw an idealtypical profile of e-actor: the user of mobile and ubiquitous computing device is expected to wear on universal technological devices (cf. smartphones) whose embedded intelligence is in continuous dialogue with an environment where technology is unobtrusive, invisible and totally pervasive (cf. augmented environments). E-actors are, therefore, made of mediated (not only human, but also non human) bodies able to interact with the surrounding environment and to locate themselves inside it, without losing contact to their social networks spread over place and space (cf. location aware software).

Action carried by e-actors and mobile/ubiquitous artefacts as e-actors (e-actants in the ANT jargon) redefine patterns of interaction at multiple levels. Convergence, saturation, mobility and hybridity contribute to what can be defined as ubiquitous interaction, emerging from the encounter between saturated environments and mediated bodies.

7. Saturated environments surrounding mediated bodies: Ubiquity, connection and connectivity

How is interaction changing because of the multiple processes of technologization and representation of e-actors as mediated bodies connecting to saturated environments?

If "mediated communication is an emanation of body-to-body communication and swings between innovation and imitation of the latter" (Fortunati, 2005: 54), it is also true that the prototype of body-to-body communication is more and more "evanescent" (Fortunati, 2005).

Mediated bodies surrounded by technologically saturated environments can interact through different patterns, where the co-presence characteristic of human interaction is variously hybridized.

In fact, there is a *(mediated) body-to-body communication* which extends the concept of co-presence (through portable, mobile technologies); *an intra-environmental interaction*, which is made of communication pervasively embedded into everyday surfaces and artefacts (through ubiquitous computing); a *mediated body to saturated environment interaction*,

where all of the categories of convergence, saturation, hybridity and mobility are enacted., and where ubiquitous interaction takes place.

The point in question here is how to define co-presence going beyond the corporeal co-presence of face-to-face (body-to-body) interaction. As Urry (2002: 1) puts it, "one should investigate not only physical and immediate presence, but also the socialities involved in occasional co-presence, imagined co-presence and virtual co-presence". Mobile devices which travel with us and follow us while being (im)mobile, allow the emergence of what Urry defines 'virtual proximities', "multiple networks, where people can switch from one to the other (…) through the shift to a personalised wireless world (…)" (Urry, 2002: 7). These transformations which enlarge the concept of co-presence, call for a closer analysis of what kind of interaction is that definable as 'ubiquitous'.

Convergence and saturation, hybridity and mobility are part of this interaction and define it: *ubiquitous interaction is a type of communication performed by mobile e-actors, that means human and non human assemblies (hybrids) who are mobile across time, space and context, being this mobility physical or virtual; it is extremely pervasive, to the extent of happening everywhere/every time, making time instantaneous and space simultaneous. Furthermore, it fulfils the potential of virtuality, making the relationship between connectivity and interaction more direct. Ubiquitous interaction, eventually, makes mediated communication more invisible, pocketable and easily taken for granted.*

Convergence and saturation account for the potential fulfilment of a continuous interaction: if bodies and environments are more and more mediated by technological artefacts and assemblies which constitute them as such, mediated interaction becomes more at hand and more pervasive in e-actors' everyday life.

This point concerns basic distinctions among *connectivity* (potential to get connected to a specific medium or technological device supporting communication), *connection* and *interaction*. Going beyond a simplistic correspondence between richness of interaction and technical bandwidth of a medium, Bonnie Nardi (2005) reminded us that "to communicate with ease, we must come to feel connected to each other, we must experience mutual commitment to joint undertakings, and we must gain each others 'attention" (Nardi, 2005: 91).

If connectivity can be defined as potential to access information and distribute it (De Kerckhove and Viseu, 2004), connection is both a pre-requisite and a result for continuous interaction over time and space. In fact, "a feeling of connection is a subjective state in which a person experiences an openness to interacting with another person" (Nardi, 2005: 92). Connectivity both enables and constrains connection. Analyzing instant messaging in the workplace, Nardi concluded that "rather than undermining the importance of embodied experience for communication, simulated bodily experiences suggest that the impact of embodied experience is so great that people attempt to mimic it in the mediated context. The quality of experience changes as we move from embodied to virtual, yet the results of the transformation often achieve the intended aims" (Nardi, 2005: 123).

But this is only one side of the relationship between embodied and virtual experience, bearing in mind that forms of intermittent embodiment make virtual experience neither more nor less 'real' than that carried out in physical co-presence.

To conclude, ubiquitous interaction makes possible to fulfil a potential which is disclosed into 'virtuality' as a dynamic warehouse of chances/opportunities to communicate. Pervasive connectivity, in fact (especially in the case of augmented ubiquitous environments), increases number and modalities to establish connection and interact with other mediated bodies and e-environments. However, it has not to be taken for granted that this connectivity will always by definition enhance fields of connection (in Nardi's terms) or enable communication.

To put it differently, transforming the potential of connectivity into actual interaction and establishing a field of connection is not automatic. Work around can always occur and transform the sign of this potential into innovative or conservative communicative practices. Ubiquitous interaction, even if (or, rather, because) more invisible and easily taken for granted, involves an invisible work of maintenance to be appropriated by e-actors.

8. Conclusion

Exploring the interrelationships between e-actors and e-environments, this contribution tried to identify analytical categories useful to frame both the poles of the relation.

Convergence and saturation, which characterize the encounter between mediated bodies and e-environments, configure e-actors as constantly on the move, at the centre of processes of mediation and technologization which converge on the body and saturate multiple environments with complex sociotechnical arrays. Bodies and environments are more and more intertwined: e-actors, therefore, have hybrid constitution, are part of institutional environments and public discourses, have the potential to work around technological systems in a creative way, and also to resist them.

Categories identified as meaningful to analyze the relation between the body and the environment configure e-actors as emerging from the encounter of mobile, hybrid, convergent and saturating technologies. This makes them able to enter and transform (being in turn transformed) a 'gigantic web of interoperability' through which interaction and communication are differently performed.

In particular, referring to the case of mobile and ubiquitous computing, it emerges how technological artifacts and infrastructures, envisioned in the designers' discourse, construct specific models of e-actors and new patterns of interaction.

Ubiquitous interaction, located at the crossroad of the categories analyzed, defines a potential to get connected which must be critically enquired, as its constitution does not automatically afford communication. Therefore, consequences of the increasing mobility, hybridity, convergence and saturation which drive ubiquitous interaction can be understood through the organizational and social practices enacted by e-actors in their everyday life. It is there that the limits and hopes of ubiquity as a metaphor for interaction will turn into more or less innovative uses of technology/sociotechnical assemblies.

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Mobile Phone, Sms/Mms, Fixed Telephone, Face-To-Face And Internet As Functional Alternatives In Everyday Interpersonal Communication

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Abstract

Drawn on the uses and gratifications theoretical approach to media choice this paper presents a study that examined the impact of new communication technologies on interpersonal communication in daily life. The mobile phone, short text and multimedia messages, the fixed telephone, face-to-face communication, and the Internet were compared to assess their usage in terms of informational - cooperative, strategic, relational, and expressive uses. The results of a nationwide representative survey, coordinated by Eurostat, indicate that albeit all social uses of new technologies, especially those of mobile phone, were profoundly integrated into everyday communication practices, face-to-face remained the dominant mode of communication. Men used the mobile phone more often for informational - cooperative purposes, whereas women used the mobile phone and the fixed telephone more frequently for relational and expressive purposes. Moreover, internet users used more frequently all technologies for managing all social activities. Finally, short text messages and the fixed telephone were assessed as functional alternatives for all types of social use except for strategic one. Our results thus appear to show that new communication technologies are persistently finding their place in the "mediatisation" of interpersonal communication, although they rarely displace the existing ones. Rather, new media add to the available options new communication alternatives, which to some extent prompt more frequent and/or specialised uses of different interpersonal communication channels.

Introduction

Recent developments in information-communication technology hardware and software, data exchange protocols, compression technologies and the physical communication infrastructure have quickly made the mobile phone, the Internet, and short text and multimedia messages viable communication technologies used by a great proportion of people (e.g., Glotz et al., 2005; Castells et al., 2006; Katz, 2006; Morley, 2007). Hence, at least in today's Western World these "new" interpersonal communication technologies play in combination with traditional face-to-face communication and "older" technologies such as the fixed telephone an increasingly important role as media for everyday interpersonal communication. These "new" interpersonal communication media are being used on a large and still increasing scale also in Slovenia so that some of them (i.e., the mobile phone and short text messages) in the 2006 almost reached the penetration rate[1] of the fixed telephone. As these communication

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[1] While in 1997 only 13 % Slovenians used the Internet and the percentage of mobile phone users was even smaller and did not exceed 8 %, nine years later, in the first quarter of 2006, 54% of persons aged from 10 to 74 years regularly used the Internet, whereas the percentage of mobile phone users was 86% (Statistical Office of the Republic of Slovenia, 2006). These ample changes had also important implications on the use and penetration of the fixed telephone in households. In the late 1990s, Slovenia was one of a few countries in

technologies are quickly becoming an integral part of our everyday interpersonal communication landscape, explaining who uses them, for which purposes, and to what extent is important – at least under the widely accepted fact in social sciences that interpersonal communication is a media of social integration, cultural transmission and identity building (Habermas, 1984).

Historically when new information and communication technologies appeared scholars have always been fascinated by them. As a result several studies can be identified that have examined different aspects of use of every of the above mentioned mediated communication technologies – the fixed telephone (e.g., Pool, 1977; Singer, 1981; Fischer, 1992), the Internet (e.g., Baym, 1995; Jones, 1995; Katz and Aspden, 1997), and lately the mobile phone (e.g., Katz and Aakhus, 2002; Katz, 2003; Fortunati et al., 2003; Ling and Pedersen, 2005; Glotz et al., 2005). All of these and a glut of other not cited studies offer precious, qualitative and quantitative insight into interpenetration of communication technologies with their users and surrounding social contexts. However, we are currently lacking studies that would consider the totality of various technologies present in everyday communication decisions and activities. Our aim was thus to analyze what people do with all the interpersonal communication technologies that contemporary society offers them and for what activities are they used.

Such question seems to fit best in the context of the uses and gratification approach, which is, as Ruggiero (2000) argues, suitable for analyzing such a complex media environment, within which social actors combine face-to-face communication, the use of traditional (i.e., the fixed telephone) and contemporary communicating technologies for satisfying their communication goals. It is thus of no surprise that we have recently witnessed a revival of the uses and gratification approach, which is claimed to be a useful and fruitful framework for studying new communication technologies, especially by internet researchers (Rubin, 1994; December, 1996; Morris and Ogan, 1996; Flanagin and Metzger, 2001).

Nevertheless, Flanagin and Metzger (2001) claim that only little uses and gratifications research has addressed the issue of choosing "new" communication technologies in conjunction with other, "old" ones, yet "it is a crucial one for gaining a better insight into the uses people have for new communication systems" (Flanagin and Metzger, 2001: 158). If we want to accomplish this goal, one has to be aware that the uses and gratification approach has its conceptual and methodological limitations. Some of them were already pinpointed in the seminal introduction of perspectives on this approach, entitled *The Uses of Mass Communications: Current Perspectives in Gratifications Research* (Blumler and Katz, 1974), and later repeated and extended (see Ruggiero, 2000). We will thus first propose an alternative and more concise analytical framework mostly based on ideas from Habermas's theory of communicative action in order to overcome some of uses and gratification deficiencies and make it more appropriate for a comparative analysis of the uses of "old" and "new" interpersonal communication technologies. The developed four-dimensional typology of social use will then be applied as a basis for an outline of different uses and gratifications,

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Europe where the percentage of households with the fixed telephone exceeded 90 %. Precisely, in the year 2000 96 % of Slovenian households had the fixed phone (Public Opinion and Mass Communication Research Centre, 2006). After the proliferation of mobile phone, which reached its saturation at the end of 2006, a substantial smaller percentage (88 %) of households had the fixed telephone (Statistical Office of the Republic of Slovenia, 2006).

ascertained by existing "comparative" studies[2] in the field of uses and gratifications research. Moreover, since Dobos (1992) concluded that the uses and gratifications approach should prove effective in ascertaining the importance of social context as a factor in the communication experience, we discuss how social uses of communication technologies differ accordingly to social structure variables such as gender and internet use. Finally, as the aim of this study is to get an applied grip on the gendering of interpersonal communication technologies, the effect of internet use as well as the general use of interpersonal communication channels, the results of an empirical investigation, carried out on a representative sample of Slovenian population, are presented in the final part of the paper.

Research Framework: The Four-dimensional Typology Of Social Use

Although the uses and gratifications approach was first put forward in the field of mass media-choice research (Katz et al., 1973; Blumler and Katz, 1974), its premises of individuals as active media users also proved useful as well as insightful in the research of mediated interpersonal communication (e.g., Rubin, 1988; Dimmick et al., 1994; O'Keefe and Sulanowski, 1995; Dimmick et al., 2000; Leung and Wei, 2000; Leung, 2001; Flanagin and Metzger, 2001; Flanagin, 2005; Wei and Lo, 2006). It is thus not surprising that we are beholding a revitalization of this research stream in today's media-saturated world (Morley, 2007), where social actors are not only confronted with a variety of media and media content, but also with a extensive array of media for interpersonal communication. If until recently "old" (i.e., the fixed telephone, pager) and "new" (i.e., the mobile phone, PDAs, and the Internet) modes of electronic communication served in a supportive and supplemental role to overly dominant face-to-face communication in everyday life, we are now entering an era of major structural change, where this complex media ensemble is itself becoming the very infrastructure of everyday interpersonal communication activities. In other words it seems that we are witnessing a transformation from a state, where face-to-face is a default medium of interpersonal communication, which would only be substituted by other channels when it is not available (due to time-space limitations) to a state of interpersonal media pluralism, where people's choice of appropriate medium for interpersonal communication bases on their beliefs and feelings how well choosing a certain medium will satisfy their needs. Such a state, where people use various media at different times for various reasons seems best suited for uses and gratifications approach.

However, reflecting the central assumptions that framed the original approach of uses and gratifications, and especially some of their implications in the research of mediated interpersonal communication, it can be ascertained that they have been often seriously criticized (Elliot, 1974; Carey and Kreiling, 1974; Ruggiero, 2000; Swanson, 1977; Lometi et al., 1977). These shortcomings have been even more evident and relevant in the recent two decades when researchers have been busy applying the uses and gratifications to a wide range of newly popularized communication technologies. This trend toward enlarging the array of technologies included in single studies as well as the scholar's inclination to refine theories concerning motivations toward media use also yielded a set of conceptual and methodological problems that turned out in a quite muddled overall picture of the uses of information and communication technologies for everyday interpersonal communication. Accordingly, the intention of this paper is not to establish a new uses and gratification framework oriented toward the identification of a larger number of uses and gratifications

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[2] The term *comparative studies* refers to investigations that examined and compared the uses and gratifications of various interpersonal communication channels simultaneously.

dimensions, but, on the contrary, only to offer slight yet necessary reconceptualizations with the purpose to systematically present existing uses and gratifications of interpersonal communication technologies in a common conceptual terminology and on this conceptual typology present an empirical research that will allow us to answer the above stated research question. We thus present an slightly reconceptualised analytical framework of uses of interpersonal communication technologies that is still based upon existing assumptions, but focuses on a segment that seems to be overlooked and somewhat trivial in the uses and gratifications approach – the notion of "use". We believe that a theoretical framework in which the use of media is conceptualized as social action can move uses and gratification approach from the utilitarian to a socially contextualized position as well as resolve its existing terminological inconsistency.

Drawing on theory of communicative action, in which Jürgen Habermas (1984) developed one of the most comprehensive and refined typologies of social action, exemplified by Petrič (2006) in his conceptualization of social uses of internet, we thus propose a typology of uses of interpersonal communication media as social actions. Applying the theory of communicative action (Habermas, 1984) we can distinguish the uses, as follows:

a. Expressive use: Use of interpersonal communication media for expressing speech acts that relate to the subjective world of personal experience, desires and beliefs. Such use is manifested in exposing one's identity, presenting self, intimate communication and other forms of expressing one's inner states.
b. Relational use: Use of interpersonal communication media for expressing speech acts that relate to social relationships, interpersonal norms and other elements of interpersonal relations. It is manifested in the activities of establishing and maintaining social relationships, giving and receiving social support, friendship etc.
c. Informational – cooperative use: Use of interpersonal communication media for expressing speech acts that relate to the objective world of facts and artefacts and is realized as giving and receiving information, working on a common project, transmitting knowledge.
d. Strategic use: Use of interpersonal communication media for conscious or unconscious attainment of personal goals, maximizing the effectiveness of one's actions where other communicators serve as means to one's ends and not as actors with their own purposes and meanings in communication. It is manifested in satisfying practical goals, organizing things, scheduling, escape, deception, surveillance, and control.

This typology can be used for an overview of "comparative" studies of uses and gratifications of interpersonal communication technologies, as the gratifications that other researcher identified can unambiguously be projected to one of the four uses, which will be shown in the following sections. When we tried to map the existing comparative studies of uses and gratification of interpersonal communication media in the proposed typology of four social uses, we were considering the above definitions as the major criteria. We first of all took a motive, need, use or gratification in documented study, then investigated its informational – cooperative, strategic, relational or expressive orientation, and finally put the need, motive, use, or gratification into one of the four proposed categories of social use accordingly to its identified orientation.

Choice of communication media in Complex media environment

Before delineating the motives, needs, uses, purposes, gratifications, of current interpersonal communication technologies that were found by the "comparative" studies on uses and gratifications and applying them to the presented four-dimensional typology of social use, it has to be noted that this discussion cannot be (and has not been) separated from the face-to-face communication and its "uses" and "gratifications", especially if one of the research problems is to investigate the functional alternatives (Lichtenstein and Rosenfeld, 1983; 1984; Perse and Courtright, 1993; Flaherty et al., 1998; Westmyer et al., 1998; Papacharissi and Rubin, 2000; Flanagin and Metzger, 2001; Flanagin, 2005). Within the field of uses and gratifications of interpersonal communication media it is thus not difficult to find "comparative" studies that take as a denominator the face-to-face communication. Face-to-face is the most "human" and natural way of communicating and it theoretically and empirically covers all of the proposed uses. For instance, Rubin et al. (1998) documented: (1) strategic uses (when talking about fostering favourable impressions and protecting vulnerabilities); (2) informational - cooperative uses (when talking of constructing and validating conjoint worlds); (3) relational uses (when talking of organizing relationships); (4) expressive uses (when talking of expressing feelings and thoughts). A subsequent review of the communication motives and uses led to the identification of a number of interpersonal communication gratifications. But although they generally expose a high variety of uses and cover a wide plethora of human motives and gratifications that stem from obtaining them, they are specimens or sub-dimensions derived from the four proposed types of social use.

The obviously rich tradition of uses and gratification approach is far more modest when the focus is on the "comparative" studies that beside face-to-face communication considered also other (especially new) interpersonal technologies, yet this is probably the most intriguing part of research in today's total media environment that has been deluged with dozens of technologies (e.g., e-mail, instant messaging, internet phone, PDA, the fixed telephone, the mobile phone, SMS, MMS). First comparative studies that, for instance, analyzed the choice of e-mail, and video conferencing in comparison with other media (i.e., the fixed telephone, letter, memo, fax), and face-to-face interaction in the specific context of organizations, already appeared in the late 1980s and early 1990s (Daft and Lengel, 1984; Webster and Trevino, 1995; Fulk, 1993; Trevino et al., 2000; Rice, 1993). However, organizational communication research has only focused on the ability of communication technologies to address instrumental tasks. Hence, it provided only limited insight into how the processes of an overall "mediatisation" of everyday life's interpersonal communication are affecting people's communicative practices, which in many aspects differ considerably from those in organizations and institutions.

Perse and Courtright (1993) were among the few researchers who at that time moved the focus away from the organizational settings and concentrated on people's uses of the computer-mediated communication in comparison with other mass media channels and face-to-face conversation in the broader social context. Considering that they investigated uses of "computer" generically, without isolating any of its specific functions, they found that computer was rated low in social presence and not strong at accommodating relational or expressive uses. In part, Perse and Courtright attributed their findings to the low diffusion of computers and the low adoption of e-mail and bulleting boards. A half decade later, when the lack of exposure and access to the Internet were no longer such limiting factors Flaherty et al. (1998) in a preliminary investigation of the Internet as a functional alternative to face-to-face communication examined the relationships between motives for using the Internet and

motives for face-to-face interactions. Results indicated that use of the Internet among students was not perceived as a functional alternative to face-to-face communication. The latter was positioned as the most preferred way to fulfil communication needs and achieve all social purposes. Similar types of social use were ascertained in study conducted by Westmyer et al. (1998). They examined perceived appropriateness and effectiveness of e-mail and five other communication channels, including face-to-face interaction and the fixed telephone, used in relation to several interpersonal communication motives (i.e., inclusion, affection, control, relaxation, escape, pleasure) in other-directed and self-directed need fulfilment situations. Face-to-face communication was found to be the most appropriate and effective channel for communicative needs given and received, while the telephone was, in almost all instances, an equal, but less used functional alternative. E-mail and other channels were possible, in many instances, as a third or fourth choice. Obviously, when given the opportunity to choose the channel for interpersonal communication, people preferred oral communication (i.e., face-to-face, and the fixed phone) over written communication (i.e., e-mail, letters, etc.). Dimmick et al. (2000) focused on the patterns of uses of e-mail and the fixed telephone and assessed that a wider spectrum of needs is being served by the fixed telephone, whereas e-mail provides greater opportunities for strategic use. While respondents looked at the fixed phone and e-mail as two competitive media for sustaining particular relationship activities, they were not seen as close substitutes since e-mail was viewed as not particularly helpful in providing the sociability gratifications of companionship, advice and care (i.e., relational uses).

Similarly as the housewives began to use the telephone in the first part of 20th century for sociability matters (Singer, 1981; Fisher, 1992; Joinson, 2004), the mobile phone changed its original role from business tool to communication device for relational use and thus become an important companion of face-to-face communication. Ishii (2006) for instance discovered that the fixed phone, the mobile phone, e-mail, and face-to-face conversation are basically all used for expressive and relational purposes, although some unique features specific to mobile communication channels use in comparison to the fixed telephones and e-mail existed. More specifically, on the one hand short text messages and mobile voice calls appeared to support only a closed friendship network, whilst e-mail was found to promote relational oriented communication with distant friends. On the other hand, compared with other media, the fixed phone was more closely associated with relational uses in domestic environment. Likewise, Cummings et al. (2002) found in their comprehensive research based on students' interaction diaries that the fixed telephone and face-to-face meetings were perceived most suitable for relational use, whilst the Internet was rated lowest for maintaining relationships, and better for arranging school work and exchanging information, the latter two corresponding to informational – cooperative type of social use.

Finally, results of the study carried out by Flanagin (2005) suggested important differences among interpersonal communication technologies. Similarly to Westmyer et al. (1998), he identified face-to-face communication as by far the niftiest channel for satisfaction of all gratifications, suggesting that despite a growing number of increasingly complex and powerful media choices, nothing appears to threaten the dominant role of face-to-face communication in terms of satisfying individuals' communication, information, and social needs. Although some caution is needed when interpreting the usage patterns of the fixed telephone due to the specific sample of students, who use the fixed telephone less frequently than other age groups do, Flanagin concluded that unlike most previous studies, in this one the fixed telephone was found the least useful communication technology for need satisfaction. Likewise, e-mail was also ranked low on all gratifications factors, more so on

relational ones. By contrast, both the mobile phone and instant messaging were used significantly more than e-mail for all social purposes, consistent with previous research (Ramirez et al., 2004) showing that instant messaging is viewed more effective than e-mail for both strategic and relational uses, if we succumb to our typology of uses. Finally, although Flanagin (2005: 183) concluded that "overall, differences between instant messaging and the mobile phone are statistically insignificant, indicating higher functional equivalence between these two media", his research showed that the latter was more used for relational and informational-cooperative purposes, whilst the former was mostly for specific relational use (i.e., meeting new people).

To put it in a nutshell, the overview of the "comparative" uses and gratification research revealed that face-to-face communication has been only partially displaced by various "new" information and communication technologies. As Joinson (2004) suggests, in certain technologically saturated social environments as well as for certain groups of individuals that share specific socio-psychological features the mediated communication has surely become a desirable mode of communication, but this is far from being a general regularity. To contextualize these findings with the recent developments and high appropriation of "new" communication technologies in Slovenia, we set ourselves to empirically research the following questions:

RQ1: Which communication technologies are being used for similar social purposes?
RQ2: Which communication technologies are most frequently brought into play for a particular type of social use?

Gendering of Interpersonal Communication Technologies

Cockburn (1993) suggested that the adoption and usage of communication technology is socially conditioned, as technology is deployed and later used in environments with different social and cultural milieu, which entail an array of diversified social relations. Social groups experience a given media technology differently due to the differences in social structures. Gender exemplifies such differences. Past empirical research reported significant gender differences in the use of the fixed telephone, the Internet, the mobile phone, and short text messages. In a review of research literature on gender and the fixed telephone, Fisher (1992) presented extensive evidence that women have what he called affinity for the fixed telephone. He suggested that there is a relationship between gender and the use of the fixed telephone. Fischer (1992: 234-235) discussed three reasons that may provide a valuable explanation of gender difference in the social uses of the telephone. First, women who work in the home may exploit the fixed telephone for breaking the isolation and monotony they experience during the day. Second, married women have usually had the role of social manager in the household, which included organizing functions and socially oriented tasks such as making appointments and staying in touch with family, kin, and acquaintances. Third, he argues that North American women are more comfortable on the fixed telephone than are men since the social role of women requires more sociability. Other historical analysis (Martin, 1991; Pool, 1977) reached similar conclusions. Using the fixed telephone more and talking longer, women used it primarily for relational and expressive purposes, such as to keep in touch with family and friends, to exchange information about the events in community, and to keep them company (Smoreda and Licoppe, 2000). Furthermore, Fortunati (forthcoming) found that in Italy women significantly more than man call just to know how is the called, to chat, to talk about personal or family problems and to confide their secrets, whilst men declare more than firsts to call for none in particular, and to talk about work issues. Finally, focusing on

females' use of the fixed telephone in small community, Rakow (1992) identified in the fixed telephone a particular useful device for women who were more likely to experience isolation, loneliness, fear, or boredom. Her study concluded that the fixed telephone "builds and maintains relationships and accomplishes important care-giving and receiving" (Rakow, 1992: 151).

Recently, scholars also examined if there are any gender differences in the use of the mobile phone and short text messages. In a study conducted on a sample of mobile phone users in Hong Kong Leung and Wei (2000) found that those respondents who called their co-workers and business partners appeared to be mostly males. Wei and Lo (2006), basing on a survey of Taiwanese college students, ascertained that females made and received more family-oriented as well as social-oriented calls. In addition, they found that men and women differed significantly in seeking the gratifications of information-seeking, affection, and mobility. Females tended to use the mobile phone for expression and affection and to take advantage of mobility of wireless technology, whereas males appeared to use the mobile phone to seek or retrieve information. Thus, Wei and Lo (2006) concluded that gender mediates how users exploit the mobile phone to establish and maintain social ties. As what regards the appropriation and the use of short text messages in the context of gender differences, Ishii (2006) pointed out how Japanese teenaged girls found that relational-orientated communication needs, including the needs of hyper-coordination with friends and family members, of chatting, and of gossip, were better served by texting than by mobile voice calls. This finding echoes that of Ling (2004), who suggested that the culture of texing lives among younger female users. Results of his study showed that females were more "adroit texters" (Ling, 2004: 165), especially prone to send emotionally based "grooming" messages oriented toward relational and expressive purposes, although they also exchanged "strategic" messages more frequently than males did.

More broadly, gender differences were studied in computer-mediated communications (ranging from e-mail, listserv, newsgroups, bulleting boards, and web forums to chat rooms) focusing on issues of access to, and use of internet applications, contents, and resources. Herring (2001) as well as Ono and Zavodny (2003) argued that access was a stumbling block for women during the most of 1990s in countries all over the World. In the Western World this gender gap in being online was gradually bridged as more women went online, accounting for 51 % of internet users in Slovenia in 2006 (Statistical Office of the Republic of Slovenia, 2006). However, once online, this did not mean that differences in patters of internet use between men and women disappeared. On the contrary, several studies suggested that on the social uses of the Internet become to differ along the gender line. For example, Hoffman et al. (1996) found that women tended to exchange more private e-mail than participate in public discussions on web forums, or in chat rooms. Herring' study (2001) indicated that, albeit women frequently participated in online opportunities such as women-centred groups, they generally posted fewer and shorter messages, received fewer responses from other participants, and were not interested in the development of discussions. Likewise, Weiser (2000), referring to the uses and gratifications approach, ascertained that males' and females' usage styles of the Internet appear to differ. If we apply the insights of his study to our typology of social uses, it can be ascertained that males showed a tendency to use the Internet primarily for strategic purposes (i.e., leisure and entertainment), whereas females use it chiefly for relational activities. More recently, this differentiation in strategic and relational uses of the Internet along the gender line was also suggested by Jackson et al. (2001), who found that on the one hand females, due to their stronger motive for interpersonal

communication, used e-mail more than males did. On the other hand, males used the Web more than females did, consistent with their stronger motive for information.

Will these gender differences be found in four types of social use of the mobile phone, short text messages, the fixed telephone, face-to-face communication, and the Internet? We raise the third research question as follows:

RQ3: Are there gender differences in the four types of social use of five communication channels?

Internet and Communication Technology Use

Moreover, this study will also explore whether the use of the Internet promotes a more frequent interpersonal communication through all communication channels among social actors. Albeit Baym et al. (2004) blasted the epistemological approach, which sees the internet as a single entity that influences its users through sheer exposure, they ascertained that "a common strategy in assessing the social and personal communication consequences of the internet has been to compare people based on their amount of internet use" (Baym et al., 2004: 300). Many of the most influential and widely-publicized studies of the Internet's role in sociability compared internet users and non-users, heavy and light users, or experienced and new users. The findings were mixed. Scholars often claimed that the Internet has a positive influence on frequency of interpersonal communication because it lowers the communication barriers in space and time. It thereby increases the efficiency and speed social activities, thus saving time for other activities including face-to-face communication. For example, Baym et al. (2004) reported that the Pew Project on the Internet and American Life carried out in 2000 found that internet users were more likely than non-users to have visited family or friends 'yesterday', and that they spent more time with clubs and volunteer organizations. Robinson et al. (2002) examined time-diary data and ascertained that internet users spent three times more time attending social events and reported significantly more conversation than non-users. Moreover, Rheingold (1993) and more recently Gershuny (2002) suggested that the Internet also offers new opportunities for relational and expressive uses, with which internet users may build new links and communities of interests and emotion. Additionally, the Internet may change existing communication networks, since people use it to maintain contact with existing community members, either by adding it to other contacts or by completely shifting the communication to the Internet (Wellman et al., 2002). On the other hand, many authors support a less optimistic view of the Internet's social impact on interpersonal communication. For example, Kraut et al. (1998), and Nie and Erbring (2002) associated internet use with negative social outcomes ranging from less time spent with family and friends to less total social involvement. Furthermore, Putnam (2000) claimed that interpersonal relationships established on the Internet were neither sufficiently rich and strong nor enough substantial and sustaining. As a consequence, the Internet can not take the place of the traditional face-to-face social networking. Nevertheless, previous research also showed that most online interactions happened between people who also heavily used other communication channels (i.e., the fixed telephone and face-to-face communication). The study, carried out by Baym et al. (2004) on a sample of students, demonstrated an online social life that was both connected to communication in other media and had its own limited but pervasive use in interpersonal communication. Students, who reported more frequent on-line interpersonal communication, were also more likely to use face-to-face conversations, telephone calls, and mail. Hence, Baym et al. (2004) concluded that on the one hand internet use fosters newer, more frequent and diverse, but also less

intense contacts. On the other hand, it also promotes more intense off-line communication (through other communication channels) with people who are already a part of users' communication network. Recently, a large-scale study on the social support networks of internet users done by Hlebec et al. (2005) in Slovenia, ultimately confirmed those insights, indicating that internet use has a relatively limited impact on social relationships and does not radically alter the structure and characteristics of interpersonal communication.

In sum, the empirical evidence does not support any simplified conclusions or on-sided interpretations as regards the use of the Internet and other new and traditional communication technologies, with respect to the frequency of use of communication channels for different types of social purposes. These equivocal results and conclusions of previous studies lead us to our last research question:

> RQ4: Are there any differences in the frequency of social uses of interpersonal communication technologies between internet users and non-users?

Method

Procedure

Data presented in this study were drawn from a larger IKT-GOS 2005 survey, which was part of Slovenian application of Eurostat survey on information-communication technology. The IKT-GOS 2005 survey was thus conducted in the frame of the Eurostat guidelines for 2005 European Union survey[3] and in accord with standards of the Statistical Office of the Republic of Slovenia. The purpose of the survey was to measure the usage of computers and other information-communication technologies. The questionnaire was divided into two parts. In addition to the harmonized Eurostat part of questionnaire, which was conducted in all 25 European Union member states, three 20 minute modules were added on social aspects of the fixed telephone, the mobile phone, and the Internet. The fieldwork was conducted by Centre for Methodology and Informatics at the Faculty of Social Sciences, University of Ljubljana.

Sample and Response Rate

The units were persons aged 10 to 74 and their households. The selected persons should answer for themselves, but if they were absent, some other household members could answer the key questions instead of the selected persons (proxy respondent). There were almost no proxies for mobile phone module. The basis for the sampling frame was the Central Population Register (CRP). The face-to-face survey was performed from 4 April to 31 May 2005 and after a lot of efforts (follow ups, refusion conversion) the response rate was relatively high. In the initial sample size of 2,000 units there were 1,827 eligible units and 1,422 persons took part in the survey. That means that the response rate was 77.8% and the eligibility rate was 91.4%. The non-response rate was 22.2% and the refusal rate was 12.1%.

To reduce the drop out, which could be caused by the considerable length of the questionnaire, only half of interviewees, who took part in the survey, were supposed to answer all three modules in the second part of the questionnaire. Moreover, respondents were also given the opportunity to skip sections in the specific module, if they "never used" the

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[3] The international data are available on Eurostat Home page: http://epp.eurostat.cec.eu.int, Themes Science and Technology, Data Information Society Statistics.

technology in question. Therefore, the final sample was 651 and is treated as a representative sample of the general population of Slovenian adults. The sociodemographic structure is similar to the 2002 Slovenian census (Statistical Office of the Republic of Slovenia, 2006). 50.8% of the respondents were men, 15.5 % had some university education, 45.3 % of them were employed, and 20.1 % attended school (primary, secondary, university). The range of respondents ages was 10 to 74 years, with a mean age of 42.1 years (SD = 17.9).

A great majority (88 %) of the respondents had access to a desktop computer or a notebook in their household, 375 (57.6 %) respondents had used the computer in the last three months. Out of 651 respondents, 353 (54.2 %) had access to the Internet in their household, and 337 (51.8 %) had used the Internet in the last three months. Among the 337 internet users, 202 (59.9 %) used it every day (or almost every day), 96 (28.5 %) used it at least once a week, and 32 (4.9 %) reported using it at least once a month. 586 (89.4%) respondents in the sample had a fixed phone in their household, whereas 556 (85.4%) respondents were mobile phone users. Among the 556 users, 496 (89.2 %) had their own mobile phone, and 44 (7.9 %) reported owning two or more. Furthermore, 213 (38.4 %) mobile phone users made or received one to four calls in a typical working day, 115 (20.7 %) daily send and received short text messages, whilst 79 (14.2 %) had never used multimedia messages.

Instrument and Measures

The four different uses of interpersonal communication media were operationalized by single statements, which were used separately for four different communication technologies (the mobile phone, SMS/MMS, the fixed telephone, and internet's interactive services) and for face-to-face communication. These statements were derived from the definitions of the four uses and reflected the intensity of use (as an action) of a certain technology for certain communication needs or gratifications. For example, the measurement instrument for four different uses of the fixed telephone was the following:

   a. Expressive use: "How often do you use the fixed telephone for talking about personal-intimate matters"[4]?
   b. Relational use: "How often do you use the fixed telephone to chat, socialize and other secondary matters?"
   c. Informational-cooperative use: "How often do you use the fixed telephone to talk about work, business and school matters"?
   d. Strategic use: "How often do you use the fixed telephone to talk about everyday practical matters?"

These statements were then repeated in the separated questionnaire modules for face-to-face communication and all other mentioned communication technologies. The decision for single statements stems from practical rationale - since our measurement instruments were only a part of a much broader, but representative Eurostat survey where we had to consider the possible effect of non-negligible length of the questionnaire and respondents fatigue, and thus had to make some unpleasant reductions[5]. Nevertheless, we could argue that our

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[4] Respondents answered for each statement on a five point scale, where 1 = "never" to 5 = "daily".
[5] If we would for instance decide to measure each use with 2 statements, this would result in additional 4 (uses) x 5 (technologies) = 20 statements.

measurement instruments are theoretically valid, since they correspond well to the definitions of theoretical concepts from which they were derived[6].

Results

The first research question concerned similarities in communication technologies use, which were assessed by a series of paired samples t-tests. Results in Table 1 show that the mobile phone was the most frequently used for strategic activities, which were followed by relational and informational - cooperative ones. Short text messages were significantly the most frequently exchanged for strategic and relational uses. Moreover, the mean values of frequency of texting indicated that respondents exchanged messages significantly the least frequently for informational - cooperative activities and expressive activities. Similarly to the mobile phone and short text messages the fixed telephone was also significantly the most frequently used for strategic activities, whilst informational - cooperative and relational activities were the second most frequently carried out communication activities by fixed telephone users. Respondents utilized face-to-face communication the most frequently for their strategic and relational uses and the least often for exchanging expressive messages; the latter also applying to the Internet. The Internet was the most frequently used for informational - cooperative, strategic, and relational activities, the first being significantly more frequently carried out than the latter. Together, these results indicate that four out of five communication channels were most commonly used for strategic activities, whereas all five communication channels (including the Internet) were rarely used for carrying out expressive activities.

Table 1: Mean Ratings of Frequency of Use of Technologies for Communication Activities - Comparison by Communication Activities (Paired Samples t-test)

Type of social use	Mobile phone	SMS/MMS	Fixed telephone	Face-to-Face	Internet
	$N = 539$	$N = 533$	$N = 628$	$N = 638$	$N = 318$
informational – cooperative	2.81	1.73	2.32_a	3.25	2.57_a
Strategic	3.83	2.32_a	2.83	4.08_a	2.33_{ab}
Relational	3.07	2.18_a	2.40_a	4.04_a	2.28_b
Expressive	1.92	1.54	1.54	2.75	1.40

Note: Means with matching subscripts within the same *column* are *not* significantly different from one another. Significant differences are at $p < .01$. 1 = never, 5 = daily use.

In order to answer the second research question that sought to discover which communication technologies are the most frequently employed for specific type of social use, paired samples t-tests were run, comparing the mean ratings of frequency of social uses across all communication technologies. The results presented in Table 2 indicate that face-to-face conversation was significantly the most frequently used channel for all four communication activities, whilst the mobile phone was significantly more frequently utilized for all four types of social use than all other three communication technologies. Furthermore, there were not found any significant differences in the frequency of short text messages and fixed telephone use for strategic, relational and expressive activities. Finally, texting was assessed as significantly the least often used technology for informational - cooperative activities, whilst the Internet was significantly the least frequently used technology for exchanging expressive messages.

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[6] Some caution is needed when interpreting the strategic use of interpersonal technologies. While the concept of strategic use includes wide variety of personal goals (practical goals, organizing things, scheduling, escape, deception, surveillance, control), the indicator used covers only a limited spectrum of a concept.

Table 2: Mean Ratings of Frequency of Use of Technologies for Communication Activities - Comparison by Communication Technologies (Paired Samples t-test)

Type of social use	Mobile phone	SMS/MMS	Fixed telephone	Face-to-Face	Internet
informational – cooperative	3.34	2.04	2.98	4.09	2.61
Strategic	4.09	2.78$_a$	2.90$_a$	4.34	2.33
Relational	3.35	2.56$_a$	2.50$_{ab}$	4.25	2.29$_b$
Expressive	2.14	1.72$_a$	1.69$_a$	3.04	1.39

Note: Means with matching subscripts within the same *row* are *not* significantly different from one another. Significant differences are at p < .01. 1 = never, 5 = daily use. N = 299, means were calculated and paired samples t-test were performed on a sub-sample of respondents, who had access to all five communication channels.

The third research question was to find out if there were any differences in types of social use between males and females across all five communication technologies. The independent samples t-tests were run using social purposes managed by different communication channels as test variables and gender as grouping variable. As shown in Table 5 males significantly more likely used the mobile phone for informational – cooperative purposes, whilst females significantly more often made use of it for relational and expressive communication. Females also tended to use significantly more often short text messages for relational purposes, and the fixed telephone for all types of social use except for informational – cooperative ones.

Table 3: The Comparison of Mean Ratings for Frequency of Social Uses of Communication Technologies by Gender - Independent Samples t-test

Technology	Types of social use	Male	Female	T-values
mobile phone	informational – cooperative	3.07 (1.70)	2.54 (1.58)	3.70***
	strategic	3.76 (1.42)	3.90 (1.42)	-1.15
	relational	2.87 (1.58)	3.27 (1.62)	-2.90**
	expressive	1.72 (1.09)	2.13 (1.42)	-3.70***
SMS/MMS	informational – cooperative	1.70 (1.12)	1.76 (1.23)	-0.55
	strategic	2.25 (1.36)	2.40 (1.43)	-1.21
	relational	2.05 (1.31)	2.31 (1.48)	-2.08*
	expressive	1.45 (0.93)	1.63 (1.15)	-1.92
fixed telephone	informational – cooperative	2.29 (1.46)	2.34 (1.54)	-0.43
	strategic	2.60 (1.34)	3.06 (1.46)	-4.11***
	relational	2.11 (1.23)	2.70 (1.43)	-5.51***
	expressive	1.39 (0.71)	1.70 (1.12)	-4.09***
face-to-face	informational – cooperative	3.34 (1.66)	3.15 (1.74)	1.39
	strategic	4.03 (1.29)	4.14 (1.28)	-1.09
	relational	4.00 (1.34)	4.09 (1.30)	-0.86
	expressive	2.63 (1.37)	2.88 (1.41)	-2.22*
internet	informational – cooperative	2.54 (1.66)	2.59 (1.58)	-0.25
	strategic	2.27 (1.43)	2.40 (1.46)	-0.76
	relational	2.21 (1.43)	2.36 (1.39)	-0.98
	expressive	1.36 (0.86)	1.46 (0.97)	-0.99

Note: # p > .05; * p < .05; ** p < 0.01; *** p < .001. N ranged from 318 to 638. 1 = never, 5 = daily use.

The last research question was to find out if there were any differences in social uses of communication technologies between internet users and non-users. A series of independent samples t-tests were performed using types of social use across four communication technologies as test variables and internet use as a grouping variable. As shown in Table 5 internet users made significantly more frequently use of all interpersonal communication technologies for all four types of social purpose than internet non-user. The only exception,

where the difference between internet users and non-users was not statistically significant, was the strategic use of the fixed telephone. A more detailed investigation shows that the largest statistically significant difference between the two groups was in the informational - cooperative use of face-to-face conversations, whereas the smallest one was in the frequency of the fixed telephone use for relational purposes.

Table 4: The Comparison of Mean Ratings for Frequency of Social Uses of Communication Technologies by Internet Use - Independent Samples t-test

Technology	Types of social use	Users		Non-users		T-values
mobile phone	informational – cooperative	3.24	(1.62)	1.90	(1.35)	10.14***
	strategic	4.07	(1.33)	3.32	(1.47)	5.68***
	relational	3.38	(1.59)	2.42	(1.45)	6.94***
	expressive	2.15	(1.37)	1.43	(0.85)	7.38***
SMS/MMS	informational – cooperative	2.00	(1.31)	1.16	(0.47)	10.80***
	strategic	2.72	(1.42)	1.48	(0.88)	12.37***
	relational	2.55	(1.46)	1.38	(0.86)	11.63***
	expressive	1.72	(1.17)	1.16	(0.54)	7.58***
fixed telephone	informational – cooperative	2.86	(1.58)	1.57	(0.97)	12.65***
	strategic	2.91	(1.46)	2.73	(1.36)	1.61
	relational	2.50	(1.37)	2.28	(1.35)	1.99*
	expressive	1.67	(1.04)	1.37	(0.76)	4.21***
face-to-face	informational – cooperative	3.99	(1.42)	2.24	(1.53)	14.85***
	strategic	4.29	(1.15)	3.80	(1.41)	4.64***
	relational	4.23	(1.22)	3.78	(1.41)	4.26***
	expressive	2.98	(1.40)	2.43	(1.31)	5.12***

Note: # $p > .05$; * $p < .05$; ** $p < 0.01$; *** $p < .001$. *N* ranged from 533 to 638. 1 = never, 5 = daily use.

Discussion and Conclusion

The aim of this study was to analyse which new and traditional communication technologies people use in everyday interpersonal communication. Although, on the one hand, the theory of uses and gratifications has always provided a cutting-edge theoretical approach in the initial stages of each new interpersonal communication medium and offered a quite exhausting range of theoretical concepts, with which it tried to embrace the social and psychological origins of both the process of choosing a certain medium as well as the process of using it. On the other hand, this trend toward enlarging and refining theories concerning motivations toward media use also yielded a set of conceptual inconsistencies and methodological limitations, which in the final stage of mapping and explaining the constitutional processes of mediated communicated acts, as Ruggiero (2000: 14) argued, turned out in a fuzzy overall picture. Moreover, past research draw on the uses and gratification approach was usually examining the social uses of one technology after another. As our meta-analysis reveals, it has rarely moved towards simultaneously investigating a whole group of occasionally overlapping "old" and "new" interpersonal communication technologies in the context of their daily use. To fill this research void, this study did not only explore the uses of various interpersonal communication technologies simultaneously, but also presented an attempt to overcome deficiencies, distinctive of the uses and gratifications framework, in explaining how a given communication technology is used in the complex interpersonal media environment by providing a more condensed, but at the same time exhaustive, research framework consisting of four types of social use.

The proposed four-dimensional typology that allowed a more systematic overview of existing "comparative" studies on the uses and gratifications of various interpersonal communication

media appeared to be advantageous also on the empirical level since the results showed some interesting and unique characteristics of communication technologies usage patterns. Firstly, unlike the Internet, which was the most frequently used for managing informational – cooperative, and strategic activities, all other four communication channels (i.e., the mobile phone, short text messages, the fixed telephone and face-to-face communication) were the most often employed for exchanging messages related to strategic and relational uses. Independently of the communication technology, the least frequently managed communication goal was expressive matters. Secondly, consistent with earlier findings (Westmyer et al., 1998; Flanagin and Metzger, 2001; Baym et al., 2004; Flanagin, 2005), this study reported that albeit internet users were adept at using the Internet socially and had integrated it into their daily lives, face-to-face communication clearly remained their dominant mode of interaction. Furthermore, compared to other three communication technologies included in this study, face-to-face conversation was still the most frequently used channel for managing all four types of communication activities, followed by the mobile phone, the fixed telephone, and short text messages. Thirdly, in the study reported in this article gender differences were observed in types of social use across interpersonal communication technologies. As previous studies (Fischer, 1992; Smoreda and Licoppe, 2000; Fortunati, forthcoming; Rakow, 1992; Leung and Wei, 2000; Wei and Lo, 2006), also this study found that on the one hand males arranged more often work and personal matters thorough the mobile phone than females did. On the other hand females made use of the mobile phone and the fixed telephone more often for relational and expressive purposes, although they at the same time showed also a significant proclivity to use the latter for strategic purposes. A useful argument, which could help us to understand the origins of the women's strategic use of the fixed telephone, is offered by Arliss (1991). In her summary of research on the role of women in the household she concluded that despite the large number of women who are employed outside the home, the daily maintenance of the home still rests on women's shoulders. She observed that even working women continue to be permanently tied to domestic activities within their homes. As a corollary, female's communication goals revolve also around instrumental and practical matters. Hence, the role of women in the household as domestic managers, conditioned by the spatial and temporal mobility between the work and the home, explains the higher strategic gratifications that women derive from the fixed telephone. Women use the fixed telephone for making appointments, ordering things to her family members, and conducting other household maintenance activities. Fourthly, the data revealed that all communication channels were used for all types of social purpose significantly more frequently by internet users than non-users. Hence, the results of this research neatly dovetail with insights provided by Baym et al. (2004) and Hlebec et al. (2005), who ascertained that internet usage enhances the frequency of all forms of mediated and unmediated interpersonal communication, even though for those who use the Internet new technologies are not viewed as an adequate replacement of face-to-face talk. Finally, the data reported in this study revealed certain evidence of functional displacements, as Flanagin and Metzger (2001) defined the systematic changes in the commonly shared practices and codes regarding the usage of different media. Namely, among respondents who were fully integrated in the nowadays complex interpersonal media environment (i.e., had access to all five communication channels) the short text messages and the fixed telephone were seen as functional alternatives for all types of social use except for informational – cooperative ones. Considering that a similar "supplement" role of texting in relation to the fixed telephone was also unveiled by previous studies (Ishii, 2006; Ling, 2004), we believe our findings underscored yet again how readily users have appropriated and co-opted new communication technologies, to meet their own interpersonal goals.

However, this study also showed that in terms of the utility of communication channels for arranging communication activities and satisfying communication needs, face-to-face communication was by far the most versatile channel for all four types of social use. Thus we found only limited support for the claims of some scholars, who suggested that in the process of the "mediatisation" of everyday life face-to-face and technologically mediated interpersonal communication may irreversibly converge as "many community ties are complex dances of face-to-face encounters, scheduled get togethers, dyadic telephone calls, e-mails to one person or several, and broader online discussions among those sharing interests," (Wellman, 2001: 11). Rather, the here presented results bear out past "comparative" research, referring to the uses and gratifications theoretical framework (Perse and Courtright, 1993; Rice, 1993; Flaherty et al., 1998; Flanagin and Metzger, 2001; Flanagin, 2005), which typically found that face-to-face communication is extremely useful for satisfying a variety of needs and no other "old" as well as "new" technology seems to be able to compete with the rich involvement that face-to-face communication provides. In addition, the highest frequency of face-to-face contacts for all types of social use among internet users seems to confirm its superiority as the most common used communication mode. Hence, the mobile phone, short text messages, the fixed telephone, and the Internet seem to merely supplement frequent face-to-face contacts among communication partners.

Nevertheless, when the relation between traditional and new communication channels is considered, it is impossible to overlook how in a relatively short period of time the mobile phone, SMS texting, and the Internet have evolved from being as largely unrelated to other traditional interpersonal channels in terms of their need fulfilment to fundamentally interwoven with them. The findings of this study indicate that people are integrating these technologies, especially the mobile phone and texting, into their daily array of communication tools and using them to manage a variety of matters just as they use more traditional media and face-to-face communication. Notably, the mobile phone, immediately behind the face-to-face communication, scored quite high on all four types of social use, indicating a high utility for informational – cooperative and strategic as well as relational and expressive oriented social actions. Moreover, this study also presented certain evidence of functional displacements between the short text messages and the fixed phone, thus firming up the suggestion that short text messages once considered an odd communication technology, low in social presence and need gratification, now appear to be a rich multi-functional communication channel, which "has found a functional niche in our communication needs" (Ling, 2004: 155).

Taken together, this would suggest that the mediated interpersonal interaction through the mobile phone, short text messages, and the Internet probably adds a valued dimension to people's social needs and settings within which they act, without necessary challenging face-to-face communication and unmediated interpersonal relationships. Rather, new communication technologies add to the mix of communication modes available to social actors, providing new and alternative possibilities for mediated connectivity that to some extent prompt more frequent and/or specialised uses of different communication channels.

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Television:
The Good, The Bad And The Unexpected Challenges Of ICT

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Abstract

The rapid progress of the information technologies brings to the fore the issue of their impact on the global/regional/national/local communication environment. These processes will stimulate mass media to pass from an extensive into an intensive phase of development. A market-driven technological convergence is taking place throughout the media industries.

The combination of terrestrial broadcasts with cable and satellite TV towards the households on *EU* territory is expected to grow into a strongly competitive environment, allowing for program, technical and financial backup. Digital compression of the spectrum already has opened up access to the widest possible range of programs (DVB-T, DVB-C, DVB-S, DVB-H) through the offer of many commercial and public services. Broadband (IPTV, xDSL), which enhances the individual selection of the programs, is now on the agenda. That is, the television actively moves towards diversification of the services on offer. It is becoming a service itself.

The type and pace of these changes may present *EU* citizens with challenges of many an aspect.

The paper examines the contemporary developments in television from several aspects: political, technological, economic, legal, social, professional. The analysis concentrates on the European media policies in line with the new *Audiovisual Media Services without Frontiers* Directive.

Introduction

In March 2000 the *Lisbon European Council* set up an agenda for economic and social renewal for Europe. Realizing that the continent is facing a paradigm shift driven by the globalization, the *EU* Heads of States and Governments agreed to make the *EU* "the most competitive, dynamic and inclusive knowledge-driven economy by 2010". It was noted then that "the knowledge economy is profoundly changing the types of skills required for work and that information technologies can help reduce long-term structural unemployment" (EC, 2000). In 2005, following the *Commission*'s mid-term review of the Lisbon agenda, a comprehensive strategy for the Information Society 2005-2010 has been launched.

The *"i2010 – A European Information Society for growth and employment"* initiative was adopted by the *Commission* on 1 June 2005 as a framework for addressing the main challenges and developments in the sector of the information, communication and media industries up to 2010. The initiative contains a range of *EU* policy instruments to encourage the development of competitive digital economy such as regulatory instruments, research and

partnerships with stakeholders. It also emphasises ICT as a key driver of social inclusion and of better quality of life.

i2010 has three main policy objectives:

- <u>to create a single European information space</u>, which will secure an open and competitive internal market for the digital economy (electronic communication and media services) both for industry and consumers. Issues areas include: convergence, regulatory framework for electronic communications, roaming, radio spectrum, RFID, mobile TV, audiovisual media services, film/content online, copyright, media pluralism, media literacy, consumer protection, public sector information, electronic payment, electronic signature, security strategy, spam, safer internet.

- <u>to strengthen investment in innovation and research in ICT and encourage the industrial application of ICTs.</u> This includes issues addressing: ICT research in 7th Framework Programme, European Technology Platforms, Joint Technology Initiatives, innovation, take up of ICT by EU citizens, businesses and administrations - ICT Policy Support Programme in the Competitiveness and Innovation Programme, ICT Task Force, eBusiness, standardisation, pre-commercial procurement, eSkills.

- <u>to foster inclusion, better public services and quality of life through the use of ICT</u>. Issue areas addressed here are: eInclusion, e-Accessibility, broadband/digital divide, e-Government, eHealth, digital literacy, flagship initiatives: Intelligent Car, Digital Libraries, ageing/Ambient Assisted Living (in preparation), ICT for sustainable growth (in preparation) (EC, 2005).

The creation of common information space has been started with the modernization of the *EU* rules on audiovisual content services. Practices have demonstrated considerable progress: telecommunications providers are already offering broadcast services and content providers - communications services. The goal is the consumers to be able to watch audiovisual content anytime, anywhere, and on all technical platforms (TV set, computer, mobile phone, personal digital assistant, etc.). Broadband, triple play and quadruple play, fixed-mobile convergence, fibre rollouts, mobile TV are the new challenges to media markets. Next generation networks, capable of offering speeds that can support Internet and high definition TV (IPTV, VOIP, mobile TV, Web 2.0) are on the way. All this exiting variety of technological options and services needs the regulatory certainty of the developing common internal market for electronic communications (Reding, 2007).

Modern technologies have considerably facilitated collecting, storage, processing, and distribution of data volumes, reducing tangibly their entropy. However, under the conditions of this new communication environment orientation in the vast quantities of information is particularly important, as well as its rationalization and conversion into knowledge or as John Naisbitt put it: "*We swim in information, but starve for knowledge*" (Naisbitt, 1984, p.17). Which brings us to the "*informational paradox of more information = less information*" in the uncontrollable commercialization of the media (Cuilenburg, 1998, p. 81).

This gives rise to the question: How well the traditional media system with its main social pillars, such as plurality and diversity, fits into the newly developed situation, in which geopolitical boundaries become ever more conditional?

The perspective of mediamatics

Theoretical verification and legal regulation of the traditional mass media developments find difficulty to keep in pace with the headlong progress of new technologies. And if half a century ago Arthur Clarke's fantasies about a satellite communication ring had a strongly futuristic twang, in less than a decade digital technology brought revolutionary changes in the radio and TV production and dissemination processes all over the world. In a matter of

several years analogue communications will be a history. The type and pace of these changes will predetermine the further development of the Information Society and will present mankind with challenges of many an aspect. We are on the threshold of change of the very paradigm of the mass media system: technologically, financially, administratively, creatively and, above all, socially.

Of all factors affecting the building rate of the new type of society, the technological one is undoubtedly the most active. Arrangement and processing of information have been optimized and the speed of communication has increased. Mass-scale advent of digital electronics and computer software in the everyday life presumes introduction of new schemes and mechanisms for the creation, distribution and consumption of information. The range of traditional communication products and services is steadily expanding. Moreover, the satellite links, digitalization and new information technologies have brought to the fore the question of convergence in communications development on various levels. "*Convergence is a process, which in the coming decades may completely change not only the system of mass information and communication media, but also the various industries related to them*" (Vartanova, 2000, p. 39).

In its 1997 *Green Paper* the *European* Commission defined convergence as follows:
- *ability to transfer kindred services on different platforms;*
- *bringing together of such large-scale public works as the telephone, television or personal computers.*

The *Green Paper* also identified the basic characteristics of the Internet and the digital technologies that challenged the applied grounds for existing media regulation in a converged marketplace – the overcoming of scarcity, the interactive merge between publisher and consumer, the user-driven status, the decentralized (horizontal) communication. Thus, it prompted the media industries that in the vast growing technological era they would be predominantly governed by market mechanisms and economic objectives for achieving wider social, economic and general policy aims (EC, 1997, p. 18).

The *Green Paper* has set clear goals to convergence policy in audio vision. The information and communication technologies have outpaced regulation and have set up an economic basis for the convergence of entire industries: the electronic, entertainment, media. Along this sense Santiago Lorente sees two stages in technological development: *convergence between telecommunications and informatics (telematics) and between telematics and audio-vision (mediamatics*) (Lorente, 1997, p.119).

Being the backbone of the knowledge society, broadband is providing access to advanced public services and diverse multimedia content for information, entertainment, training and work. Broadband access has become a prerequisite for a wide range of issues - from economic growth to social inclusion. The main broadband technologies, relevant to media, include: xDSL (ADSL& VDSL), cable modem, fibre optic cable, power line communications, cellular sollutions, W-LAN & Wi-Max, satellite solutions. The move to broadband fundamentally changes the Internet experience with new phenomena, such as "user generated" content sites and advanced "digital ecosystem" technologies. (EC, 2006).

It is the Single European Information Space pillar of i2010 that combines regulatory and other instruments for the creation of a modern, market-oriented regulatory framework for the electronic communications, stressing on the audiovisual policies, the radio spectrum management and the process of switchover to digital TV. In 2006 at the ITU's Regional Radiocommunication Conference (RRC-06) in Geneva a treaty agreement was signed, according to which the transition period from analogue to digital broadcasting should end on June 17, 2015. The new digital Plan, based on broadcasting standards known as T-DAB (for sound) and DVB-T (for TV) will replace the analogue broadcasting plans existing since 1961 for Europe.

The switchover from analogue to digital broadcasting is expected to create new distribution networks and expand the potential for wireless innovation and services. The World Radiocommunication Conference (WRC-07), which will meet in the autumn of 2007, will deal with the regulatory aspects of the usage of the spectrum for these services. (ITU, 2006). Just prior to the reform of the EU telecom rules, on March 29, 2007 the *European Commission* published its 12th report on the EU's telecom market. It points out that although the consumers have more choice in a sector, worth almost €290 billion in revenues, the full potential of EU's internal market still remains unexploited (EC, 2007).

Despite the general progress of broadband developments, access to the new services in remote and rural regions appears to be limited because of high costs due to low density of population snd remoteness. Having in mind all this, the *European Commission* published on March 20, 2006 the *Communication "Bridging the Broadband Gap"*, which refers to the territorial differences in broadband access, speeds, quality of service, prices and use between urban and rural/remote areas as well as between more/less developed areas in Europe (EC, 2006). This is a direct move towards protecting basic democratic achievements, such as freedom of expression and access to information.

Protection of media freedoms in Europe

Protecting freedom of expression and promoting media pluralism are among the most important democratic pillars in contemporary society. The necessity for sustaining these social achievements has been underlined as far back as in the first pan-European documents. In 1950 these intentions were outlined in Article 10 – Freedom of expression of the *Convention for the Protection of Human Rights and Fundamental Freedoms*:
1. Everyone has the right to freedom of expression. This right shall include freedom to hold opinions and to receive and impart information and ideas without interference by public authority and regardless of frontiers. This article shall not prevent States from requiring the licensing of broadcasting, television or cinema enterprises.
2. The exercise of these freedoms, since it carries with it duties and responsibilities, may be subject to such formalities, conditions, restrictions or penalties as are prescribed by law and are necessary in a democratic society, in the interests of national security, territorial integrity or public safety, for the prevention of disorder or crime, for the protection of health or morals, for the protection of the reputation or rights of others, for preventing the disclosure of information received in confidence, or for maintaining the authority and impartiality of the judiciary (CoE, 1950).
The *Council of Europe (CoE)* is the continent's oldest political organization, founded in 1949. Currently it groups together 46 countries. As the main intergovernmental organization at pan-European level, dealing with the democratic dimensions of communication, it has been consistently active in setting common standards for the media developments. The attention to these developments has become particularly strong since 1990's with the rapid progress of the information and communication technologies, which stimulated the media concentration process. This is in tune with *Council of Europe*'s basic aims, such as:
- *to protect human rights, pluralist democracy and the rule of law;*
- *to promote awareness and encourage the development of Europe's cultural identity and diversity;*
- *to seek solutions to problems facing European society (discrimination against minorities, xenophobia, intolerance, environmental protection, human cloning, AIDS, drugs, organized crime, etc.);*
- *to help consolidate democratic stability in Europe by backing political, legislative and constitutional reform* (Co E, 2007).

In about half a century later Article 11 – Freedom of expression and information of the *Charter of Fundamental Rights of the European Union* reaffirms that:

1. Everyone has the right to freedom of expression. The right shall include freedom to hold opinions and to receive and impart information and ideas without interference by public authority and regardless of frontiers.

2. The freedom and pluralism of the media shall be respected (EU P, 2000).

The *European Union (EU)* is a supranational and intergfovernmental union of 27 states. It was established in 1992 by the *Treaty on European Union* and is the successor to the six-member *European Economic Community* founded in 1957. The *EU* is one of the largest economic and political entities in the world, with 495 million people (Eurostat, 2007) and a combined nominal GDP of 11,294.6609 € ($15,183.404) billions in 2007. (EU GDP, 2007). Citizens of *EU* member states are also *EU* citizens.

The *European Commission* is the executive body of the *European Union*. Alongside the *European Parliament* and the *Council of the European Union*, it is one of the three main institutions governing the *EU*. The primary role of the *European Commission* is to propose and implement the legal basis for the *EU*. The *Commission* is also responsible for adopting technical measures to implement legislation adopted by the *Council* and, in most cases, the *Parliament*. It monitors member states' compliance with the *Union*'s agreed *Treaties* and *Directives*, taking action against those in default. The *Commission* is intended to be a body independent of member states. It consists of 27 Commissioners, one from each member state of the *EU* supported by an administrative body of about 23,000 European civil servants divided into departments calledDirectorates-General (EC, 2007).

The *EU Directorate General Information Society and Media* was expanded from January 2005 to include Media (formerly under *DG Education and Culture*). *DG Infso* deals with research, policy and regulation on the areas of information and communication technology and media. It defines and implements the regulatory framework for services based on information, communication and audio-visual technologies. Its regulation has cultural, societal and economic objectives, and covers some of the largest economic sectors in Europe. It furthermore fosters the growth of content industries, drawing on Europe's cultural diversity. *i2010 - a European Information Society for Growth and Employment* is currently the main ruling policy document of *DG Infso* (DG Infso, 2005).

The contemporary audio-visual policies

The acts of the *Council of Europe* important for the audio-visual developments are the legally binding European treaties or conventions, many of which are open to non-member states, as well as the acts of the:
-   Parliamentary Assembly;
-   Committee of Ministers;
-   Steering Committee on the Media and New Communication Services (CDMC);
-   The Standing Committee of Transfrontier Television
-   The European Court of Human Rights

The different acts of the *Council of Europe* have different significance and different mechanisms for influencing the national legislature of the member states. The conventions are binding acts. Significant for the audiovisual sector are the *European Convention on Human Rights* and *The European Convention on Transfrontier Television*.

The *European Convention on Transfrontier Television* is a treaty, which was opened on May, 1989 for signature by Member States and by the other States Parties to the *European Cultural Convention* and by the *European Community*. May 1, 1993 marked its entry into force. Currently, the number of parties, brought to this instrument, is 31. The *Protocol* amending the

ECTT was opened for signing by the Parties to the *Convention,* in Strasbourg, on October 1, 1998. Since its entry into force on March 1, 2002, this *Protocol* has become an integral part of the *ECTT.*

The aim of the Convention is to facilitate, among the Parties, the transfrontier transmission and the retransmission of television programme services (CoE, 1989). It lays down a set of minimum rules in areas such as the responsibility of broadcasters in regard to programming matters, including the European content of programming; advertising, teleshopping and sponsorship as well as the protection of certain individual rights. For the major part, application of the *ECTT* relies on mutual co-operation between the Parties. A *Convention* body, the *Standing Committee on Transfrontier Television* composed of representatives of the Parties, is responsible for following the instrument's application and may intervene with advisory opinion for the friendly conciliation of any difficulties. In cases where disputes cannot be resolved through friendly settlement, arbitration is contemplated, resulting in legally binding decisions.

The *ECTT* and the amending *Protocol* from one side, and the *Television without Frontiers Directive*, from another, have similar objectives, although the intention of the *TVWF Directive* as an instrument of the *European Commission* is to create a common market in broadcasting.

The rapid technological developments in TV and radio broadcasting in the 1980's enhanced the launch of quite a number of private broadcasters. Soon the need of setting some minimum standards applicable in all Member States to regulate the rigorously developing TV and radio market was felt. Thus on October 3, 1989 the *European Union* came up with the *Television without Frontiers Directive 89/552/EEC.* This *Directive* constitutes the legal *EU* framework aimed at coordination of certain provisions laid down by law, regulation or administrative actions in Member States concerning the pursuit of television broadcasting activities. It aims to ensure the free movement of broadcasting services within the internal market and at the same time to preserve certain public interest objectives, such as cultural diversity, the right of reply, consumer protection and the protection of minors. It is also intended to promote the distribution and production of European audiovisual programs and to ensure that they are given, whenever possible, a majority position in television channels' program schedules. The general principle of the *TVWF Directive* is that member states must ensure freedom of reception and that they may not restrict retransmission on their territory of television programs from other Member States unless they infringe the *Directive*'s provisions on the protection of minors (EC, 1989).

Only half a decade after the entry into force of the *TVWF Directive* the intense developments in the audiovisual sector determined the necessity of further extensions of the rules regarding some of its general provisions. These included: advertising, teleshopping and sponsorship; promotion and distribution of the European cultural productions; access the public to major (sports) events, protection of minors and right of reply.

Parallel to these actions, a report *Europe and the global information* (largely known as the *Bangemann Report*) proved to be extremely influential in starting the discussion on the future European communications policy, by pointing out that building the European information society would be market-driven. It also stipulated that a new regulatory environment allowing full competition in the area of digital developments and building new information infrastructures would be needed (EC, 1994).

Thus, on June 30, 1997 the *Directive 97/36/EC* of the *European Parliament* and of the *Council* amended *Council Directive 89/552/EEC.* Among the above mentioned provisions, it introduced a special article concerning the set up under the aegis of the *Commission* of a *Contact Committee*. It is composed of representatives of the competent authorities of the Member States with a task to facilitate effective implementation of the *Directive*. The

amended text of the *TVWF Directive* also stipulated that Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive not later than 31 December 1998 (EC, 1997).

In the process of implementation of the *TVWF Directive*, it is not possible to adopt decisions, contradictory to the norms of the *ECTT*. As an illustration of the co-ordinated actions of the *European Union* and the *Council of Europe* in the audiovisual area can serve the fact that the *Amending Protocol of the ECTT* was adopted after the revision of the *Directive* of 1997. This *Protocol* practically reflected the amendments in the *Directive*. The current discussions of the review of the *ECTT* are in tune with the latest revision of the *TVWF Directive*. As a matter of fact this process has started well ago – since 2001 the effectiveness of the articles of the *Convention* and the *Directive* is thoroughly analyzed. Both sets of regulations stipulate mainly that:

- Parties to the agreements should guarantee free reception on transmission on their territories of TV programs from other signatories;
- They govern the amount and kind of advertising permitted;
- They protect minors against exposure to pornography or gratuitous violence;
- They provide for a right of reply for persons whose reputations are injured by an assertion of incorrect facts;
- They seek to promote endogenous (local) production of television programs, in part by specifying that a majority should be made in Europe.

In another five years after the *TVWF Directive* was amended, the European audiovisual sector has changed dramatically. The convergence of technologies provides interweave of linear and non-linear services. The expansion of fixed broadband, digital TV and 3G networks is rapidly changing viewers' habits. The vertical structure of audio-visual programming is steadily being displaced by horizontal fragmentation of the audiences, wishing to follow their own viewing time schedule. The technological progress has imposed a strong impact on the business models of the media industry. A need for modernization and adjustment of the regulatory framework was felt in this new situation of rigorous market and technology developments.

After a large and intensive discussion more coherent measures to reinforce pan-European audiovisual policy were proposed to the Community legislator, taking into account the objective to create a pro-competitive, technologically driven and growth oriented environment for the development of the audiovisual sector. A broad consensus on the scope, European works, co- and self-regulation, independence of the national media regulators has been achieved. The first reading at the *European Parliament* of the proposed new *Audiovisual Media Service Directive* reaffirmed the basic pillars of Europe's audiovisual model, such as cultural diversity, media pluralism, and protection of minors, consumer protection, and the intolerance against incitement to racial and religious hatred. It recognized that *"Audiovisual media services are as much cultural services as they are economic services. Their growing importance for society, democracy – in particular by ensuring freedom of information, diversity of opinion and media pluralism – education and culture justifies the application of specific rules to these services."*

Within the meaning of the *Treaty of Rome* – the EU's founding document, broadcasting is considered a service. The requirement of freedom of movement of goods and services across frontiers of Member States is basic for achieving the pan-European objectives (Treaty, 1957). Some thirty years later, revising the *Treaty of Rome*, the *Single European Act (SEA)* added new momentum to European integration by completing the internal market (SEA, 1986). And according to the *General Agreement on Trade in Services (GATS)*, since January 2000, audiovisual services sector has become the subject of multilateral trade negotiations. The sector includes motion picture and video tape production and distribution services, motion

picture projection services, radio and television services, radio and television transmission services, sound recording (GATS, 2000).

The field of the *Convention* and the *Directive* is very flexible and dynamic. That is why the work on their improvement is an ongoing process. In particular the current discussions on the review of both instruments by the participating Parties concern:

- the scope of the *Convention* and *Directive* (the broadening of the traditional television broadcasting towards the ICT audio-visual services);
- the duties of the Parties of the *Convention* and the *Directive*;
- the broadening of the jurisdiction and the scope of the regulatory practices, involving co-regulation and self-regulation;
- the freedoms of reception and retransmission, including intended and unintended transfrontier distribution;
- the developments of advertising techniques (advertising, sponsorship, tele-shopping, product placement, etc.);
- the protection of rights granted by the *Convention* and the *Directive* (such as right to information and cultural objectives, media pluralism, right of reply, protection of minors and respect for human dignity), etc.

The rapid change of the audiovisual market requires thorough refining of the existing norms in the *Convention* and the *Directive* under broad consensus. The question is whether the regulatory changes should anticipate or follow the practices.

Promotion of media pluralism and content diversity

Already for many years one of the constant objectives in achieving sustainable democratic environment on pan-European level has been the persistent promotion of media pluralism and diversity of media content. Both the *Council of Europe* and the *European Union* have been very active and productive in discussing the issue through a number of recommendations, resolutions, declarations, opinions, communications, research papers, etc. prepared to reflect the rapidly changing media sector.

One of the first pan-European documents attempting to define the concept of pluralism, is the *Commission Green paper "Pluralism and Media Concentration in the Internal Market"* COM (92) 480 of December 23, 1992. *"The variety of expressions used containing the word "pluralism" – pluralism of the media, pluralism in the media, the pluralist nature of the expression of currents of thought and opinion, pluralism of information, pluralism of the press, plurality of the media – shows that there is no common understanding of the concept. However, two common features do emerge from a legal analysis of the European Convention on Human Rights as interpreted by the European Court of Human Rights and of national laws:*

- *the concept of pluralism serves to limit the scope of the principle of freedom of expression;*
- *the purpose of such limitation is to guarantee diversity of information for the public"* (Green paper, 1992).

The phenomenon of media pluralism and content diversity has been unceasingly a central issue of the European policy making. Earlier this year both the *European Commission* and the *Council of Europe* have published a number of documents, concerning the problems in the media environment, rising from the rapid technological developments in the audiovisual area. On January 16, 2007 the *Information Society and Media DG* of the *European Commission* initiated a three-step approach on *Media pluralism: the need for transparency, freedom and diversity in Europe's media landscape.* This new program points out that media pluralism debate should concentrate not only on the grounds of media ownership but also on the transparent mechanisms, which will guarantee the access of the citizens to varied information

so that they can form opinions without being influenced by one dominant source. A key issue in this process is the functioning of the media as genuinely independent.

Presenting the three steps, the Information Society and Media Commissioner Viviane Reding underlined especially, that "*While the media face radical changes and restructuring due to new technology and global competition, maintaining media pluralism is crucial for the democratic process in the Member States and in the European Union as a whole.*" *This requires a sound understanding of the economic and legal reality of today's European media landscape, which our three-step approach seeks to achieve.*" (EC, 2007).

Two weeks later, on January 31, the *Committee of Ministers* of the *Council of Europe* adopted three documents, concerning the further promotion of media pluralism and content diversity in the new digital environment:

- Declaration on protecting the role of the media in democracy in the context of media concentration;

- *Recommendation Rec (2007) 2 on media pluralism and diversity of media content;*

- *Recommendation Rec(2007) 3 on the remit of public service media in the information society;*

- *Recommendation Rec (2007) 2 to member states on media pluralism and diversity of media content* stipulates that governments of member states consider including in national law or practice:

- Measures promoting structural pluralism of the media, such as: ownership regulation; public service media, other media contributing to pluralism and diversity; access regulation and interoperability, other support measures.

- Measures promoting content diversity, such as: promotion of wider democratic participation and internal diversity; allocation of broadcasting licensees and must carry/offer rules; support measures; raising awareness of the role of the media.

- Media transparency.

- Scientific Research (CoE, 2007).

The challenges to television

Media pluralism is usually linked to the democratic performances of society. However, the bigger number of media outlets does not necessary means that diversity of contents has been achieved. The concept of pluralism can be defined both in terms of its function and in terms of its objective. Concerning television, media pluralism can be assessed through the number and types of channels, the number and structure of their owners, the editorial content of the broadcasts, and the access of different societal groups to the programming.

Over the last years media concentration (or media consolidation) has been considered the main threat to media pluralism. Concentration ownership structure of mass media industries usually suggests a state of monopoly/oligopoly or large-scale owners in a given media industry. Concentration of media ownership suggests also the presence of media conglomerates, such as Disney, CBS, Time Warner, News Corp, Bertelsmann AG, Viacom, and General Electric, which together own more than 90% of the media market (Concentration, 2007).

The fear of the negative consequences of media concentration is mainly connected with the availability of less diverse opinions in media and with the fewer opportunities for certain minority groups (including ethnic, religious, cultural, linguistic, and other) to reach the broad publics through media. Both of these problems are considered significant obstacles to the development of healthy, competitive media market. A major concern is also whether a consolidated media market (especially on a local level) can be accountable and dependable in serving the public interest, especially in times of crisis and in cases of emergency. The

ultimate results of such media market consolidation is viewed as poorly-informed public, restricted to reduced options of media array, which offer mainly information, supporting the media owners' interests. Thus, media deregulation may become a dangerous trend, if it facilitates an increase in concentration of media ownership, and subsequently reduces the overall quality and diversity of information communicated through major media channels. Increased concentration of media ownership may also lead to the censorship of critical debate on certain problems, to the absence of a wide range of issues of public interest and to an increased commercialization of contents.

The effects of media merge on pluralism must be carefully assessed by reference to the environment in which it occurs. The extensive research on the issue of media concentration and pluralism could not identify in quantative terms a direct link between media concentration and content diversity. (Ward, 2006, p.1)

Besides, in some cases consolidated capital may have a positive effect on pluralism. It may ensure better competitiveness against the media conglomerates, maintain reduced costs of operation, increase diversity of content supply to an extended area, provide for more and differentiated products and services, thus better answering the demands of the publics.

Comparing the two sides of the problem, it should be noted that "approaching the issue of media pluralism solely from the perspective of media ownership concentration is unproductive". (Jakubowicz, 2006).

A prevailing trend in contemporary society is the growing number of TV channels which carry out the external (structural and market) pluralism. In this case, regulatory measures may be directed at organizing such relations between the various media companies so as to ensure a degree of autonomy between them. The combination of terrestrial broadcasts with cable and satellite TV towards the households on EU territory is expected to grow into a strongly competitive environment, allowing for program, technical and financial backup. Digital compression of the spectrum already has opened up access to the widest possible range of programs (DVB-T, DVB-C, DVB-S, DVB-H) through the offer of more commercial and public services in many countries. Broadband (IPTV, xDSL), which enhances the individual selection of the programs, is now on the agenda. That is, the television actively moves towards diversification of the services on offer. It is becoming a service itself.

In the contemporary world the media are choking with unvaried in form and content entertainment formats. The form of presentation has certainly its hefty say in the television, but if deprived of content, it becomes nondescript and unpromising. Along with this, some meaningful for the public interest programs, are neglected owing to lack of attractiveness, compared, for example, to the reality shows. Thus it becomes evident that realization of the principle of structural pluralism is tightly bound to the meaning of content in the TV programs, i.e. to the realization of meaningful internal pluralism. If we fail to find such combination of diversity and quality, we will be doomed to endless switching on from channel to channel, seeking in vain something meaningful in the ocean of flickering TV images: pluralism is meaningless in such a situation (Raycheva et al, 2003). In this case, the measures may be directed either at the internal organization of the media company whose control structure will have to represent the various currents of opinion, or at the editorial content of the broadcasts.

From the viewpoint of content, guaranteeing of political and cultural pluralism merits special attention.

Concerning political pluralism, the media often act as the main subject of political manipulation, especially before elections. The active role of television in politics relates to its impact on the various stages and sides of the information process in society. The starting point in this process is the selection, processing and distribution of information. A prime postulate in contemporary political science is that authorities rely on information resources.

The skill of sifting out meaningful from immaterial information enhances the power potential. The possibility to distribute information, in one's own interpretation at that, with channels to boot, or to hold back some of it, multiplies the power capacity. (Bauman, 1998, p. 21). Direct exercise of such power is a prerogative of the media. That is why, when powerful media fall under the control of economic or political power groups, this significantly deforms democracy.

Concerning cultural pluralism, there are two risks in this sphere: one is diluting the national cultural identity and uniqueness, the other is national encapsulation. Multiculturalism is rife with the danger of forcing in and taking up foreign models. Transnational TV formats gain ever larger territories in the poorer countries, displacing their cultural traditions. Threatened are the main public values. Thus pluralism may turn into its opposite by losing on the way entire styles, epochs, national models, and favorite works of other generations. In this sense it is important to preserve the cultural identities, the letters and the languages in the EU integration processes. The constitutional rights of minority groups (ethnic, religious, cultural, linguistic and other) to education and information on their mother tongue are also part of the cultural pluralism of the media.

Contemporary television is a convergent phenomenon, combining the intellectual product with technological potential, market mechanisms, regulatory practices and response of the audiences. Along with this, the television is both a reflection and an embodiment of the post-modern concept, with its key characteristics of fragmentation, intertextuality, simulation, plurality. Fragmentation is intrinsic to television owing to its programmed and multi-channel character. Intertextuality got a boost with the advancement of digitalization. The principle of simulation in fact reversed the situation of television mirroring society into society mirroring television. Contrary to these three characteristics, however, pluralism cannot be viewed as intrinsic to television. Pluralism is determined by the tasks set to the television and the manner it deals with these tasks.

There is, however, a problem that comes to the fore: greater opportunities for selection carry weight only if there is something to choose from. What is the use of the great number of channels if they are filled with the same programs, or with similar tastelessness? That is, the pluralism of content has been brought to nil.

Conclusion

The significance and role of television in the contemporary world has been growing tremendously with the development of new platforms for distribution of audio-visual content. The television not only continues to inform the audiences, but to shape out their views too. Moreover, it rather catalyzes than reflects the public processes, thus creating preconditions for reformatting the very society to an extent at which it begins to reflect the developments on the TV screen. This mutual interpenetration is aided by diffusion of some other kindred activities with the media world. The political elites are quick to use the media for their PR purposes. For the economic elites, the media are the main distributors of their advertisements. The needs of the public are increasingly forced out of the media. Paradoxically enough, the governments engage in regulatory protection of the public service television which is supposed to be its most vehement critic. Self-regulation has failed to become the public ombudsman and corrective of the commercial influence yet. Even enhanced interactivity could hardly pull the recipients out of their assigned role of users and consumers. The Internet environment is aiding the fragmentation of audiences, but still fails to change the prevailing vertical communication model. The moment it succeeds, this would probably bring in large functional restructure of the traditional mass-media system.

The rapid technological developments of the information and communication industries outline the need to modernize the regulatory framework and practices. The adoption of the new *Audiovisual Media Service Directive* is on its way as well as the revision of the *European Convention on Transfrontier Television*. The modernization can be viewed from several aspects:

- **In political terms,** the development of free and unhindered transmission of audiovisual services on pan-European level governed by a common legal framework is important for pursuing *EU* objectives. In view of the democratic, social and cultural significance of the media policy makers and public authorities should enforce adequate measures to ensure transparency in the media sector and prevent the conflicts of interest which pose a threat to the independence and plurality of the media.

- **In technological terms**, the turbulent progress of information and communication technologies is challenging the concept of traditional broadcasting, which is limited to the number of analogue channels. The rapid spread of cable systems, broadcast satellites, low-power TV has expanded the offer of diverse programs. Digital technologies, broadband and web casting increase the number of channels, providing the viewers with multiple choices of programs and audio-visual services. The contemporary audiovisual reality becomes more and more complex with the interweaving between linear and non-linear programming as well as between broadcasting and audiovisual service.

- **In economic terms,** the expanding tendency towards deregulation and privatization in broadcasting leads to predominance of the commercial structures. The media content becomes more and more dependent on market mechanisms. Thus, the merger control at the European, as well as national level, should be complemented, where appropriate, with specific measures to protect and promote media pluralism

- **In regulatory terms,** the tendencies to merging media, telecommunications and entertainment industries lead to changes in the legal basis of the regulatory approaches (in structure and duties of the regulatory authorities, in methods of regulating (regulation, co-regulation and self-regulation) and in audiovisual content, subjected to regulation). In this sense it is of great importance to outline the parameters of the "regulatable" content".

- **In social terms,** the quantity of program offer leads to fragmentation, demassification of the audiences of the traditional broadcasting (one to many), thus opening ground for non-broadcasting and interactive audiovisual services. Further on, the Information Society services offer their products in a "one to one" mode. Through citizen journalism and citizen media individuals can produce and disseminate information and opinions that are marginalized by the mainstream media. The broad impact of media on general publics in real time is reduced due to the asymmetric communication offered by diverse electronic sources.

- **In professional terms,** the rapid introduction of the technological innovations is challenging the traditional formats, styles, and modes of programming. The process of media convergence as well as the interactivity tendencies raises serious questions in managing the editorial content. The significance of self-regulation and application of ethical codes of conduct become ever more important for the journalism practices. Public service broadcasters should contribute to media pluralism by providing a diverse range of quality programs. Media organizations should develop media accountability systems in order to strengthen professional values, editorial and journalistic independence and quality journalism.

The new pan-European actions of further promoting media pluralism and content diversity in the audiovisual sector are of major economic, social and cultural importance: television is still the most significant source of information and entertainment for 98% of the European households, watching television average more than 3 hours per day. However, having in mind the rapid technological developments in a highly competitive market, a major concern about the vitality of the new regulatory rules may be for how long the pillars of Europe's

audiovisual model (cultural diversity, protection of minors, consumer protection, media pluralism, and the intolerance against racial and religious hatred) will be protected.

In the 1930s, Aldous Huxley warned in his *Brave New World* that time would come when mankind may die uninformed, wallowing in a sea of information (Huxley, 1932). That time may not have come yet, but it is a fact that we find it ever more difficult to deal with the quantity and quality of information. And all this makes ever more obvious how compression of historical time dictates the new pace of the communication process with the good, the bad and the unexpected challenges of ICT.

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Households' ICT Use In An Energy Perspective

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Abstract
The starting point for this paper is the lack of linkage between two of the prominent social agendas of the time – the development of the information society and the question of how to prevent man-made climate change. The paper is intended as a contribution to integrate the two agendas by considering ICT in an energy perspective. In particular, the paper focuses on the integration of ICT in households and the energy impacts related to changing everyday practices. As this has not received much attention in previous research, the paper has an explorative character. Firstly, the paper reviews some of the previous studies on ICT and energy and the consumption perspective is introduced. Secondly, the integration of ICT in everyday practices and the dynamics behind the changes are outlined, inspired by a historical perspective. Thirdly, a figure of the relationships between changing everyday practices and the related energy impacts is presented, followed by descriptions of direct energy consumption related to household ICT, indirect energy consumption outside households, and derived impacts both within and outside households. The paper concludes with some remarks on political implications and questions for further research.

Introduction
The development of the information society has been and still is accompanied by enthusiasm and a strong sense of necessity where the challenge for political and administrative institutions at all levels is to increase the pace of the development and remove all hindrances – take care of security problems, increase the competencies of the population, supply new services, support the provision of infrastructure. The necessity springs from the drive for competitiveness and the emergence of new business opportunities in the so-called "experience economy". At the same time, other parts of the political and administrative system are concerned with environmental issues, not the least with the prospects of global warming. Information and communication technologies (ICTs) offer both potentials for energy savings and increasing demand for energy use so there are good reasons to bring together these two agendas. In the early 1990s the first studies on the positive environmental prospects of ICT emerged (Freeman 1992), and the first steps were taken towards regulating ICT energy use. As we will return to below, the importance of ICT in relation to energy consumption has carried some interest since then, but still the two agendas tend to develop in relative isolation. As Alakeson and Wilsdon wrote in 2001: "Most European policies for the information society and for the environment have developed in separate silos, but it is fair to say that the potential environmental impact of digital technologies is increasingly acknowledged by EU policy makers" (Alakeson and Wilsdon 2003, p. 10). In spite of this increasing acknowledgement, there is still a long way to go before the two agendas of the

information society and global warming are really brought together. As a small illustrative example, it is still possible to write a nearly 200-page status on the Danish information society (Statistics Denmark and National IT and Telecom Agency 2006) without mentioning energy (or any other environmental concerns) at all.

This paper is intended as a contribution to considering ICT in an energy perspective. ICTs have many other environmental impacts than those related to energy – for instance, the use of toxic materials, brominated flame retardants, heavy metals – but these are only included in so far as they influence the energy impacts. The point of departure is taken in the integration of ICTs in households, and the energy impacts of changing household practices are discussed. Most studies of ICT and energy have concentrated on macro scenarios or the prospects seen from the production side, so households have not received much attention (there are exceptions, such as (Aebischer and Huser 2000)). On this background the paper has an explorative character, and it is based on a combination of literature studies, discussions with experts, and a visit to the "digital home" in Taastrup, Denmark. The data used in this paper mainly refer to Denmark. The main interest is to provide a basis for further in-depth studies of households and for more proactive political approaches dealing with the energy impacts of ICT, whereas there is no intention to quantify the complex relations between household ICT use and the related energy impacts, to outline scenarios for future developments or to assess whether ICT development in households is good or bad in an energy perspective. The integration of ICT in household practices is a fact, so it is less important whether the net energy impact is positive or negative than it is to find ways to avoid the negative impacts and encourage the positive.

In the following, some of the previous studies on ICT and energy are briefly mentioned and the consumption approach is related to these. Secondly, the integration of ICT in everyday practices and the dynamics behind the changes are outlined, inspired by a historical perspective. Thirdly, a figure of the relationships between everyday practices and the related energy impacts is presented, followed by descriptions of energy impacts directly related to ICT in households, indirect impacts outside households, and derived impacts both within and outside households. The paper concludes with some remarks on political implications and questions for further research.

Previous studies and the consumption perspective
Early studies on the emergence of the information society tended to emphasize the positive potentials related to ICTs. The most immediate positive impacts relate to the possibilities for increased production efficiency in most sectors: more accurate monitoring and control of processes, quality, and inventory, miniaturizing resulting in substantial reduction in the number and weight of components, and increased transportation efficiency (Freeman 1992) – and these issues are still central for more recent studies (Berkhout and Hertin 2001;Jørgensen et al. 2006). Furthermore, it is emphasized that the Internet opens up opportunities for information sharing in business and academia regarding environmental issues (Richards et al. 2001) (see also a European series of conferences under the heading Informatics for Environmental Protection), and corresponding positive effects are identified in relation to consumers and environmental NGOs (Reisch 2001).

Gradually, the enthusiasm was supplemented with more discussion on the problematic environmental impacts of ICT. Before the entry of ICTs, offices were usually considered less important when energy requirements were calculated, but from the late 1980s offices appeared as energy consuming places. Both for economic reasons and in consideration of the

environment, more attention turned towards energy savings (e.g. the U.S. EPA introduced the Energy Star labelling in 1992 for office equipment). In the late 1990s and early 2000s, a heated discussion took place in the U.S. in the wake of some provocative statements concerning the high electricity consumption of ICT equipment, titled *Dig more coal – the PCs are coming* (Huber and Mills 1999), based on (Mills 1999). The statements were repudiated by many other researchers, as can be seen from the summary of the debate at http://enduse.lbl.gov/projects/infotech.html where links can be found to the many contributions; short summaries can be found in (Laitner 2003) and (Cole 2003). In one of the contributions (Baer, Hassell, and Vollaard 2002), it is concluded that even large growth in deployment and use of digital technologies will only modestly increase U.S. electricity use over the next two decades, however, Huber and Mills stuck to their ideas (Huber and Mills 2003).

Other studies go beyond electricity and include both direct and indirect environmental effects of ICT use, including various categories of rebound effects, for instance (Plepys 2002;Erdmann et al. 2004). In Berkhout and Hertin's study for the OECD on the environmental impacts of ICT (Berkhout and Hertin 2001), summarized in (Berkhout and Hertin 2004), they distinguish between direct effects, indirect effects, and structural and behavioural effects of ICT. Direct effects stem from the production, use and disposal of hardware, indirect effects concern efficiency improvements in production processes and in design and operation of products and services, whereas structural and behavioural effects are a mixture of rebound effects and effects related to increased consumer information. Berkhout and Hertin argue that the direct effects are mostly negative, whereas the indirect efficiency effects are largely positive, and the structural effects (including rebound effects) are highly contested. Related categorizations are used in other studies, e.g. in the foresight study by Jørgensen et al. (2006) who, inspired by Berkhout and Hertin as well as others, consider first, second and third order relationships. First order relationships refer to the direct environmental impact from the ICT equipment and ICT infrastructure, second order relationships arise from the use of ICT in different applications and the influence on processes and products, and third order relationships concern the changing structural composition of business and product areas as well as broader social and structural changes.

In most macro studies on ICT and environment, consumers play a very minor role. This role is mostly related to the indirect, structural level where the positive potential related to behavioural change is emphasized. In particular, teleshopping and teleworking are pointed out as having a potential for energy savings related to transport (just as business travel is expected to decrease because of videoconferencing). However, in studies focusing on electricity consumers are becoming more visible. Concluding a study on energy consumption of PCs Cole writes: "While this chapter places greater emphasis on PCs in the commercial sector, the impact of PCs in the residential sector must not be overlooked. The proliferation of PCs in the home, due to expanded use of the Internet, means that the residential sector may be responsible for a much greater proportion of energy consumed by office equipment than previous estimates" (Cole 2003, p. 156-7). A direct focus on consumers appear in some Swiss and German works (Aebischer and Huser 2000;Cremer and et al. 2003;Aebischer and Varone 2001), and small sections on ICT emerge in reports on consumption and environment (European Environment Agency 2005).

Consumers have been most visible in relation to the discussion of standby electricity use. The first mentioning of standby consumption of home equipment was in the beginning of the 1990s (Sandberg 1993). Since then, the American energy efficiency conference ACEEE

(www.aceee.org) and the European conference organized by the sister organisation, ECEEE, (www.eceee.org) have had workshop sessions on standby consumption, as has the International Conference on Energy Efficiency in Domestic Appliances and Lighting, EEDAL (see http://re.jrc.ec.europa.eu/energyefficiency/events/eedal2006.htm). Papers have, on the one hand, focused on measurements of the size of ICT-related energy consumption in households (Roth 2006;Harrington, Jones, and Harrison 2006), and on the other hand, discussed how to agree on standards which can be useful for energy labelling and other types of product regulation (Jones 2006;Murakoshi et al. 2005). However, standby consumption has increased steadily, and one of the leading experts on standby consumption, Alan Meier, concludes that internationally the standby consumption in households represents 4-11% of the total electricity consumption (Meier 2005). There are two ways to reduce standby consumption, either to encourage producers to develop appliances using less energy or to make users turn off the appliances instead of leaving them on standby. Internationally, the former has received far most attention, and this would also be the most efficient if it was successful. In 2005, however, only Japan had compulsory programmes concerning standby, whereas both Europe and USA worked with voluntary agreements (Meier 2005). Much of the research and development presented at the ACEEE, ECEEE and EEDAL conferences is closely related to these political efforts to reduce standby consumption, and even though progress is seen, one of the problems with the regulation and standardization is that fast technology development resulting in new types of appliances and new types and levels of standby are appearing continuously (IEA 2001).

Nationally, however, there have also been campaigns targeting consumer behaviour. A Danish study focused on households' interest in and possibilities to reduce their standby consumption (Gram-Hanssen and Gudbjerg 2006). Results here indicate that some households quite easily change routines and are able to eliminate the majority of their standby consumption. Other families, however, having expectations of being online all the time, and having many of their appliances connected to each other found it much more difficult and inconvenient. Thus both the producer and the consumer approaches relating to standby consumption indicate that standby consumption is a problem continuously to be dealt with.

In this paper the intention is to go beyond the relatively narrow roles assigned to consumers in studies on ICT and energy. There is a need for paying more attention to consumers when dealing with the energy impacts of ICT, first of all because ICT is increasingly integrated in everyday life. Furthermore, a consumption perspective can highlight aspects that complement the aspects brought forth when focusing mainly on production, thus also opening up new opportunities for managing the energy impacts. In general, when a production perspective is the point of departure in environmental studies, technological changes tend to be perceived in terms of solutions, because technology can contribute to efficiency improvements. In spite of the increasing awareness of rebound effects, the perspective tends to be mostly optimistic. This differs from the consumption perspective where new technologies are only in exceptional cases introduced to improve, for instance, the energy efficiency of household activities. New technologies serve as drivers behind consumption growth and will as such contribute to increasing environmental impacts (Røpke 2001;Røpke 2003). From this perspective efficiency improvements become a modification to the main effect. The consumption perspective thus tends to bring the more problematic aspects of technological change more directly into focus – not being relegated to the position of rebound effects.

The organization of the paper is inspired by the studies mentioned above considering different levels of effects (Berkhout and Hertin 2004;Jørgensen et al. 2006). As the

perspective of this paper is more narrow than in these studies, the same categories are not directly applicable, but a related way of thinking is reflected in a three level categorization of the energy impacts related to ICT use in households. The impacts are thus grouped in

- *Direct energy consumption* (mostly electricity) related to the use of ICT equipment in household practices, both in the dwelling and on the move.
- *Indirect energy consumption* related to the provision of households' electricity consumption, the production and disposal of ICT equipment for household use, and the running of the infrastructure such as sending masts and servers. The term "indirect" is thus used here in the same way as usual in the energy literature rather than in the way used in ICT studies.
- *Derived energy impacts* relate to changes in the composition of consumption and in behavioural patterns influencing households' energy consumption as well as systemic energy consumption.

The two first categories of energy consumption tend to increase when the amount of equipment is increased, although this can be counteracted by increased efficiency of new equipment. In the third category more positive impacts can be expected to dominate, such as, for instance, those related to equipment installed to manage heating and lighting in the dwelling in an energy-saving way – however, the outcomes in this category will be highly contested. This category also covers the effects of teleshopping and teleworking for energy consumption of both households and the wider system. The term rebound effects is not used in this categorization, because the term is attached to the indirect effects of a change which is motivated by environmental concerns (rebound effects in consumption is discussed by (Hertwich 2005)). In a few cases it could be relevant here to talk about rebound effects – for instance, in the case of energy-saving heat regulation which might save money that can be used for more energy-consuming purposes – but few of the ICT acquirements are motivated by environmental concerns so this will be left out.

The integration of ICT in everyday life
As a basis for dealing with the energy impacts of household ICT use, this section focuses on the ongoing process in which ICTs gain access to everyday life. The process will be seen in the perspective of the history of technology as this indicates the sweeping character of the changes.

In some respects, the integration of the computer in everyday life can be compared to the integration of the small electromotor. When the electromotor was introduced, it became integrated in a wide range of domestic appliances and tools – vacuum cleaner, mixer, refrigerator, washing machine, dishwasher, airconditioning, drilling machine, toothbrush. The electromotor could replace muscular strength and transmit energy for heating and cooling, and innovators searched for all conceivable possibilities for developing devices applying this new technology (including some of the more absurd applications, e.g. the electric tie holder). The motor became part of the thorough transformation of household work, the near disappearance of domestic servants, and the increasing participation of women in the labour force (Cowan 1983;Olesen and Thorndahl 2004). The point is not that the electromotor was driving all these changes, but it became integrated in the ongoing social processes and put to uses formed by the social dynamics. Thus Cowan emphasizes how the technology could have been used in other ways with different social outcomes, such as collective solutions to household chores, if the social and cultural dynamics had been different. The computer has a general applicability comparable to the electromotor and can be integrated in practically all everyday activities. The computer replaces or enhances brain capacity – the ability to calculate, manage, communicate, and regulate – a quality that can be used everywhere.

Presently, innovators are searching all conceivable possibilities for applying this new technology in appliances, tools, and devices that can be tempting for consumers and fit into their topical concerns and desires.

The computer is not only connected to the electricity net (directly or indirectly through batteries) as the electromotor, but can also be connected to networks of communication, including the Internet, the so-called motorway of information. The Internet introduces a new infrastructure that calls for comparisons with the introduction of electricity, telecommunication, broadcasting, and even the water supply system and the sewerage system. When these large technological systems are developed, many actors and interests are involved and contribute to the coevolution of technologies and use patterns. When such a system is stabilized, it becomes an unacknowledged basis of everyday life – one more system that we are served by and serve in our everyday life (Otnes 1988). The Internet has not yet acquired this status of unacknowledged basis of everyday life, but the new possibilities for acquiring information and entertainment and for communication are increasingly integrated in all conceivable activities, driven by both commercial and political-administrative interests and by users themselves.

The present coevolution of technologies and everyday life is, furthermore, characterized by the increasing mobility. This trend can be seen as a continuation of previous efforts to make all sorts of equipment available for activities on the move, such as the portable gramophone, the portable typewriter, the transistor radio and all sorts of equipment for the car and the camping trip. The mobile phone is probably the much successful innovation ever in this line of mobile appliances, and Levinson (Levinson 2004) argues that this follows from basic human desires: "It is a need as old as the human species – the need to talk and walk, to communicate and move, at the same time. It is a need that even defines the human species, as an organism that makes symbolically meaningful sounds with voice boxes and tongues, and goes from place to place upright, on hind legs" (p. 13). When the mobile phone is combined with wireless access to the Internet in large geographical areas, the mobile encyclopedia, the mobile library, and the mobile entertainment center are available as well. The development of wireless connections and better batteries permit that ever more activities can be carried out on the move, gradually reducing the difference between what can be done at home and on the move, respectively.

These general observations are reflected in the ongoing integration of computer, Internet, and mobile phones in numerous everyday practices. The pervasiveness of these technologies can be illustrated with examples from the different spheres of everyday life. The use of computer and Internet is increasingly integrated in:

Work and education: Telework, e-learning, ordinary school work, well equipped home offices, video conferences.

Reproductive work: Shopping, banking, public services, health monitoring, the intelligent home (regulation of heating, lighting, security systems), security, child care (entertainment, monitoring), cooking (find the recipe), do-it-yourself (exchange experiences, find information). Computer and Internet also add a new task to the list of reproductive activities, namely ICT maintenance, just as the car once added the task of car wash.

Leisure: Social communication, entertainment, games, creativity, documentation, hobbies, gambling, sex.

Civil society: Organizations, political activities.

Theories concerning the formation of practices in everyday life point out three constituent aspects of a social practice: The competences needed to carry out the practice, the material devices used for the activity, and the meaning attached to it (Shove and Pantzar 2005;Warde 2005). This theoretical framework has been used to discuss the formation and change of specific practices, but it can also be used to illustrate more general dynamics cutting across many practices. ICT is an example of generic technological change – a change of basic technologies influencing all sorts of applied technologies – which provides a supply of renewed material devices for many different practices. Simultaneously, these practices are influenced by changes in the other two constituent aspects, as technological change codevelop with changing discourses offering new meanings to various practices and with the development of training in the use of the new technologies. In Fig. 1 (next page) the three constituent aspects are illustrated in the top part of the figure, surrounding everyday practices. For all three aspects, government regulation, subsidies, campaigns, and other activities play a decisive role alongside the governance enacted by the firms and organizations involved – for instance, in the provision of safety, standards, business models, and training, as well as in influencing the discourses through reports on the need for keeping up in the competitive race, the prospects of the experience economy, and the potential for using ICT in various sectors.

In the formation of everyday practices, the ICT-related dynamics meet with other social dynamics related to dominant social concerns and trends of the time. Examples are the long-term trend towards individualization and personal independence, the discourse on busyness, stress and the balance between work and family life, and the preoccupation with body and health. In Fig. 1 these cross-cutting trends are mentioned within the box of everyday practices. In relation to each specific practice, many other, more detailed concerns will be important.

Direct energy consumption
The most immediate energy impacts of the integration of ICT in everyday practices are visible in household electricity consumption. Still this impact is not large compared to other categories of energy consumption in households, but it is increasing. Denmark has been particularly successful with regard to decoupling household energy consumption from economic growth. From 1990 to 2005 household energy consumption increased only 4.4%, but electricity consumption for light and appliances increased 18% (Energistyrelsen 2006). Most electricity is used for white goods, but the importance of media technologies, including TV, video, computers and related equipment, increases. Presently, approximately 20% of electricity consumption is used for media equipment, and about half of this is used for standby (Gram-Hanssen 2005).

As illustrated in Figure 1, energy consumption related to the use of ICT depend on the quantity of ICT equipment, the energy efficiency of this equipment, and the patterns of use, that is, the number use hours, the time on standby, and the intensity of use (the energy consumption of some appliances depends on the kind of use). In the following, some of the present trends influencing electricity consumption will be highlighted.

Presently, television and video weigh more heavily than computers, and in the near future, a particular burst of energy consumption can be expected in relation to the digitization of television and to the diffusion of HDTV, High Definition TeleVision. The increasing energy consumption is related to the need for set-top boxes that can be combined with existing TV sets or are integrated in new sets. In spite of increasing interest in keeping down energy consumption of TV sets, little interest has been directed towards set-top boxes, and many

Fig. 1. Relations between ICT-related changes of everyday practices and the ensuing impacts on energy consumption.
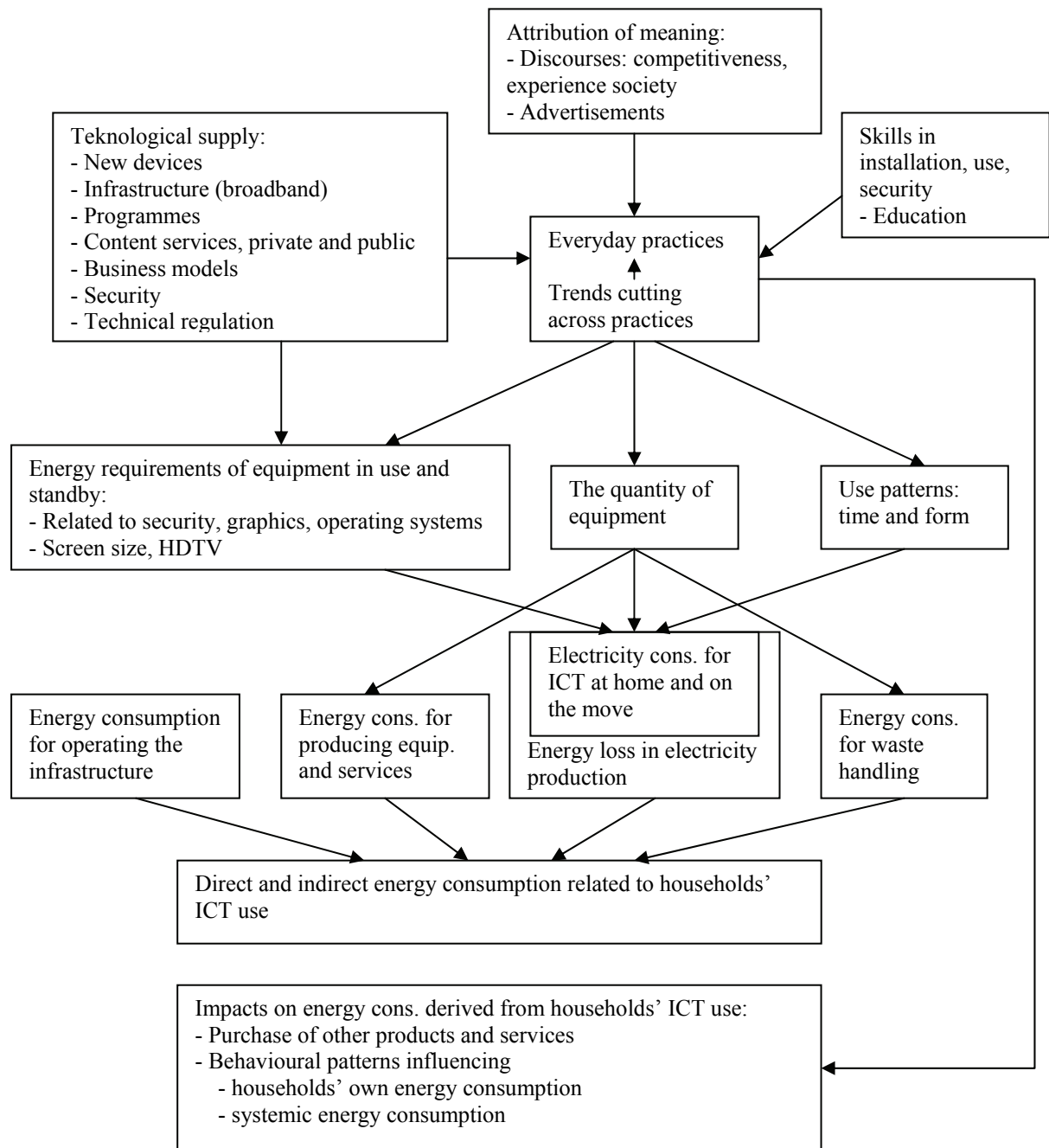
models are rather ineffective. As the stock of TV sets is large, nearly one set per person (Energistyrelsen 2006), and as many people have to follow suit if they want to watch television (excepted are a large group connected to cable TV who can carry on as usual), the impact can be expected to be considerable. Of course, digitization can be an opportunity to replace older energy-consuming models with newer and more energy-effective models (LCD (Liquid Crystal Display) flat screens are more efficient than the old CRT (Cathode Ray Tube) screens), however, replacements are often combined with increasing screen size, counterbalancing the efficiency improvements. The interest in so-called home cinema equipment has increased, including acquirement of plasma screens which are particularly energy-consuming. TV sets prepared for receiving HDTV are also more energy-consuming because of the higher resolution. Instead of following the trend towards increasing average efficiency exhibited by white goods, the average efficiency of TV sets has been relatively stable and even decreased a little (Energistyrelsen 2006). As mentioned, the number of TV sets is already very high, but the diffusion of flat screens might increase the number further, as these screens are easy to place everywhere, bringing TV into kitchen and bathroom and adding to the use of TV as a kind of "back cloth" for other activities.

Digitization of television does not directly seem to be part of any profound changes in the practice of watching television. The quality of the picture improves, and it is possible to turn on subtitles in various languages. When digitization is combined with the use of media centres / harddisk recorders, the opportunities for flexibility are increased as programmes can be shifted in time more easily than with the use of video and DVD. Visions regarding interactive television are discussed (Jensen & Toscan 1999), but it still remains to be seen whether practices change more profoundly.

While television is bound to a particular, although very time-consuming, practice computers and Internet are integrated in a wide variety of practices. The increasing energy consumption related to computer and Internet springs from the integration in an increasing number of practices and the ensuing increase in time use and amounts of equipment. When time use at the computer increases, household members increasingly demand their own computer so they do not have to wait for their turn. The demand for individual independence that is well-known from the acquisition of TV sets now makes itself felt for computers – each person his or her computer seems obvious for the younger generations. A less developed trend – which might become more important in the future – is the emergence of activity or room specific computers, for instance, specially equipped computers for use in the kitchen, the bathroom or in the garage where conditions may be tough.

Due to rapid technological change and ever more advanced applications, there is not only a demand for more computers, but also for ever more powerful computers and other ICT equipment. Demand thus increases for
- higher quality, such as larger screens with better resolution
- more processing power needed for, for instance, running the latest versions of operating and security systems and for the advanced graphics of games
- more data storage capacity, needed for the increasing amount of photos, videos, sound files, mails
- larger bandwidth, needed for video-streaming and for upstream P2P (peer to peer) file-sharing of videos and music.

These changes constitute a strong force counterbalancing improvements of energy efficiency.

Seen over a long period, various factors have influenced the energy efficiency of computers (based on (Cole 2003)). To increase the processing power of computers without increasing the size, heat reduction was necessary and this stimulated effiency improvements. With the introduction of laptop computers energy-saving was encouraged because of the desire to increase battery life, and the advances for laptops were later brought into desktop computers. For instance, this was the case for built-in power management which was brought from laptops to desktop computers in the early 1990s. The U.S. conservation programme, Energy Star, strongly encouraged further improvements so from the mid-1990s standby consumption decreased drastically, and impressive savings were achieved in business offices in the U.S. However, the power levels in operation did not change much, because the efficiency improvements codeveloped with more powerful microprocessors, more memory, and more disk storage. The monitor part of the computer became more energy-intensive in the 1990s because of the almost universal shift to colour screens and larger screens with higher resolution. However, over a more extended period of time the shift from CRTs to LCDs saves energy.

As modern computers are very diverse due to consumer-specified features, the power requirements vary so much that it can be difficult to assess the general trend (Cole 2003, p. 138). Danish data indicates that the average new desktop computer is not requiring less energy in operation than computers a few generations older (T. Fjordbak Larsen, pers. comm.). However, an increasing number of new computers are laptops, and they are more energy-effective than desktop computers. In 2006, for the first time the number of laptops sold in Denmark exceeded the number of desktop computers. This can be an energy-saving trend if the laptops replace the desktop computers, but it is difficult to assess to which extent the laptops are additions rather than replacements. Desktop computers are still cheaper in terms of processing power per dollar, so a person interested in playing games or carrying out other demanding graphical activities will often prefer a desktop. Furthermore, it is easier to extend a desktop computer with supplementary graphics cards or other peripherals.

The power management functions offer good opportunities for energy-savings, but they have to be activated. This is not always done, either because of lack of knowledge or because of technical difficulties, for instance, related to network connections and the coupling to other equipment.

The question of complementarity versus substitution in the case of laptops and desktops can be raised as a more general question. In many cases, ICT equipment incorporate a variety of functions and can, in principle, replace other, more specialized appliances. An example is the camera phone which can render the camera superfluous. However, the camera in the mobile cannot provide the same quality and capacity as the dedicated camera so the camera phone may become part of a diversification process rather than part of a rationalization of the number of appliances. Another example is the combined printer-scanner-copy machine which can reduce the number of appliances attached to the computer. However, it is expensive to run a scanner because of the need for colour cartridges, so it can be cheaper to invest in a supplementary laserprinter for printing texts.

The trend towards diversification of equipment seems to be strong, as it is reflected in the wide variety of available devices advertised in magazines. Not the least for mobile devices is the supply widening as more functions become available on the move. Rapid technological change implies that multiple generations of equipment co-exist, for instance, taperecorders – CD players – MP3 players, and video – DVD – harddisk recorders. Consumers thus tend to

have an increasing number of small and/or supplementary devices, often in various ways related to the core products – the computer and the TV set. The direct energy consumption of each of these devices in the use phase is usually not large (except for standby consumption that can be high for some products), but the sum of the small contributions may be significant. Adding to this is the phenomenon that less attention is focused on the energy consumption of the peripheral devices than on the energy-efficiency of the computer and the TV set. One reason may be the quick renewal rate which does not allow producers to pay much attention to optimizing energy-efficiency, and another reason may be the lack of regulatory attention, partly due to the difficulties related to regulating products that are changing so quickly.

A particular trend adding to the ICT-related energy consumption emerges from the phenomenon of multi-tasking. Especially, young people are able to manage computer, television, music centre, mobile phone, and the electric guitar – all at the same time. A Danish study thus demonstrates the high electricity consumption of teenagers (Gram-Hanssen, Kofod, and Nærvig Petersen 2004). Older generations may be less able to multi-task, but they are able to install systems that use electricity without anybody being present, such as surveillance cameras and other security systems. One of the visions related to the "intelligent home" is the possibility of communicating with the security systems at a distance, for instance, opening the door for the postman bringing a parcel or the plumber coming to repair an installation in the house.

Finally, it is worth mentioning that the search for new ways of using ICT has resulted in more functions using energy in the use phase – functions which were previously carried out without energy consumption in the use phase. Examples are the electronic diary and shopping list, maps for navigation, photo frames showing digital pictures, and surveillance.

Summing up, the increasing direct energy consumption related to ICT equipment has many sources. The effect of increasing quantities of equipment and of more time spent on activities using ICT is difficult to counterbalance with efficiency improvements, in particular, because the equipment in itself becomes more powerful, and because in some cases, the attention to energy-efficiency is limited.

Indirect energy consumption

Presently, we have few available data for elucidating the indirect energy consumption related to household use of ICT, so this section will only include some preliminary reflections. The indirect energy consumption arise from the production of electricity and from the other phases in the life cycle of the ICT equipment, apart from the use phase. Furthermore, the importance of the supporting infrastructure is considered.

The first component of the indirect energy consumption relates to the provision of the electricity used for operating the household equipment. This component differs between countries in accordance with the efficiency achieved in electricity production. Due to a high degree of combined power and heat supply, this efficiency is relatively high in Denmark. This component of the indirect energy consumption is thus only about the same size as the direct electricity consumption.

The second component relates to the energy used for the production of the ICT equipment. Kuehr, Velasquez, and Williams provide data for the environmental impacts related to the

production of computers, and they emphasize that a significant share of these impacts are incurred in the production phase: "For a desktop computer used at home, for example, the energy needed to produce the machine is four times more than that needed to power it during the use phase. The energy consumed to produce a refrigerator is only about one-eighth the electricity used to run it" (Kuehr, Velasquez, and Williams 2003, p. 4). For mobile phones the economic life is very short and this makes the relative importance of the energy consumption in the production phase even larger (Legarth, Willum, and Gregersen 2002). In other words, the rapid rate of renewal for ICT equipment implies that energy use for production is a very important category.

The third component relates to waste handling. The high-tech parts of computers and other electronic equipment are difficult to recycle, while the bulk materials like steel and aluminium are easier to handle. Klatt (Klatt 2003) outlines the many technical difficulties that recycling of computers meet with and explains why it is quite costly, however, he gives no information on the energy costs of the process.

Finally, the fourth component relates to the operation of the ICT-infrastructure (a brief discussion on this can be found in (Hille, Aall, and Klepp 2007)). A recent report from IDC illustrates the enormous growth of digital information and the need for storage capacity not only at user level, but also for service providers such as Google (Gantz and et al. 2007). Some service providers run large parks of servers, so services that appear to be virtual – immaterial – from a user perspective can be based on quite extensive material investments. The virtual world of "Second life" thus has a material basis in the servers of Linden Lab.

Derived energy impacts

While both direct and indirect energy consumption tend to increase when the number of appliances and the time spent using them are increased, the derived energy impacts are more likely to be positive. Most obviously, ICT can be used directly for energy savings. Thus ICT can be used for managing heating and lighting in the dwelling (lowering of the temperature at night, sensors turning off the light when nobody is in the room), and ICT can also make it easier for households to monitor their energy consumption and thus encourage savings. The Danish Electricity Saving Trust estimates a potential for electricity savings from 10 to 30% in households by using intelligent building systems to control the electric equipment. For instance, in summer cottages, heated by electricity and only used occasionally, there is a large potential for reducing the consumption by using such systems. However, the existing systems are too expensive today, due to a lack of competition, and also the standards are closed, meaning that they cannot communicate with the electronic equipment of existing systems (Ingeniøren newsletter, 21.04.2006).

Also, the Internet can be used for making available relevant information on energy savings, as can be seen, for instance, at the homepage of The Danish Electricity Saving Trust http://www.elsparefonden.org/ and the recently initiatived public campaign encouraging people to save 1 ton of CO_2. While these impacts are positive in an energy perspective, it should not be overlooked that the Internet, in an analogous way, can encourage energy-intensive consumption – for instance, by making available new options for booking cheap flights and finding exotic travel destinations (Reisch 2001).

While it is relatively simple to see that ICT can be used for energy-saving purposes, it is far more complex to consider what happens to the various practices in which the use of ICT

becomes integrated. In some cases the use of ICT is just an "add on" where more equipment is added to well-known activities that are not much changed. An example can be the use of a "running computer" for monitoring one's training efforts; such an addition does not change the practice of running in ways which have derived impacts on energy consumption. The same goes for quality improvements, such as larger screens, HDTV, and better graphics in game consoles.

In other cases the practices are changed more profoundly by the integration of ICT. Environmental improvements, including energy-savings, have been expected from such changes, in particular, in relation to teleshopping, teleworking, and the replacement of material products such as newspapers and CDs by Internet-based services. Jørgensen et al. (2006) summarize a number of studies on telework and transport. Whereas some of the early studies were very optimistic with regard to the potential for energy savings, more recent studies emphasize that a substantial part of the transport savings are counterbalanced by increased transport for other purposes and increased transport by other family members. In general, the results regarding structural impacts are highly sensitive to system boundaries and dependent on behavioural assumptions. Studies are often inconclusive because it is difficult to know, for instance, whether people will continue to go shopping although they buy some things via the Internet, and whether they will move further away from their workplace to take advantage of lower property prices when they work at home part of the week.

Supplementary to the discussion on derived impacts in relation to individual practices, it is possible to raise the issue from a more general perspective: If consumers tie their money and their time to the acquirement and use of ICT, then less money and time are free for other purposes – and the question is whether these other purposes are more or less energy-intensive per monetary unit and/or per unit of time. It may seem surprising that the question is raised in terms of both money and time, as one of the two perspectives could appear to be sufficient, in particular, if an economic maximization model is applied (Linder 1970). However, in practice both time and money constitute limitations on consumption, and institutional constraints imply that the two factors cannot be reduced to one another. To start with the monetary perspective, the acquirement of ICT equipment and services takes up an increasing part of consumers' income. In general, competition on hardware keeps prices down and energy-intensities high. In some cases, service providers have succeeded in keeping high prices due to monopolistic or oligopolistic market conditions which implies a relatively low energy-intensity per monetary unit (examples are charges for phoning, Internet access, and packages of television programmes). However, public regulation is quite active with regard to breaking the monopolistic tendencies, not only because of the general wish to promote competition, but also because of the particular interest in developing the information society. A recent project thus demonstrates that the energy intensity of ICT-based leisure activities is relatively high (Hille, Aall, and Klepp 2007, p. 166-67).

From the perspective of time, it is worth considering whether the integration of ICT tends to take up time that could have been used for other purposes or whether, on the contrary, time is freed for other purposes. If, for instance, reproductive activities such as paying the bills, shopping, and contacting the taxing authorities, can be carried out in a shorter time by using the Internet, then time is freed for either working more (and earning more money) or having more leisure time (where money can be spent). Also activities usually considered to be leisure, such as planning holiday travelling, can be done more effectively, thus freeing time. Multi-tasking and accomplishing tasks on the move can add to the productivity increase. On

the other hand, the Internet is known to be time-consuming as one can become absorbed in surfing and sidetracks, reducing the time for other activities and related consumption.

It is difficult to conclude anything regarding the consequences of the changing composition of time use and consumption in the wake of ICT integration in various practices. But it can be argued with more certainty that the supply of ever changing ICT and the integration of ICT in a wide variety of products and practices serve as part of the motor driving consumption growth. It is difficult to imagine the achievement of any kind of satiety in this dynamic setting.

Concluding remarks

As emphasized in the introduction, the intention of this paper is not to assess whether the integration of ICT in household practices is good or bad in an energy perspective. Anyway, the issue is so complex that even very elaborate studies could hardly lead to any decisive conclusions. It is more important to find ways to avoid the negative energy impacts of ICT development and to encourage the positive impacts. The issues dealt with in this paper suggest various ways in which the net result can be improved:

- The indirect energy consumption, in particular, related to the production of ICT equipment carries great weight. Therefore, "The simplest and most effective way to reduce environmental burden may be to ensure that users need fewer new PCs in the first place", as Kuehr, Velasquez and Williams argue (p. 14). In chapters 8, 10 and 13 in their anthology it is discussed how the lifespan of computers can be extended through more effective used-computer markets, smooth transfer of software licenses to secondary users, and easier ways to upgrade computers. The issue of lifespan extension is highly relevant also for other ICT equipment, not the least for mobile phones.
- Power management functions are important for electricity consumption in the use phase, and it is still highly relevant to focus on the reduction of standby consumption, both by technical means and through changed patterns of behaviour.
- Digitization of television should be complemented with intense campaigns for the choice of energy-efficient replacements.
- The focus on the energy use of the core products, the computer and the television, should be broadened to include also the wider variety of ICT equipment.
- It is relevant to keep a critical eye on ICT-uses. In spite of the enthusiasm for the information society, maybe not all gadgets deserve a place in everyday life.
- Economic considerations have not been the focus of this paper, but it should be mentioned that the net energy impact of ICT use, obviously, is influenced by the price of energy. There is a potential for using ICT for energy savings, and the realization of this potential depend, at least partly, on energy prices. The price of energy for transport is also decisive with regard to the derived impacts, for instance, whether people decide to move further away from their workplace when they get the chance to telework part of the week. In short, price incentives, as well as other incentives not directly related to the technology, influence the net energy impact of ICT use.

The above suggestions relate to direct and indirect energy consumption, whereas it is much more difficult to consider how positive energy impacts can be encouraged and negative impacts prevented when focus is turned to the derived impacts. To improve the basis for elaborating suggestions for a proactive approach to ICT-related energy consumption, further

in-depth studies of household ICT use could be useful. Such studies could deal with questions such as:
- In which practices are ICT becoming integrated? For which household members?
- In which cases does the ICT integration serve as an add-on to previous ways of carrying out the activities, and in which cases do the activities change more profoundly?
- Does the use of ICT save time, for instance, in relation to shopping, banking transactions, and enquiries to public authorities?
- Does the use of ICT save transport in relation to the same activities?
- What does social communication via ICT imply for the wish to meet?
- Is ICT applied with the purpose of saving energy?
- How often are various appliances replaced?
- Do several generations of appliances co-exist?
- Which functions are served by diversified equipment?
- Which functions are merged in rationalized equipment?
- What do households do with equipment they want to discard?

Hopefully, such studies on households' ICT use in an energy perspective can encourage that the agendas related to the information society and to climate change, respectively, can increasingly be brought together.

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New Media and Older Users: Not Just a Matter of Age, Stupid!

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Abstract

This paper discusses how older (non) users of the internet are represented in Europe's Information Society policy discourses, taking as a point of departure the fundamental divergence in representations of older age and new technologies. Social science critique of technology-centric perspectives in policy making has questioned assumptions that new ICTs are inherently progressive and produce on the whole positive outcomes with regard to quality of life, market and civic participation. What has not received critical research attention is the study of people. Disadvantaged social groups who are heavy users of welfare services are customarily defined though disabling categories, such as 'older and disabled people'. Older people's relationship with new ICTs is most commonly oversimplified, framed in terms of a generation gap. New media technologies are coded as the domain of younger generations. Older people are associated with notions of technophobia, passivity and decay. They are commonly constructed as non-engaged, unable to develop new media literacies and take up new media and services and, at the same time, considered major beneficiaries of online access to services. These increasingly prevalent definitions of older adults as a homogenous, disadvantaged group of (non)users take substantive positions about the nature of our societies and of social relationships, and bring these into the development of public policy. The tendency to take age as a key independent variable implies older people's lack of engagement with new ICTs is a temporary inconvenience, suggesting a change in the situation of older cohorts in the near future. Europe's information society policies bear a risk of failing to establish whether current levels of differential access to the internet represent a long-term challenge. This way of framing policy debates shows little evidence of an anthropocentric perspective that considers the wishes, needs, capabilities of real people. The paper suggests that ICT users are better understood as relational entities, and concludes by suggesting areas for policy intervention into lived experiences of age and media use.

Introduction

Communication and information access are increasingly mediated by digital technologies, to the point where those unable to use these technologies are at risk of being disadvantaged in a range of areas, including e-government information, ICT-enabled public services, and the more familiar public electronic communications. Expressing concern about inequities in the ability of individuals to partake on opportunities that can be realised in internet access, the European Commission's Information Society and Media directorate is currently deliberating about the levels of media literacy in Europe's population (EC, 2006). Media literacy is defined by the UK Office of Communications (Ofcom) in terms of takeup, understanding and usage of a range of electronic ICTs. Ofcom's definition, currently debated by EC High Level expert group is the ability of users to 'to access, understand and create communications in a

variety of contexts' (Ofcom, 2006a:4). Defined this way, media literacy is a condition for participation in the marketplace and the public sphere, 'starting to match the importance of other forms of literacy to work and leisure, and to the functioning of democracy' (DCMS, 2006:4). Media literacy is 'as central to active and full citizenship as literacy was at the beginning of 19th century' (EC, 2006). Without such skills, 'people's ability to participate effectively in the workplace and society may be greatly diminished' (Ofcom, 2006a:3)

Although internet use grows steadily internet takeup remains lowest between older people. According to Ofcom's audit of media literacy in the UK population, age continues to feature 'the single most significant defining factor in levels of media literacy' (Ofcom, 2006b:11). In 2004 31 % of UK residents aged between 65 and 74 and 20 % of those aged 75 or more had accessed the internet at least once, against 60 % of national population (OxIS, 2005:51-52). According to the 2006 report of the UK Office of National Statistics, there remains a large divide between the young and the old, with 83 % of the 16 to 24 age group accessing the internet compared with 15 per cent of the 65+ age group, and with 10 % of the 16 to 24 age group never having used the internet, compared with 82 % of the 65+ age group (ONS, 2006:4) Numbers fall dramatically across the EU where according to the *Eurostat* survey just over 10 % of Europeans aged 65 or over had accessed the internet in 2005 against 68% of individuals aged 18-24[1] (EU&EFTA, 2006).

Older people in Europe's Information Society policy discourses

Age then is related to whether people use the internet. Attitudes towards the internet appear to be strongly associated with age. And so is the way we make sense of the relationship between people's age and their media literacies. Our understandings of how people relate with new ICTs are defined by the sense we make of their age. Our Information Society is an ageing society, and yet advanced age is customarily associated with peril, calling policy attention though reminders of its limitations (cf. Riggs, 2004).

In Information Society (IS) policy discourses the relationship of older people with new ICTs is a double problem (Sourbati, forthcoming). Older people, especially those aged 75 or over are 'heavy users' of public services. Use of new ICTs is supposed to benefit isolated, home centred older people who use welfare services and reduce the cost of public service provision. Benefits accruing from internet access include enhanced opportunities to reach out services, convenient access to health care information and opportunities for interpersonal communication and life long learning. In that way new interactive ICTs support 'active ageing' and independent living. In the context its e-Government Action Plans, which set a national programme of action for electronic delivery of government information and services, increase of internet access takeup and boost of e-commerce (Cabinet Office 2000; 2002), the UK government has made explicit mention to the use of ICT in its policy making documents about the care of older people (Curry et al. 2002). First, to use 'assistive technologies' to make care provision more efficient and less intrusive and second, to make information about the range of care services available more accessible to older customers. However, as older people do not use new online ICTs they cannot benefit from e-public service provision. In short, older people are constructed as a category of heavy users of public services who are at risk of 'digital exclusion', along other disadvantaged groups.

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[1] In 2005 57% of individuals living in the EU did not regularly use the internet; only 24% of persons with low education used the Internet, against 73% of those with high education; only 32% of unemployed persons used the Internet against 54% of employed persons. There are, of course, sharp distinctions across the EU with pensioners living in Nordic countries more likely to use the internet.

Policy circles in Europe express a growing sense of concern that e-government services haven't reached 'the elderly and those with disabilities' who are at risk of social exclusion along with people in low income (Cabinet Office, 2002). Halving the gap in internet usage by 2010 for groups at risk of exclusion, notably older people, people with disabilities, and unemployed persons is set as a key target for policy action by the 2006 Riga Declaration on eInclusion: *'In line with i2010, eInclusion policy addresses issues in the fields of active ageing, geographical digital divide, accessibility, digital literacy and competence'* (EU & EFTA, 2006:2)

Almost eight years after the launch of *eEurope* (EC, 2000) and Member State e-government action plans policy making efforts are not attuned to the need for inclusive practices and models that promote access to online connectivity by addressing the lived circumstances of different cohorts of 'older and disabled people'. In the UK, a Member State with relatively high internet penetration rates, there is no evidence of sustained policy commitment to support the development of new media literacies for older citizens and carers. Public subsidies of home internet access are not evident either. Government sponsored training to encourage older people to learn using networked computers has been available as short, half hour sessions, dubbed 'Silver Surfer' events, where library staff or community volunteers show older customers how to use the online catalogue and email. Silver Surfer events are marketed as opportunities for older people who are unfamiliar with networked computers to join 'tester sessions' to experience – if not learn – using online ICTs. Silver Surfer events have been run as part of the UK Online programme that established a network of 6,000 community internet access points in museums, public libraries and other community learning centres between 2002 and 2004 (Cabinet Office, 2002). Following the completion of the UK Online, Silver Surfer initiatives are today run mainly by the charitable and voluntary sector supported by corporate sponsorship.

Over the past couple of years Silver Surfer news feature regularly in Ofcom's Media Literacy Bulletins. For example, Issue 7 (September 2006) hosted an article on the UK '*Silver Surfer Week'* organised by the *Charity Age Concern* and supported by BT, Microsoft UK, and Intel as well as AOL, Ofcom and the National Institute of Adult Continuing Education, to 'promote adult media literacy'. According to the article, during the week-long events 17,000 older people attended computer tester sessions run at community centres, libraries, UK Online centres, local Age Concern offices, sheltered housing accommodations, village halls and commercial training companies. Issue 9 (February 2007) includes a short article entitled *Silver surfers learn web skills*: 'A technology school and a housing group based in Kent founded a project to get more than 450 'silver surfers' online. … A Church of England school with a specialism in technology, is supporting this initiative by providing a specialist teacher who is working with residents from sheltered housing schemes to find out how technology can enhance their lives.'

The discursive portrayal of Silver Surfers is patronising and effectively reproduces stereotypical representations of older people. First entrenched as a stereotype in the end of the 1990s in advertisements targeting older American consumers of ICT products (Riggs, 2004:157-8) Silver Surfers became the metaphor of choice in Europe's e-government publicity and in commercial marketing. The 'Silver Surfer' category refers to confident and competent older consumers of new ICTs. As Selwyn et al comment (2003:262) Silver Surfer discourses 'reinforce the notion that older adults stand to benefit from ICT in various ways, and that the ability to make use of new technology is a ready means though which to "bridge

the generation gap". The concept of Silver Surfer does not challenge ageist attitudes manifested in the growing trend for newer generations of older people to be seen to act as consumers in the growing market for 'eternal youths' with regard to physical appearance and tastes[2]. Here age as subjectivity is calling attention to itself as something that can be reversed to 'youth' though consumption. The use of ICTs is seen as a ready means for older people to regress into youth by 'reconnect[ing] or improv[ing] their connection with the outside world' (White et al. 1999:362 in Selwyn et al, 2003: 563) – the world of the young and able, the confident and the included.

Technology-centric, individualistic and polarised notions of media access

These portrayals of older people are underlain by technology-centred claims, individualistic and polarised conceptions of ICT 'users' and 'non users' and binary conceptions of ICT access and use.

Europe's IS policy goals have been media-centric. e-Government and communications policy plans for the digital switchover have placed their emphasis on the formal, technical characteristics of online ICTs. Policy proclamations have stressed the potential of new ICTs to promote inclusion, improve public services and quality of life (EC, 2005: 9). UK's digital strategy is for 'public service delivery transformed by modern technology' (Cabinet Office 2005a: 2-3). At the same time, Europe is facing a reality of low levels of access to e-government services by target customer groups[3], and a minimal impact of community training programmes in encouraging 'disadvantaged groups' to access the internet: *'There is still evidence of a digital divide with some groups largely excluded from benefiting from access to the Internet. ... Some individuals may not have the confidence or skills to use computers, even though they may actually want to get online. Others do not see the relevance of the Internet to their needs. They do not see how ICT and broadband particularly can transform their lives.'* (Cabinet Office, 2005b: 7-8). Policy thinking is subsequently taking a 'user-centric' view, showing concern with the characteristics of individuals who do not use new ICTs. UK government is currently prioritising a 'better understanding of customer needs and behaviours' especially 'the needs of key groups – such as older people' (Cabinet office, 2005a: 7-8).

Older people's engagement with new ICTs is commonly understood in terms of age-related cognitive, mental and physical decline. Barrier analyses typically mention how a decline in vision and in physical dexterity stand on the way of older people's use of computer technologies designed for younger, able-bodied users and how their learning to use new ICTs is further impeded by declines in perceptual and cognitive abilities. Research into the role of non users has additionally looked at attitudinal factors. A UK survey by Ofcom's Consumer Panel (Ofcom Consumer Panel. 2006a) identified lack of confidence in learning to use ICTs, a perceived lack of interest and a perception that new ICTs are not needed as factors deterring older people from developing new media literacies. The survey reinforced a familiar conclusion that 'age remains one of the most significant factors affecting how people engage, or don't engage, with communications markets' (Ofcom Consumer panel, 2006a: Foreword, p. 1). This was particularly noticeable in the takeup of the internet where 56% of older adults 'voluntarily excluded themselves' compared to the national average of 22% (Ofcom Consumer Panel 2006a:37).

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[2] For a review of cultural attitudes to ageing and consumption see Harkin and Huber (2004:30-37).
[3] In 2005 only 15% of the population in the UK had used any e-government service (OxIS, 2005)

Within this kind of individual-centric perspectives, a growing perception of new media savvy older people has come to suggest, as Riggs notes (2004:82), that older people who haven't joined the information-rich "haves" of society 'have failed to do so out of choice, or stodginess, or they just haven't been tapped as a market segment'. For instance, Ofcom's Consumer Panel survey concluded: 'older people aged 65 and over are more likely to be voluntarily excluded; so not interested in acquiring, with no perceived need for the technologies.' (Ofcom Consumer Panel, ibid.). In all, IS policy discourses commonly suggest older people miss out opportunities presented in digital, online ICTs being inhibited from learning to use new media mainly because of their personal deficiencies or individual circumstances experienced as a result of their chronological age. However, as it will be shown in the following section qualitative studies of engagement with new, digital media reveals older people's attitudes are more complex than anticipated or hypothesised in policy research.

Static and binary notions of media access and (the) use(r)
Prevailing conceptualisations of older people's relationship with new media draw on static and dichotomous concepts of access, making a distinction between individuals who have access to ICTs and those who do not. IS discourses take ICT access as a binary good. This is the dichotomous view of the 'digital divide' super metaphor, which differentiates between those who have access to internet connectivity and use it to realise opportunities and those who do not. Binary and static understandings of new media access have been critiqued in social science research as flawed and partial (for a discussion see Selwyn, 2004). Internet access is not a matter of one-off connection to a networked computer. It is a matter of degrees and qualitative differences. Access rests on a dynamic and social process, not a one-off act of provision. Engagement with new, interactive media is also a function of access to knowledge and learning. The realisation of benefits derived from internet use rests on a range of analytic competencies, social practices and material circumstances (Livingstone, 2004a). It entails the continuous development of skills and competencies; at its simplest skills in using computers and browsers. Increased use of the internet leads to greater proficiency and confidence in the ability to do a variety of things with the technology and its capabilities: 'Once initial access is established, developing literacy leads users to alter significantly and continually the conditions of access (updating, upgrading and extending hardware and software applications).' (Livingstone, 2003a:1). Raising concerns about the effectiveness of internet use researchers have proposed the term 'digital inequality' to refer to differential ability of users to realise benefits from their access to online ICTs (Di Maggio and Hargittai, 2001, Kvansy, 2006). A way of understanding digital inequality is to place internet access 'into the system of social relations that define and sustain its cultural meanings and intended uses' (Kvansy, 2006:163, citing Bourdieu, 1980). The social relations and material structures that define 'our particular needs and capabilities to do something with the resources we believe are available online.'(Couldry, 2003:11).

The existence of a 'digital divide' between the old and young people, most commonly documented on the basis of internet takeup rates, draws on binary conceptualisations of media access. A notion of access that 'is not sufficiently nuanced to acknowledge differences in experience along axes such as education, social class or disability.' (Riggs, 2004:228-9). Ageist tendencies can be seen as a deeper substratum of dichotomies that position older and younger generations as polarised from each other and at times disengaged by the community as a whole (cf. Age Concern, 2007). The young are labelled 'internet experts'. The old are labelled 'have nots' and 'can nots'. The blanket labelling of young people as 'internet experts' simply reproduces the popular perception of engagement with new ICTs in terms of a generation gap. The confluence of technology-centric, individual-centric and dichotomous

understandings of media access has generated popular, generalising and disempowering conceptualisations of older (non) users. Older people, supposedly major beneficiaries of Information Society initiatives in e-public service, e-government, e-learning, e-health and digital entertainment media, are positioned as uninterested and incapable to develop new media literacies. They are perceived to show a deficit in their new media literacies and consequently positioned as deficient.

Who are the older people in Europe's IS and how they engage with new media?

This paper suggests that policy questions of media literacy and the position of older people are better understood if we move our thinking away from ageist generalisations, get rid of static and dualistic notions of ICT access and reject individualistic concepts of media use. The public policy question regarding access to the internet and new media-enabled public services is how interactive engagement is encouraged and facilitated, how competencies are developed, how material and social infrastructures are made available, how new media capabilities are learned.

Although research into older people and new ICTs is scant the available studies indicate that in Western economies with high internet takeup rates today's older internet users in are more likely to come from the relatively affluent, educated, white middle classes. In the UK internet access among older adults is currently stratified by socioeconomic status and educational background (Selwyn et al. 2003). In the USA 'class and race or ethnicity help to predict on which side of the Digital Divide elders are positioned, along with income and educational levels' (Riggs, 2004:226). Qualitative studies have indicated different generations of older people encounter new, online ICTs in complex and varied ways (Richardson et al. 2005; Sourbati, forthcoming) and practices of media use are embedded and grounded in existing relations of social interaction, meaning, and material structures (Riggs, 2004). This was recently highlighted in a qualitative study by Ofcom's Consumer Panel (2006b). Unlike the overall conclusion of the Media Literacy Audit of their parent regulator, the Office of Communications (Ofcom, 2006a; 2006b) and the first Consumer Panel survey (2006a), this study reported that age and health did not appear as key determinants of whether or not older people were connected to the internet but skills and ability, social and environmental factors and learned ways of doing things did. As put by a 65 year old respondent from Belfast 'young people are taught the skills from a young age, we've lived a long time without having to think like this' (Ofcom Consumer Panel, 2006b:10) The study found 'digitally engaged' older pensioners had developed new media literacies primarily as a result of their experience in the workplace (ibid.3) and exposure to and engagement with media technologies led to further development of media literacies (ibid. 1).

Critical research has questioned policy understandings of media literacy as a feature of the user. The ability to access, use and create communications cannot be taken as a property of the generalised individual. Media literacy is more realistically thought of as an emergent property, conceptualised in terms of the ongoing nature, as a relation between 'the user' and the 'media technology' (Livingstone, 2003b). We develop media literacies in and though our interaction and interface with media. Media literacy cannot be conceived solely as a feature of the user: it 'is not reducible to a feature or skill of the user' (Livingstone, 2003b:2) but must also be seen as 'a co-production of the interactive engagement between technology and user' (Livingstone 2004b: 12). Media literacy is better conceptualised as a relation between the ICT and its user whereby 'the user and the functionality of the [technology] mutually construct each other' (Tuomi, 2005:22)

Penetrating the interface: Beyond individuals and technologies
A more appropriate perspective in the study of policy questions can be found in Tuomi's suggestion (2005) for a reconstruction of our categories for studying 'the user' of ICTs. Starting from the premise that ICTs as technical artefacts become usable and acquire their meaning only in a context of social practice and in relation to social systems of activity, this line of investigation proposes to penetrate though the 'mutual construction' approach where the phenomenon of use is conceptualised as a relation between the individual user and the technology. Tuomi proposes our analysis has to reconsider the way in which we describe the users so that we can make visible the social basis of meaningful use: *'Although users are commonly understood to be individual human actors, on a more fundamental level they can only be understood as agents that express socially rooted meaningful action. ...human actors who act in a complex but highly structured field of social practices'* (Tuomi, 2005:22).

Following this line of thinking, the adoption and use of new media enabled services, such as health care information delivered via the internet, becomes a question of either matching the product/service to a given form of activity – say information seeking in public libraries, or care provision to older people – or social learning, where customers and staff in local libraries or care provision have to learn how to use this service to develop new practices (cf. Tuomi, 2005: 28). This perspective is radically different from the currently dominant policy thinking that constructs older people who do not use the internet as incapable to get interested or learn due to properties/characteristics they (do not) possess as a result of their chronological ageing. I have argued this point elsewhere (Sourbati, forthcoming, 2008) specifically in relation to the situation on Sheltered Homes for older people, where lack of engagement with a new networked computer facility characterised the everyday routines of both the young care professionals and older customers.

When our focus is on the individual (non) users and how they fit new ICTs to their everyday routines we may lose sight of the relational and structured character of ICT use, and related matters of institutional capacity and the distribution of social resources that make technologies usable. Questions of social infrastructure, including the role of institutional settings in facilitating shared experiences and the role of significant others in introducing people to new technologies, are important in the development of new media literacies. As the Belfast respondent in the Ofcom Consumer Panel study reminds us, new ICT capabilities are learned. Children and young people in today's developed economies have learned and use computers and the internet at home, though peer groups and at school. Likewise, the majority of middle-aged adults use networked computers at work and at home.

Qualitative research into how older adults experience new ICTs has examined the role of significant others who mediate between the specialised knowledge and skills necessary to use new ICTs and the situation and needs of new users. Networks of personal contacts such as relatives, friends and other close relations in the local community can encourage novices to introduce new media to their lives, and facilitate their learning of new ICT skills by offering them practical assistance and support (Haddon and Silverstone, 1996; Wyatt et al., 2005). Another practice of mediated access is when someone's engagement with new media is though others – though personal contacts who act as 'proxy' users with regard to contacting others electronically by sending an email and using the web to access information (Selwyn et al, 2005:19;21). Proxy use was documented in the Oxford Internet Survey (OxIS, 2005:6) as practice that increases the likelihood of those with a basic knowledge of the capabilities of online ICT to use its benefits. Mediated access practices beg questions of investment in

human capital. The requirement for public policies to recognise the role and contribution of competent mediators and provide additional assistance and social support for those people who need it in order to use new media services (cf. Garnham, 1999).

Issues of institutional responsibility can pose enormous challenges to Europe's IS as they entail an anthropocentric approach to public policy making: A requirement to think beyond individuals in order to provide for its citizens. Market competition has surely proved effective at extending access to internet connectivity. However, electronic communications are becoming ever-more central to exercising citizenship rights (cf. Tambini, 2006) just as a basic level of education and welfare have been in the last century, we need to develop a wider sense of public electronic communications and their 'users'. The notion of citizen, and citizens' rights to information, has a collective dimension that cannot be reduced to individual choices in a marketplace.

Epilogue: Why we need an anthropocentric policy perspective

This paper was not about 'older people' but about ways of thinking about people in public policy making. In my examination of the position of older people in Europe's IS discourses I attempted to respond to Mallard's call (2005:52) to consider how our analysis of ICT use is liable to become connected to the very project which is analysed. Looking into how our public policies construct and position older people can reveal how fundamentally flawed can be the assumptions which underlie our thinking about technologies, users and age. Dichotomous, individualistic and age determined understandings of media access have consequences for public policy development. To allow this conventional representation of old age to influence public policy and e-service provision for new generations of old people may be to disadvantage them and to misdirect governmental and commercial resources. The implicit assumption that the newly old will be uniformly media literate is misplaced and can lead to other types of disadvantage. As new ICT services develop fast, the network and storage capacity required increases and the associated ICT skills and literacies become more complex, many of today's 'included' end users, for instance those with internet access at work and a home broadband connection, may be tomorrow's excluded. Policy development must re-conceptualise the 'user' of ICTs. Policy thinking along static notions of media access, dualistic notions of use and individualistic conceptions of the 'user' disregards the relational character of media literacy. In essence, the public policy problem is not the 'excluded' non-users. What is at risk is not today's unconnected individuals but social practices of access to information, public services, voice/expression and shared experiences of citizenship.

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Identification Of Community Practices And Co-Creation By Pre-Adolescents: The Case Of Ketnet Kick

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Abstract

The paper intends to construct a critical and nuanced image of online communities and their potential social implications for youngsters. For this reason we investigate what the concept 'community' means to children. We first take an interdisciplinary perspective to discuss theories on pre-adolescence and on communities. We investigate the determinants of (online and offline) communities and try to identify what children find important in a community. Are children engaging e-actors in the community landscape and if so, how are they dealing with it?

These insights are on the one hand based on a literature study. On the other hand we discuss some essential findings from research in the case study 'Ketnet Kick', a successful collaborative game developed by the Flemish public broadcasting company VRT (Flanders - Belgium) and gamesdeveloper Larian. First, diaries and questionnaires were used to identify the children's user profiles. Next, six focus group interviews and ten in-depth duo-interviews were done, with in total 71 children in Flanders (Belgium).

It is crucial that notions of online community and Web 2.0 concepts are re-interpreted for and by children. The context of the children's everyday life is a central factor in determining the media practices and needs of children. In this regard, we find applications designed for pre-adolescents – i.e. children between the ages of eight and ten – aiming at a sense of community through collaboration and co-creation of content. The act of communicating online is not the ultimate goal of these children. Rather, they strive for common experiences and are cooperating for common purposes.

1. Introduction

We are living in a network society (Castells, 2004). Digitalisation and online networks cause profound changes in mediated communication and media experiences. Social networks are becoming hybrid. New media developments like Web 2.0 and social software (e.g. MySpace) are lowering the threshold for participating and connecting online. They have the potential of reconfiguring social networks and vice versa. Internet services that enable community building have also become popular, especially among young people: they grow up using and domesticating these new media (Livingstone, 2002). Some scholars argue that currently, children develop into communicators at an increasingly younger age. Many online communities for children have been conceived, based on this notion.

Yet the notion of 'community' or network sociality is a very charged concept (Rheingold, 2000; Wittel, 2001; Turkle, 1995). Recently we observe an increase in interactive and community products and services for children: for example Taatu, Habbo Hotel, Kid City, the upcoming BBC project, Toyinima and the Belgian/Flemish case of Ketnet Kick.[i] Gaming, pre-adolescents and virtual social worlds are becoming central research issues.

2. Theory on children in online communities

We provide in this theoretical part a quick overview of the most relevant aspects related to children and communities. We start with an overview of the different dimensions that, in our view, shape a community. Additionaly we give a short introduction of pre-adolescents and how they experiences life. These two components wil help us in analyzing one particular community case for children: Ketnet Kick.

2.1. Online communities

On the one hand digitalisation and online networks are causing profound changes in mediated communication and media experiences. Social networks are becoming hybrid, being mediated by social contacts as well as by technologies (e.g. instant messaging, mobile phone, texting etc.). Participation in communities becomes increasingly extended in the physical life (Fox, 2004). New media developments like Web 2.0 and social software (e.g. MySpace) are lowering the threshold for participation and connecting online. They have the potential for reconfiguring social networks. But also vice versa.

The internet becomes domesticated in people's daily lives, especially embraced as a communicative platform. It is not surprisingly that the internet is a place where people interact and develop communities, often referred to as online or virtual communities. Rheingold (2000) defined the latter as: *'social aggregations that emerge from the Net when enough people carry on . . . public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace'.* This paper will discuss the idea of online communities often viewed as new places for communication. Scholars like Castells and Wellman, argue that we live in a paradigmatic shift, for example in the way we are connected to each other. *'It is the shift from living in 'little boxes' to living in networked societies (Wellman & Hampton, 1999).'* People are always and everywhere connected in a positive feedback-loop, according to Wellman. *'The personalization, portability, ubiquitous connectivity, and imminent wireless mobility of the Internet all facilitate networked individualism as the basis of community (*Haythornthwaite & Wellman, 2002*).'* We are witnessing the emergence of 'networked individualism', were individuals are becoming the portal to social contacts and communities.

The meaning of the original concept of community is apparently becoming less valid and could need some adjustments in this changing context. In this paper we will investigate if and how the meaning of online and offline communities is different for children.

2.1.1. Towards an understanding of 'community'

Analysing the concept 'community' is not easy. Many scholars already have tried to make a definition. We see a community as a group of people that share a sense of community in a communal space, where interactivity can take place. In this brief theoretical part we quote the most essential characteristics of communities. This helps to analyse the different kinds of communities and to better understand the nature of the community under investigation.

Tönnies is the well-known pioneer for describing community and society as two overlapping social spheres (Fox, 2004). He makes the distinction between 'Gemeinschaft' and 'Gesellschaft'. The 'Gemeinschaft' is a tightly knit community of individuals, while the 'Gesellschaft' is a more individualized, dispersed society (Tönnies, 1957).

These notions were part of typifying the age of modernization of society, combined with the negative consequence of often-fragmented social contacts. Tönnies regards the decline of the Gemeinschaft - the place of real, organic contact - as a loss for mankind.

Place

The concept community is frequently linked with the connotation of a new kind of 'Gemeinschaft', thus a place where people interact intimately witch each other. Tönnies stresses the importance of locality and a place where people can gather. For Tönnies, the ultimate form of a community is the rural village (Tönnies, 1957). We see place as a position in space, whereas space means a continuous area. Locality, however, is regarded as a place occupied by certain people or particular activities. It is more in the sense of an area or neighborhood .

Thanks to virtual media, however, it is no longer necessary for members of a community to be in the same locality. Nowadays the digitalisation and new media offer new ways to interact, but this evolution also leads to new patterns of time and space, referring to the notion of 'time space distanciation' (Giddens, 1990). The way people meet and interact has thus evolved. The contexts in which the communities originate are changing (supra).

However the idea that place is no longer relevant for communities needs to be nuanced. The availability of a communal place is still important, yet this place can now also be a virtual one. The place can serve as a recognizable symbol for a community. Fox (2004) is convinced that a community is bound by place, which always includes complex societal and environmental necessities'. *'For an individual to be able to picture the virtual community, there must exist some semblance of a physical community system, or even a visual web content, from which he or she can begin to imagine a collective identity. Without the web content or graphical interface that constitutes a home for virtual community, it becomes difficult for an individual to create a communal picture in his or her mind, and as a result, it works against the very survival of the group (Fox, 2004).'* Our hypothesis is that this is also a very important aspect for online communities for children.

The interpretation of the concept of 'place' in a context of online communities is reflected in the online –offline continuum. The online sphere, which rather takes place in the virtual, is mediated, whereas the offline sphere, which takes place in the outside world, is physical. Often, a clear distinction is made between the online and the offline, but in reality this is not always the case. Online and offline spheres are most of the time intertwined, in creating one reality and not two different realities for community members (Wittel, 2001; Miller & Slater, 2000; Wellman, Hampton, 1999). Also Ward (1999) sees the online sphere not as an alien world, as something totally different and cut off from the real world. Both life spheres are part of the everyday life experiences of the user. *'The internet has become a part of everyday life, rather than a separate place to be* (Howard, Rainie & Jones, 2003).*'* Thus the concept of place can entail a virtual aspect (the online sphere) as well as a physical aspect (the offline sphere), which constantly influence each other (and ultimately) form one 'place' in the experience of the community members. Our hypothesis is that this kind of hybrid sphere is essential for the experiences of communities of children.

Imagined

The community takes form online and offline, but also exists on the level of the mind. Even Tönnies already described such a kind of community: *community of mind* (Li, 2004). The latter stresses the importance of a sense of community or the imaginative. The element 'imagination' transcends the physical and virtual place; we move into the individual and collective imagination, as Fox (2004) suggests. A community exits when it has a meaning for people. This is linked to the concept of 'imagined community' by Benedict Anderson (1983): *'All communities larger than primordial villages of face-to-face contact (and perhaps even these) are imagined (Anderson, 1983).'*

Communion

A community is only a community when the members experience it as something real. There needs to be a 'common feeling' or a 'will-to-community' (Fox, 2004). According to Reid (1995): *'The illusion of reality lies not in the machinery itself but in the user's willingness to treat the manifestations of his or her imaginings as if they were real'* (p. 166).

Members also have to be committed to the community. This commitment, or 'sense of community', is an essential characteristic. McMillan and Chavis characterise this concept as: *'[…] a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members' need will be met through their commitment to be together (Meng, 2005).'* This sense of community has a positive influence on the way a community is experienced.

In a virtual community, this is even more the case. The members do not always have face-to-face contact. As such, they need to place trust in the community they are belonging to. More accurately, this 'sense of community' can be called the 'spirit of community', or '*communion*': '*[T]he networks of people that constitute the community. This adds new incentive to the debate as it suggests that the spirit of community or communion that is found among networks of people is [...] more important than having a sense of place (Ward, 1999).'*

The sense of community stresses an important factor in today's experience of communities. It shows that mind and feeling play a central role in communities.

Interactivity

Communities, and especially online communities, are seen as a group of people that interact with each other in a communal place (supra). In the literature on communities, communication is often seen as an essential factor (Wilbur, 1997). Also Rheingold speaks in his definition of the importance of discussions between the members of the community (supra).

We suggest that the concept of 'interactivity' is more suitable. In the following part, it is shown that interactivity cannot be reduced to communication. It seems 'interactivity' can play an important role in bringing a community to live. Interactivity can be understood as the degree people have an influence, have choice and are empowered (Manovich, 2001). The different forms of interactivity can play a role in the experience of communities. We recognize user-to-user interactivity, user-to-documents interactivity and user-to-system interactivity[ii] (McMillan, 2002). Interactivity is also a useful concept in comprehending the Web 2.0 story, actions of children and the possibilities for creativity. Our hypothesis is that user-to-user interactivity is not always required in online communities for children. For this we start from the notion of the imagined community.

2.2. The child: the player of games

This paper focusses on communities for children. Therefore, it is necessary to know more about the targeted age group. What are the charachteristics of children and what are their visions on new media?

Children have always been a difficult research topic. Therefore, it is not surprisingly that there are different theories on the role and position of children in the network society. Often, children are reduced to almighty computerhackers or cyberkids, with the computer as it were a 'child's machine'. According to Katz (1997), children are at the epicentre of the information revolution and the digital world (Selwyn, 2003*)*. For children new media, like internet and games, are no longer unusual or even 'new' but are experienced as everyday, natural objects and thus domesticated.

According to Haddon (2004) friends are an important factor in the adoption and of new media, and learning the skills to use them. Wartella and Jennings (2000) talk about 'pervasive media'. '*The new media are becoming ubiquitous; that is, touching all aspects of children's lives. As digital circuitry becomes smaller, cheaper, and more plentiful, and as computer networks become larger and more pervasive, new-media implementations are likely to show up anywhere, including the nursery and the playground (Wartella, Jennings, 2000).*' They are in fact 'early adopters': '*As 'early adopters' of new media, children and youth are, in many ways, the defining users of the digital media (*Hartman, 2003).*' Therefore, it is important that we continue to listen to children and observe their innovative practices.

2.2.1. Towards an understanding of pre-adolescents

We have studied children in *middle childhood,* often called pre-adolescents (concept often used within the marketing discipline). These are children between 6 and 12 years old, an age group often overlooked in user research (Fine, 1987). Our study focusses in particular on the age group between 8 and 10 years old, who are considered as the 'forerunners' of pre-adolescence. It is however often stated that these children increasingly behave like adolescents (Lorré, 2005).

The age phase of middle childhood is a transitional phase, which makes it a difficult to research subject (Thornburg, 2001) since the children are evolving and changing: psychologically, physically as well as socially. Michael and Sheila Cole (2001) identify a number of biological characteristics that arise during middle childhood and which have consequences for the cognitive and social developments. They start from a 'bio-social-behavioral shift' at the age of five and seven, when an improvement in coordination and balance occurs as well as significant developments in the brainstructure and −functions, which coincides with the first years of schooling.

The social evolutions in pre-adolescence are the most pertinent: '*Children who are seven to ten years of age in these societies spend much of their lives in mixed-age groups caring for and playing with younger siblings and other younger children in their local communities (*Corsaro, 1997).*' Friends and other peergroups are becoming increasingly important. Children spend more time in places where they encounter friends. They are shifting from the environment of the family to peergroups. Their social environment is enlarged with school, sports- and youthclubs, which they can choose for themselves (Van Nes, 2004).

Members, participating in common activities or sharing interests, form groups. Mutual understanding and trust are important factors in this formation of groups. Children also show a tendency towards social participation. They mainly like to play together, but sometimes, for example, they exchange personal information or gossip. This kind of social behaviour is often seen as important for future social development (Cole & Cole, 2001).

Life for preadolescents is seen as one big adventure. They are very active and cannot stay focussed for a very long time. Their need to discover is facilitated by an adventurous world, wherein games form the centre. Child's play offers an interesting insight in the development of children, as it often reflects the formation of social networks. Pre-adolescents evolve from fantasy role-play to rule-based play, which to a certain extent functions as a model for 'the real world'. Non-verbal elements are replaced by verbal elements such as planning and reflection (Van Nes, 2004).

Children in middle childhood also begin to contemplate on the nature op friendship. They try to influence the composition of their group of friends: they 'select' children with whom they have a high level of coordination, which leads to more solidarity and more fun (Corsaro, 1997).

Three general characteristics – in correspondence to trends on the intellectual, social and personal plan – accurately summarize the essence of middle childhood (Hughes, 1999). The

most important evolution in middle childhood, on the intellectual plan, is that the child's reasonment becomes more ordered, structured and logic. This affects the child's play, which reflects a growing **need for order**. Secondly, schooling increases the child's social involvement with peers. Friends offer support, a role that previously was reserved for the child's family. **Being accepted by their friends** is of increasing importance for pre-adolescents, and is also reflected in play. Finally, there is the huge dare of growing self-awareness: they feel a need to demonstrate their talents, knowledge and possibilities to others and to themselves. Also in their play, pre-adolescents show a strong **need for 'industry'**. Young people love to show their talents to their peers. They show a strong sense for activity. These aspects are also essential to better understand how children experience communities.

2.3. Merging of online communities and children

Children increasingly learn how to use internet applications like e-mail and instant messaging for mediated interactions. In this respect, Tobin argues that online interaction is a means for children to share their worries and problems with others, something for which they do not always have the occasion in other environments, like school of family (Buckingham, 2002).

The difference between online and offline interaction is an important element in online communities for children. According to Livingstone (2002), children integrate both kinds of communication in order to maintain their social networks. They move freely between both worlds, although most interactions are local (Livingstone, 2002). Thus, the internet positively influences children's existing social contacts instead of undermining them.

As such, online interaction is primarily used to forge 'strong ties'[iii] (Subrahmanyam, Kraut, Greenfield & Gross, 2001). However, the internet also offers opportunities to form 'weak ties'. It is an environment in which one can meet new people, using applications such as MUD's (Multi-User Dungeons), chat rooms, multiplayer games etc. According to Livingstone (2002), Valentine and Holloway (2003) children are engaged in two-way interaction in 'the real' as in 'the virtual' The real world and the virtual world are no separate entities. On the one hand the internet can be seen as a tool for developing online friendships. On the other hand others use it as a means to reinforce their existing offline networks or as a welcome addition to their offline hobbies: they like spending time surfing and 'looking in' here and there *(*Holloway & Valentine 2003*).*

The online applications often used by children are games. Games are also an essential aspect of children's lives (supra). Games are often regarded as applications that can only be played. However, Fromme (2003) states that games are frequently integrated in the social and cultural activities of the users. For example, children often play with or against each other, and friends often serve as the most important advisors in game-related issues. This contradicts the idea that playing games leads to isolation. They are integrated in the circles of friends and can originate more or deeper social contacts.'*Playing computer games has generally been regarded as an individual, more or less asocial activity, [...] On the contrary there is a wealth of social activity around the games, which are closely integrated in the social relations and cultural networks of the young* (Jessen, 1999*).'*

According to Jenkins, games offer now the same satisfaction and fun as before playing outside did: the exploration and knowledge of the environment, activities with a goal and self-control (Buckingham, 2002). Jensen (1999) states that children develop a specific culture in which one has to take part, in order to understand it completely. Children, in his opinion, form interpretative communities, for example around games. He uses football as an example to explain the concept of interpretative community: '*[...] cultural phenomena are quite dependent on living cultural, interpretative communities, and even if there are many differences between football and computer games, both are functions of social and cultural communities (*Jessen, 1999*).'*

3. The case Ketnet Kick

Within this research Ketnet Kick was chosen as a case to examine the community experiences of children of middle childhood,

3.1. Ketnet Kick

Ketnet Kick is developed as an online community in the form of a 3-D game for children between the age of 6 and 12. Especially children between 8 and 10 are the most frequent players. Being set up as a user-generated content application for children, it gives them the possibility to play games, but also make drawings, compose music, improve their dancing skills, create content. Ketnet Kick is designed as a feedback loop: children create content that is showed in the game, on the internet and on tv. Now children can see what the community of Ketnet Kick is creating and can get inspired.

In the case of Ketnet Kick, it is not possible to have user-to-user interactivity, but there is user-to-documents interactivity in the sense of creating content. One can also speak of user-to-system interactivity since the players can lose themselves in a 3D world. They have the illusion of empowerment.

Ketnet Kick is also based on a story. The purpose is creating a lot of content against Kroknet, the adversary of Ketnet, By creating an enemy one creates an opportunity for a sense of community.

The 3D world provides the aspect of place for a community. The 3D space online provides a place that they can love, feel and experience. It makes it tangible for the children. Ketnet Kick is a community that has more than 100,000 players and therefore consists of a large group of children who are connected online in a virtual world.

Figure 1: Ketnet Kick screenshot
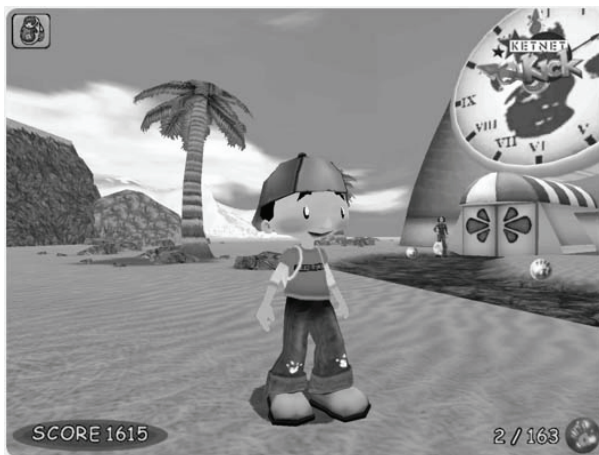
3.2. Method

This research is situated in 'the new social studies of childhood': research 'with' children instead research 'about' children. (Greig & Taylor, 1999) Children are seen as competent social actors (Holloway & Valentine, 2003). Also Piaget cited by Greig and Taylor (1999) presents children as active 'constructors' of their own knowledge.

In order to get an in-depth insight in the everyday life and online activities of children, we used qualitative research methods. The aim was looking at the nature of the phenomenon, based on an explorative and inductive approach and by this discovering the community practices of children. How do children experience communities? What roles fulfill the dimensions: imagination and interactivity in creating and sustaining a sense of community?

These issues were investigated by the examplary case: Ketnet Kick, developed by the Flemish public broadcasting company VRT.[iv]

The recruitment of the respondents was carried out via schools. In this way our target group was already classified by age and was easily accessible as a group. However children are considered as an internally heterogeneous group. To make a distinction, the typology developed by Livingstone and Bovill (1999) was applied, which makes a distinction depending on how children generate their own style of media-use:

- *'Screen entertainment fans'*: these children spend a lot more than the average amount of time in front of the TV-screen, watching videos and playing games.
- *'Specialists'*: they spend more than the average amount of time using one specific medium. Three types are identified: the book fans, the PC fans and the music fans. During the research we discerned other types of specialists: the game fan and the MSN fan.
- *'Tradionalists'*: They spend a lot of time with the traditional media (television, music, books,…) They spend less time using the PC and playing games.
- '*Low media users'*: These children spend less time than the average on all the media.

Firstly structured diaries were distributed in six classes, spred over two schools. The diaries were used to determine the children's profiles and provided after fulfillement an overview of the children's activities. The data, collected from the diaries served as input for six focusgroups. We have done separate focusgroup with traditionalists, screen entertainment fans and specialists. Two complementary focusgroups were carried out wherein the respondents were separated by gender: one with just girls and one with boys. The sixth focusgroup was mixed in gender and profile.[v]

The reason for chosing focusgroups as a method, is related to the fact that group dynamics play a central role when dealing with communities. *'Groups give children space to raise issues that they want to discuss* (Greig & Taylor, 1999)*.'* However working with children expressed the need for interactive focusgroups, since they cannot stay focused for a very long time. Therefore, during the conversations, the children had the opportunity to make drawings of their thoughts and feelings, which were also used as input for the conversations. This is one of the reasons why we chose a case study closely related to the children. Conducting research on and especially with children is challenging. During the focusgroups, it was sometimes difficult to stimulate the discussion. In retrospect, traditionally focusgroups do not seem to be the ideal way to conduct qualitative research on children. There is a need for new and interactive research methods, since it is not so easy to receive information rich judgments from children.

The focusgroups were complemented with 10 in-depth interviews wherein two children participated. In these interviews the children were different from the participants in the focusgroups. The children in the duo-interviews had some sort of relation with each other (e.g. brother, friend,…). We chose for two people that know each other to enhance the dynamic of the interview.

3.3. Towards an understanding of the experiences of Ketnet Kick

The case of Ketnet Kick (KNK) enabled us to understand how these pre-adolescents make sense of their participation in an online community. KNK is not a community wherein children talk about common topics and interest, due to the lack of user-to-user interactivity within the KNK game. So it is not an ordinary online community like a forum, as it is often stated (supra). The data showed how children experience Ketnet Kick and what they find important.

Specific elements from the game, like the mysterious island [vi], and new games are popular topics in offline conversations.

> *Iris(9 years old, PC-specialist): 'At a certain moment I was standing before a rock far away from me. I heard from a friend of school, that when you jump very far and when*

you are almost faling, you have to jump again at the right time. Then it is possible to reach the mysterious island, because he has reached it yet many times. He even found a red bottle.

Int: 'So you think that children alreeds have reached the island?'

Iris: 'If it is true off course'

It was amazing that some children started a myth around Ketnet Kick and that it lived between the children. The new and the mysterious are important topics of discussion for our respondents, especially among the children who are real fans. This means that Ketnet Kick is in fact part of their everyday conversations at school and at other places where they meet. This implies that KNK has received a place in the lives of people and that this fascination helps sustaining a sense of community.

The interactive feedback loop in KNK[vii] also creates a possibility for a feeling of 'togetherness' among the members, especially in their battle against the evil Kroknet[viii]. In this way we can say that all the children playing the game form an imagined community. In order to belong to this imagined and imaginary community, there is no need for direct contact: all gamers battle for their world, the world of KNK. They are fighting for a symbol. Here we see links with the way Anderson (1983) refers to nationalism as the basis for an imagined community: people do not need to know each other in person to love and even fight for the same country. They unite against a common, external enemy. Yet, similar to nationalism, not every member of KNK is equally enthusiastic. Some take the story very seriously, while for others, this is certainly not the main reason to play the game. Other children see past the magic of the game, and experience it as just a game they play for fun. The experience level is therefore not the same for every child.

Another aspect was the importance of the offline sphere wherein children hang out and spend a lot of time. There were children who were spontaneously talking about KNK, in order to get help in finishing the game.

Irani (9 years old, MSN-specialist):'Sometimes, on the playground, he asks me: 'How far did you get? Do you remember how to get passed that level? Do you know what that means?''

Their conversations are mainly held among friends. In a game, challenge and satisfaction are important. It is essential that children are offered sufficient help, so that they do not give up too soon. It is remarkable that children partly accomplish this need by asking each other for help or by completing a level together. However this cooperation mainly happens offline. This is demonstrated nicely by the following citation:

Jonas (9 years old, screen entertainment): 'We always say: 'How far did you get in the cave game?', and the one who got the furthest gets a piece of candy on Monday.'

Int: 'How did you think of that?'

Jonas: 'We use it with games that have levels, like 'flying' or the cave game or the mystery island. Everyone brings three pieces of candy on Monday, and whoever got the furthest in one game, gets one piece of candy from everyone.'

Int: 'And who thought of that?'

Jonas: 'We were talking about the game, and at one point, someone said that we could do that.'

Int: 'That's fun!'

Jeroen (low screen entertainment): 'In fact it is stupid, because you can never prove that you got that far…'

Jonas: 'Yes you can! When you push F7, you can print how far you got in the game!'

They generally try to fulfil this need offline, by asking each other questions. Yet some children also use online channels for this purpose.

However there are also mechanisms offered by Ketnet Kick to help the children, like Star Square or the 'Ket' of the Day [ix], are in their own way, also effective. They can be seen as forms of indirect cooperation and are shaped by user-to-documents and user-to-system interactivity that provides alternative ways for helping the members of the community and sustaining the sense of community. In these kinds of interactivity lies the online community practice of the pre-adolescents. Thus, we conclude that Ketnet Kick is an interpretative community, mainly offline but also online, through co-creation, in which the users play and interpret the game together and offline friends are the most important game advisors. Jessen (1999) also stated that these kinds of communities often arise in a game context. This research confirms this and offers support to his concept.

Online, children are engaged in the imagined KNK community. The KNK-community is also sensed offline in small group of friends. Mainly they help each other and form interpretative communities around the game. Ketnet Kick can thus be seen as an imagined multi-platform and hybrid community (online as offline): on internet, television and around friends.

3.4. The appeal of Ketnet Kick for children

Since KNK is a game, it greatly appeals to children. As such, it is an appropriate medium to set up a community for the researched age group. As stated above, the element of play is regarded as more relevant to a community aimed at children than the element of user-to-user interactivity. The theory about children in middle childhood mentions the role of games in children's live (supra). Jessen states this as wel: *The cultures of games playing involves an ongoing construction of an 'interpretive community' and in this respect it may be better suited to the patterns of children's play than older media such as books, which one is alone in consuming' (Jessen, 1999).* Our respondents play various electronic games, but also play a lot of games at school and at home. The interviews confirmed the importance of play for social contact between children. Play is central in the everyday life of children. Although pre-adolescents love to communicate, they perceive the play element as more relevant than communication.

> Tieboo (8 years old, high screen entertainment): 'You can also chat with your friends because you found a new game...'
> **Int: 'Which do you like better: playing together or talking to each other?'**
> Nick (8 years old, PC-specialist): 'I like playing more than talking.'
> **Int: 'And can you tell me why?'**
> Nick: 'Playing is much more fun than talking, because you can play with your friends and that is more fun. And else, you only talk to one person.'

The interactivity, in the sense of creating, is a useful tool to foster the online community for children. This kind of interactivity is more suited for children of middle childhood who love to be active. They are able to enjoy themselves in KNK.

Ketnet Kick also provides room for imagination in an adventurous world and that is just what the life of pre-adolesents is a lot about.

The data have shed a new light on the experience of communities by pre-adolescents and has put the role of user-to-user interactivity into perspective. The emphasis must lie on imagination, creativity and co-creation. The concept imagined community is appropriate here, but maybe this particular online community experience by children can be labelled otherwise: 'imagion', a contraction of imagination and communion. An imagion is a group of

children that has a sense of community and has a place as a symbol, but where the experiences of the group lie in user-to-documents and user-to-system interactivity.

4. Conclusion: towards the 'netplay' society?

In our analysis we focussed on pre-adolescents in relation to online communities. We conclude that online communities are to some extent experienced as an important new sphere in the lives of these young people, but we may not underestimate the value of the offline sphere. The online and offline are complementary and both have their specific values. In the case of middle childhood, it is important that we know which sphere provides which values.

We suggest that online communities are an environment, in which people can imagine and play. These are the most striking characteristics for children of middle childhood. The KNK study also demonstrates that online communities can exist without the need of user-to-user interactivity. These findings lead to the idea of an 'imagion', in which the emphasis lies on sense of belonging and imagination. The online community practices of the children are mainly situated in the creativity. Children also show a tendency to collaborate in this dimension and are becoming e-actors.

One can also notice that children bring the online community more or less 'alive' offline. This indicates the importance of locality and their close friends. If the community wants to be real in the minds of children, it needs to be linked to their own life and experiences; offline interactions can be very helpful. Often, children spontaneously give an offline extension to the online communities. This indicates the commitment to and appeal for the online community. The community lives and goes on in their local community of friends.

Middle childhood is a transitional phase and also in our research, we found some youngsters who were more active online than others. These are some indications for future research. How do the community experiences evolve in relation to age? Is the online component and need for user-to-user interactivity growing? Still we need to be aware that children remain children and they will always pass through the childhood phase. It is play (online and offline) that shapes the social network of children and with the incorporation of online community games for children in the social network. In the case of children we could re-interpret the network society as the *netplay society*. That is why games like Ketnet Kick can form a smooth transition between the 'child's world' and the 'adolescents world'. The concept, 'imagion', can serve as a bridge, to help children, step by step, learning to get involved with the interactive communities.

Central in this research is the combination of two disciplines to generate an interdisciplinary insight: child development on the one hand and the evolution of media and media audiences on the other. The findings acknowledge the current changes regarding child sociology and media use and provide insights on children's digital experiences as a reference for media producers and parents. Moreover, this research stresses the importance of collaboration between researchers and new media designers. It is crucial that notions of online community and Web 2.0 concepts are re-interpreted for and by children. The context of the children's everyday life is a central factor in determining the media practices and needs of children.

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[i] See www.taatu.com, www.habbo.com, www.kidcity.be, the upcoming BBC project, www.toyinima.be, www.ketnetkick.be

[ii] user-to-user: to interact with each other or computer-mediated-communication

user-to-documents: the way people interact with content and content makers, the way active users interprete and use mediacontent.

user-to-system: it is the way people interact with the interface. For example: flow = people lose thereselves in simulations, like virtual worlds.

[iii] Related to the concept of Granovetter (1973), Granovetter (1983)

[iv] See http://www.ketnetkick.be

[v] The traditionalists contain 8 children of 9 years old, 4 girls and 4 boys. The screen entertainment fans contain 8 children, 4 boys and 4 girls. Two children have the age of eight and 6 the age of nine. The specialists is a

group of 9 children with 4 boys and 5 girls, 6 children of nine years old, 2 of eight and 1 of ten. The group is a combination of PC fans, game fans and MSN fans. The group with girls contains 9 children of nine years old. There are 4 traditionalists, 4 screen entertainment fans and 1 PC-fan. The group of boys contain 9 children, 4 children of nine years old, 3 of ten years old and 2 of eight years old. There are 5 screen entertainment fans and 4 game fans. The mixed group contain 7 children, 1 of eight years old and 8 of nine years old. There is 1 traditionalist, 1 game-fan, 2 PC fans and 3 screen entertainment fans.

[vi] Mysterious island: a place in KNK where children are unable to go to. Children even created a myth because some children claim that they reached the island and told this to their friends.

[vii] Children can make content in KNK and show it to other children through the game, website and television. The content can be an inspiration or a tool to make content on their own.

[viii] Kroknet is the adversary of Ketnet (the public tv-station for children). The aim of KNK is to defend the values of Ketnet by creating a lot of content against the wraptors, evil crocodiles, which want to incorporate their tv-station.

[ix] Star square: this is the main location in KNK. In this square creations of players of KNK are showed and available for all the players

Ket of the day: Every week a player of KNK is selected and his avatar is showed in the centre of the Star square.

Theoretical Approach To Humans As E-Actors Research

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Abstract

E-activity is one of the possible perspectives to study change in the relationships between society and ICT. The appearance of e-actors is a direct consequence of ICT dissemination, it can be studied within this framework of analysis.

There is still no holistic theory for studying the social impact of ICT dissemination.

Action-oriented multidisciplinary approach to research is discussed. Possibilities of several theories are considered: semiotics, noosphere theory, theory of sociocultural reproduction, domestication theory, and social portrait genre.

Different options "to draw" e-portraits such as e-portrait as a part of the social portrait, as a list of e-activities performed, as a type of user, etc. are discussed.

The pragmatic value of e- portraits is considered. They can be used in many different ways: to monitor the transformation of the service sector; to measure the social differentiation; to study lifestyles or other issues involved in the measuring and characterising the users.

E-activity as a part of the computer culture is analyzed. The importance of the cultural, informational, and phycological aspects of social dynamics is emphasized.

Today, dealing with digital information has become a part of our lives. For many years, we discuss the social consequences of ICT dissemination. The appearance of e-actors is a direct consequence of ICT dissemination. The most general definition of the social consequenses is the social transformations that are related to the possibilities, rights and interests of a person. The main subjects of the social consequences research at the beginning of the 21st century are the information inequality, the usage of ICT by children and youth, the emergence of electronic networks, etc. / Haddon, 2004 /. Studying e-actors is a rather new direction of research, while being digital became resource for being succesfull. Looking at ICT from the point of view of its user has already a history of research but still has no theory.

Today, the concept "actor" is one of the basic sociological concepts; it is used as often as the concepts "subject" and "object". E-actor is an actor acting in the electronic space. The very concept "actor" coming from the verb "to act" implies studying activity. There are individual actors representing nobody but oneself, there are collective actors representing institutions and organisations. A social subject as an active participant rather than the society as a whole became the subject of sociology in the second half of the 20th century . Bourdieu and Giddens are the founders of this approach / Bourdieu , 1979, Giddens, 1990 /. The concepts "social actor" and "social subject" are often used as synonims too, but they are opposed in their relation to a social act. The concept "actor" has a meaning only together with a certain social act or acts, while the concept "subject" stresses the rationality of mind and one's ability to make a choice. A subject can become an actor concerning some act, an actor can be

considered as a subject if certain characteristics of mind are present. In one case, some actors can have properties of subjectivity, in another case, only a part of the subjects can be actors of certain acts.

We can study e-activity in many ways, using different formats of behaviour research, consumption and media studies. A multidisciplinary approach with a set of "humanitarian informatics" tools is needed.

Several existing theories are appropriate for the e-actors research. The first general theory which is helpful to study e-activity is *semiotics*, the well known theory of signs, studying the parameters of different sign systems. The very concept "semiotics" was introduced by Charles Piers in the second half of the 19th century and, at the end of the 19th century, natural languages were considered as sign systems / Charles Morris, 1983 /. Semiotics studies signs at three levels:
1) syntactical level studies the relationships between signs, the structures of their combinations, and the rules of signs transformation regardless of their meanings;
2) semantical level analyses the meanings of signs and the interpretations of signs and their combinations;
3) pragmatical level studies the relationship between signs and their users and interprets the messages carried by the signs..

These three levels are three interrelated parts of this science: syntactics, semantics, and pragmatics. Semiotics treats each sign system as a model of a certain fragment of the world. E-activity can be studied at all the three levels: purely technical (syntactical) level, semantical and pragmatical levels. Studying e-actors, we first analyze the relationships between the signs and their users. Pragmatism is an *action-oriented approach* to research /Mead G., 1938/. The word "pragmatism" comes from the Greek word "action", pragmatic means practical. At this level of research, we correspond each concept with its consequenses, all kind of consequenses: applied, moral, imaginary, etc. / Dewey J., 1916/. For instance, from the moral point of view "correct" behaviour is the one that leads to the benefit of others and oneself. E-activity from this point of view is terra incognita. Nonethical behaviour in the electronic world includes types of e-activity such as dissemination of viruses with the help of e-mail messages, dissemination of the wrong information via Internet, declaring oneself the author of somebody's information etc. The computer ethics is a new discipline. There are quite a few negative developments connected with e-activity which we do not discuss in this paper. There are not only the widely discussed problems of the information poverty, i.e. the problems of those who are underinformed but little studied problems of those overinformed. Another important problem is involvement of the actor into the world of illusionary communication. The progress of ICT makes the illusionary reality become more and more trustworthy and this makes it easy to cheat human phycology. The number of phycological and ethical problems grows.

The outburst of signs, the informational explosion is the essence of postmodernism. The postmodern tradition in the art and literature is similar to the postindustrial tradition in the economics and sociology. The basic features of the information environment in both cases are the same: fragmentary and eclectic character, no vivid borders, narrowing the realms of stable traditions; the acceleration of the development and enhancement of differentiation, enlarging information consumption due to ICT dissemination, etc. The slogan of postmodernists is: there is no reality, there are only descriptions of the reality; there is no truth, there are only versions of the truth. The truth is defined with the help of *utility*. There is nothing real as

everything has been fabricated. Signs are means of self representation. Everything has been constructed with the help of the language and can be understood with the help of the language.

The pragmatic level of the analysis becomes most useful when we analyze user aspects of ICT. There are two basic functions of the knowledge: "to know for the sake of the knowledge" and "to know to be able to do" / Teilhard de Chardin, 1987/. ICTs enhance the second, pragmatic function of the knowledge. E-activity is the activity in a fabricated world but consequenses of this activity are quite practical, they happen in the real world.

Another general theory which can be used to study e-actors is the *noosphere theory* posed by the Russian Academician Vladimir Vernadsky at the beginning of the 20th century. *Noos* is "mind" in Greek. The concept "noosphere" was suggested by a French researcher Le Rua in 1926. Using this concept, Vernadsky developed a theory of the noosphere /Vernadsky, 1987/. He claimed that the biosphere is gradually transforming into the noosphere − a manmade sphere, an artificial non-natural world. The existence of this world implies the necessity of directing and regulating the evolution of the planet and the society using the intellect and knowledge. A man of the noosphere with his technical intrusion can easily break the natural equilibrium in many ways.

V. Vernadsly was a scientist, his theory is not well known among academics. Today the concept of the "regulated (controled, directed) development" is mostly connected with ecological problems. But the "regulated development" is an alternative to the market non-regulated development in all spheres. Studying the social impact of ICTs, we know it is not always positive. Good, bad, or unexpected is the title of the conference we were participating in. The basic idea of the regulated development is the same for all the subjects and for all the countries - it is necessary to define the limitations (highest permissible values) in the sphere you are dealing with *to know what is not possible to do*. Global cooperation and global discussions should be in the basis of making decisions, V.Vernadsky claimed. Eighty years ago he said that the formation of collective intelect is vital for the humankind. Today electronic networks, commonly accessible data banks, and global possibilities of data exchange are indicators of the collective social intellect formation. To analyse the social transformations caused by ICTs, it is necessary "to educate one's mind". The acceleration of change transforms the society into an ever learning society. The rate of the technology change is constantly growing, which makes it necessary to learn all the time and to constantly update one's e-skills. The life-long learning paradigm becomes important not only in the educational discourse. The ability to learn quickly becomes very important. There appears a new social differentiation between the "computerized " and not computerized people, who have much less ability to learn quickly.

The regulated development can be implemented using all kinds of enlightment programmes. The aim of such programmes is not only dissemination of knowledge but creation of a new social climate, of a special atmosphere in society. Cooperation becomes as important market force as competition when global common interests appear.

ICT helps to implement the "regulated development", to control and to direct the development. The artificial world, or "technosphere", or digital world is a part of the modern society, a part of the modern environment. There are new social trends, new standars of behaviour, new notions of comfort, new types of activity, new types of poverty, not only in purely economic, income terms but in the perspective of e-deprivation. *E-deprivation* is a new

concept. To have no computer is a deprivation in the modern society. E-poverty can be subjective - you are bothered by the fact that your PC is less advanced than your neighbour's, for instance. The time of ICT usage can also be an indicator of deprivation. Why are people hindered in their ability to go online? Have they got appropriate social networks in their lives? Indicators of e-deprivation can be different in different countries as they depend on what is considered deprivation in this society. The levels of e-deprivation can also vary. The very concept of equality is changing in the digital world.

The laws of social development change. the relations of usage rather than the relations of ownership are characteristic of the information society. To understand the digital world, we have to study a human being "as a whole", as a system.

The noosphere is the sphere of human activity, so it includes e-activity. E-activity is one of the possible perspectives to study the change in the relationships between society and ICT. The basic principles of the noosphere theory are most suitable for studying the social development and e- activity:
1) Awareness of the consequenses is awareness of the future. Each human action has consequenses, so a person should be always aware of the results of his/her activity, aware of different possibilities of his/her behaviour and consciuosly choose the most suitable alternative from the point of view of the future.
2) In order to survive in the artificial man-made world, a system of regulations and limitations of human behaviour should be developed.

Another theoretical approach is the Bourdieu's *work on social and cultural capital, on sociocultural reproduction* / Bourdieu, 1979 /. No doubt that change is here, we have more and more information channels, intensification of information exchange, a lot of new possibilities but there are stable things too. Each culture has its own models of the production and consumption of knowledge and information. The quality of informational flows depends on the national sociocultural features. *Stable paradigms* of the informational behaviour do exist, which are transmitted from generation to generation. The types of informational interactions are stable: people are either informationally active or informationally passive, interested or disinterested regardless of the informational channel. ICTs enhance the human possibilities but first they enhance them for informationally active people. Can we say that e-active people were always informationally active?

The ability to make a choice and to project one's lifestyle does not fully depend on ICTs, it is a characteristic of a person. To take a holistic view, we have to take into account that there are several basic lifestyles that can be characterized by different attitudes / Meyer, Schulze 1997 /:
- *traditional* attitude to the family and gender roles, established lifestyle with financial independence, conservative pattern of values for all areas of life;
- *emancipated* attitude to the family and gender roles, successful and consumption-oriented lifestyle with financial independence. A search for meaning and personal freedom within the social network, openness to new experiences;
- *achievment- and status-oriented* attitude, when profession and career take priority over one's personal and family needs, pronounced status thinking, pleasure in what is achieved through one's own efforts;
- *post-modern* attitude when the guiding principle is the developoment of the individual personality in the context of diverse experiences, rejection of traditional norms and values, heightened sense of communication.

E-actor can have any of these attitudes. Becoming a lifestyle in itself, e-activity combines different attitudes. It does not necessarily reject traditional norms and values, but the usage of ICT implies openness to new experiences and heightened sense of communication.

Behaviour of e-actors can be studied with the help of words (of language) and with the help of observing usage experience and human reactions. We can go beyond behaviour looking for the motivations, trying to understand why this action was performed. E-activity can be well charted using the domestication methodology.

The Roger Silverstone and Leslie Haddon's *"domestication methodology"* is one of the best known social theories in this sphere . It emerged at the start of the 1990s /Silverstone, 1996/. Domestication as a concept originated from anthropology, consumption studies, and modern media studies /Haddon, 2006/. All kinds of social processes around ICTs are studied with the help of qualitative methodology, in-depth interviews, and participant observation. How do patterns of use develop, how does a person find time for ICT usage are studied. The questions such as does ICT evolve conflicts in the family, is it used as a means of control, what are the ownership relations; is ICT treated as a threat or as a new opportunity by different family members, is it used for entertainment or/and for work, what do people do with the technologies and services, etc. are analyzed. With the help of this methodology, we study the significanceof ICT to a person, construct the usage patterns, and study different social relations. This approach fits well for studying the e-activity of family members; it allows one to study different generations of e-actors, it corresponds well with other approaches. Case studies of households give rich in content evidence of ICT usage.

To conceptualize the e-actors research further, we have to combine different traditions of research. We can describe each e-actor with the help of his/her *e-portrait*. E-portrait is a part of the social portrait. The "social portrait" is a genre of sociological research in which the characteristics of a certain social group are described in maximal detail (for instance, "the social portrait of a young mother", "the social portrait of a believer", etc.) At first, such research implied questioning a big number of representatives of the chosen social group using a wide range of indicators. The idea was to get a full description of the social characterisics of this group.

One of the first sociological researches of this kind has been performed at the beginning of the 20th century in the USA; it was called "A Philadelphean negro". Living conditions, work, income, education, etc. of 9 000 negroes were studied for 15 months . Another widely known research of this kind is the social research of Pittsburg, 1909-1914, when the workers of the steel industry who comprised 80% of the city workers were studied.

Later, at the beginning of the 20th century, the Chicago school introduced another sociological genre – a case study. This genre is not based on large quantitative samples, though the objects are more or less the same. The characteristics of a social group are derived out of the single description of a case. Today, these two concepts are often used as synonims and the "social portrait" genre implies both statistical and qualitative research.

We can use different approaches for constructing an e-portrait. The first one is a person as a numeral or rather as a number of numerals: the identification number, the individual tax number, the set of pin codes etc. which represent this person in the electronic world. Those numerals provide a digital identification of each person but the growing danger of the possibility of global digital control is widely discussed. Such a portrait is not very informative

for studying e-activity as a sociological phenomenon.

Another approach can be based on the *types of e-activities and their intensity*. There are several main groups of e-activities: retrieval of information, communication, organization of services (travel arrangements, booking tickets and hotels, buying goods, etc.), entertainment, and working. Each e-actor performs a number of activities, which can be listed and classified. One actor is all in e-business, another is in entertainment, still another uses a balanced list of different activities. Such characteristics like paintings give us a picture of a person showing what part of his/her life became digital.

It is clear that talking about the users as e-actors will completely differ along the lines of the user type. E-actors are people who have use for ICT, intensity of e-activity can be defined by the type of the user. There are many classifications of users, each says something of their actions on the net. Making use of different typologies, we shall have different e-portraits. Each class of users is a characteristic of e-activity.

We have new literacy, new ethics, new identities, new elites, new culture. Besides the two traditional types of culture: the culture of face to face, direct communication (the initial layer of culture) and the book culture (the culture of written language), a new type of culture appeared – the screen or computer culture. It is based on the convergence of the computer, video, and telecommunication technologies. The dynamic dialogical-type interaction between the computer text and the user is the main indicator of this screen culture. Interactivity, feedback with the screen is the basic change. This new type of culture is actively interacting with the two traditional types. This interaction leads to fundamental change in the culture, but it does not deform it- the computer culture is complementary to the traditional culture /Razlogov, 2006/ as it brings entirely new possibilities.What is new: a new type of communication appears, international by nature and a new type of thinking, oriented on self-development and combining logical and emotional. Computer skills are not enough, to conduct e-activity one has to have advanced information skills: awareness of an information need, definition of the sources of information, comparison of the information from different sources and choosing the best, using the information when making a decision, and disseminating it to interested people. There are many new qualities of e-information consumers: the ability to act in a transnational environment, the ability to collect information for the task, the ability to find colleagues in the electronic world, etc.

The computer culture is not only a screen culture; such new concepts as "digital me", "e-self", "e-lert", or "e-fit" imply new social phenomena that can be described with the help of e-portraits.

E-portraits can be used in many different ways. Studying the consumption of e-services we can monitor the transformation of the traditional service sector; we can use e-portraits as a measure of social differentiation; we can study e-activity as a lifestyle; we can consider e-actors at home or at their working places, we can study the issues involved in measuring and characterizing the users. There are many directions of the e-actors and e-portrait research. The humans as e-actors research is important both for the understanding what is happening to the social and economic life, and what effective practical interventions in the worlds of production and consumption of ICT can be made.

There are many ways of thinking about the humans as e-actors research covering a multitude of often non-reducible developments. The activities that were previously considered as

preponderantly technical, or economic, or cultural, converge. The importance of 'creativity' and 'knowledge' to the contemporary economic success gives a turn to an analysis of the phycological and cultural forms to be found everywhere. The importance of the informational, phycological and cultural aspects of the social dynamics is growing. There are more and more social and humanitarian problems caused by ICT dissemination. Fundamental questions about how to understand the transformation of the traditional life caused by e-activity are raised by scholars from the humanities, social sciences, media and management studies. The action-oriented multidisciplinary approach to the research is being born. E-activity is one of the possible perspectives to study change in the relationships between society and ICT.

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Attitudes Towards Mobile Phone Communication Technology

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Abstract

Mobile phone communication is of great economic importance in Germany and the vast majority of people possess and use mobile phones. Although mobile phones are part of everyday life, a rising number of people share critical attitudes and express to be afraid of possible harming effects, mainly of masts. Within the discussion about possible effects attitudes often polarize. On the one hand people are convinced that limit values which have been set are save, on the other hand some people are sure about health damaging effects of electromagnetic fields. Mobile phone communication is quite differently socially represented in both groups. This paper will have a closer look at attitudes towards this technology which is so established in everyday life. Which concerns do people express? Are there gender differences? How is the impact of people's values? The paper focuses mainly on the results of the underlying empirical study.

Mobile phone technology in Germany

Mobile phone technology has influenced everyday life greatly, bringing along a lot of comfort. About three fourth of all people possess a mobile phone and there is nearly no place in Germany anymore, where there is no mobile phone reception (BfS, 2003). As an example we could refer to Munich. The following map presents all masts in the area of the city.

Figure 1: Mobile phone communication masts in Munich, Germany
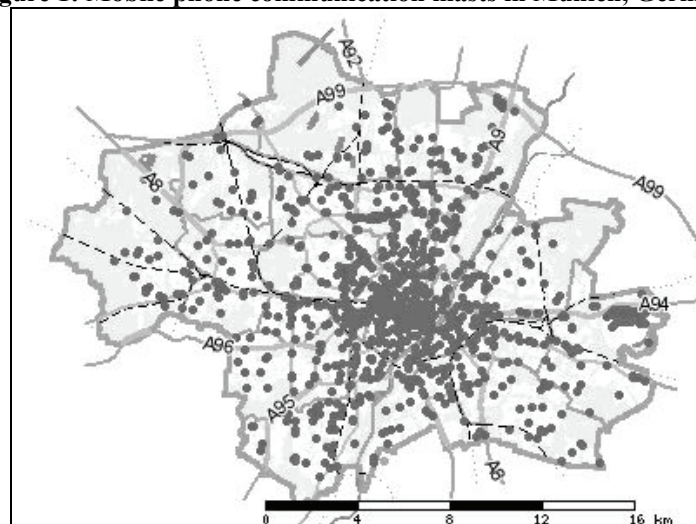
Mobile phone technology is of great economic importance. The former government had sold UMTS-licences for about 51 million Euro. Thus, companies and politics are interested in the establishment of this technology. Many people share a positive evaluation of mobile phone communication, yet there is also a noticeable number, who are concerned about possible negative effects of living close to masts or of using mobile phones. To prevent people from

any harm, Germany has enacted a law. Article 26 BImSchV[1] refers to recommendations by the ICNIRP (International Commission on Non-Ionizing Radiation Protection), which allows e.g. for UMTS-technology 10.000 mW/m². This is higher than in some other countries, like in Austria, Italy or Russia.

Attitudes towards mobile phone technology in Germany

Attitudes can be derived from publications and the public discourse on this technology, and they are influenced by them in turn. Publications on mobile phone technology are quite polarised (Ruddat et al., 2005). On the one side, especially companies and politicians state that there are no proven negative effects at all and that the limits set are sufficient. On the other hand environment organisations, citizen's group and some physicians warn of negative effects of the exposition to electromagnetic fields. There are studies which do not find any proves for negative health effects (e.g. Takebayashi et al., 2006) as well as studies that hint that electromagnetic fields could lead to health problems (e.g. the European Reflex project, other studies are for example Oktay & Dasdag, 2006, Al-Khlaiwi & Meo, 2004). In general, studies mostly analyse either physiological effects of electromagnetic fields or they try to figure out the percentage of people who are labelled to be "hypersensitive" because they "pretend" to be affected negatively by mobile phone communication technology (Kheifets et al., 2005, Schütz et al., 2005).
Which attitudes could be found among the German population? In general, about 30% are (very) concerned about mobile phone communication technology, and 28% are (very) concerned about mobile phones (wik, 2005, Infas, 2004, I+G Gesundheitsforschung, 2002). How people develop attitudes towards mobile phone communication technology is a question of their *subjective evaluation* process. Studies show that several factors could influence this process (wik, 2005, Infas, 2004, I+G Gesundheitsforschung, 2001), e.g.

- importance of mobile phone communication in their every day's life,
- knowledge on mobile phone technology,
- knowledge that a transmitter station is close to home,
- sources of information,
- concerns about other risk factors,
- participation in citizen's groups,
- suffering from particular health problems,
- socioeconomic status.

Taking these results into consideration, our study aims to gather a deeper understanding of the construction of attitudes towards mobile phone communication technology. It includes most of the listed facets found in other studies to be relevant and it is extended for values. This aspect is sometimes analysed with reference to general risk perception (e.g. Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, 2004), yet none study is known in which the meaning of values for attitudes towards mobile phone communication technology was analysed. In general, we will have a closer look at gender differences. Figure 2 illustrates the factors which will be included in our further analysis.

Study design

We conducted an online-survey on attitudes towards mobile phone communication. The following questions were included:

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[1] BImSchV: Bundesimmissionsschutzverordnung.

- Where do people search for information about possible effects on mobile phone communication?
- How do they perceive the reliability of these sources?
- Do they know about any mast close to home or work? If so: How far are they away?

Figure 2: Factors which will be included in the analysis of attitudes towards mobile phone communication technology

*mphct: mobile phone communication technology
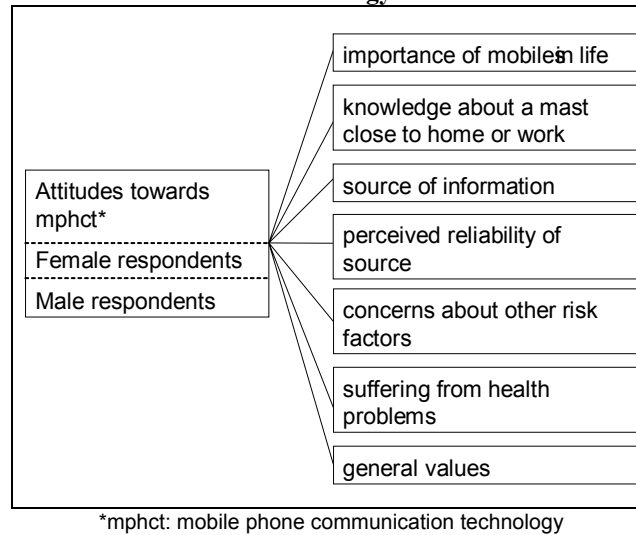
- How do they assess general statements on possible health effects of mobile phone communication?
- Are people afraid of mobile phone technology?
- How do they assess other factors with respect to their possible risks?
- Do respondents suffer from any health problems?
- To which causes do they attribute them?
- Which values are important in their lives?

All in all, the questionnaire embraced 218 items. Usually, a six point scale was used, from 1 = "not at all" or "never" to 6 = "definitely" or "always".

Respondents

During a six week period, 526 people filled out the online-questionnaire completely. Compared to other online surveys, this number of participation is not bad (Schütz et al., 2005).

62% of our respondents are male, 38% are female. Further characteristics of our sample can be drawn from table 1:

Table 1: Age and education of the respondents

Age	%	Education	%
- 20	1.5	none	0.4
21-30	13.5	primary and secondary school ("Volks- u. Hauptschule")	6.4
31-40	22.9	secondary modern school level 1 certificate ("Mittlere Reife")	15.4
41-50	32.1	vocational baccalaureat diploma ("Fachabitur, Fachhochschulreife")	12.1
51-60	20.2	university-entrance diploma ("Abitur/Hochschulreife")	16.6
61-70	9.2	university degree	41.6
71 -	0.6	conferral of a doctorate	7.5

As confirmed in another study (INFAS, 2004), in our study mainly those people took part, who are interested in possible effects of electromagnetic fields. These are men, people at the

age of 40-51 and with high formal education. Thus, this is a special selection effect which means that the case study only represents this group of highly interested people. Of course, the results presented are not representative. Representativeness is also limited due to the way of data collection via internet.

Subjective assessment of mobile phone communication

Our analysis will concentrate on different attitudes towards mobile phone communication technology. We will include cognitive as well as affective attitude components. Behavioural components will be left out, because it has proved to be very difficult to master the gap between intention to behave and behaviour in studies with a quantitative design like ours. Further we also added values. Values and attitudes differ in that way that values are more abstract and general orientation lines in life whereas attitudes are always addressed to something or somebody. Table 2 presents some information about study variables.

Table 2: Psychometric data and study variables

	No. of items	Range	Mean	SD	Coeff. α*
gender (1: male, 2: female)	1	1-2	1.38	0.48	-
importance of mobile phones in life					
necessity to use mobile phone because of work	1	1-6	2.64	1.98	-
necessity to use mobile phone because of private reasons	1	1-6	1.75	1.34	-
knowledge about masts closed to					
home (1: no, 2: yes, 3: do not know)	1	1/2/3	-	-	-
work (1: no, 2: yes, 3: do not know)	1	1/2/3	-	-	-
source of information					
scholarly literature	1	1-6	4.27	1.82	-
TV	1	1-6	3.44	1.81	-
internet	1	1-6	5.03	1.44	-
radio	1	1-6	3.14	1.77	-
newspapers	1	1-6	3.99	1.73	-
physicians	1	1-6	3.65	1.80	-
citizen's groups	1	1-6	4.27	1.82	-
friends	1	1-6	3.86	1.68	-
church	1	1-6	1.38	0.97	-
politicians	1	1-6	1.79	1.34	-
environmental organizations	1	1-6	3.81	1.82	-
companies	1	1-6	2.18	1.56	-
scientists	1	1-6	4.52	1.55	-
perceived reliability					
physicians	1	1-6	3.82	1.44	-
citizen's groups	1	1-6	4.20	1.65	-
friends	1	1-6	3.84	1.36	-
church	1	1-6	2.19	1.30	-
politicians	1	1-6	1.67	0.96	-
environmental organizations	1	1-6	4.30	1.47	-
companies	1	1-6	1.85	1.19	-
scientists	1	1-6	4.01	1.31	-
concerns about other risks					
risk trait[2]	22	1-6	4.35	0.79	0.90
health problems					
index of all health problems	33	1-6	1.53	0.82	0.86
values					
social acceptance	6	1-6	3.67	0.84	0.69
social commitment	3	1-6	4.28	0.95	0.67
religion	2	1-6	2.61	1.61	0.67
health orientation	3	1-6	4.74	0.97	0.62
family orientation	2	1-6	5.33	0.93	0.48
individualistic orientation	3	1-6	4.53	0.89	0.52
attitudes towards mobile phone communication technology					
pro mobile phone technology	7	1-6	1.84	1.09	0.84
neglect	4	1-6	2.45	1.22	0.60
anxiety	4	1-6	3.26	1.73	0.84
convinced about harms	3	1-6	3.32	1.70	0.73

* in case of two items, the correlation coefficient is displayed

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[2] Trait to perceive various environmental factors to be risky.

First of all, we will have look at the mentioned factors that could influence attitudes towards mobile phone communication technology.

Importance of mobile phones in life

66% of all respondents possess at least one mobile phone. There is no gender difference. We included two items from which we can cautiously deduce the importance of mobile phones in life. The first one was: "I would be willing to refrain from using a mobile phone, but I cannot, because I do need it due to professional reasons", the second one was "I would be willing to refrain from using a mobile phone, but I cannot, because I do need it due to private reasons". More people need a mobile phone for work than because of private reasons. There is no gender difference for the first facet, but a significant difference for the second one. Women need it more for private reasons than men (mean women: 2.07, men: 1.57). This is probably due to the (typical) role of the women to care for the children and thus they might use it mainly for the purpose to be able to communicate with them flexibly. Yet, this is just a supposition which cannot be proved by our data.

Knowledge about masts closed to work or home

Nearly 83% of our respondents know about at least one mast close to home, 8% are sure that no mast is close and 9% do not know whether there is any. The same was asked for the workplace. Here 72% state that there was at least one mast, 9% are sure that there is no mast close to it and about 19% cannot answer this question. There are no differences between female and male respondents.

Source of information and perceived reliability

Further, we asked from which sources people gather information about mobile phone communication technology. Figure 3 displays the answers.

**Figure 3: Gender differences for different sources of information**
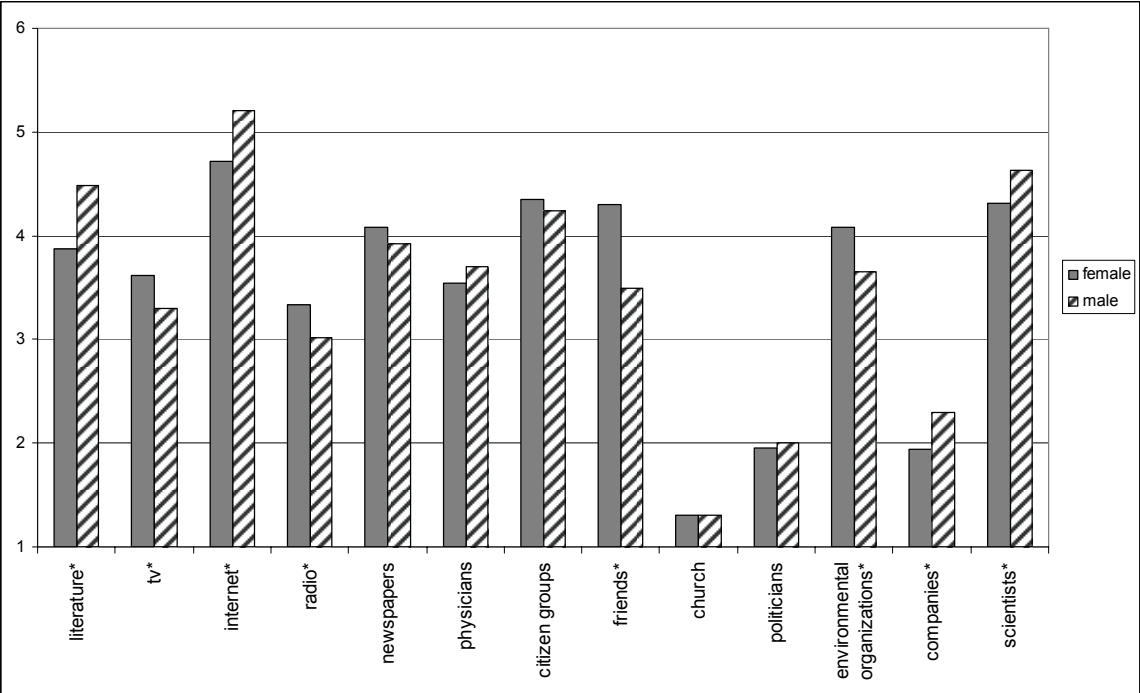
significant differences are marked with *

It can be demonstrated that most respondents use the internet to gather information. Here we need to take into account the way of data collection via internet. Thus, our respondents are used to use it also for gathering information. Further, a lot of respondents try to get information from scientists, scholarly literature and social organisations (citizen's groups or environmental organisations like the "Umweltinstitut" in Munich or Greenpeace). Comparably few use information provided by companies or the church.[3]

The ways how people try to get information differs between men and women. Our male respondents do significantly more use the internet, read scholarly literature, gather information from scientists or companies. Women rather use conventional media, like TV or radio. They also talk more to friends and look for information from environmental organizations.

The next aspect we should focus on is the perceived reliability of most of the sources (see figure 4). Our respondents tend to trust social organizations (environmental organizations, citizen's groups), scientists, physicians and friends. They do not trust information of churches, companies and politicians. Interestingly, the level of trust addressed to churches is even comparable to the trust addressed to companies. Politicians are perceived not be very trustworthy. There are remarkable gender differences for the trust given to physicians, citizen's groups, friends and environmental organizations. In all cases women do trust these sources more than men.

Figure 4: Gender differences for the perceived reliability of different sources of information
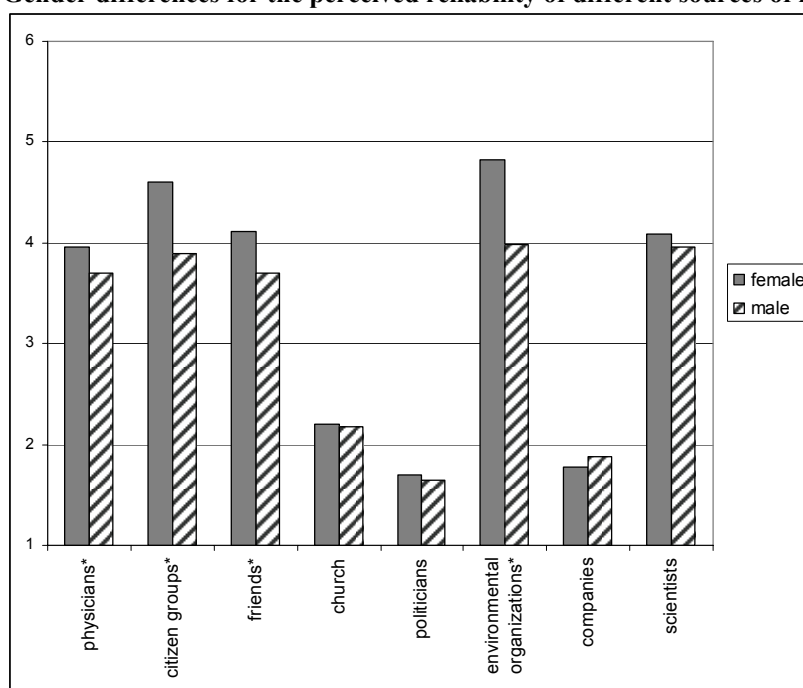
significant differences are marked with *

Other factors: Concerns about other risk factors and health problems

Concerns about other risk factors, such as nuclear power stations, air or water pollution e.g., are significantly more prevalent among women than among men (mean women 4.56, men 4.20). This tendency has been demonstrated by other studies as well (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, 2004). Further, we asked about health problems of our respondents. Women report slightly more health problems than men (mean women

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[3] Some churches publish reports on topics which are addressed to health aspects or respond to anxieties among people.

1.61, men 1.49), yet this difference is not significant. We can carefully conclude that men and women of our sample do not differ with respect to their health in general, but in their risk perception.

Values

Next, we shall a have look at which value is how important for people[4]. Here we differentiate between women and men again (figure 5).

Figure 5: Gender differences for values
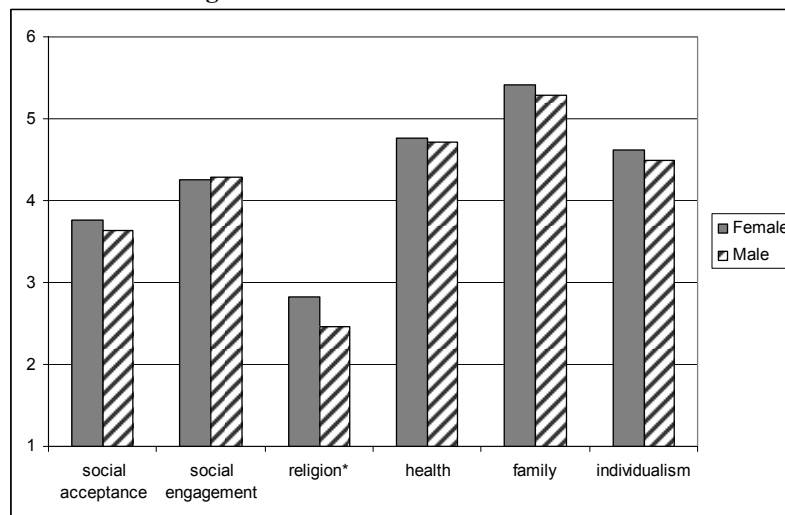
The most important value is family orientation, followed by health orientation and individualism. The next important value is social commitment. Social acceptance and religion are the least important values. There are not many gender differences. Only religion shows a slight but significant difference.

After the description of gender differences in these general aspects we can now turn to the analysis of concrete attitudes towards mobile phone communication technology.

Attitudes towards mobile phone communication technology: positive assessment

About 15% of our sample share a rather positive view of mobile phone communication. 17% say that this technology is important for a high standard of living. 22% are sure that companies do not only react to what is legally mandatory, but care for people's health. 16% are convinced that the limits set by the German government will protect health sufficiently. Social cognition can be lead by representativeness heuristic (Nisbett & Ross, 1980). This means that people refer to a group they think to know and believe that this group is representative. In our study 14% believe that mobile phone communication has no harming effects, because they know only few people who are convinced to have developed health problems due to the exposition to electromagnetic fields. Also 14% think that the critical discussion about possible harming effects only takes place because of hysteria of just a few people. Another factor which could influence attitudes is the overconfidence phenomenon

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[4] The factors result from the question: "In your life, how important is it for you to…" The mentioned dimensions consist of the following items: factor *family orientation*: have a successful partnership, have or start a family; factor *health orientation*: be healthy and fit, play sport on a regular basis, to value a healthy environment; factor *individualism*: to be independent, have as much leisure as possible, to have lots of fun; factor *social commitment*: be engaged politically, engaged in activities supporting people in need, help others, factor *social acceptance*: be accepted/acknowledged by others, be attractive to others, have a career, be able to afford all those things one likes to have, job security and have a lot of friends; factor *religious orientation*: pray on a regular basis, be engaged in church/religious activities.

(McKenna, 1993, Weinstein, 1987): According to this mode people tend to underestimate the probability to be affected by negative incidents – it can happen to others but not to themselves. Optimism is especially high if they have not made any experiences with the possibly hazardous source, if they assess the rate of occurrence low and their own ability to control high. In our study, 12% are sure, they are immune to negative effects of masts, even if others fall ill. Finally, causal attribution is important. Information which can easily brought together with existing knowledge will be adapted more easily. Causal attribution can also be used in order to avoid cognitive dissonance. In general, people tend to assess risks more accordingly their own plausibility assumptions than because of statistical data (Versteegen, 1992, Nisbett & Ross, 1980). 15% report to suffer from health problems, but they are sure, that these do not have to do anything with an exposition to electromagnetic fields.

In several studies on attitudes towards technology and risk perception gender differences are described (Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, 2004). Women care more for the environment, feel more affected by environmental problems and show more emotional reactions (e.g. anger) about it (ibid.). Are there also gender differences in our study? Figure 6 compares means of female and male respondents, while it presents all mentioned items that will be brought together as factor 1 in further analysis.

Figure 6: Gender differences for items of factor 1
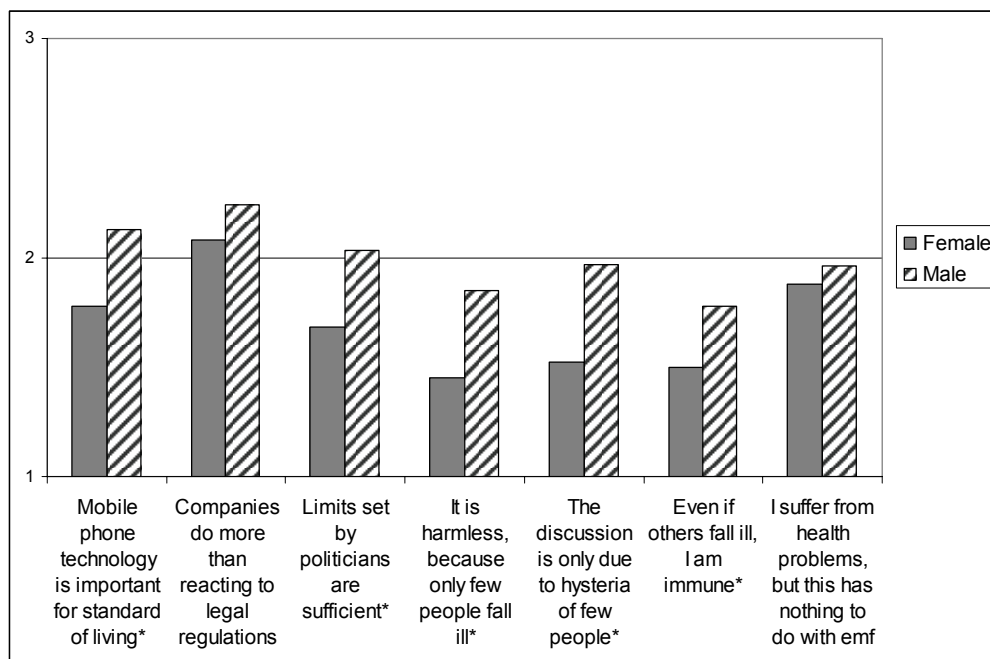
emf: electromagnetic fields, significant differences are marked with *

It becomes obvious that more men than women share a positive view of mobile phone communication. Men assess the impact of this technology on the standard of living higher and have more trust in politics. Above, they are more convinced that the discussion about possible negative effects on health has been kicked off only because of the hysteria of a couple of people and that the technology is harmless as only very few fall ill. There are no significant differences for trust in economy and the statement to have health problems which are not attributed to electromagnetic fields.

First of all, we will turn to attitudes of women and analyse possible relationships with the aspects mentioned above and displayed in figure 2. It can be seen that there is no significant relationship between the importance of mobile phones in everyday life and a positive evaluation of it (factor 1). Positive attitudes differ according to the knowledge about masts close to people. If women do not know whether there is a mast close to home or work a

positive evaluation of mobile phone communication technology is highest (means in both cases 2.00) and lowest among those, who know about at least one mast (means 1.56 and 1.49). This could be explained easily: People who share pro arguments might not perceive masts because of selective perception or missing interest – they are not important for them. There are also several significant correlations between factor 1 and the sources women resort to in order to gather information. Women who are in favour of the technology do not inform themselves via the internet (r = -0.38**)[5], scholarly literature (-0.36**) or newspapers (-0.18*). They also do not talk with friends about this topic (-0.36**) or try to get information from physicians (-0.19*), scientists (-0.23**), citizen's groups (-0.46**) or environmental organisations (-0.28**). Further, it is important how women perceive the reliability of these sources. Women who have higher values in factor 1 tend to trust companies (0.28**), scientists (0.20**) and politicians (0.20**) and they mistrust citizen's groups (-0.52**), environmental organizations (-0.40**), and even their friends (-0.28**). At the same time, women with positive attitudes towards mobile phone communication technology do assess other risks rather low (-0.24**). There is no significant correlation with their health. The analysis of the relationship between values and this attitude reveals a significant positive correlation with the value of social acceptance (0.21**), and negative correlations with social commitment (-0.30**) and religion (-0.20**). There are no significant correlations for the other values.

The same analysis for men brings along these results: A positive evaluation of this technology shows a positive correlation with the importance of mobile phones due to private reasons (0.19**). It seems to be independent from occupational needs. In contrast to the results for the women, it is not important whether there are masts close to home or work. Besides, there are a lot of correlations of factor 1 and the sources used for information as well as their perceived reliability. In general it can be said that men who share positive views of mobile phone communication technology rely on information provided by politicians (0.15*) and companies (0.27**). They do not consult environmental groups (-0.28**), citizen's groups (-0.50**), physicians (-0.26**) or even friends (-0.31**). The same tendencies can be noticed for the perceived reliability of these sources. Like for our female respondents, also men who share positive attitudes towards the technology tend to have a relaxed view of other risk factors (-0.23**). On the other hand, mainly healthy men rate high on factor 1, while suffering from an illness could also lead to a weaker support of mobile phone communication technology (-0.23**). This tendency is also reflected in the correlation between the value of health orientation and factor 1 (-0.26**). Social acceptance correlates positively (0.22**), while social commitment shows a negative correlation (-0.13*) with a positive assessment of the mobile phone communication technology.

Factor 1 shows a noticeable and highly significant correlation of 0.35** with the next factor, which is called "neglect".

Attitudes towards mobile phone communication technology: neglect

People can share the view that is not only difficult to find out what effects this technology might have, but also that it would be better not to bother too much about this question. About 40% state that one cannot escape all possibly harming environmental hazards anyway. 18% do not know what to believe because there were too many controversial study results. 12% consent that it would be better not to think about possible negative effects of mobile phone communication technology in order to enjoy life. Again the answers of our female and male respondents are compared (figure 7).

Feelings of powerlessness and uncertainty are higher among women. Together with the abovementioned results this fits: Women are more sceptical about possible negative effects of

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[5] If not stated differently, Pearson's correlation coefficient is displayed in brackets.

Figure 7: Gender differences for items of factor 2
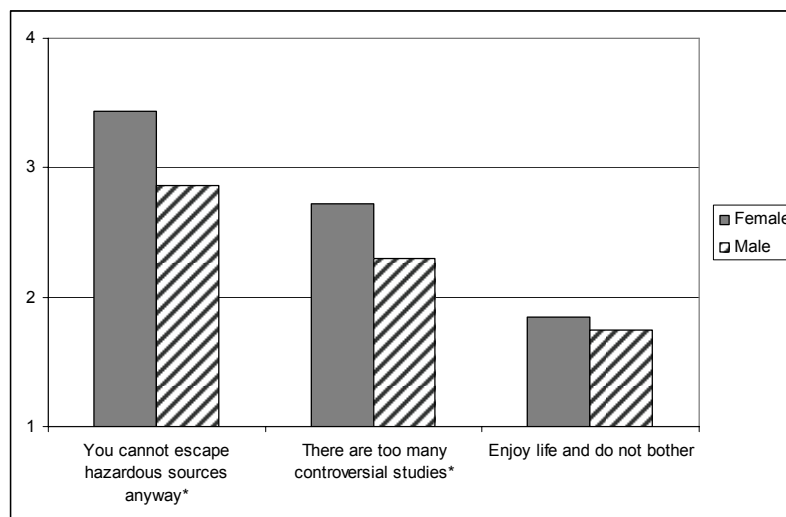
significant differences are marked with *

mobile phone communication technology and henceforth they do not support it as much as men.

For women, there is no difference with respect to the importance of mobile phones in everyday life. Those who do not know about a mast close to home or work have also highest means in factor 2 (means 3.28, 3.22) in contrast to those who know about a mast (means 2.52, 2.42). This is again a consonant result.

The correlations with sources for information are pretty similar to those for factor 1, but they are a noticeably higher for neglect. Women with high values on factor 2 do not resort to scholarly literature (-0.43**) or information provided in the internet (-0.38**) or by newspapers (-0.18*). They also do not consult citizen's groups (-0.38**), environmental organisations (-0.26**), scientists (-0.25**), physicians (-0.25**) nor friends (-0.27**). Women who share the above mentioned attitudes again rely on scientists and companies (both 0.21**) or politicians (0.16*), while they mistrust citizen's groups (-0.40**), environmental organizations (-0.26**) and friends (-0.24**). Again, there is a negative correlation between concerns about other risks and neglect, of course (-0.24**), and no significant relationship with health problems. Above, the correlations between attitudes combined in factor 2 and values are quite similar to those with factor 1. Women who strive for social acceptance (0.17*), but not for social commitment (-0.27**), religion (-0.23**) or who care not so much for health (-0.16*) show higher values on factor 2.

For men it is again relevant which importance mobile phones have in their private life (0.23**). Like for women the highest values for factor 2 could be found among those men who do not know about any masts close to their home or workplace (means 3.30, 3.01) – in comparison to those who know one (means 2.28, 2.29). Men who have high values on factor 2 do not use scholarly literature for information so much (-0.31**) or information in the internet (-0.29**) or newspapers (-0.12*), or provided by citizen's groups (-0.36**), environmental organisations (-0.27**), scientists (-0.21**), physicians (-0.17**) or friends (-0.18**). Men with high values in neglect value information provided by companies to be trustworthy (0.20**), while the sources citizen's groups (-0.31**), environmental organizations (-0.26**) and friends (-0.26**) are perceived to be untrustworthy. Further, neglect is higher among healthy men (-0.14*) with lower concerns about other risks (-0.17**). Similar to the results of women, socially engaged men who care for their health (both -.23**) have lower values in factor 2, while men who strive for social acceptance or who share individualistic values tend to neglect (0.13*, 0.12*).

Attitudes towards mobile phone communication technology: anxieties
While the last factor described uncertainty and a tendency of neglect, the next one will focus concisely on anxieties. The anxiety factor does not show a significant correlation with neglect (0.05), but a negative correlation with the first factor (-0.35**) and a positive one with the fourth factor (0.27**) which will be described later on.

The questions refer to being afraid of masts. 52% explain to be afraid of them because one cannot see the radiation. 47% are afraid because they do not know what effects electromagnetic fields might have. For 46% the source of anxiety is not knowing how to protect themselves. 40% are afraid because they are convinced that they cannot do anything against it. The analysis of gender differences brings along very interesting results (figure 8).

Figure 8: Gender differences for items of factor 3
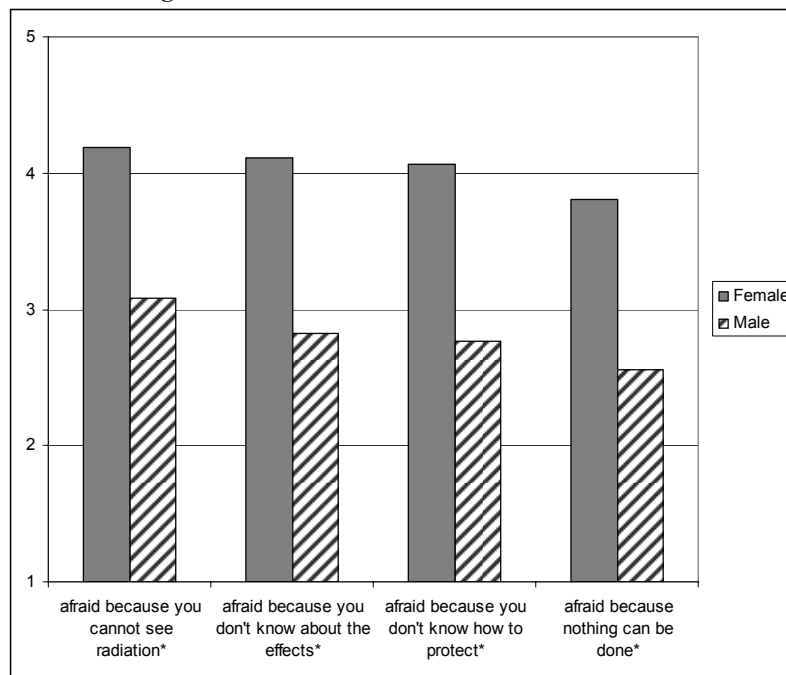
significant differences are marked with *

Women are a lot more afraid of mobile phone communication masts in all four dimensions. The analysis of possible relationships with the aspects included reveal interesting details: Anxieties seem to develop irrespective of the possible importance of mobile phone communication technology in everyday life, or the knowledge about or sight of masts or of values. In contrast, it is relevant again from which sources women gather information: Information presented by newspapers (0.17*), environmental organisations (0.22**) or friends (0.23**) seem to aggravate anxieties, while information by companies are used to reduce them (-0.26**). Women who are afraid of mobile phone communication technology trust environmental organisations (0.34**), citizen's groups (0.33**) and their friends (0.17*). They express also more concerns about other risk factors (0.36**) and if they have health problems their anxiety level tends to be higher, too (0.21**).

For men the importance of mobile phones has also no influence on experiencing anxieties. Yet, it depends again on sources of information: TV or radio reports (both 0.20**), articles in newspapers or the internet (both 0.13*), information provided by citizen's groups (0.30**), environmental organizations (0.26**) and friends (0.21**) increase anxieties. (Or anxious men seek information especially from these sources.) They do not trust politicians (-0.13*), scientists (-0.12*) or companies (-0.22**), but rely on physicians (0.18*), environmental organizations (0.35**), citizen's groups (0.34**) and friends (0.14*). The more they perceive other factors to be risky or the worse they suffer from health problems, the more they develop

anxieties (0.26**, 0.22**). While there were no significant correlations between anxieties and values for women, there are weak ones for men, in the case of religion (0.12*) and health orientation (0.15**).

Attitudes towards mobile phone communication technology: conviction that mobile phone communication damages health

This factor correlates negatively with the first factor (-0.59**) and the anxiety factor (-0.34**). Again, different factors which could influence social cognition were included. The first one looked at personal involvement. 40% are convinced that electromagnetic fields caused by masts damages health, because they have felt ill themselves. 52% know somebody, who fell ill because of the exposition of a mast, and are hence convinced that electromagnetic fields caused by masts damages peoples health. Again, the two modi of causal attribution and representativeness can shape attitudes. The weakest direct personal involvement is the case for those, who have heard that electromagnetic fields caused by masts can damage people's health. 51% share this view. Gender differences are illustrated in figure 9.

Figure 9: Gender differences for items of factor 4

significant differences are marked with *
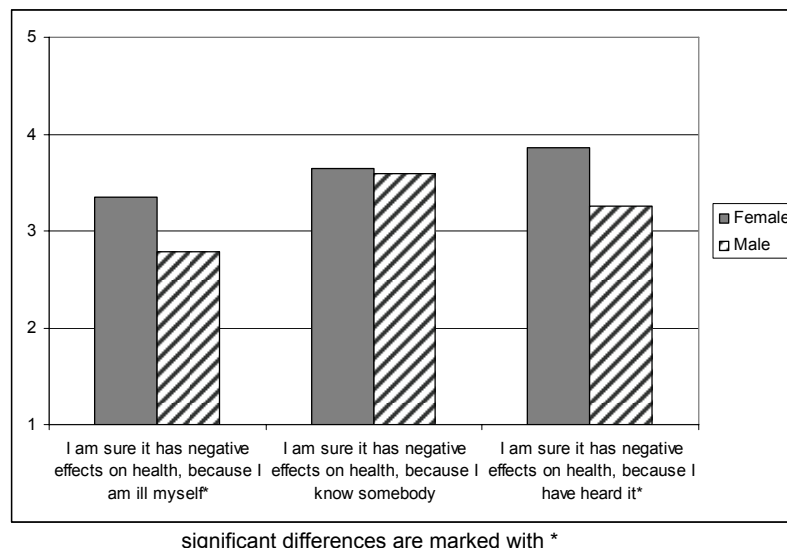
Women are significantly more convinced about harming effects of mobile phone communication technology in case they are affected by health problems themselves or if they have heard about it. There is no significant difference for the third item which is addressed to health problems of other people.

Critical attitudes of women do not depend on the importance of mobile phones in their lives. Women with high values on factor 4 gather information especially from scholarly literature (0.44**), provided in the internet (0.45**), TV (0.20*) or newspapers (0.25**). They consult physicians (0.24**), environmental organizations (0.30**), citizen's groups (0.55**) and ask their friends (0.46**). They trust environmental organizations (0.41**), citizen's groups (0.54**), their friends (0.46**), but mistrust politicians (-0.32**) and companies (-0.25**). Interestingly, they gather information from scientists (0.31**), but they also mistrust them (-0.17*). If women have health problems, they also tend to exhibit critical attitudes towards mobile phone communication technology (0.21**). Further, this correlates with concerns about other risk factors (0.26**). Socially committed or religious women have higher values on factor 4 (0.30**, 0.17*).

For men, there is no influence of the importance of mobile phones. There is also no difference with respect to the knowledge of a mast at work, but only for the knowledge of one close to their homes. Men who know about a mast there, have significantly higher values on factor 4

(mean 3.27 – in comparison to those who do not know about any masts 2.00). Again, there are a lot of significant correlations for sources of information and their perceived reliability. Critical attitudes go hand in hand with the utilization of scholarly literature (0.32**), the internet (0.42**), TV (0.25*), radio (0.20**) or newspapers (0.23**). Men who share these attitudes try to get information from physicians (0.24**, whom they trust 0.24**), scientists (0.21**, whom they – like their female counterparts – mistrust, -0.30**), environmental organizations (0.25** – trust 0.47**), citizen's groups (0.53** – trust 0.66**) and their friends (0.34** – trust 0.38**). They are not interested in information presented by politicians (-0.16*) or companies (-0.14*) whom they mistrust (-0.28**, -0.38**). Also for men there are positive correlations between general tendency to perceive different factors to be risky (0.31**) as well as for health problems (0.32**) and factor 4. At last, socially committed, religious and health oriented men tend to share critical views on mobile phone communication technology.

Conclusions

As presented in the beginning, the perceived importance of mobile phones differs between men and women when it comes up to using it for private reasons. While women explain more often, that they would need mobiles because of that, this does not show any correlations with the attitudes towards mobile phone communication technology which were analysed later. Yet, if men state that they would have to use a mobile phone for private reasons, they are also more in favour for this technology or show a higher degree of neglect. At the same time, the need to use a mobile does not influence anxieties or the conviction about possible harming effects of this technology.

If our respondents know that there is a mast close to home or work, they also tend to share critical attitudes towards this technology. Interestingly, this knowledge – or in other words: the sight of a mast – does not influence anxieties, the emotional component of attitudes.

Quite important are the sources, where people try to receive information, as well as the perceived reliability. Generally, women and men show different ways and intensities to search for information via different media or from different institutions or persons. The amount of trust is higher among women, while men seem to be more suspicious. At the same time, men are less concerned about several risk factors than women. This could already deliver an explanation why men show more positive attitudes towards mobile phone technology than women. Bringing this result together with the abovementioned statement of women that they would need to use it for personal reasons, one could expect them to be in a kind of dilemma situation: They "have" to use a mobile, but are more risk averse and afraid of the technology. This could lead to cognitive and emotional dissonances.

An analysis which sources are used let us conclude that scholarly literature and information provided in the internet are used for a critical reflection of this technology. This is the case for women and men. There is one exception: for both there is no correlation of the utilisation of scholarly literature and anxieties. The TV seems not to influence the establishment of a positive attitude or neglecting attitude, but it seems to be able to increase anxieties of men and to deliver proofs that mobile phone communication is harmful for health. Information provided by physicians, environmental organizations, citizen's groups and friends seem to confirm critical attitudes towards mobile phone communication technology. As demonstrated above this is also partly the case for information provided by scientists. The given correlations can be found for our female and male respondents. In particular, it is interesting to summarize the results concerning anxieties. Information provided by friends and environmental organizations seem to be able to aggravate anxieties of women, for men this is also the case, but here also significant correlations exist for physicians and citizen's groups.

Reliability of the mentioned sources are assessed differently: While information provided by citizen's groups, environment organisations and friends are perceived mostly to be trustworthy mainly by those who share critical attitudes about the technology in question it is labelled as untrustworthy by the supporters or those who tend to neglect. In turn, supporters (and those with high values on factor 2 – neglect) assess information provided by politicians, companies and scientists to be trustworthy. Yet, as we demonstrated above, information by scientists is often gathered by our respondents, even if they assume it not to be trustworthy. These results could underline that knowledge about and attitudes towards mobile phone communication technology are socially represented differently depending on the social system from which people gather information and depending on the observing groups, too.

A trait to perceive different environmental factors to be risky seems to influence all included facets of attitudes. There are no noticeable gender differences.

The women's support of this technology is independent of their health status. Yet, if they suffer from health complaints, they tend to have a higher degree of anxiety and are convinced about possible harming effects of mobile phone communication technology. Health seems to be more important for the attitudes of men – if they have health problems, they are not so convinced about the positive sides of the technology, they show less neglect, but they are more anxious and sure about its negative effects.

Surprisingly, attitudes towards mobile phone communication do not correlate significantly with the value of family orientation. Thus, our data provide no evidence that a critical view results from concerns about the family. Further, the value called here "individualism" also does not seem to be connected with most of the given attitudes. Only for men, there is a weak correlation between neglect and individualism. In contrast to this, we do find some significant correlations for social acceptance with the positive assessment of mobile phone communication technology and with neglect. This is the case for women and men. This might reflect the fact (as demonstrated by the mentioned studies above) that the majority of people share positive attitudes towards this technology. People who exhibit social commitment do not value mobile phone communication technology so positively nor do they tend to neglect. At the same time they are more convinced about possible harming effects of this technology. Only for anxieties there is no correlation with this value. Noticeably, the value of religion seem to influence more the attitudes of women than of men, who seem to be more lead by the value of health, whereat it correlates with all four factors for men. As social acceptance and social commitment are the main important values, it can be carefully concluded that social cognition of mobile phone communication is, above all, socially driven – especially for women. For men, individualistic values do also play a role as their attitudes are influenced by e.g. their own health or the individualism value.

Our analysis delivers some quite interesting results concerning attitudes towards mobile phone technology and a more differentiated and detailed gender comparison than most of the studies stated above. Apart from this, it also provided a clear picture of various socially represented information about mobile phone communication technology.

Yet, these results can only be used as a starting point for further studies. Our results are neither representative nor can they reveal causalities. Although the description of our results suggested sometimes to read them in a particular way, this is not proved by the data. All in all, it seems to be worthy to investigate attitudes under a broader perspective like in our study with different facets of attitudes. Further, it should be should be extended to include a representative sample while other ways of data collection should be applied, too. The best solution would be to undertake a longitudinal study.

Although some authors argue that only experts should be considered when it comes up to regulating technology (Nilsson, 2004), it could turn out to be difficult to enhance a technological development without recognizing what is happening in some social subsystems. Thus, also lay peoples perceptions should be taken into account (Stirling & Gee, 2003).

Literature

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Information Society As The Law-Governed Result Of The Evolution Of Information

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Nowadays the most advanced countries of the world are entering a phase of development which has received the general name of information society. The information society is the postindustrial society having essentially new increased   information resources and possibilities. The information society may be considered as a result of combination of two lines of development, namely, the line of development of a human society as such i.e. first of all social, cultural, economic, scientific and technical and on the other hand (that follows from the name) the line of development of the information possibilities of society. While the evolution of human society has been studied comparatively well it is impossible to assert the same about the history of development and changes in forms and character of the information played its role in the whole process. In our opinion it is the evolutionary approach to the phenomenon of information that makes it possible to see more clearly the process of growth of information possibilities of the mankind.

The general idea of information. Today we freely operate with the circle of   concepts connected to information as well as the ways of its storage and processing. Without special efforts, for example, we may differentiate and give definitions to various kinds of the economic and social information. As to the interpretation of the category of information as a whole, in generalized sense of this concept it is mach more difficult business. The conception of information remains uncertain enough, and the term as itself is understood ambiguously by different researchers. Even from prominent scientists one has occasion to hear statements of the kind: "Actually, nobody can tell, what information is this ". At the same time the authority of information in the today society gets grandiose scales and more and more imperative character. All this forces us to perceive   information as a phenomenon extremely capacious, many-sided and having almost mystical complexion.

Therefore, before building the system of conceptions related to the formation of information society, it is reasonable to try first of all to give more complete and understandable interpretation of the term "information" as such.

As a first approximation information may be defined as some data about things, properties, relations, phenomena, actions, and laws etc., which are required, perceived by some object or objects and used for realization of their purposes or requirements. In our opinion such not a strict definition being a representative of many other definitions of similar kinds is useful but insufficient. It is consumer's one and says very little about the nature of information as a phenomenon.

Phases of study and different notions of information. The term "information" has become current in the sciences and public life in the middle of XX century and has quickly found the widest application that confirmed the necessity and also timeliness of its appearance. However, some vagueness in the outlines of the concept, polysemy, the huge richness of content, have created significant difficulties in its uniform interpretation and selection of one common measure and universal unit of information.

Strong and weak points of the C.Shennon [1] approach and his followers, who connected the information, first of all, with the probability method of estimation of the reduction of the level of uncertainty during a choice, were already repeatedly discussed in the scientific literature and do not demand the further explanations. The attempts to construct a formal semantic theory of information based on the C.Shenon's ideas begun by R.Carnap and J. Bar-Hillel [2] and continued by a line of other researchers have not finally led to desirable results.

Undoubtedly an invaluable role in the development of information theory   was played by researches and conceptions obtained on the basis of cybernetic ideas, the general theory of systems and consideration of information in the aspect of control (N.Wiener [3], W.Ross Ashby [4], L. von Bertalanffy [5] and others). After that the concept of information was interpreted as a tool of management and control or as data necessary to perform functions of systems, make up decisions and solve problems.

However, even those approaches, partly accumulated C.Shennon's principles, despite of their great theoretical and applied value, could not give answers to several important questions concerning, in particular, the correlation between the form and semantic contents of messages. They have not made it possible to develop a uniform measure and a more rich universal definition of information which could satisfy the demands of majority of researchers and users.

One more step was made in the study and comprehension of information after the appearance of informatics as the science of computers and other   information technologies application. Shortly that science was divided into two branches: informatics of control and scientific informatics.

Nevertheless, one can conclude that theoretical concepts and interpretation of information existing earlier did not allow describe it completely and gave a possibility to estimate only separate sides and qualities of that major category. Attempts to overcome these boundaries are carried out today within the framework of scientific direction received the name of general theory of information, developed mainly by biologists and philosophers.

Concepts of the general theory of information.   One of well-known experts in the field of general theory of information J.Jankovsky [6] writes:
"… during last decades the necessity has become obvious of the realized organization of processes of movement and analyzing of that which has got the general name "information". Meanwhile, the concept of information in many respects remains intuitive and receives different semantic contents in various branches of human activity ".

Depending on solving problems, scientific directions, spheres of human activity and depth of philosophical comprehension this category may receive   different definitions. In the Internet for example to day one can find the list of 34 formulations of such definitions and it undoubtedly may be extended.

The beginning of development of the general theory of information in our country in many respects may be connected to the name of A.D.Ursul [7]. In the West the biological views on information were presented first of all by N. Wiener and F.Machlup [8], however the papers of those scientists mainly examined the opinions of western representatives of the biological science.

To the representatives of the general theory of information as a direction of researches, in our opinion, can also be attributed V.I. Vernadsky [9] (though the scientist himself did not assert that). Scientific predictions of Vernadsky, contained in his ideas of the noosphere – that is the state of biosphere which comes out as a result of interaction of its laws with the activity of human mind and concerns global consequences of informatization process. This idea is completely coordinated to the modern notion of information society as the society characterized not only by high level of informatization and value of knowledge in the economy and in social life, but also as the postindustrial society, taking place on the qualitatively new coil of social and economic development.

In his developed complete doctrine of biosphere as the alive substance organizing the terrestrial capsule, and of the evolution of biosphere into noosphere V.I.Vernadsky unites in uniform process and analyzes in common the biological life and the life of human society. In his theory, examining the interrelation between the informatization and the biosphere, he attaches determining importance to the informatization and knowledge.

The great interest is deserved by the definitions offered by today's representatives of the general theory of information, in particular, of its teleological direction. So S.J.Jankovsky

associates the category of information with the concept of information interaction. He writes: "Any interaction between objects during which one object gets some substance, and the other does not loose it, may be named an information interaction. In this case the transmitted substance is to be called information " [6].

Concept of the operator of information. Creating his teleological theory of information, V.I.Korogodin [10] proceeds from the situation of achievement of some event as the purpose, from the concept of purposeful action and its complex characteristics, and also from the operator of information formed for the achievement of this purpose on the basis of concentration of the necessary information. The information is defined as the set of rules, methods and data necessary for constructing the operator of information, formed for achievement of the purpose under consideration. The concept of the operator of information is also used by other experts working in the field of information theory. So E.Sosnin [11] writes: "Information is a set of receptions, rules or the data necessary for construction of an operator. In other words information is the guide for action ".

The evolutionary approach and the rise of information in the nature.

The essence of information may be better understood and interpreted by observing it in the process of evolution. The information is inherently connected to the existence and ability to live of living organisms including human beings and also societies. It is necessary not to forget, that information in particular considered historically in its evolution is not only a social, but also biological, and even, first of all, biological phenomenon. In an integrated view this evolutionary chain looks like as such: the biological information, transition to the social information, its gradual transformation into the major resource of society (informatization), formation of the information society and, finally, creation of the noosphere as a new stage of development of the biosphere.

The offered approach can be considered as the evolutionary concept of research and interpretation of information within the framework of the general theory of information.

Contrary to the opinion of many scientists who notices in the nature three super-categories: matter, energy and information, information does not belong to the super-categories of this level. It should be regarded as an attribute of only the alive matter, not of the matter in general.

The present forms and kinds of information interesting for us, i.e. presumably social information, which after its development has turned from the biological into the social one, was generated together with the origin of life. Life has arisen at a very complex, close to unique, combination of conditions (temperature, pressure, chemical compound of environment, gravitation, presence of energy sources etc.). Directly opposite to the lifeless matter which is indifferent to states it passing through: firm, liquid or gaseous, alive organisms may exist only in rather narrow limits of values of these conditions and their combinations. They must adapt in order to maintain homeostasis. According to that living creatures were initially supplied by the nature with the aspiration to self-preservation and survival. Apparently, this aspiration marked the beginning to the phenomenon of purposefulness in the nature.

In this connection living creatures were provided with sense organs, the memory as an ability to fix the important events and situations, nervous system for the reaction to external disturbances. In result living organisms got an opportunity to perceive, register changes in external conditions and react to them. It was those data about conditions and changes in the environment which formed the basis of the initial information and served as the starting point for creation of information of the next subsequent types.

According to C.Grobstein's theory [12] "the strategy of life" consists in the constant development of living matter representing steady, creative evolutionary process of its antagonism to "monstrous power of the lifeless nature". From here we may judge, that life always should adapt to big and small changes of the environment and make it until the values of these changes obtain catastrophic character and became unacceptable from the point of

view of the limits of short term possible alterations in the structures and properties of alive organisms. The continuous reception of data about the environment serves the base condition for their survival and development

Thus, originally information was the need and consequence of adaptation of living organisms to changes in the environment conditions. Further, together with their development in the courses of ontogenesis and phylogenesis, in their struggle for existence and energy sources, during training and mutual informing the growth of abilities in processing and accumulation of information took place. With development of the nervous system and acquire by animals of that K.Lorentz [13] named "parliament of instincts", living creatures got new possibilities for the effective use of information.

Almost in the same way considers this problem biologist V.I.Korogodin. He writes: "…our conviction in that, information is the basis of life, represents, in its essence, only ascertaining of this fact. We should note, that in the nature there is no any information system which, if not being alive, was not made by hands of the human being " [10].

Academician N.N.Moiseev, even more definitely considers the information to be an attribute of the living matter. Arguing about the information, he writes: "…this concept (information) is imaged by me as somewhat "historical ". Necessity of its introduction arises only at the description of rather late stages of development of the material world, only when life arises in it. The information appears only when we begin to study purposeful objects i.e. objects capable to   act purposely "[14].

Thus, from our point of view, information is simultaneously an attribute, a need and a product of ability to live of the living matter. Information has arisen and was originally used in connection with the need of living organisms to adapt for changes in the environment.

Information in the processes of ontogenesis and phylogenesis. For realization of their general strategy and performance of vital functions living organisms must have data about the condition and changes in the environment. That results in development at them devices for perception, processing and storage of these data i.e. sense organs, nervous system and at last brains. Living organisms were also provided with the emotional complex for the initial estimation of the importance of received signals and production impulses for necessary reactions to them. The fixation of reactions to coming signals was necessary both first from the point of view of survival and adaptation of separate organisms during their life (ontogenesis), and secondly for actualization of the long-term mechanisms of heredity and adaptation in populations, genus, species, orders and other biological groups (phylogenesis).

Development of the living matter is, certainly, not only the result of its opposition to the lifeless nature as well it is the consequence of its interaction with the biosphere. "Heterogeneity of the biomass is the result of its prolong interaction with biosphere – the interaction which essence is the self-doubling of making the biomass units based directly or indirectly on replication enclosed in molecules of information " (C. Grobstein, 1968).

For successful struggle for survival between separate specimens and different kinds of living creatures they should be supplied both the current situational information and the stored long-term information. The later is also promoting a choice of rational variants of reaction to coming signals and disturbances. The long-term information here is that accumulated during life of organisms (life experience), and also transmitted from generation to generation at the level of genetic hereditary attributes and acquired instincts.

There is some kind of competition between long living and short-living kinds of living beings. Here again nature provides the reliability of development of biosphere with the help of application of various ways of adaptation. Long living organisms for the period of their life are capable to save up more experience, than short living, but organisms with short period of life have an opportunity to provide faster transfer of the information saved to the subsequent generations on the genetic line.

For the recognition of coming information and proper reaction to them the memory of living beings must have registrations of various kinds of relations and already happened

events. On the basis of these registrations, and in particular on condition of their repeatability and high intensity of emotional colouring during their perception, reflexes living beings began to be formed.

During development the nervous system and intelligence of living creatures became more and more complicated and they got new possibilities.

At the same time their life experience and that partly transmitted from the previous generations summarized which found its expression in complication and increase of the number of their instincts. Created by that experience (conditioned and unconditioned reflexes) and named by K.Lorens's elegant phrase "the parliament of instincts ", together with the improved nervous system and the saved genetic information became, apparently, the main constituents of the basis on which, in particular after the occurrence of natural language, the process of formation of logic and human abstract thinking began.

Transition from the biological to the social information. It is possible to distinguish several stages in the development of forms of existence, perception and use of information. Firstly, it was the initial natural image information directly perceived with the help of sense organs. Then it was followed by the indicative (attribute) information, i.e. information connecting some phenomena together, for example, a flash of lightning is an attribute of a peal of thunder following behind it.

The signal-communication information arose in biological groups: broods, flocks, packs, herds. Firstly it may be warning shouts of alarm, exclamations of pain or, on the contrary, satisfaction. The modeling meaning of such signals (necessary reactions to them) was registered in the memory of animals together with them, at the beginning in the operative, and then in the long-term memory.

The ability of transformation of received signals into signs meant already transition to more high level of communication, and, in many respects was the consequence of growth of number and simultaneously intelligence of members of the community. Signs may be considered as signals with fixed for them and accepted by the community meaning

The growing number of living organisms and formation of different kinds of communities, realization of their mutual actions, increase of frequency of contacts between them, and perfection of their abilities to percept, recognize, store and process data, intensified the information interaction activities. The gradual transition was carried out from mainly signal, primitively sign forms of communication to the formation for this purpose and use of more and more advanced signs and whole sign systems.

"Evolution of sociums (communities) is connected just to the development of means of information interaction of its participants, and in particular of construction and use of their combined memory. The speed of this evolution is much higher than the speed of evolution of individual organisms. It is connected with that the means of information interactions used by a community may include not only means integrally inherent in its members, but also introduced in it from the outside. Advanced communities may purposefully develop external means of information interaction used by them " (Ursul, 1998).

The basic type of information used in the human society is the information expressed in natural languages. One of the characteristic features of the language information is that it may be analyzed on three semiotic levels: syntactical, semantic and pragmatic (Morris, 1983; Cherry, 1964). The development of languages passed several important stages each of which increased to an important extent possibilities of communication between people in space and in time. Main of those stages were as follows: spoken language, writing and book-printing. Now the natural language and language information have entered a new stage of existence – an electronic and digital one.

On the final account, it was the formation and use of language which made the information: perceived by all members of communities, freely enough transmitted in time and in space, suitable for use in different sorts of communities and society in general, i.e. allowed transform it into the social information.

Informatization and the formation of information society. Several last decades was the period when the information engineering and technologies were developing impetuously The accumulation of knowledge was intensified, possibilities and the significance of their use in the human and society life increased. This process should result and has already resulted in the informatization of society, and further in same cases in the formation of information society. " The informatization of society is understood now as the process of more and more full mastering by the society information as a resource of development by means of informatics with the purpose of cardinal increase of the intellectual potential of civilization and on this basis - humanistic reorganization of the whole live and activities of the human being " (A.D.Ursul [18]).

Our vital activity to a very high extent consists of reception, storage, transformation and transfer of information. Very many our physical actions, anyhow, are also connected to the processing of information. Constantly progressing processes of informatization gradually relieves people of the increasing number of physical operations connected to the processing and use of information. The impact of informatization is so radical, that may even bring some people to the hypodynamia. Though, certainly, the main impact of informatization consists in release the intellectual apparatus of men from routine operations and in increase opportunities for creative work. Now informatization is understood as the development and application of the most advanced means and technologies of information processing, first of all, electronic and digital, including computers, Internet, mobile telephones, united by the general name of "information-communication technologies".

But informatization notion may be understood more widely - as a general historical process of perfection of human abilities to process information. In this case one may also attribute to the informatization the invention and application of writing, book-printing, telegraph, telephone, arithmometer etc. As it can be seen, the paradigm sequence: "information - informatization - information society" has its historical principle of construction. In detail the initial part of this sequence looks like as follows: originating of information - development of the biological information - transition to the social information - past stages of informatization - modern electronic and digital informatization.

The next step of informatization is the information society. We speak about the information society when we mean first of all social and economic aspects of development of mankind, and we name this stage of development as knowledge society if we emphasize the information-intellectual saturation of society. Under economy of knowledge as a constituent of the information society it is reasonable to mean, first of all, such an economy in which the share of knowledge in the structure of total cost of the national product considerably surpasses the ratio which generally takes place now.

Major kinds and the general definition of information.. As researches show, to the major categories of the information it is expedient to attribute first of all the following: current information, knowledge and genetic information.

A Russian philosopher G.B.Zhdanov [15] who distinguishes three kinds of information in the context of his reasoning: genetic, logic and figurative, defines the former in the following way: "The genetic information enables an organism to carry out the special, characteristic only for the alive matter way of its self-organizing, in particular, providing preservation and transfer in time the data and programs of adaptation, adequate reaction and development of alive organisms".

In initial biological sense the reception of information is, first of all, the process of scanning and perception by an object the conditions of environment and their changes, with allocation of elements, significant from the point of view of realization of strategies incorporated in it by the nature. The data received as a result of this process is the current information. These data may influence on the perceiving object in various ways: to cause only an emotional reaction, to require in the answer some physical actions, to promote structural –

functional restructuring of the object, and also may be accumulated, collected and inherited. Almost the same properties and functions (excluding the last) also form the basis of the current social information.

As to knowledge, today both everyday life and scientific knowledge are received and stored data about objects, processes, phenomena, laws of the nature, and also about their presence, properties and relations, allowing receive or improve our comprehension of them. Usually knowledge is considered as the long-term potential information, however in some cases (for example, some discoveries) it may be used at once after its reception. Scientific knowledge is the result of process of recognition of environmental reality. This process is very well determined by Herbert von Klaus [16] who writes about knowledge as of "…perfection of the structural model of the world ". Scientific knowledge is that kind of information which, as is known, makes a basis of scientific, technical and social progress of mankind. An interesting approach to knowledge as to a resource was shown by F.Machlup and M.Porat [17]. They offered the methodology and a mathematical procedure for estimation of the contribution of knowledge in the total cost of national product. In that project V.Leontiev "input-output" tables and technological factors were used.

During evolution, beginning from the time of appearance of primitive alive creatures and up to now, kinds, forms, the role and significance of information, and also the range of spheres and directions of its use were changing and extending so mach, that now it is practically impossible to give this concept a uniform, universal and strict definition. Such definition should unite its biological, social and even technological sense. Attempts to develop such definition (for example C.Shennon's and even S.Jankovsky's) lead to quite an abstract and senseless interpretation of information, or demand a lengthy additional explanation and decoding.

Therefore, taking into account what was told above about the basic kinds of information used in the human society, we may in the following way formulate its combined definition including several constituents: *information is, first, data about the current situation, and among them: about conditions and changes of the environment, its separate objects and phenomena; secondly, the data formed and used for the organization and control of our actions; in the third, the data received and accumulated as knowledge; and, at last, the data and programs incorporated in human beings by the nature and ensuring their biological development and in a large extent, determining their behaviour (the genetic information).*

Thus, having arisen in the biosphere, information following the progress of mankind becomes the determining factor of its development. Intensive processes of informatization proceeding presently result finally in formation of the information society, as a new form of existence of mankind. At this society knowledge and intellect begin to render deciding influence not only on its own development, but also on the character of proceeding of the biosphere and geological processes, reaching further the stage of development named noosphere. Up to the present there is already a whole philosophical trend noospherizm. This is an optimistic philosophical theory because in it an accent is made on the development tendency of mankind. However noospherizm is being more and more definitely opposed by finalizm which representatives emphasize that during its development the mankind for the accumulation of the capital of knowledge as if pays and will pay with the exhaustion of resources of the planet and pollution of the environment. And finally that will lead it to degradation and destruction.

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THE GOOD, THE BAD AND THE UNEXPECTED:

The user and the future of
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A transdisciplinary conference organised by

**COST Action 298
"Participation in the Broadband Society"**

Moscow, Russian Federation
23rd - 25th May 2007

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Table of Contents

Humans as eActors

Volume II

The multiple cultures of the information society

Future directions

Politics online: comparative perspectives, theories and methodological innovations

The multiple cultures of the information society

Internet Usage Patterns In Turkey In The Context Of The Rising Nationalism

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Abstract

There is a deepening and differentiated social conflict on different ethnic and religious identities in Turkish society, especially in the last decade. The increasing street lynching attempts in some provinces of Turkey have targeted people who have been critical of the political establishment one way or the other: leftist activists, Kurdish people, students, and in the last stance, the Armenians. The assassination of Hrant Dink, who was a prominent Armenian journalist, was the latest atrocity of this kind. Dink's murder, together with the previous events, created a new discursive struggle in the name of Turkishness in the public sphere which is directly related to a fascist discourse.

These initiatives are implicitly or explicitly supported by some institutions of the state itself. Direct and brutal violence is legitimized by the authorities in the name of "sensitivity of the people", thanks to the common sense.

On the other hand, there has been a rise in the number of the nationalist and fascist websites, internet forums, mailing lists, online newspapers and their online polls, readers' comments boxes, etc. on the internet which were intrinsically inline with the attitudes of the officials. In this context, I aim to show how the lynching, assassinations, etc. seem like 'civil actions' were related to the nationalist, fascist, conservative online platforms. In order to do so, I would like to analyze the nationalistic discourse in the context of neoliberalism in these platforms.

Furthermore, I would like to criticize the myth of "Internet democracy" associated with new communication technologies because I argue that internet use does not necessarily mean democratic communication. On the contrary, it may be a used as a weapon for fascist discourse and actions, especially in dependent or semi-dependent countries, as seen in the case of Turkey.

Finally, it is difficult and also dangerous to speak about the internet usage patterns without to-the-purpose research designs since these patterns are strictly integral to the real political economy of any country as well as of the world. Although I would like to make a limited analysis on the internet usage patterns, I would try to relate this issue with a historical background and with the political economy of Turkey in last decades.

Introduction

The aim of this study is to show the relationship between the rising nationalisms and internet usage patterns in Turkey. I would like to develop my analysis in two sections:

1) A historical background of Turkish society, particularly since the 1980s. In this part, I will try to summarize the transformation of the political economy of Turkish media, with an emphasis on the "new media architecture." Turkey's adventure of accession to the EU and related globalization debates, which had a great impact on the emergence of a new nationalist discourse in Turkish society, will also be discussed in this section.

2) New phase of Turkish nationalism and its relation to the internet usage patterns of 'ordinary' people. In this part, I'll evaluate some characteristics of the internet environment in Turkey, including some nationalist and/or fascist expressions and/or attitudes in the websites, forums, mailing lists, reader comments, online polls, etc.

Finally, I will argue that in order to fully understand and explain the nationalistic discourse on the internet, the hegemonic processes, hegemonic actors and the dominant media should be the centre of attention.

Neoliberalism and the Transformation of Turkish media

In the course of 1980s the media in Turkey emerged as an industry and became one of the driving forces behind the Turkish economy. This period was characterized by a new political, economic, and cultural formation as a consequence of the stabilization measures imposed by the IMF. The measures came into force on 24 January 1980 and together with the military coup d'etat of 12th September the same year, initiated the neo-liberal orientation of the Turkey's media.

In the following two decades, the structure of the established Turkish press, which was in the process of industrialization since the 1950s, went through a drastic transformation in terms of ownership and control relations and new actors have entered the market. Distinctly unlike their predecessors, the new owners were from the commercial and industrial bourgeoisie which weren't actually making journalism and in the 1990s they enforced an array of horizontal and vertical (and super-cross) integrations in all their media holdings, including broadcasting[1].

In Turkey, the main architect of the neoliberalism and the 'new right project`, the counterpart of Reaganism in the US and Thatcherism in Britain, was Turgut Özal[2]. That is to say, Özalism is a local version of Thatcherism (and Reaganism in USA) (see Tünay, 1993).

Özal appeared to have implicitly demarcated spheres of influence with the army after the 12 September coup d'etat. He had the belief that regulating the economy and the army would consequently guarantee 'law and order`. 'Turk-Islam synthesis' which was compound by the

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[1] I use the concept of 'new media architecture' for explaining this period. This concept is related to the new role attributed to the media in parallel to the neoliberalisation process and it implies that the dominant media turns out to be a component of the big capital groups, and is organized as holdings in a context shaped by a new coalition between the state and the capital (for details see Adaklı, 2007)

[2] Özal was the Deputy Prime Minister during the military government and served as Prime Minister between 1983 and 1989 and as President from 1989 to 1993.

nationalist and religious elements in Turkish common sense used by the ruling class in this new right project, especially to overcome with the leftist and working class movements[3]. One the other hand, one of the main consequences of Turkish new right project was the depolitisation and the retreat of people from politics, especially young citizens.

Privatization of some public enterprises and other neoliberal policies resulted in very high level of unemployment and the privatization of Turkish Telekom for instance created nationalistic reactions because of the foreign owners[4]. Kamusen (Confederation of Turkish Public Employees Trade Union), a nationalist trade union federation initially used this slogan: "Selling Turkish Telekom is treason felony"

On the other hand, Turkey's EU adventure that began with the Ankara Treaty on 12 September 1963 became one of the main problems of the painful transformation of Turkish society in the last decade. Turkey being pushed into the arena of neoliberal competition on the one hand, also tried to cope with a social backlash that can be defined as the 'nationalism of globalisation' (Kaldor, 2004). Within this process, the Turkish media while championing the EU accession triggered the social troubles through the broadcasting of antagonisms and tensions such as Kurdish-Turkish, secular-Islamist, etc., particularly in its news coverage.

Although the most important topics regarding the transformation of the Turkish media industry in the context of the EU harmonisation were related to pluralism and diversity that were part of the debates on media ownership, these issues did never unfold as a public debate. Due to lack of an open democratic debate, decisions on such issues were concluded through private deals of mutual self interest between the government and the dominant media groups. It should be noted that the imposition and rules on economic issues that will come with the EU integration have not been deliberated extensively in Turkish media. The language is very vulgar and antagonistic as it is guessed.

Meanwhile, on the content side, celebrity news and 'third page journalism' have soared in the 1980s and 90s. Sexuality gained great news value in traditional media and later in the internet editions of dominant media. Nonetheless, a new moral hypocrisy and controversy without any public investigation gained a momentum in this new discourse.

As of today, four family groups (Dogan, Ciner, Cukurova and Dogus) dominate the Turkish media market. Due to the special conjuncture, some Islamist media groups like Albayrak and Fethullah Gülen groups also try to have a share in market and assert an influence on Turkish politics (see for detail Adaklı, 2007). In addition, smaller media enterprises which make up the remaining market, struggle within this oligopolistic market structure that is increasingly more engaged with a militarist, nationalist, anti-Islamist, etc. discourse in the name of Kemalism as a larger, "umbrella" discourse[5].

Late period of Turkish nationalism: A background

There is a general consensus that a 'new' nationalism is on the rise all over the world. I agree with the argument that this is a phenomenon related to global development under the neoliberal politics which was implemented in several countries in Asia, in Latin America, and also in Turkey after 1980s. But there are important differences between the nationalisms

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[3] For a detailed analysis on the reasons of 1980 coup d'état see Aydınoğlu, 2007.
[4] Turk Telekom was sold to a consortium dominated by a Lebanese capital group (Oger Telecom) in 2005.
[5] The brands of the most popular examples of this media have the "Turk" (Kanaltürk, Habertürk, etc)

rising in these different regions. I would like to describe the Turkish version of new nationalism in the context of the late period of Turkish politics and neoliberalism.

Cold war and in succession the `new world order` which was introduced in 1970s, achieved a definite success in 1980s, particularly in the aftermath of the collapse of Union of Soviet Socialist Republics and other socialist regimes since 1990s. In this new era, USA emerged as the biggest power in the world, politically and economically.

In this new era, a novel type of nationalism flourished all over the world. Perhaps, the war in former Yugoslavia was the peak point of this new nationalist wave in 1990s. Mary Kaldor (2004) uses the term 'new nationalism' for this phenomenon:

> *"What I call the "new nationalism" is both shaped by, and shapes, the various phenomena we bunch together under the rubric of globalisation. I would argue that the "new nationalism" is regressive, and, in so far as it persists, will contribute to a wild, anarchic form of globalisation, characterised by violence and inequality."*

Turkey was not immune to the wave of new nationalism and since it was trying to integrate with the world politics and economics under the neoliberal process as from 1980s, Turkish people started to face more closely the "out of Turkey" through several social experiences. First of all, the process of the EU accession which started in 1950s, accelerated in 1980s and 1990s. The structural harmonization with EU gave way to a defensive reaction in the common sense. The sale of various public enterprises to foreign investors through privatization, and a significant increase in property purchases by foreigners also evoked the given nationalist imagination. In the process, as Turkey was criticized by the EU in every progress report on the violations to the freedom of expression, this created hostility in public to some Turkish intellectuals and human right activists which were supporting of the EU accession. These, coupled with the growing gap in the income distribution, increasing poverty and unemployment -or flexible employment- turned away the people to the more nationalist alternatives in politics. Some nationalist and/or far right political organisations and news media addressed to these annoyances as "the imperialists/EU/USA/etc. will divide our country under the discourse of 'freedom of expression' with the cooperation of the ethnic and religious groups in Turkey"[6]

Here, I believe going back in Turkish history shortly will be helpful in explaining this new phase of Turkish nationalism.

There was a struggle between the Kemalist elite and the others that emerged in the decades (1920s and 1930s) following the foundation of the Republic of Turkey. After a 1960 coup d'etat and a new constitution, Turkish politics and society were transformed radically. For the first time, working class came on the political scene and was represented by a political party; TIP (Türkiye İşçi Partisi, Turkish Workers Party). A military intervention interrupted the developing oppositional and libertarian movements in 1971. Following this coup d'etat, fascist groups (Nationalist Movement Party MHP and its youth organisations) were used by the hegemonic powers to undermine these movements and for reaching a new status quo in the name of a western capitalist way.

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[6] One example of this approach is clearly introduced in this source: Yıldırım Koç (2005) "Avrupa Birliği Türkiyeden ne istiyor? [What does EU want from Turkey?], 13 November, http://www.antiemperyalizm.org/gercek/gazete/article_782.shtml

After the 1980 coup d'etat, these state-supported fascist groups together with influential leftist and working class movements were eliminated to a great extent. A depolitisation campaign was implemented by the military government and its successors, largely accompanied by the dominant media groups. This fact created masses insensitive to the politics in Turkey, especially among the working class and youth which were highly politicized in the 1970s. So, paramilitary fascist groups of 1970s were replaced by an amorphous and to a certain extent decentred masses[7].

The Kurdish problem was raised in the middle of 1980s as a domestic war between Turkish army and Kurdish Workers Party (PKK, Partiya Karkeren Kurdistan). In the leadership of Turkish Armed Forced, Turkish Republic tried to block the PKK movement in 1980s and 1990s. The war is over in a great degree after PKK leader Abdullah Öcalan's capture in 1999 with a big help from US, but the "ordinary nationalism" in the Turkish common sense is not over yet.

On the contrary, in reaction a bigger hostility against the Kurdish people or every representation of Kurdishness emerged in the Turkish society. This attitude went beyond the Kurds to include USA because of its standing by the Kurdish political groups, especially those in Northern Iraq. On the other hand, in order to fulfil the EU criteria Turkey abolished the death penalty, saving the life of Abdullah Öcalan This and other similar developments promoted a nationalist (and fascist) reaction of identifying EU and PKK in the common sense[8].

In 1980s and the 1990s, popular agendas such as the Kurdish issue, EU accession process, and also Islamist movements and its representations by Turkish media were integrated into less visible facts like increasing gap in the income distribution, unemployment and poverty. These concrete facts which were the basic results of the neoliberal policies took a great role in the rise of a new nationalist wave throughout 1980s and 1990s.[9]

Dominant press outlets and the newly established private television channels supported the operations of Turkish ruling classes in blocking the Kurdish movements. In the process, a debate on "the deep state" rooted from the assassination of some Kurdish businessmen and journalists and some secret operations of the military and security forces.

Nationalist reactions based on the antagonism of Turkish-Kurdish have risen especially during the 50th Government of Turkish Republic, formed by Tansu Çiller. A major economic crisis in 1994 and problems in the political sphere have doubled the ongoing instability. In the following years, these facts were echoed in the electoral counts in 1999 General Elections.

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[7] But it didn't mean that the far right organisations melted into the air. For example, another far right party BBP (Great Unionist Party), splitting off MHP, was established in 1990s, and distanced itself from MHP in preferring more Islamist motives in its politics. Both MHP and BBP preserved their core social base through out 1980s and 1990s in general.

[8] This reaction was also triggered by some newspaper columnists when death penalty was a big debate in 2000. For example, the editorial writer of *Hürriyet* (Oktay Ekşi), titled his column as "Does a criminal have human right?" to reflect discredit upon Abdullah Öcalan (9 January 2000). Interestingly, the columnists supported the accessing to EU also use a very nationalistic and fascist discourse to balance the public opinion.

[9] According to a writer on Turkish nationalism (Bora, 1993) "the szyhoprenic and unstable structure of Turkish nationalism swinging between the feelings of hostility and admiration towards the West deepened. On the one hand a self-confident, extrovert, modern and a Western nationalism was developing, on the other hand ethnic-cultural, and chauvinist and isolationist tendencies were getting stronger." (Cited by Sumer, 2003: 41-2)

MHP, as an important part of nationalist/fascist movement, surprisingly took a great amount of votes and became a partner in the coalition government[10].

Actually, antagonisms such as Turkish-Kurdish or hostilities to the every kind of "other" could be observed through some events which contained acts of direct violence like the assassinations of some prominent figures of Turkish society[11] and the recent increase in street lynching.

All assassinations and some political scandals[12] caused a great indignation in the society but investigations into them did not come to a satisfactory conclusion and even if the investigators found any information, their findings were not shared with the public. So, Turkish people did not know who really was responsible of these crimes. It can be argued that this disinformation (and misinformation) processes triggered the people (especially the younger, lower class and under-educated people) to retreat from politics and admire the military as the real power in Turkey.

The great ratings success of 'Valley of Wolves', a popular television serial dramatizing some recent historical facts about the secret dealings of the state, in its popular name `the deep state`, may be explained by this disinformational climate of Turkey. The serial has caused a flood of complaints to the broadcasting regulator, RTÜK, because of its violent scenes.[13]. Its latest season which took up the Kurdish issue, was cancelled when only two episodes were broadcast, due to growing public concern and complaints.[14]

In 23 March 2005 a big clash between participants and the security forces broke out during the celebrations of an important Kurdish day, Newroz, in Mersin province. The events were blown out of proportion by the media and named as the "flag crisis". Official statements on the events were very instigative rather than calming and they became the material of the dominant and some right-wing media in creating a nationalist hysteria.

One of the nationalist and fascist assaults happened in the city of Trabzon, which recently came into the spotlight after a number of murder and assaults. On 6 April 2005, five members of Tutuklu ve Hükümlü Aileleri ile Dayanışma Derneği (TAYAD, Solidarity Association of Prisoners' Relatives) delivering flyers on the hunger strikes in prisons were attacked by a

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[10] MHP increased its share of votes 119 percent from the previous elections in 1995 taking 17,98 percent of all votes.

[11] `Unsolved` political assassinations after 1990: Muammer Aksoy (Academic, 31 January 1990); Çetin Emeç (Journalist, 7 Mart 1990); Turan Dursun (Writer, 4 September 1990); Bahriye Üçok (Academic, 6 October 1990); Uğur Mumcu (Journalist, 24 January 1993); Musa Anter (Journalist, 20 September 1992); Onat Kutlar (Writer; injured in 30 December 1994 and died 11 days later); Ahmet Taner Kışlalı (Academic, 21 October 1999); Necip Hablemitoğlu (Academic, 18 December 2002); Andrea Santoro (Priest, 5 February 2006); Hrant Dink (Journalist, 19 January 2007)

[12] One of them broke out in 3 November 1996 accidentally and gave rise to a mass mobilisation demanding the investigation and punishment of the political relations between fascist groups, the mafia and official authorities.

[13] See www.rtuk.gov.tr. For a critical evaluation of the issue see Korkut, 2007.

[14] There could be several factors in the blocking of the serial. For example, it may be argued that the some reactions of some leftist groups but especially of the Kurdish citizens were effective in this blocking. On the other hand, competition between dominant media groups may be also effective. And one more reason for this blocking may be the attitude of the Turkish General Staff which doesn't want to be known that its secret operations in the past. (See Altaylı, 2007)

fascist group encouraged by the civil servants, bureaucratic elites' statements and national and local media[15].

On the other hand, the assassination of Hrant Dink, a Turkish journalist of Armenian origin, created a new nationalist hysteria about the Turkish-Armenian question. Since some Armenians and other groups claim that the Turkish rulers have killed some 1,5 million Armenians in the Ottoman territory in 1915 in what they describe as an act of genocide, although Hrant Dink was not a typical supporter of the idea, after his funeral some nationalist sectors of Turkish politics argued that the people who gathered and shouted "we are all Armenians" at his funeral was in a betrayal. Parts of Turkish media joined this nationalist and somewhat fascist chorus eagerly.

All these, in fact, present the vulnerability of the ordinary people when faced with what is different in general. Any international football match or international meeting (even if not political), or any statement from an EU representative about Turkey (even when it is not a negative or hostile one) may trigger a new crisis thorough the ruling elites' statements or reactions, assisted by the Turkish media.

If Turkish nationalism is on the rise, one of its major sources can be observed in the legal structure and laws of Turkey. Especially one, the Article 301 of the Penal Code which prohibits "insulting Turkishness", gained a symbolic value in recent times. Many intellectuals and journalist in Turkey have been charged with violating this article. This article is used to suppress freedom of expression in general and have been a threat for many intellectual including world-famous writers Orhan Pamuk and Hrant Dink[16]. In recent years, Kemal Kerinçsiz, a lawyer, and his Turkish Jurists' Union have launched a lot of cases against Turkish intellectuals under the article 301, and they have transformed every court trial into a nationalist/fascist demonstration.[17]

When nationalist discourse started to raise in general, some radio and TV channels, book publishers, newspapers and magazines either launched or turned existing ones into a nationalist outlet. On the other hand, consumption of these mediums increased to a large extent. Especially, amazing increases on the number of books based on some conspiracy theories are important indicators of a rising antagonism in favour of the nationalism[18]. A few years ago, sales of Adolf Hitler's book "Mein Kampf"' have oddly increased[19] when the sales figures of some nationalist fiction and conspiracy theory books were also on the rise[20].

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[15] All of these events were represented in the dominant media in favour of the assailant groups in a very nationalistic discourse (For example see *Hürriyet, Sabah, Akşam*, etc). On the other hand, Trabzon TV, a local television channel, in its news ticker reported that PKK hang its flag in Uzun Street, prior to the lynching attempt.

[16] Actually, it is hard to say something what is the exact beginning moment of the `new` nationalism but I think that it is not so new as some people argued after the assassination of Hrant Dink. At least, it could be extended to the 1990s which was the peak point of using military and paramilitary power as well as a psychological power through especially by media to suppress the Kurdish movement.

[17] Kerinçsiz said "his mission in life is to protect the Turkish nation from Western imperialism and global forces that want to dismember and destroy us". (*The Economist*, March 8th 2007)

[18] Some of them are *Şu Çılgın Türkler, Efendi: Beyaz Türklerin Büyük Sırrı, Metal Fırtına*, etc. In the meantime, although it was not a popular and best selling book in the market, sales of 'Nutuk' which is the main text of Mustafa Kemal Atatürk, founder of the Republic of Turkey have increased as well (300 thousand copies sold in two years; Sabah, 16 March 2007).

[19] 70 thousand copies have been sold only by one publisher (Emre Publishing) in a few months.

[20] The media companies utilizing the economies of scale had the opportunity to publish more and cheaper books recently thanks to the new technological investments. In general, these are sensationalist, nationalist (many of

On the other hand, some television channels, such as Kanaltürk, Habertürk and Flash TV, stand out with their sensational, hysteric, nationalist and militarist broadcasting policy. Programs that feature some insufficient people, address the common sense discourse which operates with some basic oppositions or antagonisms.

One of the most visible aspects of the new nationalism is the spread of nationalistic online activities[21] and all of the traditional mediums like books, radio and TV stations, films, etc. have extensions or reflections on the Internet as websites, book portals, forums, comments, advertisements, etc. Now, I would like to describe the Turkish internet environment in general and then I will try to elaborate the nationalistic reflections on the online platforms.

New nationalism and its relation to the internet usage patterns
Turkish internet market is relatively a small-size one according to the Western markets and internet use is not widespread at the national level. The first Internet connection in Turkey was established in 1993 and 3–4 percent of Turkish citizens were Internet users in 2000 (Wolcott and Goodman, 2000). This figure changed to a great extent in only six years and total number of internet users reached 16 million in September 2006 (21.1% of the population) according to the ITU. Although internet accessing forms are varying in Turkey (see below), Fig.1 could give an idea for the increasing rates of the internet users and PC ownerships in Turkey between 2000 and 2005:

Internet users and PC owners between 2000 and 2005 in Turkey		
Year	PC owners x 1000	Internet subscribers x 1000
2000	2. 450	1.550
2001	3.600	2.751
2002	4.760	4.360
2003	5.800	5.410
2004	7.000	6.900
2005*	9.000	8.500
Source: Mestçi, 2007		

Internet use and PC ownership are increasing steadily in Turkey. But, as Wolcott and Goodman argued (2000), "to understand the Internet capability of a country, it is necessary to understand not only how many and where people use the services, but also how the Internet is employed." If internet use is reaching beyond a narrow community of technically skilled people, a sophistication of use can be mentioned. There is enough evidence that the Internet was used especially by a narrow community but this fact is changing rapidly in recent times. There is no useful data of internet usage patterns to sophisticate any analysis as well as some standard service and using numbers. But I hope to fill a small gap in this area by trying to analyse some internet `spheres`. Although there is no such detailed statistics or surveys about Turkish internet users, we can describe some evidences available through media and some unmediated observations.

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them using an anti-imperialist jargon), easy reading and very cheap books (some pirate publishers or pirate arms of the big companies sell them even cheaper on street stands).

[21] For a general evaluation of the relation between nationalism and the Internet in the context of 'de-territorialisation of nationalism' which was rooted in Gellner's famous works (1983; 1997), see Eriksen, 2007. In this study, author describes especially four varieties of Internet nationalism: state-supported (Chile), surrogate (Afrikaner), pre-independence (Kurdish) and multiculturalist (Moroccan-Dutch). Eriksen agrees with the argument of Miller and Slater (2000) on the relation between Internet use and nationalism: "this technology is often used to strengthen rather weak national identities, and that it can be exceptionally efficient in reproducing such identities across vast distances, uniting dispersed populations in virtual communities because it can fully exploit the time-space compression characterising our era".

In this data-poor world about Turkish internet usage, there is an interesting figure about the ages of the users. The majority of (46%) of internet users are between 15-24 years old in Turkey. Although young people and technology relation was more powerful than the other age groups, it should be noted that all these people don't have a PC, according to their class positions[22]. But these lower class or déclassé young people could use some other ways to access the Internet, such as the internet cafes.[23] On the other hand, there is another critical group who does not have a PC of their own, but access the Internet at the office[24].

These people are generally using internet as if it was only an entertainment or leisure activity medium, rather than an informational and knowledge-producing thing. Sex and sport are the most viewed content as it generally is all over the world.

The nationalist discourse in frequently used internet platforms
In this study I consider with all internet environment including websites, e-mailing lists, reader comments, online polls, etc. in a general level to show that some basic elements or clues about some specifications of the nationalistic discourse in Turkey. Surely this would be a limited analysis to explain all internet usage patterns and its relation with the rising nationalism in Turkey but I believe that it would provide an inspiring framework for further researches in this field.

As I have mentioned before all nationalistic events like assassinations or lynching and campaigns experienced in real life always have their extensions on the internet. Some users or organisations are using the internet to mobilize people for posting protest emails to the ministers, ambassadors; some of them use it to make videos or other visual materials available online for gaining an advantage on the 'enemy', etc. But I want to take a close look at some internet mediums on which we can observe a nationalistic approach to the actual events. I would like to describe these mediums or technologies in general below:

Websites:
There is a lot of fascist and/or racist Turkish websites, forums, blogs, etc in the Turkish internet environment like www.turan.tc, www.atsiz.org, www.turkyigitleri.com, www.kibristurkundur.com, www.tonyukuk.net, www.turkcuturancilar.com, www.dedekorkut.net, www.turkbirligi.com www.radyohiras.com, www.turkdirilisi.org, www.turkcucephe.org, www.sevay.org (a music-oriented site), www.ozturkler.com (a Turkish mafia leader, Sedat Peker's website).

In these sites, Turkishness and its enemies are big identity issues in an openly racist way. It can be argued that their approach is a follower of the fascist movement represented MHP before 1980s. But these sites, which have very shallow approaches, do not represent the broader and diversified nationalist discourse. Moreover, although these websites and forums join the nationalist chorus in the public sphere with a very aggressive and vulgar language, other internet communities are more influential in constructing this discourse.

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[22] Ogün Samast, the alleged assassin of Hrant Dink, was an internet cafe addict according to his relatives.
[23] There are 20.000 registered Internet cafes in Turkey. There are 20 PCs in average in these cafes and their customers especially are from the lower class and young people. It is suggested that these cafes' level of activities is about 1-1, 2 billion dollars (Nebil, 2006). According to another source, the rate of using internet café to access internet is 47%. (*Milliyet*, 8 April 2007)
[24] In online version of a dominant newspaper, Hürriyet, there are more than 50 thousands commentators, and majority of them access to the internet on weekdays in general. This may be taken as an indicator that these people don't have the access at their homes.

For example, *Hürriyet*[25] (liberty) or *Milliyet* (nationality) newspapers have more influence in mobilising the ordinary reader to join the chorus with their online activities. By the way, internet versions of these traditional media react immediately to the emerging events through out the day changing their headlines, or adding new content to the websites.

Mailing lists

As the internet use became popular in Turkey, various social groups have started several mailing lists for information, communication and discussion on various topics. I am a subscriber of a number of lists to communicate with my colleagues and friends on some specific issues. Mailing list of my university has around five thousand subscribers and it is very representative of an intellectual community on the internet in order to observe some nationalist, sometimes directly fascist utterances.

It should be noted that, majority of this list's members as an official academic platform react with a great "Kemalist reflex" to the developing events in general. For example, whenever the Armenian thesis was mentioned (it might be the US Senate voting for a resolution on "genocide" or other events on Turkish-Armenian relations), the list is divided as the "nationalists" (who defend the Turkish official thesis with various evidences, documents and/or pictures, photographs, etc.) and generally "democrats" without arguing a genocide thesis, only react to these "evidences" through "we should discuss everything" approach.

One of these debates in the list on Kurdish question was very interesting. A list member sent an e-mail to the list on 10 June 2006 about a TV channel's logo. According to him, this logo was composed of three colours representing the PKK flag. This was reflecting a big sensitivity to all the symbols of the other (here, of Kurdish). This e-mail calling the members of the list to protest that TV channel also created a great controversy in the list without any useful discussion or dialog.

All these online debates would generally turn into a "cockfight" because it would keep the list members' opposing views going without any genuine idea or a real dialog. It is impossible to make a deal between these different positions, especially on the more sensitive "national" issues like the "Armenian genocide" or the Kurdish question.

Even in this platform which is composed of well-educated people, the nationalist discourse gained momentum to a great extent in recent years. Nationalism is not basically a matter of 'education', rather, it is directly related with the ongoing process of neoliberalisation in Turkey, as well as many other nation-states in the world which faced the same problem, namely the "rising nationalism".

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[25] *Hürriyet* may be most influential newspaper in Turkey in several ways. First of all, it is a long established mass newspaper launched in 1948 and it has a deep relation with the state, bureaucracy, big capital groups, military and security authorities, etc. It also has a significant 'official discourse' which is connected with the Turkish ruling classes. As a matter of fact, while its owners were a family of journalists (*Simavi*s) until the beginning of 1990s, *Hürriyet* was sold to an industrialist-trader Aydin Dogan in 1994 and later became part of a big capital media group, Dogan Media (DMG). *Hürriyet* has always displayed a conservative approach to the political issues but this approach was shifting to a more nationalistic way recently.

Reader comments[26]

First of all, it should be remembered that some influent newspaper like *Hürriyet, Sabah, Akşam, Milliyet*, etc. used to promote very nationalistic attitudes with its headlines, news, columns, etc. This attitude is naturally going on for the internet versions of the newspapers. These newspapers rediscovered the 'reader' as a profit-making element especially for their internet versions. All newspapers, and also magazines started to place a great space for the reader comments recently. In this process, while commentators feel themselves as important persons, the newspapers could transform this interest to a great profit through increasing their advertisements on the internet.

In general, in these comments almost everybody agree with there is a big withdrawal in Turkish style politics but same people could argue that Turkey is a big country and there is a lot of things to be proud of it... This seems like a contradiction but it is understandable. Because there are two basic discursive elements in these comments: 1) Fatalist, 2) Aggressive, defensive (hate speech). These elements are easily manipulated by the editors of *Hürriyet* newspaper. This newspaper always uses various methods to provoke the readers for making benefit of nationalist discourse on the basis of its financial and political aims (see footnote 22).

Online polls

Online polls are the new ways to attract the reader for online activities and these activities' topics are generally triggering a vulgar approach on some sensitive issues like Kurdish problem.

One of these online polls was about an ongoing "public" debate of Turkish military intervention to Northern Iraq because of the argument that PKK forces have taken shelter there. Hürriyet newspaper started an online poll as "should soldier go into Iraq?" (www.hurriyet.com.tr, 15 February 2007)[27]. 302.015 user voted for first poll and 58.8% of all votes preferred "no" option.[28]

But I think that highly politicised Kurdish readers which were very sensitive to the "Kerkük problem" have prevailed for this result. Otherwise, this poll would result with a great majority of "yes" votes by the traditional readers of this online newspaper. Reader comments on this poll supported this speculation[29]: "Turkey should go into Northern Iraq for struggling with PKK. All feeding sources come from Northern Iraq. Then, its domestic terror points should be hit intensively"; "The territory which you didn't go into is not yours" (this is a traditional and also nationalistic verse); "Let loose two missile to the region, it would be solved, we follow USA in every issue, why don't we do the same thing in this issue?"

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[26] I should say that this comments and statements are limited to the news which triggered a possible nationalist discourse; it would be very interesting to make a comparative analysis on the other news segments, issues or areas.

[27] This was unbelievable because a civil newspaper could ask people a question like this. Although it was occupied by USA forces, mentioned here (Iraq) was a sovereign state…

[28] Online survey result address: http://www.hurriyet.com.tr/gundem/5944998.asp?gid=112 (15 February 2007)

[29] Turkish originals of these comments: "Türkiye Kuzey Irak girmelidir PKK ile mücadelede bu şart tüm besin kaynakları Kuzek Irak dan geliyor sonra ülke içindeki terör noktaları ağır bir şekilde vurulmalı"; "Ayak basamadığın yer senin değildir"; "ya bolgeye iki tane fuze brakalim olsun bitsin her konuda ABD e uyoruzda bu konuda niye uymayayim"

Same day there was another online poll in the same online newspaper on a TV serial (Valley of Wolves, Kurtlar Vadisi) which was banned because of the massive viewer reactions on the serial would provoke the hostility for the Kurdish people. The poll question was, "Kurtlar Vadisi was banned. Is this decision right?"[30] This poll took 1.076.025 votes soonest and the 88.1% of users was preferred that statement: "This is censorship. This serial shouldn't be banned". Editor of this poll titled as "This is the record of "digital democracy" in his column for those large participation to poll.[31] This is an exploitation of the so-called "internet democracy" which was based on it could create a participatory, dialogic, generous relations among its users. As Bakker argued (2001), there is no enough evidence that internet created "a wonderful new forms of community" or on the contrary it "destroy community altogether" (cited by Bakker from Wellman and Gulia, 1999: 1). In this example, the editor of the newspaper is arguing that the majority of the users could have decided to a serial should go on and this is democracy. [32]

Even in one of the quality news site (ntvmsnbc.com) comments to the emerging events are very aggressive and nationalistic. The last example of these comments on an Iraqi Kurdish leader Mesut Barzani's statement on Kurdish issue triggered a new nationalistic reaction wave in Turkey. In this website (ntvmsnbc.com), asked a question like this: "How do you assess on Barzani's statement and the reaction of the Turkish authorities?" One of the answers is like that: "The pain and fury of Turkish nation would only pass off when big Turkish army went into Northern Iraq and topple down every single thing".[33]

Even childish actions or jokes…

The recent example of nationalist online activities was a clash between Turkish and Greek internet users about a video which was showing Mustafa Kemal Atatürk, founder of the Republic of Turkey, as a gay in Youtube. This is a very interesting event to consider the internet using and rising nationalisms. A big campaign organised especially in the internet platforms to ban the video and Turkish legal authorities started to operation to judge the video owner on the basis of Article 301 of the Turkish Penal Code (see İlkiz, 2007)

The Turkish nationalism is also supported aggressively by the main opposition Republican People's Party (CHP). CHP used the nationalist-Kemalist discourse in every opportunity against ruling Justice and Development Party (AKP) especially in recent years. Lastly, CHP proposed a supplemental item in the draft bill about internet crimes for punishing the defamation of Atatürk in the internet to the Justice Commission of the National Assembly (TBMM) and this proposition was accepted. According to the draft, if anybody would put into any defamatory statement (even jokes…) on Atatürk, it would be blocked by Telecommunication Authority. Ruling party didn't want to reject this supplemental proposition because such rejection would create a negative image in the condition of the electoral atmosphere (both of the presidency of republic in May 2007 and general elections in November 2007)[34].

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[30] Online survey result address: http://www.hurriyet.com.tr/gundem/5955050.asp?gid=112 (15 February 2007)

[31] However, I have voted for "no, it should not go on" almost 10 times…

[32] For further information as liberal, communitarian, and deliberative views of online democracy see Evans, 2000.

[33] "Türk ulusunun yüreğindeki acı ve öfke ancak Büyük Türk Ordusu Kuzey Irak'a girip önüne geleni yerle - bir ettiği zaman dinecektir", http://www.ntvmsnbc.com/modules/forum/messages.asp?TGID={0C2872E3-24BC-4D2B-BE97-B2A387FC1357}&p=2

[34] In this context, my recent experience on the internet crime is interesting to me. A colleague of mine launching a website on jokes said to me that he hesitated to post some jokes about Mustafa Kemal Atatürk because he may be investigated for insulting Atatürk…

Concluding remarks

All of the statements, speeches, attitudes, votes, etc. in online debates are not independent or individualistic point of views in general. Users are triggered to the given discourse in their speeches, in Foucaultian terms, they are 'inciting to the discourse'[35]. They would start to say something when a question was asked; otherwise, they keep silent...[36]

Especially online polls and comment boxes are the best examples of involving ordinary people to the playground which is controlled by the dominant media. In this relatively new medium, political issues and also *faits divers* are evaluated as basic oppositions and antagonisms like love or hate, positive or negative, true or false, West or East, etc. In this absolutist approach, it could easily be seen as a superficial evaluation of the issues without any in-depth knowledge or contemplation. Connectedly, verbal capability is very low in the comments or in other writings on the internet.[37]

Urgency is another attitude in this approach; users frequently call the other people through e-mail links, power point files, etc. to save the State, the Republic, Turkey, Atatürk, etc. and invite the Turkish Army or Atatürkist powers to a big fight with the PKK, Armenians, and imperialists, and also with their domestic 'accomplices'.[38] Most of Turkish citizen argue that the sources of all problems of Turkey were foreign countries like USA or "imperialist countries" or "the West" in general. Very xenophobic elements leak to this discourse in various ways. As I have mentioned above, as USA was supporting some Kurdish groups in North Iraq as well as PKK for its regional and of course for its world hegemony, this attitude triggered the anti-Americanism in almost every section of Turkish society.[39]

On the other hand, the new media is a new sector to profit from for the big media capital all over the world and the dominant media groups in Turkey are no exception. They want to enlarge their field of penetration and utilizing the online audiences and users as a new source of revenue[40]. Since when the new accumulation model have come into effect in 1980s, Turkish ruling elites were struggling with its inconsistencies[41] and on the other hand, they wanted to show a coherent State to the Turkish society as well as to the rest of the world.

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[35] I use the term only as a borrowing from Michel Foucault, especially from his study on sexuality (Foucault, 1993)

[36] As I said above, Turkish television environment changed radically and reality programming was becoming an important part of the mushrooming television channels schedules in 1990s (see Adakli, 2001). "Men in street" was the main actor in these hybrid formats and this approach developed in various ways. Microphone and camera were directed to the ordinary people in news bulletins, reality shows, talk shows, game shows, talent shows, etc. This is a very functional way to produce cheaper programmes than the other program formats like serials or documentary and a proportional success in ratings was guarantied. The same methods of production are employed in producing internet content, too.

[37] This is also related to the literacy of the Turkish people. Although the literacy rate is relatively high according to the official statistics, this rate does not necessarily reflect the expression capacity of the people.

[38] A meeting held by the Atatürkist Thought Association on 14 April 2007 in the capital city Ankara to protest the Islamist government is the latest example of this tendency.

[39] Interestingly, the only communist party in Turkey (TKP, Communist Party of Turkey) preferred a nationalistic discourse in recent times establishing "Patriotic Fronts" in several working fields around Turkey.

[40] Internet advertising market is growing steadily in Turkey recently. In 2006, the increase rate of this market was 30% (20 million $,of the 3.6 billion $ total ad revenues) (*Referans*, 6 March 2007)

[41] Political instability of the Turkish political life was in turmoil once more when a weekly news magazine published the alleged diaries of retired vice admiral Özden Örnek, which documented a series of coup d'etat attempts in recent history. According to the diary, commanding officers of the army would have done a military intervention to overthrow the Islamist government in 2004 (*Nokta*, 29 March 2007).

The new hegemony project is rooted within the neoliberal political economical model. We could have observed that some political issues and actions (war with Kurdish powers, very fast privatization, EU harmonization laws, etc) have created a great unemployment wave and unrest for a large part of Turkish society. So, the Turkish ruling classes' crisis management tactics have a big role in the fascist and nationalist discourse which was circulating in the vast majority of internet forums and other internet sites. In this processes, Turkish media as an important segment of the ruling class, have been playing a specific role to join the construction of more nationalist discourse via Internet as well as the traditional mediums.

It should be noted that nationalism is flourishing on the Internet as well as in the other mediums but this relatively new medium is becoming a part of the general nationalistic discourse rather than becoming an interactive medium which helps the democratic processes as some people suggested. But this ascertainment does not mean that internet is a medium only for a nationalistic politics or movements in our times. We should remember that the Internet contains a huge amount of informative content, discussion, etc. And there are several democratic, open-minded discussions and movements in the Turkish internet and it contains a great opportunity to develop ideas and spreading them. So, when analyzing internet use, especially some virtual communities, this ambiguous and non-territorial character should be considered. For example, there are some "lurkers" (people who follow the messages but do not join in the debate) or silent members of the discussion groups. It is also important to underline that there are several less visible communities on the internet. This reminder can allow a more adequate assessment on this indefinite medium and its forms of use.

There is no clear evidence that the internet use was pumping a nationalistic discourse, but it is evident that ongoing Turkish politics have concluded in a new nationalistic reaction and this reaction is increasingly being visible in several events, in the real world as well as on the internet. As Bakker argued clearly, Manichean[42] approaches on internet are not asking the significant questions, thus, they create new myths on the Internet which were emphasizing its 'benefits' (democracy, dialog, etc) or 'damages' (child porn, sex abuse, etc.). We need more evidence and more qualitative research, more surveys on the internet usage patterns and its relation to real life, real politics, real economics, and the rise of nationalism.

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[42] 'Manichaean' means dualistic, presenting or viewing things in a "black and white" fashion.

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Web Journalism in Turkey: Users/Readers and the Market

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Abstract

With the help of technological developments internet became a suitable infrastructure for carrying over different types of media content. After these technological developments the number of news web sites increased rapidly and these kinds of applications named as online journalism, multimedia journalism, web journalism, internet journalism or citizen journalism. Popular literature and optimistic mainstream researchers considered internet journalism as more democratic and participatory than the traditional one and usually these claims have been based on technological facilities of internet. In this paper optimistic expectations about internet journalism will be questioned using empirical data that is collected by analyzing content production process and technological facilities of news web sites on the case of Turkey.

Introduction

Today conveniences and advantages of information and communication technologies (ICT's) especially of internet are incontestable. Because of digitization and developments in computer technology the distinction between mass communication and point to point communication began to fade. This process named as convergence and especially became apparent on the basis of internet. Internet was considered as the technology which has potentials to change economic and social conditions of our lives in a fundamental way on both national and global scale. These kinds of expectations became apparent especially after the 1990's by mediation of policy documents about national and global information infrastructure. In communication field internet was also considered as the main source of some improvements. For example internet brought some new concepts to discussions about the relationship between media and democracy.

In literature some analyzed the relationship between media and democracy as including ICT's (see Tsagarousianou et al., 1998; Alexander and Pal, 1998). In these discussions internet journalism has become a popular topic. Especially because of commercialization and monopolistic structure of media, groups which are not represented on mainstream media have perceived internet journalism and web based technologies as an opportunity for breaking limitations of traditional media. For technological facilities like interactivity, hypertextuality, multimediality, relative cheapness, no hierarchy, no censorship, elimination of the traditional media newshole, integration of online and off-line news services, internet journalism is considered as more democratic and participatory ways of communication than the traditional one.

In this paper optimistic expectations about internet journalism will be questioned using empirical data on the case of Turkey. These news web sites' content production process and

technological facilities are going to be handled in a critical way whether they are effective for a more democratic and participatory communication process. Through the paper the news web sites which were constructed by both mainstream content providers and independent enterprises are going to be analyzed but internet diaries known as web logs or blogs will not be covered.

Defining Internet Journalism: Literature Review

By the 1990's due to diffusion of internet the number of news web sites increased rapidly. This quantitative increase began by appearing of news web sites which distribute content only over internet (henceforth news portals) and appearing of news web sites that were established by traditional news organizations (henceforth virtual newsstands) (Cohen, 2002: 532) both print and electronic media. This new era of journalism has named as online journalism, internet journalism, web journalism, multimedia journalism or citizen journalism.

The existing literature contains various studies focusing on the definition and the classification of internet journalism. Also there are numerous studies analyzing differences between internet journalism and traditional one (see Deuze, 1999, 2001a, 2001b, 2003, 2004; Jankowski and van Selm, 2001; Trench, 2003; Pavlik, 1999: Deuze and Dimoudi, 2002; Bardoel, 2002; Lasica, 1996). Jankowski and van Selm (2001) analyze the distinguishing facilities of internet journalism by mediation of a typology. According to this typology there are eight "added values" which make internet journalism different than the traditional one. These "added values" can be listed as hyperlinks to additional information sources, discussion groups for online media users, feedback to journalists and editors, availability of news service archives, multimedia publishing, elimination of the traditional media newshole, integration of online and off-line news services, updating and timely release of news stories. Similarly Lasica (1996) explained the distinguishing properties of internet journalism as multimedia, speed for updating information, horizontal distribution, decentralization, accessibility, no hierarchy, no censorship and interactivity. Another scholar Deuze (2001a) considered internet journalism as a fourth kind journalism and mentioned multimediality, interactivity and hypertextuality as the essential characteristics of internet journalism. According to him there are four different kinds of internet journalism can be named as mainstream news sites, index and category sites, meta and comment sites and share and discussion sites. Internet journalism impacts journalism practice in three ways. First internet affects the way of doing journalism and the gathering news. Internet offers journalists various news resources and technological facilities. Second internet increases the intermediary role of journalists in democracy and third internet created its own type of journalism so-called digital or online journalism (Deuze, 1999: 373).

The literature has suggested that the multimediality, the interactivity and the hypertextuality are the essential characteristics of internet journalism. Also there are some "added values" associated with these essential characteristics like customization of content; no hierarchy; no censorship; availability of news service archives; elimination of the traditional media newshole; integration of online and off-line news services; updating and timely release of news stories. Following this literature internet journalism can be defined as distributing news content coded in different kinds of media formats like moving image, text or sound primarily on the internet in interactive and hypertextual ways.

These essential characteristics are not only used to describe what the internet journalism is and what the distinguishing attributions from the traditional one are but also used to ground

the relationship between internet journalism and democracy. It's claimed that internet journalism empowers users/citizens and has the potential to reverse shortcomings of traditional media which has been characterized as "top-down or one-way." However, like in many technological artifacts in the past, once again emancipatory character of new technologies has been based on technological facilities of applications.

Interactivity is the most emphasized characteristic of internet journalism. Academic literature has employed the term to refer to everything from face to face communication to computer mediated communication (Downes and McMillan, 2000: 157). Interactive options on news web sites can be subdivided into three types as navigational interactivity, functional interactivity and adaptive interactivity. Navigational interactivity can be designed using buttons like "next page" and "back to top" and scrolling menubars; functional interactivity can be designed through direct mails to links, reporters or editorial board and moderated discussion lists and adaptive interactivity can be designed offering chatrooms and customization of content by web masters of news sites (Deuze, 2001a). In internet journalism interactivity allows recipients to be a sender and gives opportunity to sender gathering feedback from recipient in communication process so with the interactive features, recipients are recognized as active participants. According to Kenney, Gorelick and Mwangi (2000) following Downes and McMillan interactivity increases the goal of communication is more to exchange information than to persuade participants have greater control of the communication environment, participants take an active role to get fully benefit from the communication, participants act and react to messages via two-way communication, timing of communication is flexible and responsive to demands of participants, communication environment creates a sense of place. According to Aikat, interactivity offers on-demand, customizable content, new combinations of text, graphics, moving images and sound, the creation of "e-communities" based on shared interests and concerns (1998: 94). As mentioned above discussion groups for online media users, feedback to journalists and editors by emails are the most common demonstrations that used to improve interactivity. In addition to these demonstrations some news web sites in Turkey are applying various practices like writing comments to news, forwarding "popular" stories to friends by e-mails, calling users to vote for news stories and columnists.

Another essential characteristic is multimediality. Multimediality is a result of digitization, developments in computer technology and bandwidth and convergence like other distinguishing characteristics of internet journalism. With the help of these developments to distribute content coded in different media formats over internet infrastructure has become possible. By multimediality in internet journalism applications it's meant that the extent to which text, graphics, sound, voice, and still and moving images are translated and integrated into a common digital form (Paulussen, 2004). For multimediality function web sites are offering news dossiers containing texts, photos and video clips. Theoretically speaking, multimedia facilities create a vast range of new opportunities for online media users. They can find ways of escaping some of the limitations of the dominant form. Especially accessing breaking news and live events in a multimedia form in an asynchronized way on internet news sites is considered as an advantage for the users.

The last essential characteristic is hypertextuality which is another important facility that is associated with democratic potential of internet journalism. Hypertextuality means that the extent to which different parts of texts is connected to one another at different junctures, thus leading to a hypertext (Paulussen, 2004). According to Deuze (2001a) texts can be interconnected through links -named as hyperlinks- in internal and external ways. In internal

way texts are connected to other texts within the text's domain; in external way texts are connected to texts located elsewhere on the Internet. It's claimed that hypertextuality can give some opportunities both for news producers and users. It allows news producers to offer users different routes through news material, according to their own previous knowledge of the topic or their level of interest (Quinn and Trench, 2002: 11). In this way, it is claimed that users become more active; they can access background information of events and compare different point of views and news sources.

Internet Journalism in Turkey: Emancipation or New Tools for Old Media?

In Turkey internet was constructed as a result of an academic project. In 1991, Middle East Technical University (METU) and The Scientific Technological Research Council of Turkey (TÜBITAK) have started the project and in 1993 a dedicated 64 Kbps internet connection was established which the first international internet connection of Turkey was. METU and TÜBITAK also formed an informal organization known as TR-NET to promote the use of internet throughout Turkey. In 1995 Turk Telekom decided to establish another backbone because of the capacity and the limitations of TR-NET project. An auction was started and a consortium known as GlobalOne was announced as the winner. In 1996 TURNET backbone went online. By 1997 because of the technical and operational shortcomings of TURNET another backbone became necessary. This backbone was started operating in 1999 and known as TTNet (Wolcott and Cagiltay, 2000). In the meantime people were connecting to internet through dial-up technologies. In 2002 Turk Telekom started offering internet connection through cable infrastructure and in 2003 started offering internet connection through asymmetric digital subscriber line (ADSL) technology. After the establishment of TTNet backbone, both internet service provision market and content production market in Turkey began expanding. Internet is considered as a new commercial arena for actors both from in and outside the communication sector and sectoral convergence and new organization models began to be experienced in Turkey's communication market. Investments in internet which are conducted by these actors were investments realized compatible with the picture foreseen as the commercial benefit of convergence. Internet investments held in both service provision and content production are supposed to generate great profit and the business models which have been used in the world were copied and tried to be applied also in Turkey.

Internet journalism applications also began as a part of these content production investments. By the late 1990 numerous "virtual newsstands" and news portals began operating. The early examples of internet journalism applications in Turkey were the "virtual newsstands" established by *Actuel* magazine and *Zaman* newspaper and a news portal named as *XN*. After these pioneer establishments nearly all of Turkey's mainstream newspapers like *Milliyet, Hurriyet, Sabah, Zaman, Cumhuriyet*; news agencies like AA, ANKA and television stations established their web sites one by one. Simultaneously numerous news portals began operating for example *haberturk.com, netgazete.com, nethaber.com, haysiyet.com and dorduncukuvvetmedya.com.*

In content production process both "virtual newsstands" and news portals applied the same methods. They just carried over the news which was produced by traditional media companies to internet. For example *hurriyet.com* -web site of one of the most popular newspapers in Turkey- was established in 1997 and just contained the news of printed version of the newspaper in that days. Up to 2000 *hurriyet.com* just served breaking news on its web site in entire day and after that date started updating its content due to events happened in that day time. Another popular "virtual newsstand" *milliyet.com* was operated just as the same

way in the beginning and later it is conversioned to a web site updating its content in entire day. In content production process news portals just did the same; they gathered news especially from existing news agencies and "virtual newsstands" and served this content over their own web sites. Presently both "virtual newsstands" and news portals are just using the same method but today they are in a very good condition in updating their content. But at this point the resources of these web sites are more important than whether they are updating their content. Especially most visited news web sites in Turkey belong to big media corporations and these sites are using the "news pool" of the news organizations they are associated with in the same media corporations. The main reason of this structuring is the existing conditions of the market. Internet content production market didn't generate great profit and business models like trying to gain revenue from internet advertisements or subscription fees are not be realized as profitable as they are considered. Because of financial limitations news web sites both "virtual newsstands" and news portals can only employ limited stuff and these web sites are being prepared by a few journalists and webmasters. So it is practically impossible gathering news from news resources different than the dominant ones and is obvious that internet journalism in Turkey is still lies on the material gathered from news agencies and traditional media corporations rather than the original content. Nowadays news portals are trying to find alternative financial ways such as trying to gain a currency in the way traditional media companies have in the law. By a strategy like that news portals are intending to gain revenue via governmental advertisements. This kind of a financial model can solve news portal's financial problem in a short period but in a long wave it will be an application limiting their content production freedom and way of doing their job. For these reasons by analyzing content production process of news web sites it is possible to say that the dependency to the dominant news resources is still in progress and internet journalism applications are far from offering alternative content and overcoming bias and homogenouity of existing media structures in Turkey. Also by analyzing technological facilities of news web sites it is possible to affirm similar arguments about democratic and participatory potentials of internet journalism on the case of Turkey. In Turkey, some of "virtual newsstands" have been applying various methods to improve interactive character of internet in order to create more "reader friendly" websites which can also be defined as an effort to make use of "information sensitive to the market." One of those tools is implementing new applications to measure popularity of certain topics. Not only clicks are counted by expert software but readers are called to vote for different news stories. This way more attractive stories of headlines are being created on the web which is later used by the traditional paper-based versions. Writing comments to news, forwarding "popular" stories to friends by e-mails are among other tools to create a consumer base. For example knowledge gained from popularity index of news on the websites was being used by managerial elites of traditional media in order to consolidate their market base and to determine their content production policy. In addition to this, other important advantages of internet journalism hypertextuality and multimediality are being used by some of news portals and generally are being used by virtual newsstands effectively. So this caused preferring "virtual newsstands" by users who went online for news and in this sense keep being dependent to traditional media monopolies' content. At the end of this dependency process "virtual newsstands" build user loyalty and in internet journalism applications, user loyalty means money.

Today it would be said that internet journalism applications are far from being democratic and participatory on the case of Turkey. So it should be borne in mind that potential is potential for all and also that potential is not simply realized. To realize the democratic and participatory potentials of internet journalism, internet must be analyzed with the economic

and political factors that surrounding internet and policies that are useful for promoting these potentials must be implemented by the policy makers.

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Making Sense of Broadband in Rural Alberta, Canada

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Abstract

This paper stems from a collaborative research initiative (The SuperNet Research Alliance) that examined the social adoption of the SuperNet, an Alberta government infrastructure project designed to provide broadband connectivity to public facilities, and through service providers, to businesses and residences in Albertan rural communities. The paper sets itself the goal to explore how rural community members made sense of the SuperNet as a communication technology in the context of their practices and perceived needs and against the background of their existing experience of Internet use.

Introduction

This paper stems from a collaborative research initiative (The SuperNet Research Alliance) that examined the social adoption of the SuperNet, an Alberta government infrastructure project designed to provide high-speed, broadband access to public facilities, and through service providers, to businesses and residences in Albertan rural communities. The paper sets itself the goal to explore how rural community members made sense of the SuperNet as a communication technology in the context of their practices and perceived needs and against the background of their existing experience of Internet use. The theoretical underpinnings of the approach taken in the research derive from social constructivism and critical theory of technology. Members of rural communities in their capacity as current and/or potential users of the SuperNet were construed as relevant actors in the social shaping of the network. In the process of the research activities it became clear that these activities themselves constituted an important stream in the meaning-making and hence social shaping of the SuperNet.

Methodologically, the study reported in the paper took an interpretative approach relying on qualitative data gathering techniques. Four focus groups were organized for the purposes of data collection in four rural communities of different size and location with respect to urban centres.[1] In the data analysis, an effort is made to identify the specific Internet use genres that arise in rural residents' practice and how these genres are affected by broadband access. Differences in access and use among rural residents are discerned and related to social factors characterizing different positions within the rural setting. A comparison between rural and urban everyday Internet use is drawn based on the results of another study that focused on Alberta urban homes during approximately the same time period. The political and civic meaning of broadband as it emerges from the discourses of rural residents is defined and reflected upon in light of present and future policy initiatives.

The paper uses the results of the analysis to address the question of what economic, political and cultural influences of national (and provincial) character may be responsible for the

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[1] A, population of 3,666 in 2006; B, population of 6,972 in 2006, C, population of 799 in 2006 D, population of 7,785 in 2006. Participants in the focus groups represented also some of the neighbouring rural communities. In an attempt to ensure the anonymity of respondents, the community names are withheld.

observed developments. It will also discuss the specifics of rural appropriation of broadband in Alberta and the conditions and outcomes of the creativity of rural users.

Background

This study engages the broad problematic of rural ICT adoption and use (see Gilligan, 2004), and yet it is set against a very specific national, social and economic background. That is why some contextualization is in order. First of all, a general survey of Internet use in Canada reveals that while 68% of all Canadians accessed the Internet in 2005, the percentage of rural users was significantly lower at 58%. In the province of Alberta where this study was conducted, the overall percentage of users was as high as 71%, with the two major cities Calgary and Edmonton scoring 77% (the highest in the country) and 69% respectively. About 90% of all Canadian Internet users had access to the network from home. Among them, only 18% did <u>not</u> have a high-speed connection. Notably, however, 70% of those low-speed users lived in small towns and rural areas (Statistics Canada, 2006). These figures show little improvement in rural broadband accessibility from 2003 when another survey had documented that 72% of Canadian communities, mainly those in rural or remote areas, did not yet have broadband services available (Statistics Canada, 2003). The analysts point out that the geographical distribution of the Canadian population presents a major challenge to the provision of these services, largely due to the high cost of upgrading and extending infrastructure to customers dispersed over very long distances (Veenhof, Neogi and van Tol, 2003). They go on to explain: 'Given a smaller customer base and the fact that customers are dispersed over greater distances, building the infrastructure needed to provide broadband services often does not make economic sense for broadband providers' (p. 19).

A number of programs initiated by the federal government were aimed at remedying the situation, however, their efficiency and success rate were low (see Veenhof, Neogi and Van Tol, 2003, Mitchell, 2007). Around 2001/2002, the Government of Alberta took it upon itself to initiate the construction of a powerful broadband network which was mandated to connect 429, or 95%, of the communities within the province. The project was a co-operation between the provincial government and the major telecommunication operators in the province where the government would cover about two thirds of the costs of constructing the network and the telcos would compete for a contract to carry out the actual construction work. The infrastructure that would emerge out of this endeavour was to be an optical-fiber trunk reaching into municipal administrations, health and educational institutions across the province, with the further expectation that local service providers would piggy-back on the main network and deliver last-mile connectivity to the homes of rural residents. The SuperNet, as the network was named, advertised itself as a 'real broadband network' because it was designed to surpass mainstream high-speed connectivity by providing multi-megabit capacity for uploading and downloading information at equal rates, guaranteed transmission levels, efficiency, security and reliability of traffic achieved through constant monitoring and maintenance (see Axia, http://www.axia.com/projects/alberta_supernet.htm). With such a technological marvel in place, users, ideally, would be able to run business-quality videoconferencing, voice over IP (VoIP) telephony or mission-critical systems monitoring as a matter of daily practice. All these high-end applications, of course, would realistically only benefit administrative, medical and larger-scale business or educational organizations. Home-based users, for their part, had a good chance to tap into the power of the SuperNet (through the mediation of service providers) and obtain reliable high-speed access at a reasonable

cost.[2] As it later turned out, the last-mile coverage would be the Achilles' heel of the fiber giant.

At inception, the cost of the SuperNet to Albertan taxpayers was estimated to be around CAD 193 million invested over three years. Why could the Western Canadian province afford such a bold and expensive undertaking? A few broad strokes should suffice here to present the economic situation of Alberta. For several years now, Alberta has ridden the accelerating wave of oil and gas prices. The oil-rich province has paid off its debts and has been continuously posting record-breaking surplus numbers. The latest one is the $8.7-billion surplus, the largest ever, announced for the 2005-2006 fiscal year with resource royalties and other payments hitting a record $14.3 billion (CBC News, June 27, 2006). Needless to say, the explosive growth of the oil and gas industry has given a major boost to many other businesses in the province and the vibrancy has been transmitted down to the level of individual households. In rural Alberta in particular, numerous people have found employment at the 'oil rigs' or in other directly or peripherally related businesses. Incidentally, in approximately the same period ranchers in the province were hit by a BSE crisis and a series of sanctions in its wake, which stressed out, and in many cases ruined, small farms. Thus the opportunities for alternative or supplemental employment in oil and gas and its supporting industries were readily taken up.

Parallel to the unrolling of the Alberta SuperNet, an interdisciplinary team including researchers from several Western Canadian universities and led out of the University of Calgary set out to investigate the social and economic uptake of the new communication infrastructure (see http://supernet.ucalgary.ca/). This study represented a sub-area of the larger project. Our focus was on the home and everyday life as sites of signifying work carried out by rural Albertan residents in their effort to come to terms with the challenges and opportunities introduced by broadband connectivity.

The Study: Theoretical and Methodological Framework

As researchers, we faced our own set of challenges and opportunities engaging in this particular project at the time when our main research object, the SuperNet, was still being built. As it usually happens in real life, the anticipated completion deadlines were not met and only small fractions of the network were lit up experimentally while we were out in the field collecting data. In the specific case of the sub-project looking at domestic users, this meant that we could only capture vague rumors and speculations as far as the SuperNet proper was concerned. People had not experienced it in their daily lives. Only a handful of community leaders had been following the development and could offer their perspectives on what the network was about and how it was expected to affect communities. In its large part, these were ideas picked up from governmental publications and administrative meetings. The average rural resident knew at best that 'they are digging for something outside my fence'. This caused our research focus to shift away from the SuperNet per se and on the experiences of rural residents with various forms of connectivity and more precisely on the transition between dial-up and broadband, its driving forces, the accompanying emotions, decision-making, hopes and fears. Interestingly, in our focus group discussions, we found that it made sense to come back to the topic of the SuperNet in the end, after broadband connectivity had been examined from multiple perspectives, and to invite people to think ahead, to imagine and project what a more powerful broadband conduit could do to their lives. This dynamic

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[2] Details about the interesting business model championed by the SuperNet can be found in Mitchell (2007).

turned our focus group meetings into a constructive exercise of sorts as far as our visions of the SuperNet and our questions worked to shape the conversation in which rural residents' definitions of the network started to sprout.

Theoretically, our study was informed by a framework combining the social construction of technology approach (Pinch and Bijker, 1984), sociological phenomenology (Schutz and Luckman, 1973) and a broadly conceived concept of domestication in everyday life (Silverstone and Haddon, 1996, Lie and Sorensen, 1996, Bakardjieva, 2005). From this perspective, a critical moment in the process of social construction of technology is the one in which users, located in different situations and accordingly pursuing different interest-driven plans, discover the relevance a technical artifact has for them. From that discovery stem new definitions of the technology and new *use genres*, recurrent use practices that correspond to typical situations arising amidst particular broader social, economic and cultural contexts. By virtue of being the originators of ideas as to what this technology can do for them given their circumstances, and of ways of integrating it into their daily practice, users become important agents in technological development.[3] Thus the concrete objectives of the study become to identify typical situations in Albertan rural users' everyday lives that make broadband relevant to their pragmatically oriented projects and actions. What types of users turn to broadband in what typical situations and how do they construe the significance of this technology for them personally as well as for their families and communities? What use genres do these situations and interests give rise to? How does the use of broadband transform the lifeworlds of rural Albertans?

As mentioned earlier, four focus groups were carried out in four rural communities lying at 2-3 hours drive out of Calgary. The communities were selected based on their size and make-up. They represented centres of farming and ranching areas and hosted some small and medium-size businesses in other industrial sectors. They were farther away from the city than the typical commuter communities, but did not fall into the category of truly remote settlements. Not the least, these particular communities were visited because our team had managed to establish contact with a local resident interested in helping us organize a group meeting. These local assistants were entrusted with the recruitment of the focus group participants according to our specification: Our goal was to recruit participants representing a wide range of occupational and socio-demographic profiles. A desired feature of participants was to be Internet users because current Internet users were expected to be in a better position to envision possible applications, benefits and challenges that might occur with the introduction of the SuperNet in their communities. As a result, the focus groups were composed of diverse individuals who were technologically curious and willing to experiment and push the boundaries of the existing information and communication channels and practices.[4] The focus groups included between 5 and 12 participants and employed a structured discussion format covering two sets of questions: (1) Questions concerning participants' current Internet use at (a) the personal and (b) the community level and (2) Questions concerning participants' expectations regarding possible changes in their use practices and outcomes that the SuperNet would bring about at (a) the personal and (b) the community level. A balance was sought between holding on to the predetermined topical structure and allowing participants to recount experiences and share opinions that were relevant, but not strictly 'on topic'. In the course of the discussions it became clear that a

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[3] For a detailed development of this argument see Bakardjieva (2005).
[4] It would be prudent to point out that the participants in our focus groups were not representative of the local population in any statistical sense. They were people active in the community at many levels having higher than average interest in broadband.

distinction had to be made between current Internet use practices involving dial-up versus those based on some form of high-speed connection. That was where the dramatic change in perceptions and experiences was occurring at the moment. The SuperNet could only be envisaged against that background as an extension of the current high-speed options and in directions suggested and imaginings sparked by them.

Rural Use Genres

Smart farms… 'not just some dumb farmers'

Farming and ranching as traditional activities firmly tied to the land and live stock may seem far removed from the virtual spaces of computer networks. That is why the visitor from the city (understand the researcher) could be caught by surprise to hear that broadband is essential to cattle breeders:

> We have a pure breed catalogue, we have a website. We try to market to people who wouldn't ordinarily come to this part of the country for a sale… Before the internet, if we had send out our catalogue to all these people they would read the catalogue and [say] oh, I am interested in this now and they would telephone us and say 'I like that number so and so, what does he look like?' And then you send them your picture, and if they did not contact us at least three weeks before our sale, there was no way that we were going to get that video on time… So now about two years ago we had a sale and two days before the sale people were telephoning: 'Could you send us a digital picture on the internet from front to front, back to side…' And [I] went outside and took the pictures and ran them on the internet and people ended up driving up for our sale and there were figures up to about $10, 000… That was the highest selling that we have ever had in our sales. (Alice, 53, rancher, A)

A web site designer from the same community confirmed that Alice's case is not isolated. Farmers and ranchers were his main clientele eager to put out their products on the web. Broadband emerged as a critical condition for success in this endeavour.

> All of my sites involve lots of pictures of cattle and horses mostly cattle pictures. On a regular 56K dial up modem they will not download right away and that's a big problem when people go to your site and want to see a picture and they have to sit and wait, wait, wait, wait. So that's mostly my customers' base here and there are other things too, but that's basically it in a nut shell… But in order for them to make it a useful tool it needs to be faster, it needs to be more information, it needs to be more assessable to people. (Roger, 30, web designer, A)

Another rancher talked about his part-time job with an organic beef company and how the 'education aspects' of Internet access were important for their business:

> I am on a number of lists servers on grazing. … Another one from the American Meat Institute sort of ties into the organic beef and what's going on in North America and the rest of the world actually. So they have a magazine, but also a daily update on email, about what's going on. We had similar experiences to [another rancher from the group] where we have people contacting us all the time. Last year we had a fellow from France that was doing a university project here and there will be two kids from Austria coming this summer they have to do a project as far as their degree on organic farming. It is virtually impossible to do a descent job of networking on anything without the Internet (Mike, 60, rancher, A)

In terms of networking and putting their farms and their own expertise out for the world to see, the web had been instrumental for another rancher's family. They had gotten connected to an international Farm Stay Program that had subsequently sent a German student to spend time on their farm doing 'some practical work in order to finish her degree'. This visit, they

said, was a classic example of 'how the Internet has affected us'. The organization had found them through their website and the whole visit was arranged via e-mail.

A rancher and part-time accountant from a different community put these experiences into perspective:

> As in any industry there is your professional end and your more non-professional end. … the more professional ones that use it [the Internet] all the time are quite often the ones that are into the purebred. And there are a lot of purebred breeders. Your Charolais, Heifers, Black Angus … Those people have been able to promote their breeding through the internet. You want people to buy the semen from your bulls. You can buy semen from bulls right from Alberta. You can buy them from France, or you can buy them from England or whatever. And that is definitely very big time. The things with purebred horses, the quarter horses, all that agricultural end right down to getting a German Shepherd to guard your farm. You can get those kind of things off the Internet and I think that is the more professional end of the agriculture. But Mister and Missis Joe Farmer that have twenty cows, you know, they aren't going to have a computer in their home. It is frightening to them, to think of technology … (Sara, 52, rancher, B)

However, as another participant in the same focus group further elaborated, there were pressures that made Mr. and Mrs. Joe Farmer look around and come to appreciate the potential of the Internet to do something for them in their specific situations:

> Ross: As an agricultural economy, probably one of the best things for the computer industry and the internet was BSE[5]. Because these guys aren't making any money and they are all working off the farms and as soon as they get off the farm they find out 'gee whiz I gotta have a computer and I have to be connected'.
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> Sara: And be knowledgeable.
>
> Ross: I gotta send my time sheet in and stuff everyday. As far as, maybe there is a lining, a sliver lining, in some clouds anyway. And the other thing, a lot of the people that I found like around [community] and area that have been quite affected by BSE. If they were on the internet they are researching stuff and then figuring out that people are starting these new packing plants, all that research has been done and they have found investors on the internet. And those are the farmers that are more connected and they go out and talk to the guys that are not connected, those guys are going to have to get connected.

The possibility of researching options for packing and marketing one's meet that Ross mentioned was of critical importance for the economic survival of ranchers at the height of the BSE crisis when USA markets were closed for Canadian beef. Ranchers had to find alternative outlets for their meet or fold down. With that crisis as well as the general increase of regulation of agriculture by governments, more pressing necessities for farmers to use computers and to be online had arisen. The outspoken rancher-accountant lady, Sara, described them in compelling detail:

> Also… with the ag-farms, there are forms that you have to fill out for the government. They want to know--like sometimes twice a year "how many acres". You tell them, but they may want to know again, because they lost the first one. So they were mailing us oodles and oodles of forms: how many acres do you farm; how many of those are tame grass; domestics grass; how much is planted grass; oats; how much is barley; how many acres are tame; how many cows…or whatever. So they would mail these forms to us, so you are getting lots of stuff form the post office but now we go on the website we can download the forms. We can print out just the ones that we need as some forms do not pertain to us. They want to know how deep the brow is; how many gallons of water your cattle drink, go figure… They want to know all this stuff. We were farming over 300 cows and I was almost full time trying to get the government forms done. I really do not know how our neighbours who don't have computers how they are doing all this.

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[5] Bovine spongiform encephalopathy (BSE) commonly known as "mad cow disease".

> Now you can get all the forms over the Internet so that speeds it up. Not without high speed…You are going kerchunck, kerchunck waiting for that. (Sara, RMH)

Ross countered this comment with a story about the government of British Columbia (neighbouring province) which had set up a GPS system allowing farmers to go on a site on the Internet and take satellite photos of their properties and then, by just 'running around with your mouse' calculate its area. And that information was going to become available in Alberta, Ross explained: 'But you can't do it on dial up. Absolutely can't do it. So the one thing that we keep going back to is: Go back and don't wait for your study to be done…' Sara finished his sentence urging us: 'Get us the SuperNet. Get us connected!'

Thus the farmers and ranchers population of rural Alberta appeared to be divided into at least two categories: the 'professional' and the 'Joe-Farmer'[6] with different degrees of understanding, experience and impatience with respect to connectivity in general and broadband capacity in particular. The Joe-Farmers were typically 'deadly afraid of telecommunications', as Sara insisted, however, many of them were making first steps toward discovering the relevance of a high-speed Internet to their lives – in response to needs created by agricultural crises and supplementary jobs (most often in the oil and gas industry). The professional farmers, however, the ones with the need to maintain a high level of knowledge of recent developments in their area and high interconnectedness with suppliers and clients as well as a heavy load of governmental accounting to do, were literally screaming for high speed. They have had enough of the 'kerchunck, kerchunck' of dial-up.

Doing business on dial-up

Small businesses are a major component of the rural economic landscape. They include businesses concentrated in the core settlements as well as ones located on farms or acreage estates out in the country. Due to the necessity for rural families to diversify their sources of income and supplement or replace farming as a major source, many of them have undertaken businesses from their homes, often run by the women. In our focus groups we heard several accounts of the out-of-your-farm business experience under the conditions of dial-up. Notably, there was an assumption shared by these participants that a connection to the Internet was a must, no way around it. The issue was speed. Because DSL and cable were not offered to the spread out farms and estates, their residents were compelled to use the telephone line to hook up to the Internet. The result was crippling for both communication devices because doing anything online tied up the telephone. Juggling the two became a nightmare during periods of emergency and events where time was of critical importance. What rural business operators had come to realize was that the outside world assumed high-speed always-on connections. Julia, a website developer in one of the communities reflected upon this state of affairs:

> I find that because of the internet my business associates and my customer have an increased expectation of response. It used to be that they would phone me during business hours and if they couldn't contact me during business hours they would not expect to hear from me until the next day. That is no longer true. I can be working a 1:00 in the morning and I have customers that are e-mailing me knowing that I work late and are actually hopeful that I am going to be responding them instantly in the morning. So it makes us all immediately available to all people who we are in association with, be that our families or our business associates. (Julia, 52, B)

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[6] As our study participants justly pointed out we had no representative of this category present at our discussion, obviously an upshot of the self- and peer-selection used in forming our respondent groups.

An exasperated editor producing a local newspaper out of her farm shared a very similar experience:

> Um, I'm on dial-up so it is quite painful and especially when you're talking to someone from Calgary, they don't understand why, "Oh did you get that email?" 'Well, no, I haven't got that email, I would have to stop everything I'm doing, get on the dial-up, go and check.' You know, so it's, it's difficult because nobody… They don't understand that you're still on dial-up and there's, you know, we don't have the same opportunities as them. I don't know does something ding when you get an email on, on high speed? I don't know but everybody just can't understand why I can't, I don't want files that take forty-five minutes to download. Why you can't do that two minutes before deadline and you know things like that so it's typical. (Christine, 31, C)

She said she had paid some of the telecommunication companies operating in the area to come and provide her with a high-speed connection, but because her house 'had trees and was in a hollow' it didn't work out.

Shirley, a kind and peaceful middle-aged woman running an accounting business explained how she wanted to take down her computer and jump on it when the downloading of a big file would get interrupted in the middle after several hours, or her airline ticket wouldn't print in full because the connection went down, or her clients would try to phone her at the same time as she was checking for e-mails from them. Sometimes she had to call her son in the city in the middle of the night to ask what to do to resume the file download from where it stopped – she had a whole book with notes about how to deal with crisis situations like that. Everyone in the wider world that she dealt with in her business or as part of her many volunteer involvements was on high-speed and her inability to keep up with the rapid communication flow was a constant source of frustration. 'Like, the dial-up has to go, or else I'm going to have an ulcer cause now my business is depending upon the Internet', concluded she with a deep sigh.

Rural business people with stake in high-speed high enough to justify the substantive investment and fees for satellite connections had taken that route and for some, the pay off had been good. A Hutterite[7] man who had electronics manufacturing business making original devices for electronic control of processes in ranching (feed and water supply control, etc.) recounted a positive experience in connecting with potential customers (for example someone in England) over the Internet and developing products to their specification: 'we started e-mail back and forth, and this was the product that he wanted, and you could send him a picture of what the product was and what it looked like, how it functioned, and it must have been 150 back and forth, changing the design and getting the product developed, and it was marketed in England.' His business had a web site that he wanted to enhance to be able to offer pricing and ordering and support documentation. He himself regularly downloaded product documentation from the Motorola site and felt that helped him move ahead with his projects faster and more efficiently.

Many other rural small businesses were waking up to the marketing possibilities opened by the Internet. There was a learning curve all of them had to go through. Sara, the web site developer working in one of the communities captured the dynamic thus:

> Because people, small businesses, farms, retailers, people that are selling things that they are building in their backyard, and there are tons and tons of those business, small service business, people with one truck they are everywhere. And when they want to have a website, or they want

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[7] Hutterites are a communal branch of Anabaptists who, like the Amish and Mennonites, trace their roots to the Radical Reformation of the 16th century (wikipedia.org).

to be on the internet, what they want to do it is basically put a fancy business card on the internet or a brochure and they have this sort of mild hope that vast thousands of people will land there and they are going to sell things. They don't understand about the fact that it is two-way communication. They don't understand the commitment that it takes to have a presence; the fact that you can't create relationships on the internet with a static page, things like that. They have no comprehension of what it is that this medium will give them. … And once they get it they are like little junkies. They really can't get enough and then they start phoning their MPs and say we're on dial up. Do you know I am on dial-up? Until they get it. They don't understand what it is that they are missing out on. (Sara, 52, B)

For larger businesses, on the other hand, the need for speed had been clear and inevitable for some time. Barbara, 45, a business woman running a company doing field work for the oil and gas industry explained that there was a high demand from her clients 'to get information yesterday'. This put her company at pains to move data 'faster, faster, more efficient, quicker and everything like that' between the field sites and their two offices across three provinces. Needless to say, for such an operation connectivity held the key to competitiveness and success. Barbara's company had its own wireless tower which provided reasonably reliable transmission, but nevertheless she felt very upset by the fact that a SuperNet connection point was located only a mile away from her office and yet it was unusable because last-mile connectivity was slow to arrive.

Bigger companies will only come to or stay in communities that offer them the kind of communication infrastructures required by the contemporary business world, a participant in another group reasoned. 'But they need the infrastructure otherwise, ah why move to a rural community? I mean that's very simple and, and we need the infrastructure to attract the businesses to spin off the economic benefits.' Ross, 52, whose general supply store was also a hot spot of connectivity in his rural area and who had followed the growth of the demand first-hand summed it up for all, big and small rural businesses by observing: 'You gotta take the fact that all of us as individuals in business, it doesn't matter whether it is me, or you guys, or Bill the farmer, or whatever, you know we will connect one way or another. But God, make it easy and make it quick! Doors are closing all over the place'.

Crafting a lifestyle

For some of the focus group participants the use of the Internet and the issue of connectivity was not simply a response to an existing social-biographical situation and its dynamic. These people were reflexively creating a new situation for themselves to inhabit following their own life-political values. This category included mostly professionals with university education who had worked in jobs typically hosted in the city for a number of years, but had later made the choice to move back to a rural community and pursue self-employment or business form that basis. The Internet, they admitted, was the great enabler of this move.

Sonia, a 31-year-old financial planner had started her business in the city with available high-speed connection, but had later moved to a rural community with her 6-year-old son. She recognized that she couldn't have had her lifestyle – working in this particular business from a rural home and raising a young child, if it weren't for the Internet. Certainly, the dial-up created problems for Sonia and she was considering switching to satellite although she found the cost quite unpalatable. James, a broadband advocate running a consulting business in the same community spoke about the desire for the rural lifestyle as characteristic of a whole generation of people raised in small communities across Canada, but later educated and employed in high-tech professions in the city. What James referred to as the 'digital

economy' had attracted university graduates of his generation to the urban centres because it was intellectually exciting, dynamic and paid well. Now, he thought, the time had come when the digital economy was starting to creep out of these centres into rural areas:

> … I can relate back to my experience of being in the city when I was still working there and a lot of people who I was interacting with at that time came from rural communities that tended to be the peer group that I was associated with, and they all wanted to come back to rural communities because that is where they grew up and that's where they felt most at home, but they were making a living through the knowledge economy somehow, the digital economy, and therefore unable to come back home because it would limit their opportunities to such an extent. … It used to be just the major urban centers and now with high speed Internet through DSL and cable into those small towns you get some opportunity there and that allows you to participate to certain extent in the digital economy. (James, 40, A)

The trajectory described by James closely matches the path of a professional woman living several hundred kilometers away in another rural community of similar the same size and make up. Sara, the web site developer quoted earlier, had grown up in a small community, later received training in computer programming and spent a good part of her working life writing software for mainframe computers in office towers and big cities. In the 1980s, Sara entered the arena of microcomputers and already at that point she was hoping that the new generation of information technology would offer her a ticket out of the city and back to 'small town rural life', that 'place of sanity', as she saw it: 'I live in Rocky not because I chose to do business here, but because I choose to live here. And finally I do business', says Jennifer.

Developing web sites for small business had been a significantly new type of activity for her and she still felt fascinated by the social and communicative side of the enterprise. Other than allowing her to have the rural lifestyle and making a living in her profession at the same time, Sara saw the Internet as facilitating her relationship with a globally dispersed community of people working in the same area. She admitted to have learned a lot from professional exchanges on web pages, mailing lists and blogs.

> The reason I think it is so significant for rural people is that rural people who have interests that are not too similar to the people around them...Rural people are so isolated from their professional associates without the Internet. We cannot all afford to leap into our car and go to Calgary every Thursday night to the meeting of the whatever association that discusses those topics and interests. So if you are rural and you are in farming you are good to go, but if you are rural and you are not into beef you are really professionally very, very isolated or can be. … And in fact many of my associates are in New Zealand, the States, Ireland, Great Britain, and there is enough of a sense of community that you can actually establish personal relationships and rapport with people who contribute so much to your intellectual milieu.

Sara's story is only one version of a type of movement that rural residents anticipate the Internet, and even more so broadband, may trigger. There is the category of older professionals who are retired or semi-retired who may and do decide to move to rural communities for the peace and quite and closeness to nature. With high-speed connectivity at hand, these people would still be able to maintain their bonds and commitments and that would make rural life more attractive to them. The influx of professional people could diversify rural communities and invigorate their economies. It could help close the gap between the rural and the urban worldviews that many focus group participants believed was glaring. City folks who come to live the rural lifestyle would learn that 'the milk comes from the cow, not form the grocery store', they would come to understand the concerns of rural dwellers and thus the political agenda, so heavily 'lopsided toward large urban centers', would gradually restore some balance.

> I see that that city person will come out there and if he represents a high rich lawyer and he lives amongst these rural people and he can go back when he has his council meeting or his administration meeting he can say: I know that I am where my beef now comes from, and I ain't going to eat it anymore [laughing]. (Mike, 60, rancher, A)

With significant social transformations like that in view, naturally came some anxiety and sense of impending loss. Those urban migrants might put a lot of pressure on the infrastructure of rural towns with demands for services similar to those offered in the city. Their estates would take away land from farming and ranching and thus erode the foothold of agriculture. With a fast and fascinating Internet at their fingertips, people would spend most of their time in front of their computers and would not go to visit their neighbours as they used to. People like Sonia move to our community, said Alice, a 53-year-old rancher, 'and yet we don't go to visit her and see her'. That geophysicist who buys acres around the corner may decide to stay in his house and do his work and the community will never know who he is.

> It's good in a way because it brings new people into community. If agricultural is suffering then we have some people that are moving in to pay taxes and buy things in our community that might not otherwise be there, but then again, on the other hand, it isolates us a bit because we are now married to our computer instead of our partner and our neighbours. So there are two different ways to look at this whole thing. (Alice, A)

Computers and the Internet were seen as the main culprits for the onset of depersonalization of life, alienation from neighbours and the community and existence behind closed doors. There was always something to maintain or update, viruses to disarm, spam to clean up, problems to solve on the computer and the Internet and these activities ended up eating up huge amounts of time, complained Barbara (45, business woman). The kids could not be persuaded to go play outside, grumbled a choir of parents from all focus groups. Our lives are moving at a breath-taking speed with our senses constantly tuned into the computer and we do not find time for our usual social activities and human pleasures.

> At the same time there are very few hours of the day where I will sit and relax and not have my ear tuned for the beep, beep, which means I have an incoming message. (Sara, B)

> I feel that our families are becoming so concentrated that we come home check our e-mail and do all these things at home. [We] do our stock reviews, that is, so focused on the one individual and the computer that we are not doing a lot of that social interaction… A definite change in our lifestyle from twenty years ago… (Barbara, B)

So, it looked like the desired rural lifestyle was being undermined at the same time as it was being made more available to different categories of people. The vehicle responsible for both processes was one and the same – the Internet. There was obviously a price rural communities had to pay for 'growing into the global sphere' as Barbara put it. And yet rural residents were quick to push their apprehensions aside and to raise their voices demanding broadband.

Home schooling

According to our focus group data, there were several compelling reasons why rural young people needed home schooling in the form of individual courses or whole programs. First, it

was the factor of distance which made it impractical for some youth to travel to school every day. Second, but not least important and possibly more wide-spread were the economic reasons. Farms and ranches needed the young workforce in place throughout the day to help out with cattle minding and working the land. Most small farming and ranching businesses could not afford to hire outside workers and had to mobilize all available hands in the family. Thirdly, the resources of local schools did not allow a large gamut of courses to be offered, which usually became a serious problem at the level of high-school. Students, as well as parents, did not want to put up with the limited educational choices available locally and looked for options offered by distance education. Finally, but also quite commonly, due to the changing profile of the provincial and local economies adults needed to take college or professional courses in order to enhance their skills and employability in particular areas. More often than not these were working people, moms and dads who could not simply move to the city for their studies. They had to stay put, go about their daily lives as usual, and fit their studies into their evenings, weekends and early mornings.

Predictably, in all these situations home schooling, distance education and their online versions gained relevance and attractiveness. People quickly came to appreciate the interactive course delivery modes furnished by the Internet and opted for them whenever they had a chance. Moreover, doing research online had become a habitual practice and necessity in all forms of education starting from elementary school and going up to the high levels of university. Rural people were clear that if their abilities for conducting research online were crippled, their learning outcomes would not be as high as desired. In one of our focus groups Ken, a 17-year-old high school student and free-style skier shared that he always felt a bit behind the city students who could do their research in no time while he had to sit and wait for information to download for hours. Will had taken conventional correspondence courses where materials were mailed back and forth and Internet-based ones and could compare the experience:

> Ken: On the Internet it's more you go on and everything is interactive and they are telling you what to do and there is more and more stuff going on, it is more available and you can do more and you can be surfing the net while doing your homework. I think it definitely is very different from conventional. … On the Internet you know it's [help from the teacher] right there, somebody is there and you know when they are on and if you are stuck on a question, you can ask it right there. … I have used a lot of high speed internet already so I know what it has to offer and I would like to have access to it right now, but it's not out here when you need it. …Right now you can't do that over the internet. Like I tried and it's impossible, I ended up just quitting the course

> Carl: My daughter was doing a German course because it's not available in [community] and she has to telephone constantly on the phone asking questions and interacting like that. I see the Internet with the high speed broadband where that class is now not limited to lecturing at university. It's available to anybody any place with high speed internet.

> Sonia: I think that if we had high speed internet where then it would just make the educational side easier. Obviously it would make my work easier, but like instead of doing paper based school, you could probably do the [inaudible]. Tim has his own computer and his is not up to technology, but I gave him my old computer and I bought myself a newer one and I keep that in the kitchen because I like the apple juice next to me and its right there by our kitchen table and it can access the internet. I think that for right now with him he is five years old so he probably wouldn't go on the virtual web, because would be so slow, but if it had higher speed and had the cable based one, he might.

A middle-aged woman in another community told us that she was taking a university course online, but did all her downloading and correspondence from work where she had high-speed access. Some families in their communities had given up on online home schooling as both

parents and kids found it too slow and too frustrating over a dial-up, our participants reported. Families from one community, we learned, would sometimes move to bigger towns where high schools offered more subjects to their teenagers. Getting access to high-speed Internet for the kids would sometimes be a factor in making such a decision. School access was generally available in all communities we visited, however, it was considered inadequate as way too many sites and activities were blocked on the school servers.

Rural parents whose children had access to the Internet at home, regardless of the speed, did worry about all the things that are also a concern for urban families: pornography, strangers in chat rooms, kids not playing outside, although there was the caveat that rural kids have chores related to the farm and the animals, so getting completely sucked up into computer activities is more rarely an option for them. In the rural setting the dark sides of the Internet were probably met with somewhat higher anxiety as they contrasted so sharply to the more peaceful and conservative (at least on the surface) environment small communities had offered until not long ago. And despite all this, rural parents spoke about the absence of broadband access as a major disadvantage putting their children behind urban youth, diminishing their chances in life and threatening to chase them away from their home places for good.

> I think it's going to become more and more important because the kids out here may have to have to get a proper education. (Randy, 46, farmer, C)

> In order for them to compete on the same level as the city kids and to get the same type of education that the city kids are getting our kids in the rural areas have to have it as well so that they can compete on that basis. (Melissa, 42, buyer, C)

Certainly, many Internet uses, or as I call them, use genres that emerged out of rural residents' accounts closely resembled those that have taken shape in urban households: maintaining relationships with family members across distances and feeling connected to friends, shopping online – despite heightened caution and numerous reservations, rural residents were discovering the potential of online shopping as a practice that could save them gas and time and expand their consumer choices tremendously. There was a rural twist to all these use genres compared to how they were conceptualized and enacted in the city. One interesting nuance referred to travel: both urban and city dwellers enjoyed the opportunity of researching and arranging their trips via the Internet, but with rural people there was more of a desire to stay away from crowded commercial resorts and into less well-known quieter places in Mexico, Belize or elsewhere. The Internet came very handy in finding those places. Both urban kids and rural kids rushed to their computers to start chatting with their friends right after they came back from school. For rural kids, however, these chats (and the telephone) were the only way to get peer help with homework or just gossip and giggle as often these kids were surrounded by miles of fields with no one their age around. The Internet-related roles and activities in both rural and urban homes were divided along gender lines, but in rural household it was more often the case for the woman to take leadership in computer and Internet use. The male ranchers and farmers typically had little or no typing skills. Some men worked on the oil rigs and spent weeks on end away from home. When they came back they were not interested in virtually leaving. Both rural and urban entrepreneurs and professionals needed to establish connections over the Internet with partners and colleagues outside their immediate surroundings, but for the rural people this need was often a matter of survival.

An interesting time lapse was noticeable when comparing the discourses of rural Internet users to those of their urban counterparts that I have been studying over a period of close to 10 years (see Bakardjieva, 2005, 2006, 2007). The signifying work accompanying the domestication of the Internet in rural homes resembled those that unfolded in urban homes in the late 1990s due to the later arrival of the Internet in rural areas. The enthusiasm, the puzzlements and the intense decision-making performed by urban adopters at an earlier stage of Internet penetration were present in the current accounts of rural users including, as has been demonstrated in this paper, questions regarding personal and professional development, economic opportunities, issues of parenting children on the Internet, privacy and security concerns, etc. While for urban users in 2004 - 2006 period being connected to the Internet was taken for granted and no particular or personal reasons were sought or articulated, rural users still approached their Internet connection with the reflexive and critical mindset characteristic to the appropriation of a novelty.

Conclusion: Broadband Citizenship

Rural communities in Alberta present a varied landscape of access possibilities and quality. Those residents living in the core settlement most typically are already being served by commercial broadband Internet providers. In contrast, residents living on farms are most likely to have dial-up access only and to face very high prices for both second phone lines and/or satellite Internet connections. This creates disparities among rural residents themselves. The greatest disparity perceived by rural people, however, is the one between themselves and urban dwellers. Rural residents frame their understanding of broadband and, in this particular case of the SuperNet, in terms of equality and civic rights. They see themselves as 'have-nots', deprived cousins, second-class citizens relative to urban dwellers. They, or more precisely those among them who have tasted the power of high-speed connectivity, are past the point where this state of affairs might be considered natural and part of the necessary price a person pays for living amidst natural beauty and fresh air. The major message that our focus group participant wanted to convey through us was that the urban-rural broadband disparity was unfair and unacceptable and it was their government's duty to step in to ensure equal citizenship and equal economic and social opportunities for all.

> … what I expect the Super Net to be is pipelines coming in [here] and towers being put up so that everybody can have access to the Internet … We would like it the same. We would like to have the city people realize that we are not just some dumb farmers that have a BSE problem that you do not need because your food comes from the grocery store. (Mike, 60, farmer, A)

> I feel that the quicker that we can get high speed internet to everyone or the availability of it, whether you choose to use it or not, but having the ability of it I feel that it makes people, it has the ability to make people more equal its more of a democratic equalization, I think, information is and knowledge is… (Ron, 49, rancher, A)

> - If we could have those costs to us similar to those folks [in the city]…Put us in the same playing field.
> - To what people in the city are doing because everybody's got it in the city so they must have something that's affordable. If we would have the same opportunities…
> - It's a terrible disadvantage when you look at it.
> (Exchange among participants in C)

At the same time that rural residents voiced these feelings they engaged in a deliberation around the hot issues of the technical designs and business models that would be quicker and more efficient in bringing broadband into their communities. Is it more practical to employ satellite or land-based optical cable? Through what technical installations should the last mile

connection be secured? Who should be responsible for providing the last mile connection – small local players, large provincial telecommunication companies or should that be part of the SuperNet project as a governmental responsibility: 'Okay but why isn't the government helping, like instead of sending a local company [to do] the patchwork of who knows who, … why aren't they working our provincial phone company to bring it to the masses?'

What about the last quarter of a mile? Are there people who will be excluded: 'So,… the technologies [have] come so far, but there, you know, it doesn't make it through your trees and it doesn't make it up the hill there…' What should residents in rural communities be doing to accelerate the process? Should they be signing petitions to the government, or joining forces with other small communities across Alberta to cooperatively build a shared infrastructure?

> … if we could have it [so] that it could be spread out amongst Albertans, rural Albertans and people in small villages and towns right across from the northern to the southern part then it could be cost effective, then we could afford it. And this is what I'd like to see. (Shirley, 54, C)

These debates, I believe, amount to no less but a kind of engagement that could be called 'broadband citizenship'. It is interesting and ironic at the same time that it takes a research team to travel to the rural area in order for such a collective deliberation to be precipitated. Despite the fact that these conversations were happening in the research laboratory, in a sense, their potential as a formative strand in the process of technological development is indisputable. For this to happen they should spill out of the test tube and be taken aboard in a timely and appropriate format by technologists and policy-makers.

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Potentials Of Broadband Mobile Services In Turkey

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Abstract

Mobile phone penetration frequently exceeds fixed-line penetration in developing countries, and digital wireless platforms can incorporate Internet technology with rapid developments in communications technology, which has made broadband services over the wireless networks possible. This so-called 3G (third generation) is mostly accepted as an evidence of the new era of communications although the actual diffusion of 3G services has been very slow and disappointing in most countries. In this study, by analyzing the diffusion and the use of communications technologies and services like PSTN, GSM, the Internet etc., the potentials of broadband mobile services in Turkey are discussed. The history of telecommunications development in Turkey constitutes the background of this discussion because of two reasons. In the first place, this historical background has led wireless telephony and the Internet to the new consumption norm. Secondly, this history can be used to shape the future of technological systems to the advantage of not only economic development but also social and cultural development.

Introduction

Rapid developments in communications technology have made broadband services over the wireless networks possible. This so-called 3G (third generation) is mostly accepted as an evidence of the new era of communications. However the actual diffusion of 3G services has been very slow and disappointing in most countries. Turkey is one of the countries that have experienced rapid development and diffusion of mobile services since 1994. 3G services have not been launched in Turkey yet. The Telecommunications Authority announced its aim to form an authorization plan of determining the policy regarding the number of operators providing 3G services, type of authorization, launch time and authorization fee at the beginning of 2006. Also, two of the three GSM operators have been granted test permission for 3G by the authority. Before this authorization plan, it is important to evaluate the potentials of 3G by taking the diffusion and use of other communications technologies and services as a basis.

In order to analyze the diffusion of communications technologies and services, the model of diffusion of innovations that was formulated by Rogers is generally accepted as a starting point. According to Rogers (1983), the diffusion of an innovation can be defined as the process "by which an innovation is communicated through certain channels over time among the members of the social systems." Typically, a sequential stage model consisting of awareness, interest, evaluation, trial, and adoption phases is assumed. The past researches have sought to explain the diffusion of an innovation in terms of the characteristics of the adopter, the social network to which the adopters belong, the communications process and the characteristics of the innovators. Although the traditional theory of the diffusion of an

innovation has provided many useful insights to understand the adoption and diffusion of technologies in the past, recent works on the diffusion of interactive technologies have pointed out some limitations of the model. Especially, innovations are often characterized as complete objects that need to be "diffused" in a linear sequence within a context marked by individual decisions in free markets. In Rogers's model and other models, which take it as a basis, innovations have been thought to be related to only users and not to be reconnected with policies and environments. In this model and the subsequent ones, innovation is just considered as a product that begins to diffuse and its diffusion is analyzed in a retrospective view. However Schumpeter distinguished inventions from innovations that were created by entrepreneurs. Schumpeter argued innovation by the entrepreneur led to gales of "creative destruction" and this creative destruction caused continuous progress and improved standards of living for everyone. Then all innovations are related to capitalism and all of its structures (Freeman, 1992). However the study of the diffusion of technological systems like broadband mobile services cannot be isolated from the complex economic, social and political systems that are determined by historical, social and cultural situations of each country. It seems to be useful to associate the concepts of the "diffusion of innovation" theory and each country's historical, social and cultural situation for the evaluation of the potential of 3G. For the evaluation of the potential of a technological system, several questions have to be asked. In this study, four of these questions are discussed to find some answers. The first of them is that whether and how past and present telecommunications policies influence the diffusion and use of communications technologies and services. To answer this, the interrelation between telecommunications policies and the diffusion and use of other communications technologies and services is analyzed in a historical and comparative way with the aim of understanding the dynamics. The history of telecommunications in Turkey provides some variables related to telecommunications policies to explore another question: "Do the diffusion and use of communications technologies and services in the context of Turkey acquire a characteristic different from other countries and how?" Third question is, "What can be envisaged for the potential of 3G on the basis of the findings about other information and communications technologies?" One more question might be, "Can the diffusion and use of information and communications technologies and services be used to shape the future of technological systems to the advantage of not only economic development but also social and cultural development and how?"

Telecommunications Policies and Diffusion

Because the most important expression of success or failure of a given telecommunications policy is the diffusion of networks and services, telecommunications policies are geared to diffusion. This signifies the importance of the deployment policies which are articulated with the telecommunications policies. Although there is no policy set that is named as deployment policies, when the telecommunications policies are reviewed historically, it can be seen that some different policies which have the purpose of increasing the diffusion of network and services have been implemented in different periods. These policies can be classified, in terms of the processes and the consequences, as "public service", "strategic deployment", "social-Darwinist", "protection of the disadvantaged", "diffusion of techno-economic paradigm" and "focused scattering". The public-service model emphasizes the purpose of making information and communications services available to all people, nationwide at a reasonable charge or free. The most important characteristic of this model is the deployment preventing social exclusion with the central planning. The social-Darwinist model is a pro-market one. It is based on the assumption that only free market can guarantee optimal distribution in a perfectly competitive market. According to this model, by allowing market

agencies, information and communications services will diffuse themselves in an uncertain period of time. In this process, the exclusion is normal. The protection-of-the-disadvantaged model is also a pro-market one. But in this model, since free market can not provide full competition and perfect distribution, information and communications services have to be provided for geographical or social segments which are not profitable in the market condition by state intervention or regulations. The purpose of this model is to decrease the impact of imperfect market conditions, and to prevent market failure, as the area of communications does not display many of the characteristics of providing a perfectly competitive market. In the techno-economic paradigm diffusion model, the purpose is to construct institutional, legal and cultural structures which are the requirements of the diffusion of paradigm at a macro level or to expand some infrastructures according to the requirements of the new techno-economic paradigm or accumulation regime. The strategic-deployment model is based on the deployment of services according to some preferential national strategic targets. It has some strategic targets like establishing and strengthening the national communications industries, introducing and developing "national champion" firms and subsidizing the process of communications technology development. The focused-scattering model is concerned with providing services for preferential segments of the society like rural areas or women by means of projects carried out with the support of NGOs, private firms and national and international funds in accordance with the sustainable development policy.

History of Telecommunications in Turkey

The history of Turkish telecommunications system goes back to the Ottoman Empire Period. In 1855, the India system was introduced and the Ottomans, joined by the British and French, were at war with Russia on the Crimean Peninsula. During the Ottoman period (1855-1914), telegraph was the sole tool of communications. It was used for multiple purposes by the imperialist countries of that time, such as the United Kingdom, France and Germany. Several authors argue that the telegraph was used to integrate the empire's economy to the global capitalist economy and to transform the empire to a de-facto semi-colony. Telegraph system was especially used for the connection of the centers of trade and ports to the European markets (Basaran, 2000: 187). Secondly, telegraph connected the countryside to the capital (Istanbul) for administrative and military purposes, and eased the control of the empire over the local political power holders by making it more powerful. During the same period, relatively free flow of commercial, and sometimes political, information worried the political elites of the time, and forced them to take some measures to control that flow. For example, Sultan Abdulhamid II (1876-1908) set up a mechanism to censor all the telegraphic messages and thus gathered strategic intelligence about the political situation of the country. Abdulhamit also banned the use of telephone from 1886 to 1908, thinking that such a device could only be used to prepare political conspiracies against him. The censorship was lifted after the Revolution of Young Turks in 1908, which was initiated by sending telegraphic news of the revolt and asking for participation all over the country (Kologlu, 1995: 606).

The role of telegraph changed from an imperialist and domestic administrative control tool to a revolutionary and anti-imperialist technology during the Turkish Independence War (1918-1923). During and after the war, the administrative center of the existing telegraph system was shifted from the old imperial capital Istanbul to the new republican capital Ankara. This newly reconfigured system was used against the occupying forces in an anti-imperialist war by waging propaganda wars to coordinate the troops and their support structures. During the period between the successful completion of the Independence War in 1923 and the end of the Second World War, the telecommunications system was nationalized, expanded and

redesigned for the new political center and for the connection of the new territory of the state to the emerging national economic market. Moreover, local connections were better integrated to the system for military purposes. In addition to the telegraph and the news agency, new telecommunications technologies, radio-telephony and the telephone began to be used. For example, the telephone infrastructure was built and used for intra and inter-city economic and administrative communications; radio was used for the domestic political propaganda and acculturation of the public for the republican ideals. During these years, Turkish telecommunications policy could be regarded as independent in general policies, but dependent in telecommunications hardware as Turkey relied on imports to meet its hardware needs. In the era between 1946 and 1959, the telegraph, telephone and radio were widely used. Telecommunications were defined as a public service, rendered by state monopolies. This period was characterized by further military and economic integration with the capitalist system and increasing foreign investments and relative modernization. At the same time, national independence in determining the telecommunications policy gradually decreased as the country's technological dependence increased in terms of telecommunications hardware and expertise. (Basaran, 2000: 96-100)

Between 1960 and 1980, television was added in the list of Turkey's telecommunications technologies. The planned economy and welfare state policies operational during this time meant that television was also mainly dependent on other countries (chiefly Germany) for hardware and expertise. But in this period, the establishment of the national communications industry was realized. A deal was signed with Northern Telecom (NT, Canada) in 1967 to locally produce mechanical crossbar central office exchanges. The subsidiary of Northern Telecom, Netas, thus came into existence as a joint venture with the Turkish PTT and a military foundation. The aim was to enhance local production and technology capability progressively and thus to raise the local value-addition (Başaran, 2000: 177-178).

Interestingly, the policy helped to adhere to the public service principle in the telecommunications sector, since the sole buyer of Netas was the PTT as stated Geray(1999). Meanwhile TUBITAK (Scientific and Technical Research Council of Turkey) and the PTT began to research and develop digital communications systems to replace analogue systems. The policy worked well until the second half of the 1970s when the worldwide economic crisis struck Turkey. The government was unable to continue investing in telecommunications, which led to the increasing number of waiting lists. The economic and political crises led to another military take-over in 1980. The Generals were back and a new telecommunications policy as well, this time to a large extent to serve NATO purposes. The military and NATO generals were unhappy with the backward telecommunications infrastructure that rendered the "free world" command and control structure inefficient and unable to prevent "the enemy", the Soviet Union, from eavesdropping on NATO communications. Thus, the military-appointed government developed a new "digitization" plan. Other advantages of digital technology, such as increasing highly needed capacity and reducing long telephone waiting lists, also influenced this phase (501).

The Generals demanded that Netas switch to producing digital exchanges from using the old mechanical crossbar ones. It was the Turkish government and army who demanded the new technology meeting NATO requirements. Another important goal of the telecommunications policy was to maintain the "public order", especially in the Southeast, where Kurdish rebels had begun a separatist movement in 1983. Within a short period, even the most distant villages had at least one telephone channel. With some financial help from the US government, the capacity leased from the Intelsat satellite system was brought to the region under the coverage of national government television and emergency communications systems were supplied with mobile terminals by 1985 (Geray, 1999: 501-502).

Between 1982 and 1986, the total capacity of telephone exchanges increased by 83 percent. The number of telephone subscribers grew by 80 percent, and the number of villages having telephone service grew by 162 percent. At the same time, a variety of new information and communications services were launched in Turkey. First generation mobile network (Nordic Mobile Telephone, NMT) was built in 1986. Since this network was analogue and constrained by capacity, low quality and high prices, it was diffused among a very limited number of users (there were only 93503 users in NMT network in 1994). Cable TV and Packet Switched Data Network (X25) were launched in 1989. Turk Telekom introduced radio paging and fiber-optic cable. In 1986, Turkey formulated a network expansion plan, which proposed a substantial effort over a 2-year period to decrease the time customers had to wait for new lines and increase the number of villages with telephone service by 100 percent. Between 1984 and 1993, annual increases in the capacity of telephone exchanges were usually between 15 and 20 percent. In 1987, the year of the most rapid expansion, the capacity of Turkish telephone exchanges increased by 44.7 percent (Akbalik, 1997). By 1988, all Turkish villages had telephone service.

The most important feature of this period was the strategic deployment model. The strategic deployment model is rooted in the conceptualization of Mansell to contextualize global network policy trends, two alternatives, the Idealist and the Strategic. In Mansell's model, the structure of markets is captured by technical change and the determinants of change are located within a broad range of social and institutional arrangements (Mansell, 1993: 5-6; Geray, 1999: 495). The strategic deployment model takes into consideration the strategic maneuvering of several agents to reach some preferential targets by means of policies, regulations and some tools like the standardization and the obligations of the agreements.

The 1990 s and the Liberalization of Telecommunications

In the 1990 s, major regulatory and structural changes at the global level, together with other ones in the European countries, towards the liberalization of telecommunications markets affected Turkey as well. A major structural change towards liberalization was started in June 1994 to save telecommunications services from the direct involvement of the government by establishing Turkish Telecommunications Inc. (Turk Telekom) as a state economic enterprise. Under Law 4000, which was passed in 1994, 49 percent of the company was privatized. Although the early efforts to privatize Turk Telekom were unsuccessful, policymakers have taken a number of measures that have produced open, competitive markets in some market segments. These measures have been accompanied by selective definitions and policy nuances that have realized some liberalization in spite of the lack of direct support in the Constitution and legislation passed in the Turkish Parliament. There are three prominent examples: cellular phone service, international leased circuits, and Internet services (Woolcot & Cagiltay, 2001: 136). Further steps were taken by amending some parts of Law 4000 to liberalize part of the market of value-added telecommunications services. With an agreement concluded between TTAŞ (Turkish Telecommunications Operator) and two corporate entities under terms of revenue sharing, GSM 900 services were launched in Turkey. License agreements were signed between the two operators (Turkcell and Telsim) and the Ministry of Transport in 1998 and then in 2000, GSM 1800 services started. Today there are two GSM 900 operators and one GSM 1800 operator in Turkey. Given the number of population, GSM penetration rate was 49 percent in Turkey in 2004. The number of GSM subscribers increased rapidly and while it was 692.779 in 1996, it increased by about 70 times more and reached 53 million at the end of 2006. GSM operators launched some value-added services like GPRS with their 2.5G mobile infrastructures in 2001.

Also, the Internet service providers started to appear under service contracts with Turk Telekom in 1996. After the first international Internet connection from Turkey in 1993, Turk Telekom, the national telecommunications services provider, granted a contract for the creation of a national Internet backbone to the GlobalOne consortium. This backbone went online during the fall of 1996 and provided the foundation for private, commercial Internet service providers (ISPs). The creation of TURNET and the special pricing arrangement by which the price of local calls to access ISPs via local telephone network would be reduced led to an increase in the Internet use and the number of ISPs. The rollout of an ATM network called TTNet instead of TURNET in 1999-2000 increased the domestic and international bandwidth capacity. But according to the surveys conducted by BILTEN in 1997 and 2000, the Internet connectivity at home rose to 6.9 percent in 2000 from 1.2 percent in 1997. These surveys presented that in 1997, 6.5 percent of homes had a personal computer and by 2000, the rate of homes with a computer had climbed by 5.8 percent up to 12.3 percent. This situation has been continuing since 2000 though the Internet has been accessible from almost every Turkish village. At the same time, the state of the Internet in Turkey is significantly different from the state of the Internet in the EU and other developed countries. At the end of 2005, 12.9 percent of households had a personal computer or a laptop according to the TURKSTAT (Turkish Statistical Institute). However 6.6 percent of households had the Internet access. On the other hand, 72.62 percent of households had a mobile phone. Despite the fact that mobile phone was widespread, only 3.21 percent of households used their phones to access the Internet. It is obvious that the diffusion of the Internet and personal computer in Turkey is still low.

Since 1990, the government policy regarding the telecommunications has supported deregulation and opening the market to competition. Recent examples are the liberalization of long distance telephone services market in 2004 and the privatization of Turkish Telecom in 2005. In this period, mobile services and the Internet have been launched as competitive markets. The most important feature of deregulation and privatization policies in telecommunications sector is the social-Darwinist model which regards the deployment of information and communications technologies and services like any other goods and services under market control. The deregulation and privatization policy set, which is regarded as neo-liberal, has assumed that only free market can guarantee optimal distribution in a perfectly competitive market. According to this assumption, by allowing market agencies, information and communications services will diffuse themselves in an uncertain period of time. In this process, the exclusion of some individuals or groups is normal in terms of evolution by natural selection. But the failure of this assumption was inevitable at a short notice in all the countries which implemented the deregulation and privatization policies in the telecommunications sector because of the imperfect market conditions in the telecommunications sector and social connotation of the access to the communications networks in a new era, the so-called Information Age. The universal service obligations as the correction of market imperfections and the improvement of the socially unwanted effects of competition in telecommunications appeared on the political agenda about telecommunications. It obviously means "protecting the disadvantaged" by the definition of the EU, "the provision of voice telephony service via a fixed connection which will also allow a fax and a modem to operate, as well as the provision of operator assistance, emergency and directory enquiry services (including the provision of subscriber directories) and the provision of public payphones [and special facilities for customers with disabilities or special social needs]" (COM, 1996, 73). In Turkey, social-Darwinism has been evident in the personal computer (PC) deployment, while there have existed the protection-of-the-disadvantaged model by means of the universal service principle in fixed line telephone service and the strategic deployment model by means of decreased tariffs for the access to

the Internet service providers via PSTN on the Internet, setting GSM as the only standard and the coverage area obligations arising from the agreement between the corporations and the Ministry of Transportation in mobile phone services.

Fixed Telephone and Mobile Phone

The analysis of the history of telecommunications in Turkey indicates that the diffusion of information and communications technologies and services has required some intervention in the processes. The most important example of these interventions is the deployment policy set which went along with public service and strategic deployment model in PSTN and fixed telephone service until 1990. According to the statistics, fixed telephone service was one of the most equitably distributed technologies although there was a digital divide even in the access to a telephone. The surveys showed that the lowest income group, 59.7 percent of whom had a telephone in 1997, made the biggest gain in three years. The connection of this group increased by 3.6 percent to 79.3 percent in 2000 compared to 1997 figures. The lowest income group contributed 33.2 percent to the overall fixed telephone ownership average of 86.8 percent in 2000, whereas its share of the overall connectivity rate (81.8 percent) in 1997 stood at 14.3 percent. 90.3 percent of the lower-middle income group had a telephone connection in 2000, up from 81.8 percent. The lower-middle income group came second according to the contribution to the overall connectivity rate in 2000. However, the lower-middle income group's share in the overall teledensity dropped from 31.5 percent in 1997 to 29.9 percent in 2000. When the lowest and lower-middle income groups were considered together, they had 63.1 percent of 86.8 percent in 2000 up from 45.8 percent of 81.8 percent in 1997. The two income groups whose share in all telephones dropped in three years were middle and higher-middle income groups. In 1997, those two income groups had 34.2 percent of all telephones. By 2000, their share had fallen to 21 percent. There is no available statistics about fixed telephone in households. However, according to TURKSTAT, the overall number of fixed telephone subscribers in 2000 was 18.395.171, whereas it was 18.831.616 at the end of 2006. The slight difference might be the evidence of that fixed telephone has still been the most equitable technology.

When mobile phone, as a highly diffused technology, is considered, it must be stated that the number of mobile subscribers has surpassed the number of fixed telephones in Turkey now. But this does not mean that the mobile technology is distributed as equally as fixed telephone. According to the TURKSTAT survey, 72.62 percent of households had a mobile phone (less than fixed telephones on a household basis). The most important factor in the diffusion of mobile phones was the interconnection of PSTN. As Rogers stated, the critical mass and compatibility are important factors to accelerate diffusion (Mahler & Rogers, 1999). If mobile phones had been designed so that each user could only talk with other mobile phone users, the diffusion process would have been extremely slow like other interactive innovations because of critical mass. However the diffusion of mobile phones was up against the obstacles of "critical mass" as mobile phone adopters connected to the existing PSTN, which initially spread very slowly for several decades and achieved critical mass automatically. The compatibility with the installed base of telephone subscribers has accelerated the diffusion of mobile phone, too. Besides, the political decisions for the adoption of the Global System for Mobile Communications (GSM) as a mandated standard and the coverage area obligations arising from the agreement have helped the result of the rapid diffusion of mobile phone in Turkey. Both of these are very important in respect of the liberalized mobile phone market. Turkey's population at the end of 2006 was estimated 70.4 million. More than 65 percent of Turkey's population lived in cities, defined as built-up areas

with 10,000 or more inhabitants. 30 percent of the total population is living in nineteen cities with populations then of more than 200,000. The largest was Istanbul with a population then of about 12 percent of Turkey's overall population. As far as this situation is concerned, since establishing an infrastructure around Istanbul and other big cities might have been enough and providing mobile services in poor rural areas might not have been preferred by the entrepreneurs, the deployment of mobile infrastructure might have been limited and slow. In addition, in the case of market-based standards, where network effects are present, compatibility across platforms (i.e., standardization) might have been a key determinant of the failure of a mobile technology as it has been in the countries which preferred this market-based standard. The addition of culture to these would provide a more robust understanding of the dynamics of interactive network diffusion. Economic, political and social environment of the country and the change in the requirements of international capitalism and the varied meanings of both technologies with regard to the current accumulation regime are also important. These factors do not shape only different diffusion patterns, but also different considerations of the Internet, mobile phones and POTS in communications policy, social policy, industrial policy and science and technology policies. But an analysis that identifies culture as a predictor of diffusion which adequately specifies the dimensions of culture and their impacts and considers the current accumulation regime related to the country exceeds the scope of this study. It can be maintained that some useful criteria can be formed to envisage the potential of 3G from the discussed dynamics of the diffusion of fixed telephone and mobile phone in Turkey by comparing it with the Internet diffusion.

Potential of 3G

Cellular phones have diffused rapidly, whereas there are some reasons to believe that 3G technologies are likely to exhibit different diffusion patterns. The 3G technology is seen as the natural evolution of 2G services. It facilitates higher speed and data throughputs enabling the delivery of a wide range of multimedia services such as video streaming, movie downloads, mobile TV and so on. The broadband capabilities promised by 3G go beyond simple voice telephony. After the 2G (second generation) digital mobile phones and services, in particular GSM had been incredibly successful, 3G services have been launched by mobile operators in certain countries as of 2003. However, 3G services have fallen short of diffusion goal of operators until now. The number of 3G subscribers around the world was estimated at 50 million in the beginning of 2006. They accounted less than 3 percent of all mobile subscribers. Korea and Japan have been countries that have experienced rapid diffusion of 3G. United Kingdom and Italy are the countries are in the lead with 75 percent of the European total, although 3G services have been launched in majority of European countries. . In Italy, 3G subscribers accounted for 9% of the mobile subscriber base in June 2005, a far higher proportion than in other European countries (idate, 2006). By mid-2006, in European countries, GSM remains the dominant platform, accounting for 97% of all subscribers, of whom about 80% were on prepaid plans and SMS remains the most successful data service, accounting for 15% to 20% of many operators' revenues, and up to 95% of data revenues (online reporter, 2007). This situation is the most powerful reason to expect that the diffusion pattern of 3G would be different from fixed telephone and mobile phone in Turkey. This difference has taken root from the characteristics of 3G services. The feature of providing converged voice and data services makes 3G mobile networks unique. But also this means, while thinking about the diffusion of 3G services, it must be considered that diffusions of internet, mobile phones and mobile data services as parameters. In addition, the socio-economic condition of country is important. Low-income countries in Asia and Latin America have very low penetration rates in 3G.

In Turkey, as it was stated above, while 72.62 of households had a mobile phone, only 3.21 of households had used their phone to access internet. SMS is the only successful mobile data service in Turkey. It is used not only for personal communication but also for announcements of organizations, corporations and etc. On the other hand, diffusion of internet and mobile phones can be considered together by means of the term of "digital divide". Generally, three kinds of digital divides for both the Internet and mobile phones have been defined and analyzed by the recent studies. These are user/nonuser, veteran/recent and continuing/dropout. The user/nonuser one is more important than the others. The digital divide between Internet users and nonusers is supposed to be associated with income, education and age, but no longer with gender and race in developed countries. In addition, in these countries, the divide between mobile phone users and nonusers is associated with income, work status and marital status. (Rice & Katz, 2003: 597-598)

But in Turkey, several studies on the digital divide show that it is associated with income, education and age and also with gender and geography (Binark, 2005; Geray, 2001). The gap between high and low income groups in the access of the internet is very significant because of the existence of a relatively high unequal distribution of income in Turkey. Only 0.5 percent of homes within the lowest income group had an internet connection at home in 2000. On the other hand, internet connection rate of the highest income group was 51.9 percent. Similarly, 27.9 percent of higher-middle income group homes and 12 percent of the middle income group homes had internet connectivity. The results which showed that internet connectivity concentrated in higher-middle and the highest income groups have stayed same since 2000. TURKSTAT data show that there are serious differences in the rate of internet usage among gender and age groups, education level and income. In 2005, 44.68 percent of females never use internet, while this proportion is 37.76 percent for males. Table 1 indicates the proportion of internet use by gender and age and Table 2 indicates the proportion of internet use by gender and education level.

Table 1: Internet use by gender and age group (%), 2005

Age group	Internet user	
	Female	Male
16 - 24	18.82	37.41
25 - 34	10.63	22.50
35 - 44	5.01	14.35
45 - 54	2.36	10.09
55 - 64	0.94	3.80
65 - 74	0.14	1.80

Table 2: Internet use by gender and education level (%), 2005

Education Level	Internet User	
	Female	Male
Literate without a diploma	0.18	1.05
Primary school	0.34	3.11
Secondary school	9.76	18.33
High school	27.14	36.52
University	57.88	65.67

Source: http://www.bilgitoplumu.gov.tr/eng/docs/161105.xls

The cross categorization of Internet and mobile phone usage/non-usage is distinguished primarily by income and education, but also by geography and gender in Turkey. But it has to be made clear that there are several digital divides. When the rate of internet usage is concerned geographically, Marmara region which is most urbanized has the highest level of internet use and South-eastern Anatolia has the lowest level. Like wise, Turkcell, the biggest operator with 31,8 million users by the end of 2005, announced that it had the coverage of an area that included 79.61 percent of the Turkish geography. It is obvious that the biggest region of Turkey, East Anatolia, has the least number of mobile users. These gaps are the indicators of a new gap that is opening between those who have rudimentary services and others who have 3G as an advanced one in future.

Recently, the Council of Ministers carried a decision on the authorization and minimum licensee fees in 3g. This means that 3G will be launched in 2007. Many foreign enterprises believe that Turkey has remarkable opportunities for information and communications technologies and services, in terms of demographical structure. The fact that the majority of the population is under the age of 30 (*54.9%*) and that the individuals under the age of 15 constitute 28.1% of the society is made sense of a sign of great potential for Turkey. Furthermore, high penetration rate in mobile phones is concerned that the great potential of 3G.

Despite Turkey's young population and high penetration rates in 2G, computer and Internet usage is still not as prevalent as in the developed world. It is a well known fact that the usage of 2,5G services is very low in Turkey. Under these conditions, the success of 3G will depend on strategic deployment policies that include tariff regulations and mandatory provision to use this in rural areas, that is, if it has to become a mass service. The most important critique of telecommunications policy processes in Turkey has been the reduction of the strategic purposes and the increase of the cost of telecommunications licenses since the mid of the 1990 s. However while 3G services are launched, unless some strategic aims, like facilitating the implementation of e-governance, e-education, tele-medicine etc by means of 3G, are determined and some strategic policy interventions to achieve these aims are planned, some problems will certainly arise about the potential of 3G. These problems are related not only to the number of users but also to the effective utilization to turn 3G to an advantage for social and cultural development on the way to the Information Society. Recently, many analysts have prompted the debate, *"Do we really need 3G?"* In "The Register" web site, John Leyden answers this question by quoting from a meeting, *MobileUK: Mobile Phones and Everyday Life*:

> *"The short answer is: yes, but maybe not yet and not necessarily in the way 3G services are first entering the market. ... Girls, games and gambling are often cited as the killer content for 3G. ... The UK 's first 3G network, has, for example, appointed a Director Of Adult Content. Playboy is among its many media partners. Fletcher, along with others at the meeting, expressed doubts about whether or not it will be socially acceptable to view porn in public." (2003)*

Consequently, although entertainment itself is not necessarily a negative factor, the fact that Turkey has comparatively fewer web sites should be noted in relation to entertainment-oriented content use. This suggests that the broadband mobile in Turkey appears to have developed with a focus on information or content consumption rather than on its production. Therefore, Turkey's 3G potential is questionable.

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The Digital Review Of Asia-Pacific (2003-6)

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Abstract

This paper is a subjective view of the experience of contributing as a national author (on behalf of Australia) to the *Digital Review of Asia Pacific* (2003-4; 2005/6) and as the lead author of a general chapter (for 2005/6) on 'Social, political and cultural aspects of ICTs: E-governance, popular participation and international politics'. This opportunity, and the insights offered by it, proved an immensely valuable way to address the multiple cultures of ICT (Information and Communication Technologies) usage within the Information Societies that support them.

Participation in the *Digital Review of Asia Pacific* (DiRAP) process, from 2003-date, has permitted a unique opportunity to share perspectives across a wide range of cultural, technological and economic settings since the foundational interactions were face-to-face encounters (in Malaysia, during Ramadan 2003; and in Jakarta, during 2005) with all the authors from twenty-nine different countries in addition to a representative of the nations within the Pacific Island States forum. Any gathering which involves a week of intensive engagement with author/representatives from Afghanistan through to Vietnam (including perspectives from Bhutan, Myanmar and Timor-Leste, for example) is a crash course on development issues.

As the Australian author (and as the Australian co-author for the 2007/8 edition) I found myself responding in unexpected ways to the information being offered by other national representatives. For example, I was shocked to learn that an email list for medical doctors in Cambodia had lost half its members when it was made web-based (since the loading of the web-page removed access for so many participants). The human rights implications of some restrictions by nation-states in the Asia-Pacific were keenly felt by all group members, but could not be mentioned in ways that explicitly criticised the authorities concerned. In many nations of the Asia-Pacific the issue is not only one of content-produced in local languages, but also one of having the appropriate fonts in which to produce local content. On the other hand, it was interesting to see the ways in which other countries in the region – especially Singapore, Korea and Japan – were setting a pace which challenged Australian technological infrastructure and commitment.

The paper reflects critically upon the value of an intensive and personal exposure to a range of different countries and cultures united in a geo-political global region but with such a wide divergence of political, social, economic, technological and religious identities.

DiRAP is an initiative supported (in 2005/6) by the Asia-Pacific Development Information Programme of the United Nations Development Programme; the Pan Asia Networking Programme of the International Development Research Centre; Orbicom; Southbound; and the Agence intergouvernementale de la Francophonie. The hard copy DiRAP volume can be ordered from the website and the 2005/6 edition includes a CD-Rom of the previous edition.

Introduction

This paper provides a background to the *Digital Review of Asia Pacific*, which started in 2003, and which is published every two years. The third volume, 2007/8 is in press. Detailed specifics of the *Review* are followed by discussion of my personal experience of writing for the volume, as the chapter author for 'Australia', and of the experience of learning through interaction with other chapter authors; with the editorial team, and with the Chief Editor, Chin Saik Yoon (the Publisher and Managing Director of Southbound). This is a necessarily personal reflection since my experiences differed greatly from many of my co-authors. The paper progresses to discuss some indicative differences in the digital environments of countries in the Asia Pacific region as revealed by the *Review* and finishes with some conclusions.

The *Digital Review of Asia-Pacific*, http://www.digital-review.org/, (DiRAP n.d.) has a complex list of publication credits reflecting both the inclusiveness and the cost of the endeavour. Canada is – perhaps unsurprisingly, given its commitment to development scholarship – the locus of two key contributing organisations: the Pan Asia Networking Programme, International Development Research Centre (IDRC), Ottowa, Canada; and the Orbicom Network of UNESCO Chairs in Communications, Montreal (ORBICOM), which provides the base for the overall Publisher of the work, Professor (and Vice-Rector, University of Quebec) Claude-Yves Charron. The third copyright holder in the works, and the UN-funded Asia-Pacific based partner, is the Asia-Pacific Development Information Programme, United Nations Development Programme (UNDP-APDIP). In addition to holding the copyright in the two volumes so far published these three organisations are co-publishers with a fourth organisation – Penang-based Southbound (Malaysia) – which provides the design, typesetting and printing, and the chief editor (for the 2005/6 edition) Mr Chin Saik Yoon (also Publisher and Managing Director of Southbound). The editorial board represents the individuals whose vision realised the DiRAP, who also represent the key funding organisations. Other grants and contributions are acknowledged on an DiRAP volume by volume basis.

The rationale behind DiRAP is available on the web as one of the projects of UNDP-APDIP: http://www.apdip.net/projects/dig-rev (APDIP 2005). Here we learn that the project's specific objectives are:

- To provide a one-stop reference source on the state-of-practice and future trends in ICTs for development and ICTs for industry for the Asia-Pacific region;
- To serve as a comparative, analytical tool for policy and decision-makers, technology practitioners and experts, researchers and educators in the region;
- To strengthen the research capacity of key Southern ICT partners by developing their skills in collecting, analysing, synthesizing, publishing and marketing content;
- To enable Northern and Southern researchers to cooperatively build a needed, shared data resource, and

- To complement the Digital Divide Index effort, being undertaken by Orbicom, as a monitoring tool for evaluating the e-environments of Asia-Pacific countries.
- To conceptualise and test a sustainable business model for selling online the Digital Review in an electronic format to developed country readers, while at the same time providing it free-of-cost to key policy-makers, researchers, practitioners and libraries in the developing countries of the region.
- To build and nurture a core group of Asian researchers and writers to systematically review, analyse, forecast and report on ICT issues in the Asia Pacific Region on a regular basis. (APDIP 2005)

My role in DiRAP is as the national author representing Australia (although for 2007/8 I share national-author credit with Dr Axel Bruns, editor of *M/C: A Journal of Media and Culture* [M/C n.d.]), and as the first author of a thematic chapter for the 2005/6 edition: 'Social, political and cultural aspects of ICT: E-governance, popular participation and international politics'. The APDIP (2005) policy document summarised my role as one of "a panel of contributors comprising both members of the academe and industry, who are already conducting on-going periodic reviews of the countries of their coverage. They will be provided with a template and style sheet to guide their preparation of contributions to the publication" (APDIP 2005).

My experience of participating in DiRAP: the writing

The vision for the *Digital Review* was to allow a reader to compare digital uptake and adoption across the Asia Pacific. Accordingly, every author had a country-specific panel to complete which allowed ready comparison of relative digital engagement and capacity-building. For example, the *Australia facts* table addressed (Green 2003, p. 29): Population; Rural population as % of total population; Key economic sectors; Literacy in the national language(s); Literacy in English; Computer ownership per 100 inhabitants; Telephone lines per 100 inhabitants; Internet hosts per 10,000 inhabitants; Internet cafes/telecentres per 10,000 inhabitants; Internet users per 100 inhabitants; Cell phone subscribers per 100 inhabitants; Number of websites in the national language(s); National bandwidth within the country; National bandwidth to and from the country; Ratio of incoming and outgoing Internet traffic volume. The 269 references I used in this chapter (ibid, pp. 42—6) indicate both that I several times had to stray away from areas in which I felt confident and charted my progress through rigorous citation, and also that I made extensive use of web-based information to source relevant data. I was consequently dismayed when the editors introduced a new rule for the following volume (to limit references to 20)!

The comparative ease of access I had to digital resources to research and write my chapter, and the unbelievable advantage of being allowed to write in my mother tongue, meant that my experiences of contributing to the publication of DiRAP 2003/4 (and DiRAP 2005/6), differed from that of most of my fellow authors. I soon became aware of the extraordinarily privileged situation I was in: additionally, there was a lot to write about. Australia is a very fortunate country in terms of digital investment and infrastructure. While it may lag behind, for example: Hong Kong, India, Japan, Korea, New Zealand and Singapore, depending upon the indicator chosen, it was almost always possible to find something to say about each of the suggested headings and subheadings provided for the chapter structure. I'm delighted to say that Australia did not have the longest chapter in that first volume, however – there was more to say about Singapore.

The 2005/6 volume was able to respond to the feedback of readers and user-groups who had had access to 2003/4. In addition to the 29 individual nations represented (Iran and Maldives had joined the team of national authors), there were three subregional groupings (ASEAN [Association of Southeast Asian Nations] and APEC [Asia-Pacific Economic Cooperation] joined the Pacific Islands). All chapters outlined the nation's, or the subgrouping's response to ICT opportunities. Further, there were four 'theme chapters', three of which had multiple authors largely drawn from the pool of national authors. These teams were self-selecting but managed to combine a wealth of differing perspectives. The thematic chapter that I worked on ('Social, political and cultural aspects of ICT: E-governance, popular participation and international politics'), for example, included an author each from Iran, Dr Masoud Shafiee; Malaysia, Associate Professor Zaharom Nain, and the Phillipines, Dr Emmanuel C. Lallana as well as myself.

A further innovation in the 2005/6 volume, and one that replaced (at that time) the individual country's ICT *facts*, was a diagrammatic representation of the country's relative access in 2003 to a range of ICTs and development indicators. This 2003 indicator was visually compared (by means of an indicative scale) with that of the same country in 1995, and with the global average of access for 2003. The work of compiling this visual representation of the global-wide digital state of play had been a major project for Orbicom in the years leading up to 2003 (Sciadas 2003). It was chastening to realise how much a country such as Australia differed from the norm, dwarfing the usual reference points which were so indicative for so many other countries in the DiRAP volume. (Although the 2007/8 volume has yet to be published, a table equivalent to the country facts has been re-established, so it may be that both sets of information have been found to be useful.)

A further innovation for the second volume was the introduction of up to two 'side-bars' per country chapter: one of these offered a success to be celebrated (and possibly adapted by other countries into other circumstances) and the other was an opportunity to offer a cautionary tale. In the case of Australia, the celebration was of the Western Australian Telecentre Network. Although my PhD had focused on the impacts of broadcast services to remote Western Australia, and although I knew something of the value placed upon the services by Australians living in rural and regional communities, I had to travel to Kuala Lumpur (2003), and Jakarta (2005) to realise that Western Australian policy makers had provided a telecommunications-access model of international significance. Many of my co-authors wanted to know more about this network of centres, and it made for an easy choice of topic for the Australian 'side-bar of success'. As for my cautionary tale, I didn't have to look much further than Australian/US free trade agreement – which was being finalised as I wrote. While the ostensible aim was free trade, one effect was to align further the Australian copyright environment (50years) with that of the US, by increasing to 70 years copyright protections for US properties in Australia. The nett impact, far from freeing trade in information and culture, was to make it more restrictive. The Australian open source movement was also bitterly (and unsuccessfully) opposed to the changes which were rushed through the Australian parliament.

My experience of participating in DiRAP: the learning

The original commitment by the three publishers – the Pan Asia Networking Programme, IDRC; Asia-Pacific Development Information Programme, UNDP, and Orbicom – was to fund two volumes of the publication in the expectation that the third and subsequent volumes would become self-financing as a result of sales of the books and subscriptions to the

regularly-updated website. Although the authors are not business partners – and not privy to the financial success (or otherwise) of the enterprise – it is exciting that a third volume is in press and that the model appears sustainable. As mentioned, one aim of the project was to: "To build and nurture a core group of Asian researchers and writers to systematically review, analyse, forecast and report on ICT issues in the Asia Pacific Region on a regular basis" (APDIP 2005). The project development finances allowed the nurturing of the core group of authors to occur in an exemplary way.

Firstly, the authors represented no uniformity of background. Some were IT academics – usually from the systems management/technical areas (while I was from the humanities) – but this was not overwhelmingly the case. Many were policy experts and advisers to their respective governments. Some were IT entrepreneurs with international networks and connections, operating as one of few 'digital entry points' to their economies. A few were professionals committed to a development agenda, whose experience of wealthy economies (coupled with their commitment to their adopted homes) enabled them to experience the digital divide in a way that highlighted the potential benefits of supporting community-based IT initiatives. A number of authors had written policy papers, and a few had a background in journalism, but for most of the chapter authors English was a second or subsequent language.

The author gatherings – Kuala Lumpur (2003, during Ramadan), and Jakarta (2005) – were characterised by a reviewing of the draft chapters and by discussion in small groups of the issues arising. For example, a 'regional grouping' within Asia Pacific places Australia and New Zealand together with Timor-Leste (East Timor), Singapore, Malaysia, Indonesia and the Pacific Islands. Alphabetical positioning unites Afghanistan, Australia, Bangladesh, Brunei, Bhutan and China with Hong Kong. It was almost impossible for a grouping not to reveal a wealth of new information and perspectives. Typically the group began with a round table exchange of backgrounds and perspectives (we had generally come to be our country's chapter-author by a variety of ways) and then got down to a nitty-gritty discussion: what were the biggest challenges confronting 'ICT4D' (the deployment of ICTs for development) in our area? Given that the challenges had been identified, were any other countries aware of strategies to address these challenges that had worked?

In addition to the 'assigned' groupings, which took up perhaps half of the round-table time, the authors arranged themselves on other occasions according to groupings of interest. These included such critical issues as 'fonts'. Until that point I hadn't realised the double-difficulty of promoting digital culture in a country with low levels of mother tongue literacy and no standardised fonts for developing websites in that language. Thus Bhutan (for example) in 2003 was working with Microsoft engineers to develop a standard Dzongkha font in Unicode. At that stage there were no websites in the national language. The 2005/6 Digital Review Bhutan chapter reports that the first Bhutanese website was launched on January 9, 2004. "The initiative is hampered by low technology and the lack of a standardised font in the national language. Visitors to the website will notice that the pages are made up of large image files imported into HTML tags. This is not the ideal way, but it seems to be the best available option for the moment". (Pradhan 2005, p. 83). The site is at: http://www.bhutanstudies.org.bt/index-dz-a.htm.

In contrast to the vigorous discussion taking place on fonts, I was involved in an exchange about wireless broadband. In Australia, recent changes to legislation had caught up with the fact that domestic wireless broadband should not fall under legislation which required all broadcasters to hold a licence. Privileged Australian families were installing wireless

broadband to allow multiple family members simultaneous access to the Internet (in whichever domestic location they preferred: often in front of the television) thus preventing the squabbling over whose turn it was on the Internet-connected computer. This use of wireless contrasted with an Indonesian example of a grass-roots solution to the high cost of Internet access "using off-the-shelf WiFi equipment that was adapted locally to build affordable neighbourhood broadband networks" (Pradhan et al 2005, p. 5). These access-innovators had gone on to explore "alternative regional networks in the country, using either a satellite backbone or the fibre/microwave backbone of cellular operators" (ibid, p. 5). Clearly, Australia's debates had less to contribute to the ICT4D discussions than Indonesia's.

As well as engaging in arranged (and in self-selected) groups, the country authors were also involved in wide-ranging seminar discussions and debates with the Editorial Board and the Publishers (and their representatives and policy makers). Sometimes this was at the residential/work/conference venue where we were meeting: sometimes it was as part of a field trip to explore local initiatives (such as the Cyberjaya, in Malaysia's Multimedia Super Corridor [MSC]), and a locally-run and user-serviced cybercafe in downtown Jakarta. Importantly, the learning continued after the face-to-face round tables since every author had to review and offer feedback on at least two other revised chapters (and had to respond to feedback offered) as well as working with 'external' reviewers who represented the perspectives of key stake-holders (such as policy-makers and IT developers).

The elephant in the room in any discussion of Internet access and information exchange in the Asia Pacific was the vastly different political perspectives of the countries concerned when it came to concepts such as those labelled in the West as 'free speech' and 'holding governments to account'. All country authors were required to undertake that conversations and opinions shared openly in the sessions remain private, and were not to be recorded or repeated. While many of the differences in perspective can be traced back to a philosophical belief in whether the rights of the individual should take precedence over the rights of the group (or not) it soon became clear that a (Western country-based) web-search would be an easier and fairer method for gaining specific information about ICTs, human rights and civil liberties. Relevant sites include Amnesty International (http://www.amnesty.org), Human Rights Watch (http://www.hrw.org), International PEN Writers in Prison (http://www.internationalpen.org.uk/index.php?pid=4) and the International Federation of Journalists (http://www.ifj.org/default.asp?Language=EN).

Indicative differences in ICT environments in the Asia Pacific

The *Digital Review* is replete with details of the ICT environment for the Asia Pacific nations involved. Those who wish to access specific details about particular nations are encouraged to pre-order the 2007/8 volume now (DiRAP n.d.), and to obtain a hard copy of the 2005/6 volume (which is bundled with a searchable CD-Rom of the 2003/4 volume). Additionally, or alternatively, a number of web resources are available on the *Digital Review* site: http://www.digital-review.org/. Whereas the individual country chapters necessarily concentrate on the country of interest and thus do not engage in comparative analysis, there are contexted comparisons within the themed chapter section of the 2005/6 volume. The raw material for these over-arching chapters is generally sourced from previously-published information, and thus broadly reflective of the situation prior to 2005. The chapters were multiply-authored (apart from the one on Internet governance), predominantly by country-chapter writers who could bring their own perspectives to bear. The four themes addressed were:

- Building information societies: Bridging the digital divide in Asia Pacific
- Internet governance: Urgent issues for Asia Pacific
- Social, political and cultural aspects of ICT: E-governance, popular participation and international politics
- Appropriate ICT for Asia Pacific: Opting for open source, localization, internationalization and free access.

The flavour of one theme chapter can be gauged by this excerpt from 'Social, political and cultural aspects of ICT' (Green et al 2005, p. 32), which looks at the nature of information poverty and argues that it is a two-edged sword:

> Not only is there a lack of access for the poor as consumers of information and communication products, but there is a corresponding lack of access for the poor as producers of such products – and no realistic editorial control over the content produced by information-powerful others. The information rich countries control the representations of the information poor, and select images congruent with pre-existing perceptions and prejudices. A similar dynamic can be seen to operate when considering the situation of the relatively information-poor population groups and societies in any country: they control neither the agenda nor the content of public debates. In Loas, for example, government agencies in the provinces have had to use floppy disks to send information collected in the regions to the capital for processing, while telephone density in Myanmar has been estimated at less than 1 percent. [Unchanged in 2005/6] This digital divide, both inside the country and between poor and rich countries, has obvious implications for the future development of ICT, particularly if a government does not commit itself to providing universal communication access (as a right, regardless of commercial viability). This situation contrasts almost obscenely with Australia, where so much emphasis is put on the web delivery of government services that those without access queue for long periods, or make long telephone calls, to gain equivalent information.
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> The information rich – at the level of the household, and of the nation – are wealthy according to a range of indicators, and are likely to be perceived as rich as well as information rich. It may not be technology access that makes them rich; instead, their technology access may be only one of a number of traits, a privilege that reveals wealth rather than confers it. Arguably, most of the information rich in consumer societies are ignorant of the lives and aspirations of people they class as information poor, and the information poor have few opportunities to communicate back to them as equals in a discussion about rights and responsibilities. In some nations, such as Timor-Leste, the comparative lack of Internet-connected computers is only one of numerous challenges facing the country.

Conclusion

Sadly for those of us involved in contributing chapters to the *Digital Review*, it looks as though the original structural model (involving a week in the company of other authors) may not be sustainable in the long-term. The 2007/8 volume has not been written with the benefit of this inter-author interaction. While there is some talk of a launch of the new volume to which authors will be invited; dates, details and costings are sketchy. Notwithstanding changes in the processes of producing the volume, the information in it remains as detailed, as intriguing and as valuable as ever. It is time that the initiative was duplicated in other regions of the world – Europe, for example – and that the key founding objective of enabling

"Northern and Southern researchers to cooperatively build a needed, shared data resource" took international form (APDIP 2005). It would be great to arrive at a point where various *Digital Reviews* representing regions from around the world collaborated to create a global picture of how nations and economies are responding to the online environment.

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Usability vs. Functionality?
Mobile Broadband Technologies and User Agency[1]

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Abstract

While providers hope that mobile broadband devices and applications will define the future of telecommunications, enabling maximum flexibility and mobility by way of integrating as many functions as possible into one small, handy, and universal device, real-world usage lags behind these expectations, both qualitatively and quantitatively. One possible reason for this is that both the convergence of functions and applications in mobile broadband devices, and the everyday uses intended by their designers, imply trade-offs between the norm of usability – the ease and intuitiveness of accessing the functions of a device – and the norm of functionality – the control over, and in-depth access to the functions of a device. These two norms of user agency are critically compared with respect to their value as conceptual tools for understanding the case in question.

If design logic worked, the usage patterns of mobile broadband applications would be characterized by the adaptation of a palette of "usable", but functionally rather limited applications to a wide, but unspecified variety of possible situations in everyday life. However, user's needs and adoption strategies appear to suggest otherwise, namely more specialised, customisable functions and their adaptability to specific contexts – and they question the seeming disjunction between the norms of usability and functionality.

1 Arguable Definitions

One of the authors of this paper once witnessed two of his philosopher colleagues being engaged in a heated, and seemingly unresolvable, debate about the true path to a truly democratic computer technology. Such a technology would not only enable users to participate *in* it, that is, allowing for the largest possible variety of uses by the largest possible section of the general population, but also *through* it, that is, making the use of computers an exercise in democracy beyond issues of access and usage of technology, namely as a model for, and a medium of, political and social participation in general. The argument revolved around the following question: In order to achieve this goal, should the mode of interaction with computers, and thus the interface design, follow the ideal of designing a technology so as to allow direct contributions to system and application development by its users in the first place, or should it adhere to the ideal of creating an easily accessible, readily and intuitively usable user interface design?

The former normally requires some technical expertise, in terms of programming skills and general knowledge about computing, which may not bee easily available to everyone, but which, if the user is in the position to pay that price, allows for maximum control over the

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[1]This essay is a first theoretical statement in the context of an upcoming research project to be conducted by the authors of this paper. In this function, it is inevitably an open-ended work in progress.

functions of the computer and data structures, and for maximum adaptability to the experienced users' needs. In contrast, the latter design philosophy would impose less need on the user for developing technical expertise, and thus enable more widespread use, however at the cost of forfeiting control options and adaptability to the user's own purposes.

However oversimplified the questions and positions in this debate may have been formulated, what emerged from that debate were different preconceptions of what should be the guiding principle of design towards participation. These seem to resonate with ongoing debates about the social aspects of computing: Should the first principle be usability – the possibility of using a system towards a given purpose with as little effort, as much efficiency, and perhaps even as much pleasure as possible –, or should it be functionality – the availability of a wide variety of functions in a system, and of the means of controlling them?

Generally, functionality and usability are seen as two aspects of any user-oriented technology that, although being different aspects, both have to be properly accounted for in design (Goodwin 1987, Davis 1989, Shackel 1991, McNamara and Kirakowki 2005). The questions are, firstly, whether ease and simplicity of use on the one hand and versatility and depth of control on the other inevitably compete with each other, implying trade-offs in design solutions, or whether they need to be interpreted as complementary and mutually supporting.[2] Depending on the answer to this question, it may be asked, secondly, whether usability and functionality are on equal footing, or whether one of them may have, generally or under certain circumstances, preference over the other. Most certainly, the meaning that is given to the terms "usability" and "functionality" bears on the answer one will consider appropriate to these questions.

The standard definitions in the discourse in question seem to be clear at least about what the concept of functionality means: It refers to a set of functions offered by, or associated with a technological system – capabilities it has, as mapped onto the purposes to which it should be used. Plainly and simply, a functional system is one that has the capacity of serving a certain set of purposes. In the case of computers, functionality revolves around questions like what tasks can be fulfilled with a certain program, or with a certain configuration of software and hardware, and how they can be fulfilled.

Things seem a little less clear for usability, given the many competing definitions in the literature on usability: It could simply be the property of a system of being capable of being used towards its given purpose – as would fit the word's etymology. It addresses the properties of the system and/or the conditions around the system that allow the user, given his or her level of technical knowledge, to actually use the functions offered by that system. In the case of computers, usability particularly matters for issues of interface design: What means of configuration are offered to the user? How are the functions of the system made known and displayed to the user? What conditions would impede or facilitate perception and use of those functions?

On this definition, usability is the flip side of the coin of functionality: While functionality is the property of a device or application of offering certain effects that may serve a certain purpose, looking, as it were, with a technical eye from the system towards its purpose, usability is the property of offering certain ways of achieving the effects in question, looking from the system to the user under psychological and, to some extent, sociological premises. Obviously, functions that cannot be used, for want of accessibility, would be just as pointless as user-friendly interface designs that would not give the user access to any functions he or she wanted to use. So much can be taken for common sense.

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[2] Goodwin(1987) strongly argues for complementarity, as do McNamara and Kirakowski (2005), who further differentiate the user related aspects into usability proper and user experience, while Jordan (2000) favours a hierarchical view.

But on closer inspection of the usability discourse, a variety of different interpretations emerges: Usability may refer to the effectiveness and efficiency with which a system can be used – the traditional definition which is partly preserved in ISO and IEEE standards –, or to the usefulness of a system as perceived by the users, in conjunction with their degree of confidence and satisfaction accounting for the system's acceptance by users (Davis 1989), or even to the quality of the user's subjective experience as such (Thomas and Macredie 2002, McNamara and Kirakowski 2005). Thus, usability may be a category allowing for quantifiable measurements (what are the costs of error detection and correction, and of learning commands and procedures required for proper usage of a system?), or it may be a domain of statistical generalisations from users' subjective behaviours towards a model of acceptance of a technology, or it may be a category reserved precisely for the non-quantifiable, intrinsic and essentially subjective aspects of using a technology (do users feel safe and comfortable when using a system?) – or it may be a mixture of either of these approaches (Gould 1988, Nielsen 1993).

Another question of at least equal importance is whether one perceives usability as a property of the system taken by itself, or whether it is a quality of the interaction between system and user, thus shifting the focus on the particular contexts, predispositions, and environments of use.[3] The latter position has gained much credit since the 1990s.

2 What Users Do

Our purpose here lies not in settling the issue of the correct definition of usability. In fact, there may not be one definition that fits all purposes. Broadly speaking, the choice is a matter of one's interests (research and other), and of the nature of systems in question:

1. Efficiency is a criterion that is operable in investigation of work environments, and usability would best be defined in these terms when looking at work-oriented applications, viewed from the perspective of optimising procedures towards given tasks.

2. Subjective well-being, on the other hand, becomes an issue if one takes the entire work situation into account, seeking to improve it beyond the level of task fulfillment, namely towards task definition. Empowering the computer workers towards greater autonomy in defining not only *how* to do their work, but also *what* they can do, was one of the main motives behind the participatory design movement which originated in Scandinavia in the 1980s (Bjerknes, Ehn and Kyng 1987).

3. If attention is focused on consumer oriented applications that are not, or not exclusively or mainly, tailored to work environments, so that measurable, standardised criteria of efficiency and work satisfaction are not applicable, the aspect of "user experience" becomes a key topic in designing and evaluating applications. This interpretation of usability will be of foremost interest to market researchers and anybody with a commercial interest in selling these products.

It is little surprising that the "new usability" discourse emerged when computing went beyond the comparably fixed and predictable work environments and into the many small devices of everyday usage in all kinds of contexts.

Following these observations, the right balance between usability and functionality, too, is an empirical issue. The answers to both questions depend, firstly, on the given context, and, secondly, on the concepts of user agency employed in each case. These concepts seem to be different in the three examples outlined above. If actions are behaviours of a person that occur purposefully and voluntarily, then a person's or a collective's agency consists in the ability to

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[3]As Shackel (1991) programmatically put it: "Designers must see the user as the centre of the computer system instead of as a mere peripheral". See also the distinction between "quality of use" and "quality of experience" in McNamara and Kirakowski (2005).

determine their own courses of action. The ability to determine one's own courses of action depends on the possibility, firstly, of determining one's purposes, that is, goals and reasons for acting in a certain way, and, secondly, on being in command of the appropriate means to fulfil those purposes.[4] These conditions, in turn, are dependent on, and vary with, the specific environment in which a course of action is placed, where the "environment" is to be understood as a specific set of relevant conditions one encounters in his or her surroundings, not as the surroundings in general. It may be a different environment at different times to different individuals, or perhaps even to the same individual at different times. This environment consists of other people, of institutions, natural conditions, infrastructures and artefacts that enable or constrain certain actions, to which purposes and actions are directed, and which also may function as means to those actions.

If technologies thus are part of one's courses of action, and if they are supposed to support users' agency, the expectation is that, in the context given, they enable the definition of purposes that would not be attainable without them, rather than constraining it, and that they are suitable and available as means of attaining the so-defined purposes. What is different in the examples above are the sources of the purposes, and the weight that is given to the means to those purposes: User agency may be viewed as the fullest control possible over means *and* purposes of action, implying participation in the definition of purposes and in the design of the means, as in (2), or as the ability to freely choose from a pre-fabricated set of means to meet pre-arranged purposes that one has consciously selected, as in (3), or it may mean being equipped with the best pre-fabricated set of means available to meet fixed purposes that one may not, or only partly, have chosen oneself, as in (1). Our suggestion here is that practical definitions of user agency like these are the level on which the disagreement between our philosophers above, and the competing definitions of what usability and its relation to functionality is, are best analysed.

In the following two sections, we will present some historical observations on the history of personal computing, and, viewed through the lens of the concept of user agency introduced above, critically compare them to current developments, where computers not only have become a consumer commodity, but also have paved the way for so-called "information appliances", to whom, it is said, the future of ICT use belongs (Bergman 2000, Norman 1998). Among this range of products, main attention will be paid to mobile broadband devices and applications, since their functions and design seem to inhabit a somewhat uncomfortable, but highly revealing middle ground between personal computers and single-purpose information appliances, from which they may further evolve into either direction – or one of their own, opening new perspectives for user agency.

3 Creating a Universal Machine

The philosophers' argument highlighted different philosophies of personal computing. These different philosophies, with their different views of what is truly important in personal computing when it comes to user agency, can be traced back to different historical stages of the development of that technology, and they represent different groups of users:[5] Technology

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[4]This, of course, is an abstract definition of the concept of agency, not an empirical description of how actions work. All sorts of outer constraints apply, as well as imperfections and mistakes in conceiving of one's purposes occur – without necessarily disqualifying a behaviour as an action. The philosopher's answer to this problem is that a behaviour is an action if there is at least one description that the person displaying that behaviour would give under which it appears as occurring purposefully and voluntarily: Davidson 1980.

[5]We are taking the following historical observations from the chapter on personal computers in Weyer et al. (1997). On the basis of historical accounts like this one, the authors of this book are making a systematic point on technological innovation in general: The hypothesis is that innovation is defined not by some sort of logic or dynamics inherent to the technology itself, but by constellations of actors that change from informally connected pioneers in a highly volatile and marginalised field through a phase of stabilisation, in which institutional actors

enthusiasts and application users, which in turn can be divided into expert (mostly professional) and general users.[6]

A defined group of technology enthusiasts was the driving force behind the development of the personal computer, acting in an autonomous space of activist networks, mostly of Californian origin. In fact, the development was driven by users who basically *were* designers. They were grassroots computer enthusiasts and visionaries whose primary interest was the technology in itself and as such. Usability was not an issue to people who bought (and manually mounted and set up) an Altair computer – whose user interface consisted of an array of switches with which to enter binary code (one for each bit of one byte, and one for "enter"), and a set of little diodes that responded to a given input. Exploring the functions of a computer for oneself, in one's own workshed, for the sake of bringing computing home, was the purpose. Indeed, the purpose was a participatory, and often deeply political one, because home computing activism was concerned with wresting computing from the hands of the centralised, bureaucratic, hierarchical institutions that hosted mainframe computers, and giving it to the people. Things have somewhat changed since then.

Back then, none of the established computer manufacturers like IBM was structurally capable of thinking about such adventurous and commercially unpromising endeavours like creating economically affordable stand-alone computers for individual use. Initially, individual use did not mean using the machine towards any other purpose than trying out and expanding their capabilities. Applications were experimental in form and purpose, and the systems' performance was utterly humble, as compared to the mainframe technology already available. The main usability-related issue was the invention of programming languages for personal computers that allowed for more efficient and convenient programming than tediously entering binary code. First ventures towards task-oriented applications for non-technically minded users were not overwhelmingly successful, as, for want of user-oriented design strategies and experience, those systems did prove not to be very reliable and usable.

A significant population of application users only emerged when established computer manufacturers entered the field that had been prepared for them by the Do It Yourself practitioners to a state where the corporations began to see some commercial potential. Very roughly speaking, there were two target groups:

1. People in business and administration that had been users of business machines before. Their purposes were not technical, but task-oriented: doing calculations, producing, designing and archiving documents, creating data structures for quick retrieval. In the early years of commercial PC applications, systems and programs were tailor-made to the client's needs. Off-the-shelf solutions were not available, and initially had little potential, as the technology had to be crafted towards certain uses instead of offering universally applicable solutions.

2. Home computing enthusiasts who used computers for purposes of education and leisure. Here, off-the-shelf solutions quickly became the norm, with the overall goal of making computer technology affordable and accessible on a large scale to mid-income consumers with no special technical training. Machines were generally more simple and unspecific as well as less powerful in their functions (games, word processing, BASIC programming), but suited the equally less specific purposes of their users well enough.

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enter the field, to diffusion, where large corporations and other institutions dominate. This is where the (utterly non-linear, frequently branching) paths of development are repeatedly opened and closed.
[6]These groups should not be interpreted as general types of the innovators/ early adopters/ early and late majority schematism in so-called "diffusion of innovation" models. As such models prove to be in need of modification when applied to concrete cases, and as they presuppose a linear, inherently progressive, and non-disruptive model of technological innovation, they beg the very question of how technology develops. The classification proposed here is constructed from the concrete history of personal computing. In case of the first group at least, it refers to a real-world collective, and it is not meant to allow for more than very limited generalisation.

The home computing market blended into the personal computing market in the early 1990s, when personal computers became standardised and economic enough to be available to home users – while, in the meantime, most business PCs have become part of complex local networks that need professional administration, which in effect means a return to centralised, hierarchical structures.

Users from both target groups had need for accessible functions that did not require profound technical skills, but the levels on which these criteria were defined varied significantly: While for professional users, the limitations included the willingness to learn complex sets of commands and menu structures of, for example, a statistics program, but would not include a willingness to learn to modify its code, home users often were eager to learn simple BASIC programming to adapt their machines to certain functions in the first place, and to playfully acquire programming skills, but generally would settle for plug-and-play convenience wherever available.

Although it may seem that the entire scenery of the computing world has dramatically changed, each of the aforementioned groups – technology enthusiasts, expert and general users –, each with their own modes of usage, has found its niche in present-day computing practice: Technology as a purpose in itself, or as a means of social participation is still highly valued among a highly active and interconnected minority – the Open Source movement and Wiki enthusiasts, for example. At the same time, there is a market for highly specific, advanced applications for specialised purposes. The majority, meanwhile, is made up of general consumers using computers towards a variety of everyday purposes.

Functionality is a key topic for the former two, albeit on different levels ("What can the machine do?" vs. "What can it do for me? "). Usability is a key topic for the advanced, expert user, who however has the strongest need for a good balance between the two criteria. The casual user, on the other hand, may only need a few not too sophisticated functions to meet his or her purposes, while strongly relying on their usability. Or so it seems.

The heterogeneity of users suggests that neither a fixed position on an imaginary scale between usability and functionality (if we treat these aspects as competing, implying trade-offs), nor the perfect blending of the two (if we treat them as complementary and synergetic), may hold the ultimate answer. The way users are best enabled to define their purposes, and to choose the means towards these purposes, as well as the extent to which users are thus enabled, depend on their knowledge, interests and social roles and positions.

Consequently, the solution to the philosophers' argument may be as simple as this: A good design in terms of enabling users to produce, receive, and manipulate information in accordance with their capacities and interests is one that allows for different modes of access to a system that each user can adapt to his or her own needs. Customisable interfaces that, depending on one's wishes, use or transcend the well-established desktop metaphor, and its advantages and limitations, seem to be the answer – and it is available, to some extent: Open Source operating systems with variable graphic user interfaces, applications, and means of securing interoperability between them. This answer may work for personal computers, as it endorses the view of the computer as a "universal machine", which has been one of the key ideas, perhaps *the* key idea behind computing as such. But how might this relate to the "information appliances" mentioned before?

4 Limited Designs

The concept of information appliances highlights a significant departure from the idea of computing technology as the creation of a "universal machine" – a machine that can be made to meet any variety of tasks in information processing. Although the concept itself, as developed by Turing (1936), was highly abstract, and it was not intended to deliver a

blueprint for real-world machines, it exerted a strong influence on computer science and the science-led development of real-world computers.

Computers were meant to be an indefinitely flexible match to the intellectual generalism of people, augmenting their memory, their calculating capacities, their orientation among available informations in any direction desired.[7] The hardware-software distinction may be cited as the technical incarnation of that principle: To change the task the machine was to fulfil, one did not have to re-wire it, but (at least in principle) only to input semantically and syntactically correct instructions. The mode of interacting with machines thus changed significantly, in direct conjunction with the ultimate functions given to them.

What has been preserved in the concept of information appliances is that the predominant mode of interacting with them is via symbolic language in an extended sense (icons, folders, menus, virtual keyboards etc.). They also retained the basic nature of the computer in terms of their inner architecture: processor, storage device, and some kind of hardware-software distinction. What is not retained is the very idea of a universal machine, which is replaced by a concept of networked single-purpose, or limited-purpose machines: "An information appliance is designed to perform a specific activity, such as music, photography, or writing. A distinguishing feature of information appliances is the ability to share information among themselves." (Norman 1998, p.53) The concept of universality, while sometimes being acknowledged as an advantage of computers over information appliances, is generally taken to be an obsolete impediment, for offering excess functionality that makes use difficult (ibid., p. 60 and ch. 4).

For this reason, information appliances, it is said, should not only be maximally usable, but pleasurable, and functionally self-evident to average consumers, who are the customers primarily envisioned. Consequently, these appliances are designed for a highly individualised use, that is, they are designed under the premiss that users will need to learn and adapt the available functions on their own, or at most in communication with their peers. No kind formal training shall be a precondition for using the appliance.

The acknowledged cost is that the devices' functions and possible uses are fixed, and expressly limited (Bergman 2000, Norman 1998): They may not allow for extensions and upgrades, and thus significantly fall behind personal computers in terms of configuration options (modifying the operating system, installing additional applications, (re)-programming source code). Generally speaking, options for 'looking under the bonnet' of the device one is using are largely absent, and purposefully so. A digital camera can take pictures and do some video recording, and organise and share the data. A portable MP3 recorder offers very much the same for audio files. A business calculator can handle difficult and highly specific financial calculations, receive exchange rates on-line, and share the data. Additional tasks ask for additional devices, all of which are supposed to communicate with each other without first requiring tedious installation and configuration procedures.[8]

However, an interesting case in question are mobile broadband devices and applications – third generation (3G) mobile telephones, so-called smart phones, and personal digital assistants (PDAs) with mobile telephony and broadband functions. What makes them so

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[7]In fact, the very concept of artificial intelligence would never have deserved serious attention if the challenge of computing had not been the simulation of at least some of the most important human intellectual capacities – thereby implicating theories about what the most important of those capacities are. The longest lasting critiques of artificial intelligence were those that sought to prove that computers inevitably fail to simulate the most important human intellectual capacities (Dreyfus 1992, Gunderson 1985, Searle 1980).

[8]Presumably, at least given the present state of the art, there will be a personal computer used to ultimately store and organise the different data, so that, at least in this function, has not become obsolete.

interesting is a certain kind of dialectic between their intended functions and their limitations:[9]

- On the one hand, they are supposed to be information appliances in the sense described above. Bergman (2000) discusses some of them as paradigms of this category. Their purpose is not only to augment mobile telephony with multimedia functions, but to move beyond it by providing internet and email applications as well as location based services and mobile television. Rather than as telephones, they are designed as mobile communication and media centres whose functions address the user's current local situation. This versatile, but limited set of functions is intended to be available in the form of pre-configured, ready-to use, easily accessible applications.

- On the other hand, the interface design of many mobile broadband devices (especially Windows CE operated ones) is modelled on the personal computer, providing the user with a desktop environment, including windows, folders, and even some office applications – however in a form stripped down so as to fit the technical limitations imposed by small displays and storage space, partly bereft of the WYSIWYG principle, and sometimes displaying, but not enabling editing of formatted text or spreadsheets. Another (fading) limitation are so-called "walled garden" services, where only limited, tailor-made on-line contents are made available by service providers.

In spite of these latter shortcomings, mobile broadband providers hope that the features of smart phones and their kin, and the applications implemented therein, will finally break the ground for 3G mobile telephony and broadband services – ultimately providing the potential users with the rationale for actually switching from standard GSM mobile telephony to 3G. Only then the available, and still expensive, bandwidth would be effectively utilised, giving the technology a chance to compete with, and stand out against, other wireless online technologies that are, like WiFi, designed for mobile personal computing. Consumers are told that mobile broadband devices and applications will define the future of telecommunications as such, providing maximum flexibility and mobility to the user by way of integrating as many functions as possible into one small, handy, and universal device. This promise is still awaiting fulfilment.

At first sight, technical limitations may be held responsible for the rather slow adoption of mobile broadband technologies. Interestingly, sales of 3G phones and similar devices increase considerably quicker than the use of the mobile broadband applications for which they are built does. For example, in Germany in 2005, only 11% of smart phone users used the mobile internet services available, and only 10% of the available bandwidth were actually utilised, even though providers as well as devices now allow access to full web content instead of walled garden solutions (c't 2005, Grünberg 2005). One might blame this on shortcomings in implementing these functions. One might expect that, once these limitations are overcome, the information appliance design philosophy will prevail: Users-as-consumers will endorse limited functionality, which should perfectly cater for their needs, as long as the available functions are properly implemented and easy to use. Since the trade-offs in terms of functionality will not affect most users most of the time, they will mostly pass unnoticed, while the remaining functions are easy, intuitive and pleasurable to use.

But upon looking closer, this expectation may seem unwarranted, or at least its fulfilment may not be sufficient for ultimate acceptance of the mobile broadband. In a certain way, the information appliance design philosophy does not seem to be consistently employed, as a variety of personal computing functionalities (e.g. rudimentary office applications) and interface design features (e.g. the desktop metaphor) are somewhat crammed into the small

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[9]It should be openly admitted here that the following assumptions are not based on systematic research, but only on limited surveys, mostly of the German computer press, and on anecdotical observations. This, of course, turns them into tentative empirical hypotheses that have to be critically evaluated and tested.

and delicate machines, in order to reproduce at least some aspects of the PC's universality. Mobile broadband devices fall into the range of information appliances, but at the same time they try to mimic the functionalities and the interface designs known from personal computing, without always convincingly doing so, and seemingly without their designers always paying attention to the conditions and the premises under which they are used.

In the first place, mobile broadband devices are still distributed, and very likely perceived and used, in the context of mobile telephony, which may not be helpful to them in developing a profile of their own. At the same time, the environments in which they are used are likely to be marked by low attention and manifold distracting factors that are normally absent from the more predictable use contexts of personal computers. Moreover, the usage of mobile devices in general often makes reference to the very fact of mobility, that is, of being at a specific location when communicating. The purposes to which mobile broadband devices are used may be closer to those of standard mobile phones than to those associated with mobile PCs.

If these assumptions prove to be empirically valid, the trade-off seems not to be between design considerations of functionality and usability, but between the functions intended in design and the, rather different, environment of use in which they have to prevail. This criticism may be read as a call for design strategies that account for the differences mentioned, and as a call for paying close attention to the real-world adoptions of mobile broadband applications by their users. Perhaps developers just have to decide whether they want their machines to be mobile phones with some extra functionality, or real mobile PCs in pocket format, or whether they should, alternatively, focus on functions and interface designs that will sufficiently distinguish them from either.[10]

However, the above criticism may be also read as the overture to a critique of the information appliance design philosophy as such, in the name of user agency: Influential works like Norman (1998), who frequently refers to what *the* user's true need is, seem to suggest that "the user" is a monolithic entity, just as if the general consumer were the necessary end result of any successful development of a use-oriented technology, other user groups being mere transitional stages towards this final state, and as if the possible uses of a device or application could be fully anticipated and determined in advance.[11]

But, firstly, the discussion of the development of the personal computer, and the technology enthusiasts, early adopters and majority consumers involved in it on different levels at different stages, and the observation that these groups continue to co-exist, may serve to suggest otherwise. Of course, from the perspective of mass marketing, anyone but the general consumer may be a *quantité négligeable*. But even so, why should taking the possibility of control over the functions and configuration options away from the users benefit them?

Secondly, the uses and adoptions of a technology frequently diverge from the uses originally intended, and they do so in different directions according to different users' needs. There are many examples, the most popular one certainly being users' adoption of the SMS function of mobile phones, which they transformed from a service message broadcast medium into a medium and style of instant written communication between individuals. Observations like this one may be generalised to the level of a conceptual argument, as it has been proposed by

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[10]Navigation tools and location based services, both of which take advantage of the fact that smart phones are a mobile device that is used under the conditions of mobility – travelling, finding one's way, searching for information about newly encountered locations – seem to be the most promising innovative and distinctive functionalities for those devices, with their promise to assist users in genuine issues of mobility of the kind "How do I get to *p* from wherever I am now? What will I find there? What do I need to find there? "

[11]This does not necessarily imply that the mobile industry itself favours such a monolithic image of the "general user". However, it is has a need for generalisations, which always tend to miss many interesting nuances. For the industry, of course, sales figures rather than accuracy of description are the proof of the generalisations made. See Green et al. (2001).

etiological theories of function:[12] The function of anything that people use is the result of a history of uses to which that thing is put, and of the effects that it displays on these occasions. These effects, if frequent and consistent, enable its continued reproduction. A thing's function is not something that could possibly be determined in advance, on the level of design purposes. That is, functions are, and probably need to be, explained historically, which generally prohibits broad generalisations towards the future.

Trying to determine who the users are and what the uses shall be thus may prove to be a vain effort, as it does not acount for the peculiarities of user agency: That agency may be limited by all sorts of constraints, but it is a highly flexible, adaptable, and often unpredictable trait of human beings. People select the purposes and means of their actions under the limiting and enabling conditions they encounter in the environment in which they act. Technical artefacts and infrastructures are part of that environment, and thus are part of the limiting and enabling conditions under which actions take place. The selection of purposes and means, even if it may not follow the paradigm of "optimising agents", occurs in response to those conditions, with the aim of enabling beneficial courses of action. What these beneficial courses of action are varies with the conditions in the environment, and with the knowledge, interests, and means available to the agents. Moreover, the fact that the question of user agency concerns technologies does not imply that it is restricted to issues concerning the use of technology, that is, issues of functionality, accessibility, or technical knowledge. The ability to use technologies is one contribution, among others, to the general agency in a social environment in which using these technologies is relevant for partaking therein.

Thus, the seemingly paradoxical picture emerges that, on the one hand, some technologies may not be designed for any sort of emancipatory purpose, but can be found to enable their users to forms of interaction and social participation hitherto unknown. In certain respects, and with some caution, this can be said of the information appliance named mobile telephone.[13] On the other hand, we may find technologies whose originally intended purpose was social empowerment, but whose modes of use may be found to be difficult and exclusionary at times. This seems to be the case for personal computers. However, the principled openness of the design of personal computers leaves much potential for adapting and configuring them to meet, and perhaps also to define, one's own specific purposes.

It may seem ironic that this is precisely the one aspect that has been sought to be designed away from mobile broadband devices, in the name of the user, who now has less of a choice as to which functions to use, and which ones to omit. It may be too early to say what users will make of this seeming constraint, but if mobile broadband technologies really prevail, their uses and functions, once selected, are likely to turn out to be something very different from what they were intended to be. Keeping the doors open to a greater variety of adoptions by a great variety of different users, and thus to let them define by themselves what is functional and usable to them, may not only improve the chances for success of the mobile broadband.[14] It may also improve their agency as social beings.

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[12]The most refined theory of this kind is to be found in Millikan (1984). Interestingly, these theories mainly aim at the functions of biological traits rather than at technical functions, using arguments from the theory of evolution, while assuming their general applicability to, among other things, technical artefacts. It may be that the standard engineering-oriented view of technical functions tends to obscure this possible explanation.
[13]For a comprehensive survey, see Katz and Aakhus (2002).
[14]An interesting example is the open-source, Linux-based development of the so-called GPE environment for palmtops and smart phones that allows for the development and implementation of a variety of applications by users themselves.

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e-Semiotics For Romanian-German Trans-Cultural Interfaces

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"A picture is worth a thousand words.
An interface is worth a thousand pictures."
Ben Shneiderman

Abstract

The 21st century has been marked by the broadband technology and it has imprinted its features to the environmental gadgets that are surrounding us; therefore it is required an imperious ability of adapting to continuous changes, however the benefits are clear-cut: flexibility, the availability of information in real time, and certainly the linkage between farthermost people.

In this regard, the paper is presenting a trans-cultural interface based on images besides language, benefiting from broadband technology in order to link people belonging to different cultures.

The idea was also undertaken in a previous inquiry [1], taking into consideration the gap between technological offers and user expectations, hence illustrating the necessity of anthropocentric interfaces ('user-pulled') and revealing the dangers of current ICT designs ('technology-pushed') [3]. Moreover, it came out with a solution for merging the two complementary premises of a communication between humans belonging to different cultures within the EU: preserve cultural identity and create a common denominator between national identity and the European one ('Unity through Diversity'): the trans-cultural interfaces.

The current paper extends the previous researches and takes advantage of the event "Sibiu and Luxemburg European Capitals of Culture" by focusing on particular target users: Germanophones and Romanians.

Introduction

Thanking into consideration the opportunity of implementing a trans-cultural interface on the occasion of the event "Sibiu and Luxemburg Capitals of Culture", the paper is intended as a notice for those who have still doubts regarding the communication in the broadband era.

The interface facilitates the gathering of different cultures in a real communication based on a common denominator, in this particular case, the culture. For example, the Celtic influences in both Romanian and German mythology can represent a common denominator for these cultures. Moreover, the interface addresses the users who have a specific degree of knowledge and at least a medium scholar training. Even though, the interface is not meant to limit the users and therefore a special designed ontology will help the potential users to exploit the benefits of broadband society.

Motivation and Intention

Given the broadband technology, this trans-cultural interface is meant as an instrument for communication in the broadband society, i.e. the Internet, assisting the *Netizens* [5] in achieving a real-time communication between different cultures.

The architecture, based on a common ontology, can be easily implemented in a short time by a trans-cultural team. The interface is intended to be anthropocentric (human-centred) which can be translated in nowadays IT as a system tool intended for human use, the human being its *reason d'être*. As Bărbat explains in [2], the characteristics of anthropocentrism are: a) the machine is shifting the role with the human; it will "do the job"; the interface complexity should be the burden of the computer (including here the adaptation to the proper language); b) the evolution must be seen as the change from the (inter)action with a tool to the interaction with an assistant. (The *assistant* metaphor suggests that the interface is following the human assistant/apprentice's behaviour, who, by observing and learning, seeks to adapt to assisted person's needs and preferences in order to become more experienced).

The trans-cultural communication is important because it is both necessary (in our arabesque-like Europe with 27 countries and even more valuable cultures) and affordable (due to broad-band technology). Whereas conventional translation is impossible without a dictionary, "trans-cultural translation" is unthinkable without ontology. Far from being merely a software tool for interface design, the ontology plays a key architectural role in preventing semiotic distortions in conveying messages (i.e., the harmful difference between "intentio auctoris" and "intentio lectoris" [4]. As a corollary, the trans-cultural ontologies should constitute the object of a trans-disciplinary research in its own rights.

Architecture

The interface is designed as an anthropocentric (human-centred) tool endeavouring user's requirements and it makes possible the communication not by translating the words, but by using the *semiosis* [4] for understanding the meanings of the images and the associations between related areas of interests for both of these cultures.

The anthropocentric design is based on several principles: it should ease human job and interface complexity should be the trouble of the system, not of the user; the shift from interacting with an instrument towards interacting with an assistant has to be acknowledged and promoted; anything visible to the user regarding the system behaviour or structure, excepting the interface, is useless and might become harmful and the last but not the least, in order to able to manage it, all interaction should be based on models explaining how user intentions are converted into system actions. Thus, ICTs have to be anthropocentric, so as to stimulate all kind of users in adopting new working styles and/or acquiring new skills.

Emphasizing the principles of anthropocentrism the interface is facilitating the process of communication whereas translation will progress from textual, semantically correct, to multi-modal, culturally adequate, based on a common ontology created by a trans-disciplinary team.

Interface model

The designed interface is presented, by corroborating the depiction with examples from German and Romanian areas of interests. Among, the examples are: when chatting about music, the users communicating on a specific subject as brasses (wind instruments), point the image of a horn, the analogous *bucium* in Romanian and *Alphorn* in German as depicted in Figure 1. Moreover, as shown in several surveys [7], [9] people from different countries tend

to accept diverse kind of icons depending on the nature of their design (from realistic to abstract).

Extrapolating, the precise examples can transcend to a more culturally adequate level dealing with archetypical connotations; the relation between the old sculptured wood-gates of Maramureş which are strongly rooted in the archaic Romanian symbolism with imprinted Celtic influences.

The *wood-gate of Maramureş* was also referred at as arch of solar triumph and chopped altar in eternity by chisel and soul. It is said that in the past the tradition was that the people of Maramureş had to firstly chop up their gate – as a sign of ownership when building the house, for the reason of passing to timber under the gate as a meaning of luck and protection. The classical signs of Romanian mythology are deeply inlaid in the gate. The tree of life, the stars from the sky, the rope of endlessness, the primordial snake, the magic rooster and the solar wheel with four wooden-spokes (borough symbol from Celts) having all of them an important significance in the folk's belief and forming together a real monument of folk culture.

Fig 1. A common denominator for both cultures

The Romanian *bucium*		The German *Alphorn*
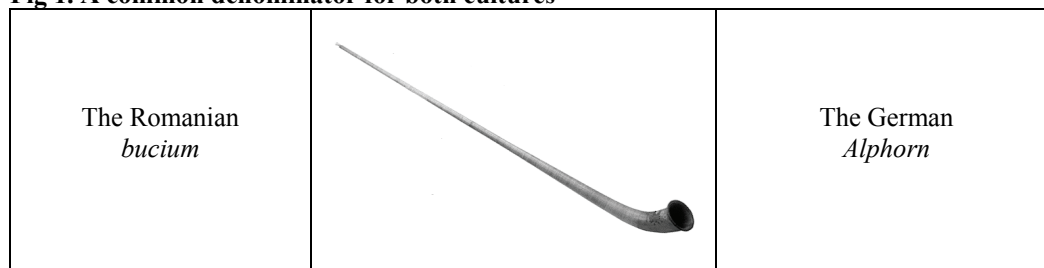
The wood-gate of Maramureş as well as the wooden-crosses from the *Merry Cemetery* are chopped from oak not only because of its strong essence but also because of its sacral importance; the oak being the second tree in the Romanian mythology after its connotation. In comparison, the Celtic Wheel of the Year was a Celtic lunar calendar having thirteen months. Extra days as needed were added at New Year's as a time between times. The wheel of the year was divided into eight segments, each with a corresponding festival. The four fire festivals took place on the last evening of a month and the following day because the Celts, like the Jews, count a day from sunset to sunset. That's why it is celebrated All Hallow's Eve, Midsummer's Eve, and so on. These four fire festivals are tied to the agricultural cycle as follows: Samhain, Imbolc, Beltane, and Lughnasadh [6].
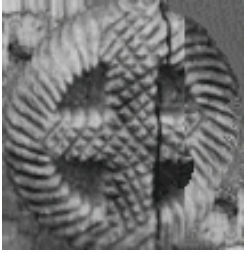
The only real differences between Germanic and Celtic religion seem to be the names by which the Gods are called. A Viking of the tenth century would likely have felt quite comfortable in a Celtic ritual among the Gauls a thousand years earlier. Celtic religion deviates from the Asatru norm no more than do, for example, a priestess of Freya in Iceland and a warrior pledged to Wotan in Germany in Herman's time. Indeed, one is inclined to say that there is only "European religion" - and that the Germanic and Celtic beliefs are two expressions of it. Also Celtic-Germanic unity flies in the face of the assertions that since Europeans often boast roots in different countries there are somehow mixed ancestry. The Northern peoples are essentially, in both their physical aspects and in their ancient religions [8].

As we can depict from the trans-cultural features described above, both Romanian and German cultures share Celtic mythology as a key attribute in their own culture. Therefore, in a conversation about Romanian wooden-gates and Celtic Wheel of the Year, a German person can relate the Celtic influences from the Romanian culture and mythology with his

own culture by recognizing Celtic religious influences in his culture, for example the *Gartenzwerg*.

In German culture the *Gartenzwerg* is also inspired from northern mythology. The religion of the ancient Germans, the same with that of the Scandinavians, contained Alfs, Dwarfs, and Giants. The Alfs have fallen from the popular creed, but the Dwarfs still retain their former dominance. Unlike those of the North, they have put off their heathen character, and, with their human neighbours, have embraced a purer faith. With the creed they seem to have adopted the spirit of their new religion also. The German Gartenzwerg or the *German Garden Dwarf* became an omnipresent character in German gardens, but also in other cultures because of its guardian qualities.

Fig. 2. The Celtic influence in Romanian and German cultures

a) The wheel with four wooden-spokes	b) The tree of life (Der Lebensbaum)	c) The Gartenzwerg

Hidden threats

Here "hidden" means both "unknown" and "concealed". The main threat is the temptation of gadgets: since implementation becomes so easy, technologists are tempted to develop (almost effortlessly) multimodal interfaces, beyond their expertise in the application domain. If multimodal interfaces are designed by technologists (and not by social scientists and/or humanities professionals) i.e., if dilettantes are involved in "translations", the danger is to blur the crucial difference between creative metaphor and deadly equivalence.

Some examples of occurrences of hidden threats:

- At the highpoint of the West-Berlin blockade, when President Kennedy came to Berlin, he made a (rather cultural than) grammatical error by saying "Ich bin ein Berliner". Kennedy should have said "Ich bin Berliner". By adding the indefinite article "'ein", he referred to himself not as a citizen, but a non-human Berliner, a common pastry.
- The word "hamburger" comes from Hamburg. Because "ham" stands for meat, a California chef cooked the first cheeseburger, transforming thus "burger' in a suffix.
- The bowler (Figure 3.a.) was the traditional headwear of London city gents and has become something of an English cultural icon. However, most young English people nowadays have never seen a bowler hat. The threat is when deciding what gender wear that hat, because in Bolivia women wear it too (Figure 3.b.).

Fig. 3. A bowler as cultural symbol and as possible confusion

| a) bowler | b) woman from Bolivia |
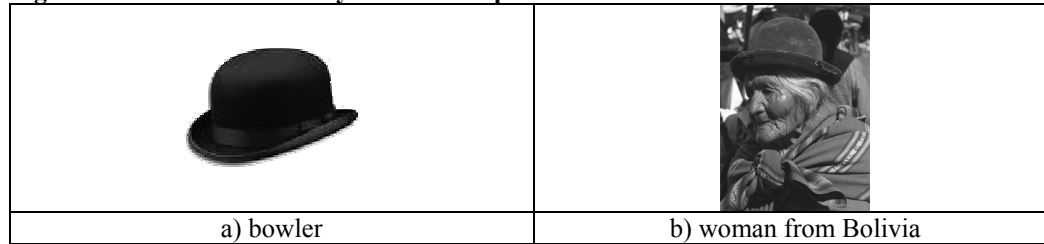
Conclusions and future intensions

The interface is planned to be presented in 2007 on the occasion of "Sibiu and Luxemburg European Capitals of Culture" by a trans-cultural team. The further research goes for challenging the opportunities of integrating trans-cultural interface approaches in common web technologies, these facilitating in this extent the comprehension of cultural importance regarding the considered idiom. The interface will be continually improved due to the constant changes in technology that will facilitate new prospective ways of communication between people of different cultures.

The nature of the interface model at this stage does not allow drawing clear cut conclusions as regards end user evaluations. Thus, the conclusions refer to the approach and the architecture.

- It seems unavoidable that ICT users, as communicators, have to share a coherent communication paradigm – no matter the technological infrastructure involved. Thus, trans-cultural communication based on multimodal interfaces will be necessary.
- If social scientists and/or humanities professionals dare to become a kind of users' "ombudsman", then they shall promote anthropocentric interfaces in order to enable the users to take advantage of agents as their assistants, else, users will remain prey of "technological determinism".
- Users should press for a brand certificate ensuring "User-Need inside" (instead of "Intel inside"), to be awarded only when the interface is designed involving them from the beginning (applying the Scandinavian method or the ethnographical one).
- Albeit risky to generalise after implementing just a few examples, it seems that the design effort is very unbalanced: about 10-15% for software engineers and the rest for sub-domain specialists.

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Young Italians' Crossmedia Cultures[*]

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Abstract

The paper discusses the findings of a qualitative study aimed at investigating the development of new crossmedia diets and new practices of media consumption and production among Italian young people (14-24).
These practices are certainly enabled by the diffusion of the broadband, mobile media, and the media convergence processes at the institutional and production level; still, these practices are oriented also by factors as age, generational belonging, gender, household composition, the extension of one's social networks.
The study has followed a multi-sited approach to the object of the study, with the adoption of different techniques of investigation (in depth interviews; participant observation with the support of visual sociology; an exploration of Italian online discussion areas).
The findings related to teenagers' and young-adults' consumption practices will be presented here under a perspective highlighting some specificities of the Italian young generation in the development of cross-platform consumption diets, and in relation to several variables. In

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[*] This paper is the outcome of the discussion involving Anna Sfardini (who materially wrote paragraph 1 and 1.2), Matteo Stefanelli (paragraph 1.1 and 3.1), Francesca Pasquali (paragraph 2 and 5), Giovanna Mascheroni (paragraph 2.1), Barbara Scifo (paragraph 3 and 3.2) and Nicoletta Vittadini (paragraph 4).

particular, the spatial-temporal contexts of consumption and the role of social networks and contents on the background of the diffusion of the platforms in the Italian context.

The findings on Italian youth's media cultures, as emerging form the study, provide the chance to reflect upon some relevant issues of the contemporary debate on media convergence: especially, the relation between private and public contexts of consumption, between mobile and domestic media, social broadcasting media and networking social media, linear and non-linear patterns of reception.

1. Media in transition

The increasing complexity of contemporary mediascape, due to processes of digitalization and convergence, makes utterly urgent a wide re-thinking of media change beyond the usual utopias and dystopias. For some years now, the need to rethink the dynamics of media convergence beyond its mere technical dimension has earned prominence across theoretical literature (Gitelman, Pingree, 2003; Jenkins, Thornburn, 2003a; Jenkins, Thornburn, 2003b; Jenkins, 2006; Gitelman, 2006). The digital revolution paradigm, oriented towards the transformative features of digital technology, is thus being replaced by the *convergence paradigm*, which appears more responsive with regards to the multi-dimensional nature of media change, to the role of subjects along with that of technologies, and to the hybridizing and re-mediation mechanisms between old and new media.

This attention towards the forces and the subjects shaping media technologies is one of the striking features of the convergence paradigm. While the advent of new media and the digitalization process provide the conditions for a widespread change of the media system, these same conditions are being actively shaped by the various actors populating the contemporary media environment. That is to say, by multimedia conglomerates (on the offer side), by public institutions (on the governance side) and by the users themselves (on the consumption side). A medium, therefore, can not be defined unless one starts from its accompanying "protocols" and "practices", which shape it on the cultural, economic and social level (Scaglioni, Sfardini, 2007).

The present global phase is characterized by tactical decisions and unforeseen consequences, multiple signals and competing interests, and above all uncertain directions and unforeseeable outcomes. The dynamics of convergence assume different characteristics depending on the specific cultural and economic contexts, which in turn depend upon the various national histories of media systems. We will attempt at giving a (non-exhaustive) depiction of the Italian context, starting from a snapshot of the digital platforms and the relative market players.

1.1 Overview: media change in Italy

While analog television appears today, together with radio, the platform with the highest penetration rate among the Italian population, a look at families' technological equipment reveals highly differentiated diffusion rates among the four typologies of devices and services (ICTs, informatics, entertainment, consumer electronics) that digital convergence is centered upon. According to data from the Ministry of Communications, as of June 2006, the mobile phone remains the most diffused technological device, being present in more than 80% of cases (two or more per family, in the majority of cases). The personal computer's diffusion is limited to less than half of the families (47%), albeit growing of more than 3% since June 2004. However, with regard to the PC universe, market tendencies reflect the deep occurring transformation: in 2006, laptop sales (2.540.000 units) exceeded those of desktop

PCs (2.255.000), and the total of PCs in Italy (counting both workplaces and households) has reached 24.7 millions (data from Assinform 2007 Report).

In the last few years, technological innovation has been driven, other than by the diffusion of the mentioned platforms, by that of new ICT products as well as by the development of entertainment electronics. Concerning ICT, the highest growth rates have been recorded by UMTS and broadband-enabled mobile phones, which finally managed to get over their niche status (UMTS user by the end of 2005 where almost 10 million).

Broadband diffusion speed rates look stunning. On the infrastructural side, the actual technological reference point for broadband, xDSL, is available, as of September 2006, to 88% of the population. On the diffusion side, records show a growth of 20% since June 2004 – penetrating 27% of italian households (and the 38% of connected households)[1]. With regard to consumer electronics, the highest-growing devices are DVD video, DTT recorders, digital cameras, digital camcorders, and, more recently, Mp3 players.

Figure 1. Source: Ministero delle Comunicazioni, Osservatorio Banda Larga – Between (2006)
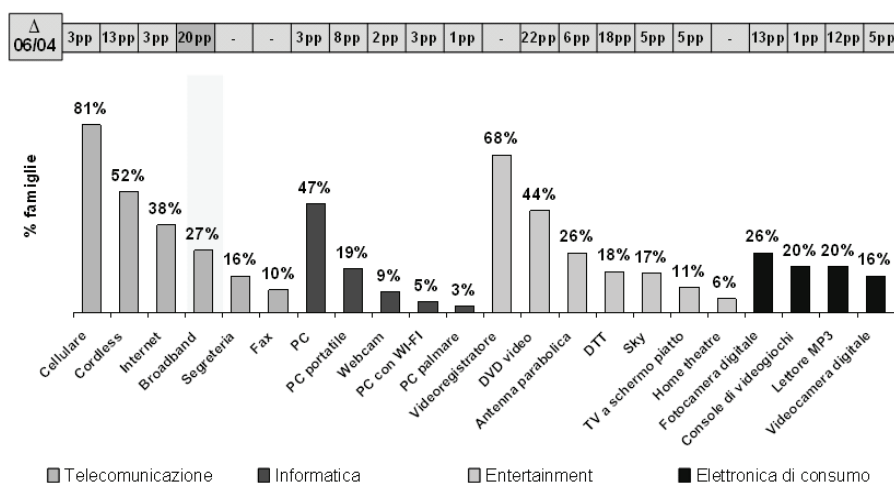
1.2 Television facing convergence in Italy

Within this context, the central medium itself – television – is passing through transformations that are redefining both its role in the scenario and the positioning of its players with regards to the development of the various digital platforms (Aroldi, et alii, 2006; Colombo, Vittadini, 2006). In particular, forecasts predict a strong diffusion of DTT, symmetrically to the progressive extinction of analog television within 2012. This is the date set by the Italian Government for the switch-off, which is going to involve almost twenty-four millions national households. However, these forecasts look optimistic, considering the shortcomings still affecting terrestrial digital television.

The satellite platform, featuring the highest growth rates in the 2003-2007 period thanks to the launch of SkyItalia, should stop growing due to the saturation of the pay-tv market, stabilizing around five millions households.

IPtv diffusion is tied to the growth of broadband connections (estimates predict more than 15 millions in 2012), and only beginning with 2007 it should become a market ripe with offers and contents. Also in this case, however, estimated growth rates – supposed to surpass satellite subscriptions around 2011 - may appear too optimistic. Broadband diffusion might

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[1] Data from Osservatorio Banda Larga (available online: www.osservatoriobandalarga.it).

naturally tie to, and drive, the diffusion of forms of InternetTV, outside the "closed gardens" of IPTv. The diffusion of MobileTV should be approached with even more prejudice, being affected by further uncertainties concerning the prevalence or the co-existence of a linear flow-based Tv (based on the Dvb-h platform) or of audiovisual on-demand services (based on Umts and Hsdpa).

Figure 2. Source: Mediaset/Booz Allen Analysis, based on forecast Telecom Italia, Informa Media, Gartner, ScreenDigest, Sky, Ministero delle Comunicazioni
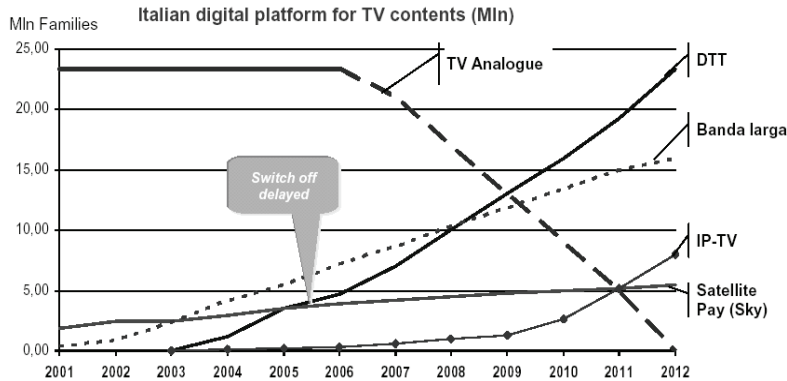
2. The research project

We are currently witnessing a phase of change, featuring wide margins for negotiation and unpredictability, in which the change at the level of media offer (concerning the redefinition of the role of market players, but also of the various forms of economic valorization of media products, and even of the topics of standard and copyrights) goes together with an increase in the possibilities and forms of media consumption.

The ubiquitous nature of digital and networked media (from multimedia internet to personal media and ICTs) define an ever more articulated and complex scenario wherein subjects move and make their choices (Ito, 2007). A scenario still featuring analog platforms (e.g. generalist television) alongside various new digital platforms (e.g. digital, multi-channel and multi-thematic television); traditional forms of distribution of television, movie or music contents (e.g. broadcasting or physical supports) alongside new circulation practices (e.g. p2p online networks); one-to-one communication modalities (e.g. fixed or mobile phone) alongside many-to-many forms (e.g. Instant Messaging, blogs, social networking sites); contents produced by institutional and commercial subjects, alongside user-generated content of ever more multi-medial nature (not only text, but also pictures and videos); niche contents, to be shared with a closed social circle, alongside mainstream contents, and so on.

Despite some delays, Italy too has entered a full networked information economy, characterized, in Yochai Benkler's (2006, 3) terms, by the presence of a "communications environment built on cheap processors with high computation capabilities, interconnected in a pervasive network". To this change in technological and institutional scenario is starting to correspond a re-defintion of media consumptions, at least in the niches of audience more easily penetrable by technological innovation processes. Concerning the Italian case, the most recent data on media consumption indicate adolescents and youths as the population segments more directly involved by the emergence of networked information economy. Exemplary, in this sense, is the growth among Italian adolescents and youths of download

and file-sharing practices (Bennato, 2007) and of web 2.0-related services[2] involving convergence between institutionalized and user-generated contents as well as inter-connection between different communication platforms.

Italian youths and adolescents are therefore now fully integrated within the communicative economy of *convergence culture* "where old and new media intersect, where grassroot and corporate media collide, where the power of media producer and media consumer interact" (Jenkins, 2006, 2) in structuring new media diets.

Undoubtedly, while the situation benefits from the relevant technological variables we discussed in the previous paragraph, it must nonetheless confront with the specific social and personal variables that, within the shared framework of the theories on media and Icts social shaping[3], drive the adoption and incorporation of technologies.

The research whose results are presented here was designed to study the emergence of new cross-media diets among young Italians. While still a consumption niche, it nonetheless appears a peculiarly interesting case study, as it is typically characterized by rapid domestication processes of digital technologies, wide social networks of belonging and reference wherein media contents – even traditional ones – are important resources for socialization (more so than for other age groups), and finally by a high availability of time for both media consumption and technologically-mediated or face-to-face relations.

2.1 Methodology

The complexity of the chosen research object led to rethink traditional ethnographic approaches to media, and required the adoption of a flexible and multi-sited methodology (Marcus, 1995). Analogously to the line of thought originated in the field of Internet studies – and especially in Internet ethnographies – the methods of "mobile" ethnography were adopted (Hine, 2000, Hartmann, 2006). This methodological proposal revolves around the inter-connections between life (both on- and off-line) and the flows of interaction, thus requiring for multi-situated researchers and research objects.

Being both adaptive and reflexive and able to progressively redefine itself on the base of the research findings, this research approach allows to set up a proficient circularity between empirical data and theoretical base, and to triangulate several inquiry tools and objects. The research was articulated across three areas, in continuous reciprocal dialogue. Each area corresponded to different knowledge objectives and engaged different inquiry techniques: in-depth interviews, and both on- and off-line participant observation.

The triangulation between these different research instruments and observation environments intended to reconstruct the relationship between the subjects and the various platforms, insofar as they are integrated in the domestic and extra-domestic contexts and shaped by the daily lives and individual biographies of the subjects.

The processes of incorporation of the new digital media platforms within extra-domestic contexts were accessed through ethnographic observation inside the meeting and entertainment places of the urban youth (a gym, a shopping mall arcade and a ludotheque); therein, through ethnographic notes, photos and video, the nomadic fruition practices and

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[2] For example, data published in the research report by Nielsen//Netratings, relative to January 2007, state that in the last few months the usage of web 2.0 sites has reached 56% of Italian web surfers, with a particular diffusion among younger users. Italy ranks therefore fifth among European nations for the traffic of sites such as YouTube, MySpace, and the Wikipedia.

[3] On these topics, see the section on *Technology Design and Development* in Lievrouw, L. and Livingstone, S. (eds.) (2002), the proceedings of the symposium *The Good, the Bad and the Irrelevant: The User and the Future of Information and Communication Technologies* promoted by COST Action 269, Helsinki 3-5 settembre (2003) and Haddon, L. et alii. (eds) (2005).

their contexts of use and socialization could be observed. Ethnographic observation was integrated through brief, nondirective individual/group interviews to the subjects frequenting these places, in order to reconstruct the discourses and dynamics of the socialization of outdoor digital consumptions.

With regard to domestic media consumption, 40 nondirective in-depth interviews were conducted. The interviews were conducted inside the domestic context, in order to observe the subject's social context, the devices owned, their physical collocation, and to better explore the moral economy regulating the access to technologies (Silverstone and Hirsch, 1992).

The sample interviewed, equally divided between males and females, was built upon the intersection of two main variables: typology of the platforms owned and used by the subjects and age class. With regard to the first aspect, the sample was segmented on the base of the ownership of devices pertaining to at least two of the considered platform macro-typologies: digital television platforms (decoder DTT, satellite tv, IpTv); PC with a broadband connection); mobile devices (third-generation mobile phone, TvPhone and portable players, such as mp4 players and Sony PSPs). With regard to the age variable, the sample was distributed as follows:

- 5 pre-adolescents (11-13 years of age) and 9 adolescents (14-18), for a total of 14.
- 15 youths (19-24 years of age) and 11 young adults (25-35, among which 6 under-30s and 5 over-30s), for a total of 26.

In this paper we will focus on the empirical data gathered through domestic–context interviews - and in particular on the media consumption practices enacted by adolescents (14-18) and youths (19-24)- in order to highlight the emergent consumption forms bordering between different platforms in the phase (characterized by high uncertainty and unpredictability) of their first incorporation into daily life.

3. Media competition in crossmedia cultures

Within the above-depicted multi-platform media environment, young users are faced on the one side with evermore interconnected and inter-operating multimedia and multitasking digital technologies; on the other, with a set of technologies/services allowing for the same media consumption practice (e.g. movie watching, music listening, or mediated interpersonal communication) with different modalities, timings, contexts of use, and formats. Our focus of interest shall then be on understanding not only how these practices are enacted within the new media context, but also on the reasons driving the choices among the many options (both old and new) possible today, as well as the peculiar and differentiating features of each solution[4].

What factors, not only technological in nature but also economical and above all socio-cultural, define the selection criteria and make the various ICTs from time to time either competitive or alternative (and not only complementary and integrate)? What how do these selection processes impact over the forms of social incorporation of digital and networked media and over symbolic and functional re-configuration of pre-existing media and communication practices, since, as Jenkins (2006) points out, "old media are not being displaced. Rather, their functions and status are shifted by the introduction of new technologies" (p.14)[5]?

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[4] For a similar approach applied to the practices of mediated interpersonal communication see Haddon (2005); for a focus on screen-based media see Livingstone (2002).

[5] The assumption upon which this paper is based, shared with a long tradition of media studies, is ne un-acceptability of the "displacement" thesis, according to which the arrival of a new medium implies the

Questions that become crucial when the ubiquitous nature of digital and networked media (from multimedia internet to personal media and ICTs) define an evermore articulated and complex scenario wherein subjects move and exercise their choices. A scenario interpretable, again in Jenkins' terms, as a new convergence paradigm covering a lot of ground: "convergence represents a paradigm shift – a move from medium-specific content toward content that flows across multiple media channels, toward the increased interdependence of communications systems, toward multiple ways of accessing media content, and toward ever more complex relations between top-down corporate media and bottom-up participatory culture" (Jenkins, 2006, 243).

The purpose of this paragraph is to re-read the research data findings in order to highlight the processes of competitive selection that the youth activate at three different levels, corresponding to the moments of adoption (the choice of whether to buy or not to buy a ICT), of access (which ICT to activate among those owned) and of use (what practices to perform through the accessed ICTs) of the available media and contents. In particular, we shall focus our attention on some socio-cultural factors shaping these choices[6], such as the spatial-temporal structures of daily life, social networks, individual biography and gender. However, within this wide range of recorded practices, we shall here focus only on "screen-based" and communication-related practices..

3.1 Screen-based media consumption

With regard to the practices of screen-.based media consumption, we can distinguish the plane of the platforms from that of contents. Concerning the platform dimension, the youth show some after-effects of the loss of the centrality of television, currently affecting their age segment. This loss is expressed by a vast concurrency between linear television fruition and nonlinear audiovisual fruition, in which the old analog/generalist television broadcasting still retains some value, but must compete with digital television platforms, other media platforms and communicative platforms, over the mentioned planes of adoption/appropriation, access and social uses.

On the plane of adoption, the competition between television and other media is first and foremost driven by domestic negotiation, still highly influent for this age segment, and by economic factors. The adoption of digital platforms such as the personal computer, for example, is inserted into intra-family dynamics, wherein the purchase of a PC is part of a broader spectrum of variables centered upon criteria for collective utility and value as didactic support. The highest investment in terms of adoption is directed towards mobile devices: the reduced possibilities for spending and the lesser relative cost of such technologies contribute to shaping the choice of addressing mp3 players and mobile phones, without any interest for the more advanced standards (dvb-h mobiles are notably absent from this age group). The platform selection process is also contributed by the peer network, which strengthens the social relevance of some means considered as strategic (mobile phone, mp3 players, tools for online communication).

A typical example is the presence of further television platforms – typically, satellite tv: the presence of SkyItaly in the household is tied to intra-familiar power dynamics, and its acquisition depends on politics of purchase wherein the youth assume a secondary role, or anyway are in situation of lesser strength compared to factors such as parental consumption

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displacement of the pre-existing ones. Rather, the experience of pre-existing media seems to modify itself when sided by that of the new media, thus generating a more differentiated and specialized use and incrementing the complexity of the media mix. For an outlook of the debate between old and new media, see, among others, Pasquali (2003).

[6] For an overview on the cultural and social factors shaping adoption and use of ICTs see Thomas et alii (2004).

choices (or those of other family members – e.g.. the role played by little children and pre-adolescents in the acquisition of Sky, seen as a platform richer than others for children content).

On the plane of access, the competition between television and other media gets very harsh, and is influenced by several factors. First among them is the general shrinking of the amount free time spent in domestic activities, which configures the attitudes relegating television consumption in a residual position (especially among young college students and and/or workers). The temporal economy of daily life influences the access to screen-based platforms, for example de-centering the lowest symbolic investment platforms (such as analog tv) and, on the other side, re-valuating other platforms within specific communicative situations or contexts (such as the viewing of music videos on mobiles or iPods in mobility/study/vacation contexts).

The consumption's spatial restructuring factors play an important role in driving the logics of platform scarcity/abundance in specific places or domestic spaces: the presence of satellite tv in the living room alone, influences the selection of analog tv as a secondary platform, or even on the use of the PC as a device for a movie viewing determined only by individual, non-negotiable choices.

The relational dimension of media also appears highly relevant, insofar as on the one side it pushes the young toward favoring CMC and mobile telephony over cinema and television, and on the other it confers more value onto those screen-based platforms offering the video contents with the highest social spendability, such as audiovisual files than can be converted into trade items online. This is the case, on the one hand, of audiovisual files of narrative products (such as movies and tv-series), which file-sharing practices thrive upon; and on the other, of short video files ("funny videos", user generated videos), upon which are centered properly-communicative exchanges via email, chat and Instant Messenger. Familiar gate-keeping plays a role also here, influencing (in the younger population) the access to certain platforms in terms of timings, costs and contents, and, concerning download practices, with the more competent subjects (male) or those older among peers (older brothers), designated as leaders in the download of music and audiovisual files.

On the plane of use, audiovisual fruition puts into direct competition platforms designated for familiar rituality with those designed for individual practices. While analog and even satellite tv (or dvd viewing through a dvd-player) are integrated into the dynamics of rituality internal to the family (or to friendship relations), the fruition of DivXs or of downloaded movies/tv-series is better qualified as an individual practice. Furthermore, it should be remarked that the same marginality of television fruition can be traced back to an intensive use of the personal computer and of the internet, as platforms allowing for the access to the very same television contents. In this sense the download of tv-series and movies, and in part the streaming of funny videos and UGCs, configure themselves in the young as practices that are competing with the traditional television or DVD fruition.

Precisely with regard to contents, the linear viewing of television, either via the old analog platform or the new digital ones, still represents for some people a central practice as a reference point for the building of an agenda of contents consumption (e.g. to locate tv-series, movies, music videos) to be then retrieved and consumed on other platforms.

This level is also influenced by factors tied to the subjects' social networks, which uphold and drive the discursive centrality of some television contents (such as brands, themes or characters). On the supply side, the general competition between analog and digital tv (mostly satellite and IpTV, but also to some extent the DTT platform) revolves precisely around the offer of contents: while analog tv is tendentially being symbolically de-invested, digital satellite television represents a factor of re-activation for audiovisual consumption. Access to audiovisual content is further influenced by factors relative to the youth's available

time-budget which, for example, is subject to the influence exercised by interstitial times – study breaks, socialization moments at school, journeys to school/work – over the activation of consumption practices of short videos (funny videos, UGCs). Time-budget is also subject to the influence of evening times in the activation of the consumption of specifically-narrative audiovisual contents (movies, tv-series).

3.2 Technologically-mediated interpersonal communication

Within Italian adolescents and youth's media diets, technologically-mediated interpersonal communication practices (either via mobile phone or via the Internet) are objects of strong temporary and identitary investments, and their activation often colonizes time-shares previously dedicated to other media-related (or non media-related) activities (such as watching tv or simply filling up daily interstitial times). Furthermore, the management of technologically-mediated interpersonal communication is a terrain of fierce competitions (essentially among voice calls, SMSs, Instant Messaging, e-mail and Voip), which has gone through a wide re-configuration. This re-configuration started with the availability of flat-fee, always-on broadband connections, which actually re-defined the role previously played mainly by mobile phones (Scifo, 2005). Mobiles thus effectively compete with the forms of computer mediated communications, which, in turn, are variously activated in relation with the spatial-temporal configuration of the communication itself, of the other communicators and of the communication's content and purpose.

Let us start, then, with the use of the broadband-connected PC with Instant Messaging software (mainly the highly popular Microsoft Messenger, MSN), whose diffusion and ubiquity among the young represents the true novelty of the present Italian scenario of interpersonal mediated communications.

The *appropriation* of instant-messaging software is undoubtedly made possible by the availability of always-on broadband, whose fee is paid for by the family and not by the young user, but which is driven socially by peer network pressures. These pressures play a fundamental role in the diffusion of tool-related knowledge, as well as in fueling the motivational push toward the activation of the software as a group belonging symbol, and, finally, in activating related alphabetizing and social learning processes.

However, while the young may be in possess of the software, the relative *access* is not to be taken for granted. Its times and spaces are negotiated with other family members – particularly at the intra-generational level (siblings), due to the reduced presence of internet-connected PCs in households (typically featuring a single unit in the children – often shared – bedroom).

When accessibility is granted, the *use* of the MSN software is shaped by several factors. First of all, from a temporal point of view, a central role is played by the synchronization with the peer network's social times of access, which are in turn determined by the alternation between two different spatial-temporal configurations: that of social obligations (school/university) and outdoor pleasure time, and that of domestic permanence, in which the pc platform becomes accessible (e.g. in the morning before leaving, during the afternoon and/or the evening concurrently with other study-related activities, but also PC-related ones such as web surfing, downloading and music listening, and with television watching).

With regard to interlocutors, Instant Messenger is destined to the subject's restricted social circle, that is to say, to the sustaining of pre-existing networks of relationships instituted through daily life[7], but reduced to the peer group (classmates, out-of-school friendship network), thus excluding adults (typically parents). Therefore, this social norm, shared

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[7] From this standpoint, Msn completely displaced open chatrooms.

among adolescents and youth, deems instant messaging as a practice typical of these age cohorts (indeed, findings show a reduced adoption and usage rate of Instant Messaging in pre-adolescents, and an higher predilection for email in young adults).

Finally, from the perspective of the contents and purposes of communication, the use of MSN affects several levels: fatic (simply maintaining the communicative contact), social micro-coordination, sharing, identitary expression. A truly multi-functional tool whose uses go beyond the mere synchronous communication (that is, chatting) in *basso continuo* (either during other computer-related practices or in a dedicated mode), being instrumental to the organization and synchronization of the activities of outdoor informal sociality. Furthermore, an important role is played by the possibility of exchange or indicate multimedia materials (both personal and otherwise), such as photographs, music files and links to popular funny videos, as well as of building spaces for self expression and sharing them with the restricted peer network, through the blog area offered by MSN.

Some emergences are to be noticed concerning two factors: the consequences exercised by the activation of the Instant Messaging practice over the re-configuration of mediated (and non-mediated) communication practices previously incorporated by young Italians; and the kind of competitive dynamics it generates between the various possible options.

First of all, the high temporal and symbolic investment toward Instant Messaging makes it one of the main drivers toward the PC use (indeed, the use of MSN is a preliminary action that comes right after the powering of the unit), but above all makes it an agent for the symbolic re-definition of the PC, re-domesticated as a networked "ego-centered" platform (and not only as a platform for gaming, study and multimedia).

The second emergence, even more relevant, is the way in which the use of Instant Messaging re-configures that of SMSs, its direct competitor. Indeed, MSN and SMS exchanges take place within the same social networks, but since in households access to both platform is available, MSN competitive edge results from its economic (no charge for the subject, who exploits a family resource and not a personal one), from its technological features and capabilities (writing via the PC keyboard is more efficient and comfortable, and supports more easily many-to-many multimedia communications) .

Then when and in what forms do SMS usage persists? First of all, within the domestic context the use of SMSs acts as substitute when connectivity is absent (the interlocutor does not possess either broadband technology, the software or the rights to access). Furthermore, the privilege for SMSs depends on the kind of communicative content and on the different social location of users: SMS still plays a fundamental role in the ultra-short-time micro-coordination of users (be it "just in time" or outdoor).

Finally, MSN incorporation re-defined also the use of email (more frequent in young adults than in adolescents), deemed as a slower mean for communication whereas the communicative needs of the youth seem hold speed as fundamental, also for the mentioned short-period micro-coordination management. The competitive edge of email returns when the need arises for a communication functional to manage non-synchronized social timings, relative to either the coordination of study/professional activities or social coordination on the long period. Furthermore, from a symbolic point of view, email is perceived as featuring fewer social obligations and being less invasive. Interestingly, always-on connections and familiarity with MSN induce constant mailbox monitoring practices during the domestic permanence.

In closing the paragraph, we shall only briefly mention the other digital mediated communication practices that can be activated through the computer or through mobile devices. Concerning the PC, video-calls made possible by VoIP systems (e.g. Skype) are highly appreciated; being immediately perceived as video-communication service, they are starting to compete with MSN. Significantly lower interest has been recorded toward mobile

video-communication, often sanctioned negatively (due to lack of privacy during the communicative act), especially when it is compared to domestic video-communication (through a webcam connected to either MSN or VoIP). Finally, no intensive use has been recorder with regard to MMSs, whereas the simple photographic activity via camera phone appears highly appreciated and widely performed; it is followed by an exchange of materials via MSN or e-mail.

Therefore, while Instant Messaging is becoming the main support platform for digital media communication, SMS and email still resist as the main alternative tools, able to be differentiated in relation to the communication's interlocutors, contexts and contents.

4. Media integration in crossmedia cultures

Crossmedia diets among different technological platforms and contents are incorporated into the daily lives of Italian youth and adolescents also through practices of acquisition, consumption and exchange of contents. With regard to these practices, some cultural factors as temporal structures of daily life (societal time use structures and cultural expectations about time); housing characteristics (size, privacy and faciliters) and values (family and group orientation) act either as drivers or as limiters to adoption and usage of crossmediality.

On the background, the presence of multi-functional media technologies (PC, mobile phones and other mobile devices) enables "multitasking" consumption practices on the same platform (e.g. using Microsoft Messenger while listening to music files stored on the PC and/or sharing audiovisual files; or the gaming and music listening activities on mobile phones). Although this multitasking context appears dominated by a centripetal logic (the logic of convergence), Italian "networked public" (Ito 2007) practices respond to different logics, foreboding an evolution towards new scenarios. We'll describe in this paragraph the cross-platform mobility of contents, the cross-platform content acquisition and consumption and the cross-platformcultural exchange of either institutionally produced or user-generated contents.

Some housing characteristics as the presence of multiple platforms (e.g. analog/satellite tv, personal computer) – often related, as we already have seen, to negotiations concerning access times and contents, also in terms of competition – alongside with forms of strong affection (close to fandom) for some television brands and content (e.g. The Disney Channel, MTV; serials, cartoons and music videos) act as drivers for the twofold activation of crossmedia mobility, aimed at the extension or intensification of consumption practices.

(1) The prolongation of the consumption experience, striving for either a repeatability of the experience itself through the mobility of consumption practices between digital and analog television platforms or towards storage supports (see for example the Sky reruns of TV-series or the archival of cult TV-series on self-produced supports), or its intensification through the gathering of materials on the Internet (either from institutionalized sources or from other users "grassroots" sources).

(2) Some kind of substitutive consumption (even of contents with low symbolic investment) through the retrieval of the synopses for missed episodes or through the podcasting of segments of beloved programs, activated when the conditions of the access to analog or digital television platforms forbid proper fruition.

These forms of consumption grow in relevance with the age of users (being more present in youth than in adolescents), due to a different orientation (and alphabetization) to Web 2.0 and a different and higher value ascribed to breaking free from the rigidity of flow-based schedules. In these cases, cross-platform mobility acts according to a "centrifugal logic", where a central media (tv or cinema) remains prevalent while propelling "accessory" uses of

other media and technological platforms aimed at enhancing the consumption experience itself.

Even more relevant among the young Italian "networked public" is the activation of crossmedia content acquisition and consumption. Indeed, the cross-platform diets of young Italians widely feature patterns structured in three phases: 1) individuation and fruition of contents (music files, movies, tv-series) on mainstream platforms (analog tv, radio, cinema); or their individuation through word-of-mouth (either virtual or real-life) 2) content acquisition either through the Internet file-sharing and streaming modalities (with an initial, often transitory, hard disk storage); or through the purchase of originals (Music CDs and DVD box sets); 3) Transfer on other memories (dvd/DivX, CD) or mobile supports (mp3/mp4 players, Sony PSPs, mobile phones) for either fruition in other spatial-temporal contexts, archival or trade/exchange. The relevance and intensiveness of these practices among young Italians is upheld by factors related to the evolution of consumption's spatial-temporal structures and to family and group orientations.

(1) The value ascribed to consumption flexibility due to the increase of consumption's spatial-temporal structures. Indoor, related to the ever-stringent negotiation for digital platform access (television and PC). Outdoor, related to the progressive emerging of new spaces and times for the fruition of media products both individually (during increasing interstitial times of ritualized mobility) and collectively (with the progressive colonization of the time of social obligations – e.g school – or that of informal sociality, such as the peer group).

(2) The wide time budget available to this age group (mostly coincident with students) features large indoor time-shares (typically study time) in which file sharing fits, with regards to other activities, as a "low continuity" one (when it is not colonizing night-time). The time budget cut correspondent to the entrance into the work age, in fact, leads to a progressive reduction in file sharing frequency, an increase in selectivity, and the re-configuration of the perception of file-sharing as an excessively time-spending activity.

(3) The relevance of friend networks, both as activators of motivational processes leading to the use of services and software as symbolical/identitary tools for group belonging, and as contexts for the social learning of file sharing software and connected practices.

However, the activation of cross-platform content acquisition and consumption rows still presents some margins of resistance, again due to social networks and spatial-temporal configurations. The scarcity of household PCs makes usage times dependent on the platform's accessibility. Unequal alphabetization within the youth context and within family micro-contexts generate: (a) among the younger (adolescents), gate-keeping processes activated either by older (typically male) siblings, who tend to exercise forms of control over software access, or by parents, who tend to monitor connections' timings and costs; (b) among the lesser young, forms of operative delegation towards the more competent local experts (brothers, boyfriends, friends – also typically male).

In these cases, cross-platform practices acts according to a "linear logic" and – regarding particularly to content selection processes - the compass/agenda role played by TV and/or radio platforms as drivers of cross-platform practices appears highly relevant. This is the direction pursued by "young" brands and channels, and by those formats (such as movies, tv-series, or music products – even non-audiovisual) that either activate forms of autonomous consumption of the flow-based schedule, or configure themselves as cult products and are therefore purchased for (a) collecting purposes, (b) recovering of affective material or re-enacting of memories, (c) pursuing non-mainstream materials, (d) screening materials in advance.

Finally, another remarkable presence is that of the cross-platform cultural exchange of institutionally-produced or user-generated contents. In the youth context, media contents live

their peculiar social life through a "network logic"-driven circulation across various groups. Exchange patterns are sustained by networks of relationships instituted through mediated communication (Microsoft Messenger, Fastweb) wherein contents may circulate in their integral form (music files, trailers, movies, and UGCs such as pictures and videos) or as web links; or they may be trade items within real-life networks of relationships, through lending or gifting digital supports (DVD, DivX, CD) for movies and tv-series, or through wireless data exchange among mobile devices (such as mp3/mp4 player, mobile phone, Sony PSPs), for music files, funny videos and UGCs.

Forms of content upload are present, albeit in their residual form, with regard to web personal spaces (blogs, social networking sites).

In all of these cases, content exchange is the crossroad of practices of highly trans-platform practices (e.g. UGCs produced through mobile phones and stored on PCs; or institutionally-produced contents acquired through file-sharing and stored on DVDs and DivXs). Within such patterns, contents acquire a value in terms of "social capital", variously activated within competitive or integrative logics. The already-mentioned colonization of outdoor informal sociality spaces performed by mobile devices confers social spendibility to those contents characterized by high identitary investment (UGCs, music files). More in terms of integration, the presence of computer mediated communication as a fact of life among the youth's mediatic practices defines a context in which also low-investment, extemporally consumed contents such as funny videos (acquired from Youtube and Google Video), are valued as tools for the preservation of both real-life and virtual social network.

With regard to institutionally-produced contents, their re-contextualization within the logic of gift and reciprocity confers to them a symbolic value as a part of the cultural capital defining both group belonging and the group itself. Also these practices feature margins for resistance related to the family negotiation dynamics conditioning the access to the PC as either (a) platform for content archival, (b) mastering tool for the supports for gift and exchange and (c) as re-distribution platform. Another limiter to the process is the (real of imagined) reduced alphabetization to the audiovisual management skills within this distribution network On the one hand, indeed, their supposed "heaviness" and difficulties in management, being it shared more through processes of socialization of the practice itself than through direct experience. On the other hand, the limitations and cost of mobile devices able to support them are still perceived as excessive.

5. Conclusions

As the research data show, consumption among young Italians (representing, from this standpoint, the spearhead of wider tendencies) has to be conceptualized as a set of strongly interconnected practices, among which the young are increasingly mobile between different technological platforms and different contents (both those oriented by media companies and user generated contents), and are engaged in redefining their relationship with media, in relation to both the social role played by media, and the technologies, places, times, patterns and rituals of consumption practices. Henry Jenkins is therefore undoubtedly right when, discussing the new media scenario, he describes it as a stratified, often contradictory ensemble of consumption practices. It is certainly possible to "describe such a scenario in terms of convergence, but steering clear from the usage the term has usually acquired in media and technology circles: the utopian dream that today's chaotic and often redundant array of communication technologies will someday coalesce into an elegant and all encompassing singularity, a monolithic medium for every kind of message" (Sinnreich, 2007, 44). Rather, what we are witnessing is an ever-increasing complexity of the possibilities for

media consumption, which offer themselves, to use an expression dear to the field of internet studies, as an hypertext of possible pathways, as an ensemble of possibilities of use and consumption based upon the different variables orienting the relative choices. While the pathways are, as we demonstrated, individual in nature and often idiosyncratic in their singularity, we still can map them according to shared patterns, and feature homogeneous aspects rooted into the generational and national specificities of the analyzed subjects. We would like here to retrieve two aspects that seem to transversally characterize young Italians' cross-media consumptions. The first element is the centrality bestowed upon the relational element of communication. We are dealing here – as Meddiapro (2006) research (albeit limited to adolescents and pre-adolescents) also indicate – with the centrality, in our country, of the media and technologies sustaining interpersonal relations (such as the mobile phone in the past few years and presently instant-messaging software) compared to other countries where the aspects of production and participation play more relevant roles in the relationship with the digital scenario.

The attributions of meaning to user generated content, funny video and even to file-sharing, are in this sense emblematic; they are often conceptualized as resources primarily in relation with their social spendability, now with a purely fatic function (e.g. funny videos), now as dentitary resources (e.g. user generated content), now as a tool for the consolidation of relationships (e.g. file sharing). The second, remarkably Italian aspect is related to the peculiar history of our media system, dominated until the last few years by the centrality of generalist commercial television. A centrality that digital TV and new media have undoubtedly critically broken, but that nonetheless, at the very least, retains a strong symbolic role, as witnessed by the role still played by mainstream media in orienting the crossmedia consumptions of young Italians.

While young Italians are part of the so-called "web 2.0 generation" or "iPod generation", and are actively partaking in the processes of transnational media consumption, nonetheless the peculiar social variables connected to elements such as age or nationality play an integral role in the shaping of the processes of media technologies incorporation within the frame of convergence culture, thus building links of strong continuity with consolidated forms of media socialization and ITCs incorporation.

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Municipalities and Information Society in Portugal

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Abstract

The emergence of information technology in planning practice at the municipal level is a recent phenomenon in Portugal .Recently the use of Internet as a means of developing new relationships with citizen can be a very important step to develop participatory planning.

Debate on the concept of Digital Cities started in Portugal in the late 90's when the first goal was to inform the citizen about decisions taken by the municipalities.

Cities in Portugal are faced with different challenges that are specific to their complex character and stage of development. Our case studies consider the experience of Almada and Peninsula de Setúbal (Lisbon Metropolitan Area).

These projects try to create 'Portals' that provide and promote access to information on local government, economic enterprise, education, health and tourism. There are also projects to create electronic forums accessible by all, as well as virtual communities. The municipalities aim to have as many services as possible available on-line (forms for download, tax information, etc), as well as providing public information on political representatives municipal decisions , competitions for projects, access to libraries, museums and other cultural facilities

This research paper is about the problems faced by the public in the understanding planning area sites al local level. What are the main problems when citizens need to analyse a subject like local or regional planning and how the municipalities are implementing these relations. Evaluate if different socio-economic groups, more rural (east part of case study area) or more urban (north and west part of case study area) in the Lisbon Metropolitan Area have the same problems to use this new technologies. If the answer of municipalities is similar or if they are trying a specific approach the each population.

1. Introduction

Planning and democracy as not being together in urban life for a long time, but new approaches in urban and regional planning recognise that a informed population and a democratic participation can be a good value for planning.

According to Castells (2004) "this information age is not just about information and knowledge…..I know no society I which information and knowledge have not been absolutely decisive in every aspects of society….the information technology revolution happens with the microelectronics based information and communication technology paradigm is creating something new now." . Information technologies can support the development of e-government and be a very good support for democratic planning specially in the area of public participation in decision making. To be a sustainable world is a participated world for all, not only for the elites. When public authorities want to involve all society they must use these powerful tools. The use of Internet began in the e-government area with Public Services as a system of information for places and activities, gradually approaching more sophisticated matters both from a technological and knowledge point of view, along with the diffusion of the broadband throughout the territory.

The more common way to give access to broadband is by cable which creates important differentiations in the territory, excluding some areas from Information Society or at least making more difficult there complete integration and benefice. Lisbon Metropolitan Area is, according with ESPON the more developed area in Portugal.

Fig 1 Broadband internet access in Europe
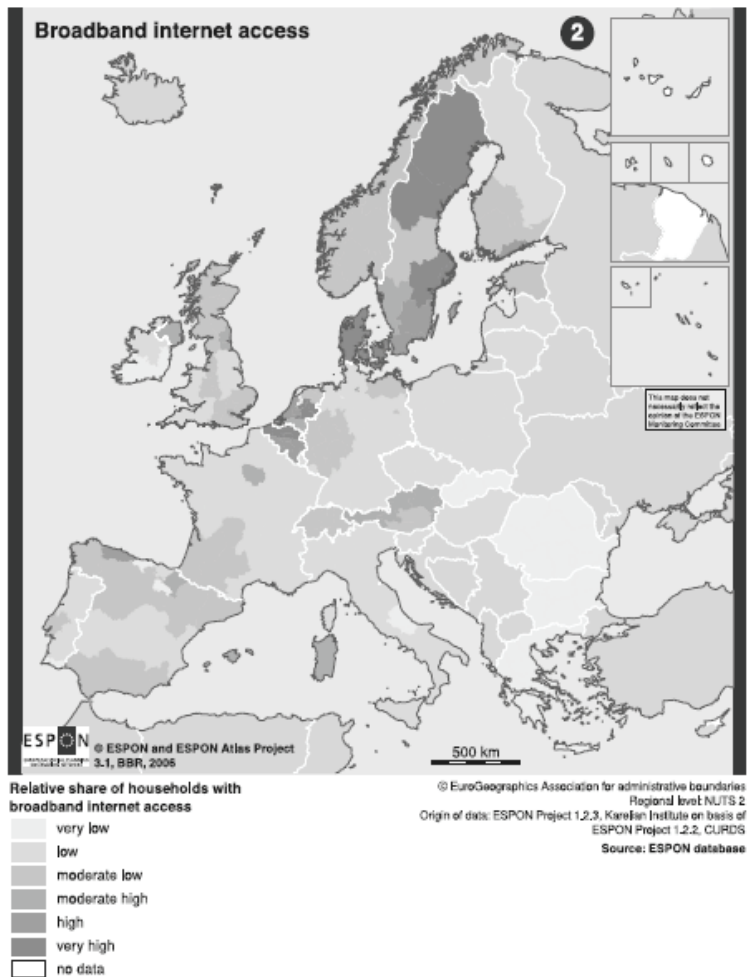
2. The Portuguese context

The Information Technologies have been developing at a quite fast pace in Portugal in the last ten years. Nevertheless the country still shows a very low level of access to Internet in households (31% with internet access at home and only 20% with broad band) comparing with other European countries. The best access is in the Lisbon Metropolitan Area (Fig1)
The first phase of development of the information society was related to the installation of infrastructures allowing the access to Internet; at the same time the diffusion of personal computers increased, which has been quite important in a country where the purchasing power is relatively low. Only in a second moment the diffusion of broadband has increased.
The surge of Portuguese contents came a bit later, but has gained great visibility since.
Observing data from 2006, 96% of the Portuguese municipalities (they are 308) were connected with Internet. If it is analysed the reason that determines the development of a website (fig.2) in first place comes the diffusion of institutional information about the City

Council (Camara Municipal) with 99% at the same level of the promotion of tourism and culture.

Fig. 2 Determinant reasons to the creation of a website in municipality

	%
Promotion of Tourism and Culture	99
Publish institutional information about "Camara Municipal"	99
Publish the cultural / sportive agenda	97
Better connection between local power and citizens	89
Promote the socio-economic development of municipality	82
Approach the emigrant communities with their municipality	75
Promote the information technologies in the municipality	74
Availability of online services	62

Source : OSIC 2006

When analysed the sort of functions available in the websites (fig.3), it is important the value of the download of forms 74% and public consultation in planning area 36%.

Fig. 3 Functions available in the website of "Camara Municipal"

	%
E-mail to suggestions and complaint	78
Download and print of forms	74
Subscription of newsletters	41
Public consultation process (Spatial Planning)	36
support of the users (Helpdesk)	27
Inquiries to the citizens	24
Material about the municipality	22
To fill and Submission on-line of forms	21
On-line vote	15
Forums of discussion between local authorities and citizens	14
Online payments	2
Transmission by video conference of the municipal meetings	2

Source : OSIC 2006

In the sort of information available in the website of the municipalities (fig. 4) it has a great importance the municipal information with local spatial planes 81%.
Almost all Municipalities (89%) also consider the services to the citizen by Internet as part of their strategy to develop the dissemination of TIC in their territory.

Fig. 4 Information available in the website of "Camara Municipal"

	%
Organization Chart of "Camara Municipal"	83
Municipal information and local planes	81
Advertising of Municipal meetings	79
Resolutions in meetings and sessions of the municipality	75
CV and contacts of Municipal leaders	73
Information about services	72
Information about municipal taxes	65
Administrative resolutions	49
Activity planes and activity reports	49

Source : OSIC 2006

3. Case Study

The introduction of Internet as a tool in the municipalities was initially implemented with the application of the concept of Digital city had been used in Portugal was in 1998, when the government implemented a pilot program for the development of Digital Cities.

This process came together with the introduction the notion of e-government at local level, with interesting experiences in Aveiro, a city in the littoral center with a University and a Telecommunications Research Center, that integrated public services through telematic networks, improving city life in all aspects, and Castelo Branco, a city in the inner center, where the main objective was to fight the effects of inland location involving some areas of the community like health services.

Following the experimental period of 1998-2000 the development of this area was supported by the 3rd Community Support Framework within the Regional Development Program 2000-2006.

It was then created the Operational Program for the "Information Society" (POSI) under the Ministry of Science and Technology with a total budget of 625.035 euros co-financed by ERDF, ESF and national funds. It was in the scope of priority II measure 2.3, Integrated projects: from digital Cities to Digital Portugal, that received 37% of the financing of the program, that were approved since 2001, projects to promote among other areas, the development of e-government at the level of local government and creation of accessibilities who aloud population to familiarize and use Internet.

All projects intend to reduce administrative bureaucracy connect the population with some services in the area of education ,health and culture, support touristy information and at planning level show interest in presenting cartographical information using GIS.

In 2005 this program was renegotiated and incorporated 5 more priorities (and more 252548 k euros) and one of the new priorities is to reinforce the importance of diffusion of broad band and the local e-government was concerned.

In this paper will be analysed three different situations Almada, Seixal and Setubal Region all in the South MAL (Metropolitan Area of Lisbon).

3.1 Almada

The development of the use of Internet in local e-government began in 2002 in this City in the South Bank of Lisbon Metropolitan Area in front of Lisbon. It was an industrial city with a strong link as a suburb to Lisbon.

Almada has a project at municipal level where the connection through wide band Intranet of all municipal services spread throughout the region has a great weight. This project represents the importance of Technical geography as the telecommunications infrastructure of the internet and the spatial distribution of the Internet's broad bandwidth towards the ulterior success of e-government (CASTELLS, 2001).

Fig 5. Map of spatial management
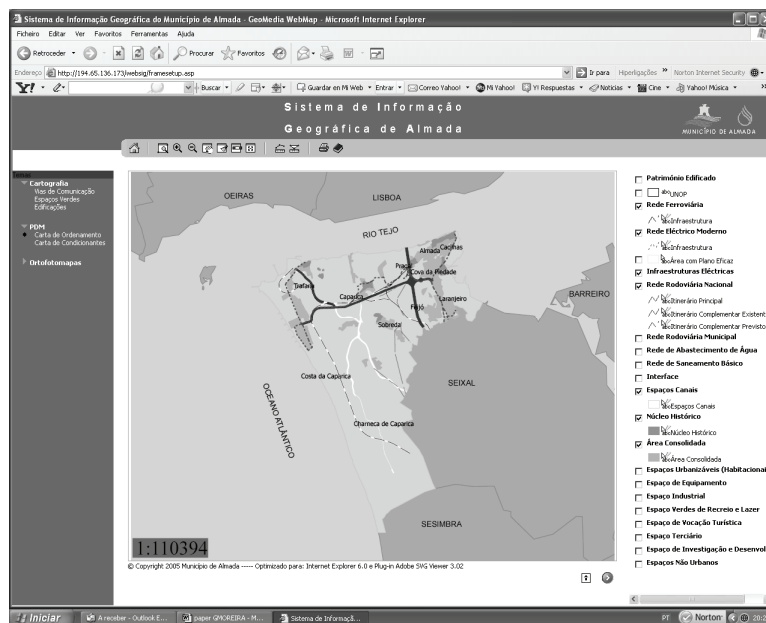
It developed an interesting area connecting services to the population through the availability of cartography at various scales and maps of the Spatial Plan (PDM) against the payment of a fee.

This project has been organized along four areas:

The foundations of Digital City

The digital community:

Accessibility for everyone in the digital city:

Digital Municipality

- o Intranet
- o Civil protection and civil prevention
- o Municipality on-line
- o Site Dialugares

Analysing the local planning sites (fig.5 and 6) it finds an interactive system where it is possible to choose the most important subjects to the spatial management of the territory, but only experts can use it, in a profitable way by the sort of maps presented.

Fig 6. Map of spatial conflicts
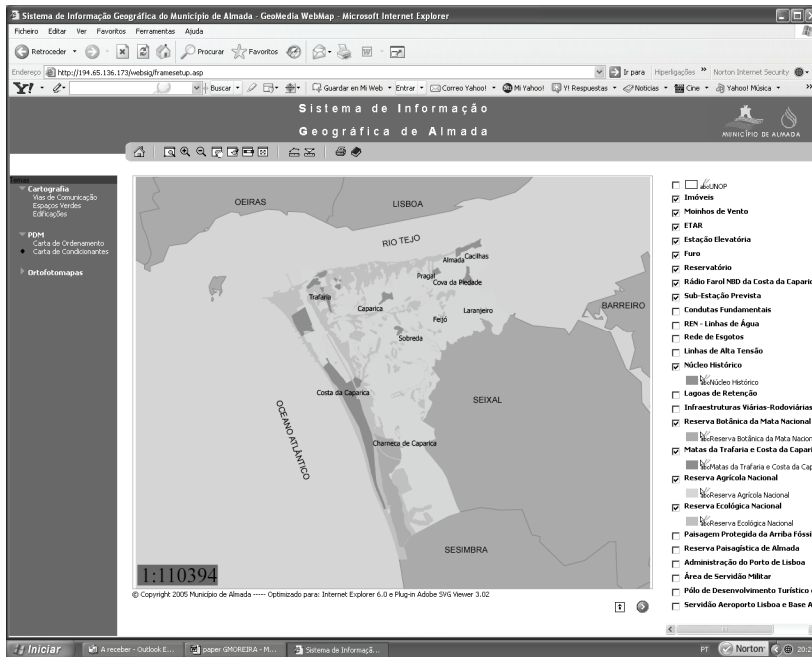
3.2 Seixal

This municipality in the South Bank of Lisbon Metropolitan Area was also an industrial area connected with iron and steel.

Fig 7. Seixal Portal –Site Solutions
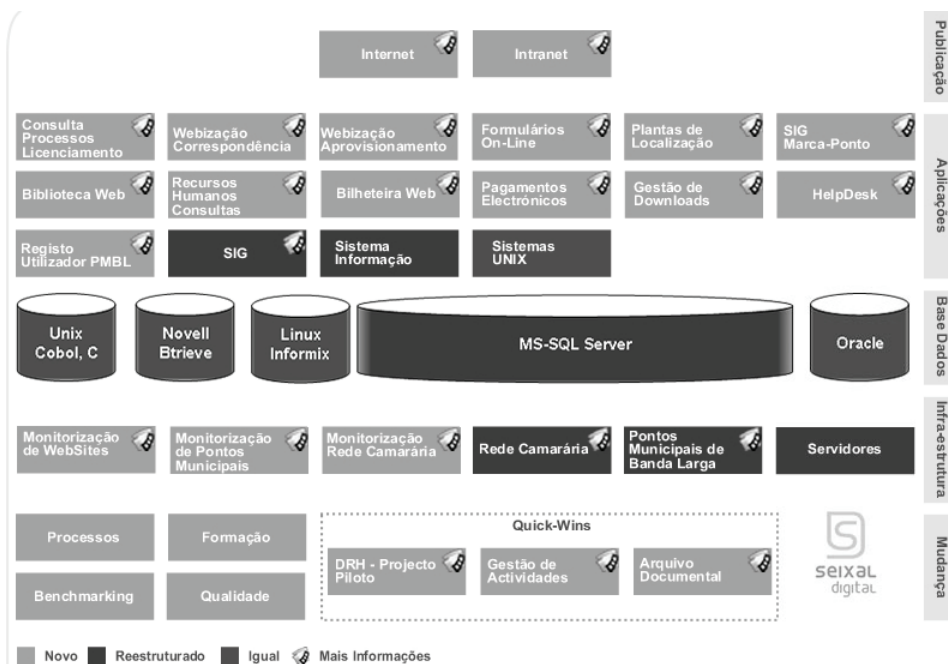
In the last four decades had a huge increase of housing and population, between 1960 and 2001 pass from 20470 inhabit to 150271 inhabit.

The municipality of Seixal implemented a local project to develop all the on-line services with the support of POSI to qualify population's life.

They began in the second half of 2004 and considered finished the work in the middle of 2006.

The site has an informative area, on-line municipal services with downloads and has in planning area the possibility of use GIS information about Spatial Local Planning (Fig 7).

3.3 Setubal Region Project

The Setubal regional project is made with 7 municipalities working together to develop several areas with learning benefits.

Each municipality has his owned site with the information defined.

Fig. 8: Site of Setúbal Region
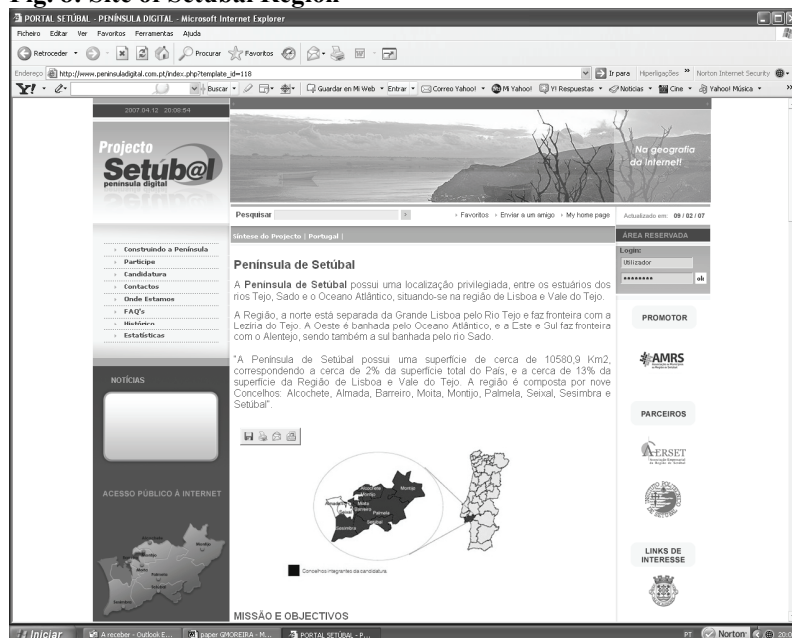
Two of them, Alcochete and Sesimbra have a site in building process, without any information. These two municipalities are the most rural of the group.

Some others like the municipality of Barreiro (fig. 10) developed a system with aero photos that make the comprehension of the territory much easier. Some others have less developed projects.

Barreiro was during the first half of 20 century the most important industrial city of Portugal and needs now to develop a new strategy to have a new roll in the 21 century.

Fig 9. Ortophotomap of Barreiro city
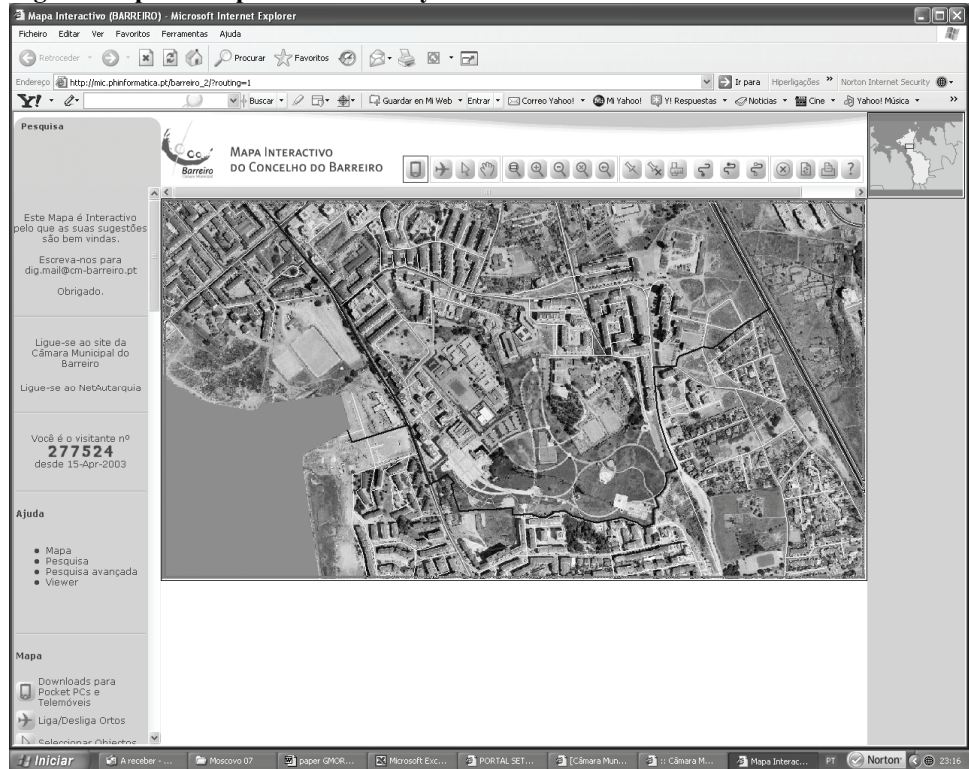
4. Conclusion

Planning area is consider by the municipalities a very important area to be presented in their websites.

The participation of citizens is considered with a special reference in the sites and e-mail entrance.

The level of development of the visual part of this subject is very irregular. And can be a very sensitive aspect because part of the population is not familiar with map graphics and consequent way of reading the information and in the end participate actively in participation processes in planning.

The two way interaction is considered when citizen can use GIS to look a special issue.

The target public is in first place the experts, who can understand the information and only in a secondary level the local population.

The development of websites in this subject to the local population is in the beginning but can be a very interesting subject in the future looking what the municipality of Barreiro is doing.

Fig. 10 Stage of the municipal sites in planning area

Municipality	Site	Planning Site	Information	One-way downloads	Two way interaction	E-mail for citizens
Alcochete	Yes					
Almada	Yes	Yes	Yes		Yes	Yes
Barreiro	Yes	Yes	Yes	Yes	Yes	Yes
Moita	Yes	Yes	Yes	Yes		Yes
Montijo	Yes	Yes	Yes			Yes
Palmela	Yes	Yes	Yes	Yes		Yes
Sesimbra	Yes					
Setubal	Yes	Yes	Yes	Yes		Yes
Seixal	Yes	Yes	Yes	Yes	Yes	Yes

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Mini-Ontology for Trans-Cultural Interfaces

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"I have a dream for the Web [in which computers] become capable
of analyzing all the data on the Web – the content, links,
and transactions between people and computers."
Tim Berners-Lee

Abstract

The next step in Web development was to design web pages that can be understood by people and machines - *The Semantic Web*. In order to create machine-interpretable web pages ontologies are required. The broadband technology can ease the process of communication through the availability of information anytime and anywhere. The aim of this paper is to illustrate the potential of broadband technology regarding an essential factor of the broadband society: *trans-cultural communication*. The research described has the objective to carry out mini-ontologies for two research activities in the area of trans-cultural interfaces. The first is about the generic architecture of such interfaces imposing strict restrictions on ontology rules [2]. The succeeding one is more specific (focusing on the trans-cultural communication between Germanophones and Romanians) and momentous in 2007 taking into account the opportunity of event "Sibiu and Luxemburg Capitals of Culture". The conclusions are depicting the importance/benefits of the ontologies used in conjunction with the broadband technology.

Introduction

Ontology is the base of the semantic web; the web can not be easily understood by computers without a base language. Ontology, as part of the semantic web, is used in searching and extracting information and it is designed for knowledge sharing and reuse (existing ontologies can be reused and extended). An ontology contains a list of terms and the relations between them; it is a *vocabulary* that gives information about the objects in a certain domain and the way they are related to each other; an ontology defines the terms used to describe and represent an area of knowledge [13]. The broadband technology can ease the process of communication through the availability of information anytime and anywhere.

This paper will try to explain the advantages and the improvements that the semantic web and ontologies, as an integrated part of the semantic web, brought to trans-cultural communications and trans-cultural interfaces. Another aim of the paper is to exemplify the creation and the modelling of a trans-cultural ontology and to show how a program can respond to queries and retrieve data from programs/web pages that use the same ontology. To design the ontology, a language based on XML (*Extensible Markup Language*) format was chosen because it can be very easily integrated into web pages.

The ontologies can be referred as an answer to the problems appearing during information interchange and retrieval. The *apple ontology* is an example that demonstrates how this problem can be solved, by defining rules and properties to the used terms. It is very simple to feel the differences and to understand the meanings of a term as a human being; it is natural for humans because all the connections are made automatically by our brain. The problem is to represent the data in a specific manner in order to be easily for the computers to identify its meanings [4]. The *apple ontology* exemplifies the binding between a simple, common word and its meanings. Searching for the word apple on an encyclopaedia [11] provides a lot of results (Apple Inc.®, Apple Corps, apple as a fruit) and also a large list of terms at which one may refer (disambiguation). It is so obvious, even for a first year school child that the apple he had eaten at lunch is not the same, not even close, with the Apple Computers company who made his music player; the problem becomes even more complex if we relate to trans-cultural examples. This is one of the problems treated in the *apple ontology* described in this paper. The meanings are easily understood by humans because the terms can be naturally distinguished in different contexts of speech. So, in order to achieve the same results with the computes, relations and restrictions were defined for the term "apple" and the software application tries to explain and determine the meaning of world *apple* from a given context, having as a comparative base the rules learned from the ontology. The concept is verified both for web pages that are displaying their content information in a form that can be straightforwardly understood if an additional XML file form the content they show, or XSL *(Extensible Stylesheet Language)* information integrated in the HTML *(Hypertext Markup Language)* page and for ordinary texts.

The ontology plays several critical roles to overcome the drawbacks that exist in today's Web and, in this regard, the next section will present the way it contributes to trans-cultural communications.

Rationale and Approach

An ontology that supports trans-cultural communication is both necessary (in our arabesque-like Europe with 27 countries and even more valuable cultures) and affordable (due to broad-band technology). Whereas conventional translation is impossible without a dictionary, "trans-cultural translation" is unthinkable without the use of an ontology, so the authors developed a mini-ontology for proving this concept. Far from being merely a software tool for interface design, the developed trans-cultural interface played a key architectural role in preventing semiotic distortions in conveying messages (i.e., the harmful difference between "intentio auctoris" and "intentio lectoris" [6].

In the early ' 80 , Tim Berners Lee, established the bases of the Web and its main objective was to allow information interchange between people. At this step the HTML was created and it facilitated a simple representation of information. The World Wide Web has changed the way people communicate with each other and the way business is conducted. It lies at the heart of a revolution that is currently transforming the developed world toward a knowledge economy and, more broadly speaking, to a knowledge society [5]. This development has also changed the way we think of computers. Originally computers were used for computing numerical calculations. Currently their predominant use is for information processing, typical applications being data bases, text processing, and games. At present there is a transition of focus towards the view of computers as entry points to the information highways. Most of today's Web content is suitable for human consumption. Even Web content that is generated automatically from databases is usually presented without the original structural information found in databases. Typical uses of the Web today involve people seeking and making use of information, searching for and getting in touch with other people, reviewing catalogues of

online stores and ordering products by filling out forms. An alternative approach is to represent Web content in a form that is more easily machine-processable and to use intelligent techniques to take advantage of these representations. This plan of revolutionizing the Web is referred as the Semantic Web initiative [1]. It is important to understand that the Semantic Web will not be a new global information highway parallel to the existing World Wide Web; instead it will gradually evolve out of the existing Web. The Semantic Web is propagated by the World Wide Web Consortium (W3C), an international standardization body for the Web. The driving force of the Semantic Web initiative is Tim Berners-Lee. He expects from this initiative the realization of his original vision of the Web, a vision where the meaning of information played a far more important role than it does in today's Web.

In order to specify meanings, an ontology language must be used; ontologies have been gaining popularity as a method of providing a specification of a controlled vocabulary. The term ontology originates from philosophy. In that context, it is used as the name of a subfield of philosophy, namely, the study of the nature of existence, the branch of metaphysics concerned with identifying, in the most general terms, the kinds of things that actually exist, and how to describe them. For example, the observation that the world is made up of specific objects that can be grouped into abstract classes based on shared properties is a typical ontological commitment. In general, an ontology describes formally a domain of discourse. Typically, an ontology consists of a finite list of terms and the relationships between these terms. The terms denote important concepts (classes of objects) of the domain. For example, in a university setting, staff members, students, courses, lecture theaters, and disciplines are some important concepts.

An ontology provides a common vocabulary for researchers who need to share information in the domain. Some of the reasons to create an ontology are to share common understanding of the structure of information among people or software agents, to enable reuse of domain knowledge, to make domain assumptions explicit. Once ontologies begin to have more structure however, they can provide more power in applications. Once the ontologies have more structure than simple generalization links, property information can be used in many forms [8].

Since the undertaking started with two experimental models, the approach is necessarily a "bottom-up" one. Moreover, it was unavoidable to apply the mixed blessing of "try and cut" methods. Likewise, the approach is condemned to "micro-continuity" (entailing that the objectives are expressed related to time horizons) and in order to avoid the "traduttore-traditore" (communication in natural language is too rooted in anthropogenesis for not being a target but it also has drawbacks independently of a specific language), the main concern is to shape rules rather to enforce restrictions (mainly to impede culturally unacceptable equivalences) than to relax the process of semiosis. To match the multimodal interfaces they work for, ontologies must advance from language to languages (i.e. to complement spoken language with diverse sign languages) [3].

Architecture

The *apple ontology* is an example that tries to solve out a classic example of disambiguation. Even in a simple fruit ontology with the term "apple", properly placed in the ontology it would be a difficult task to come up with an unambiguous definition for apple; if the same task would be given to ten different people they probably would come up with ten (slightly) different definitions and they could spend hours discussing what the best definition would be. Firstly, like any other ontology it describes some properties of this term. It is structured in more than one part, and because of its aim, namely to allow a software tool to identify the sense of the word apple in a given context, it can be said it refers to more than one domain.

Every ontology, by its definition and its role, it describes a certain topic, a specific domain, in the example, the disambiguation of the word "apple". The same with the *apple ontology*, the only difference is that for each sense of the word apple (a fruit, a corporation) another ontology can be created, because it can be split in different ontologies about different themes: a fruit ontology, an electronic products ontology, a Beatles ontology. Each new ontology can be very easy reused in other contexts.

In order to exemplify the use of the term in different contexts, every context was defined in the ontology with its on relationships and definitions. So, to reach to the point when a class apple was defined, there were needed other classes such as a fruit class, a plant class etc. and the relations between these classes as depicted in figure 1.

Fig. 1. The apple class definition

```
<class id="fruit">
      …
      <comment>Fruits of a tree.</comment>
      <subClassOf>
            <class id="plant"/>
      </subClassOf>
      …
</class>
```

The ontology is created in such a manner that the restrictions defined should be very easy extended for other ontologies; in this manner the application that reads the ontology can be reused for reading and understanding other ontologies, defined in the same way.

For a global communication, the ontology is very important, and the amount of information it should contain is emergent, that means a single ontology can not contain all the senses and examples for a trans-cultural communication. The main aim of the ontology is to exemplify some of the senses of the word apple and the application should discover each sense of the word based on the rules it has learned from the ontology. The rules in the ontology are very clear, they are strict related to the term they describe and they try to contain only the information it is needed for the deduction of the meaning of the term. Three main domains are discussed and explained in the ontology: a fruit domain (for the sense of apple as a fruit), an electronic – industry domain (for the reference to the Apple Company) and a multimedia domain (for the reference to the Beatles Foundation). Each domain has its main classes, which are described with their properties and restrictions. In the hierarchical structure of the ontology, as a subclass or as a property, the instance apple is defined (`<class id ="apple"> ... <subClassOf> <class id="tree"/> </subClassOf>`). All these domains modelled in the ontology have at least one link with the apple term and the software program after reading all the ontology will determine the exact sense of the term.

Experimental Model

The subject of ontology is the study of the categories of things that exist or may exist in some domain [8], thereby the first in creating the ontology was to settle down and determine the domain that the ontology will cover and its scope: in this case the domain is the usage of the world apple, generally speaking, and in particular there are more than one domain, depending on the meaning of the word apple. The domain of interest and the scope of the ontology they are essential for further steps, after they were determined, the next step is to search and find other ontologies that match the established domains (in this case an ontology about fruits, economy, IT products, apples). Enabling reuse of domain knowledge was one of the driving forces in ontology research. For example, models for many different domains need to represent the notion of time. If it is needed to build a large ontology, we can integrate several existing ontologies describing portions of the large domain and/or extend it to describe our

domain of interest. There already are ontologies about economics and food [9], [10], although in this case because the *apple ontology* is mainly about the term apple, the existing ontology won't be used.

The next step was to determine which terms will be related to the *apple ontology*. Such terms must be very carefully chosen, because they will represent the base of the ontology. In this case, in order to determine the most accurate terms for each sense of the world apple, a quick search was made on *Wikipedia* encyclopaedia. The ontology includes terms like: company, computers, smart phones, Steve Jobs; plant, tree, fruit, leaves; multimedia, electronics, films, etc. For each of the selected term, some properties must be find out, in order to describe the internal structure of the ontology.

Every ontology need to specify descriptions for the following concepts: classes (general things) from the domains of interest, the relationships that can exist among things, the properties (or attributes) those things may have. So the next step in developing this ontology was to determine the class hierarchy and defining the properties of concepts. Some of the class hierarchy presented in the ontology are: the tree class as a sub class of the plant class, the apple class as a sub class of the fruit class, the smart devices class as a sub class of electronic products as presented in figure 2. The class hierarchy represents an "is-a" relation, according to the W3C *(World Wide Web Consortium)* standards proposed for OWL *(Web Ontology Language)* [12].

Fig. 2. The iPod class definition

```
<class id="iPod">
      …
      <comment>
            The division of mp3 players produces by Apple.
      </comment>
      <subClassOf>
            <class id="smartDevice"/>
      </subClassOf>
      …
  </class>
```

At this point all the class relations are being defined, not just the `subClassOf` relations, but also the `equivalentClass` relations and `disjointWith` relations.

After the class hierarchy has been established and all the class relations defined (through their names), because the classes alone will not provide enough information, properties and restrictions between these classes must be defined. The same will happen with the properties chosen to describe the terms of the ontology. Many relations, inspired from the real world and their purpose is to link terms between terms as illustrated in figure 3.

Fig. 3. An example of class relations

```
<property id="owns">
      …
      <inverseOf>
            <property id="isOwnedBy"/>
      </inverseOf>
      …
  </property>
```

The last step in the development of the ontology was the creation of individual instances of classes in the hierarchy. Defining an individual instance of a class requires: choosing a class, creating an individual instance of that class, and filling in the slot values [7].

After the structure of the ontology was created, it must be checked to find the errors that are easy to make when defining classes and a class hierarchy. Some of the common modelling mistakes that may appear are: to include both a singular and a plural version of the same concept in the hierarchy (fruit sub class of fruits) or to have cycles in the class hierarchy.

Maintaining a consistent class and a well structured hierarchy may become very challenging as domains evolve, but a more clear and accurate structure gives later the possibility to extend and reuse the ontology.

The software application was developed in the same way, all the classes an data structures were used in the program, were created after the structure of the ontology. The program was tested with web pages that included an XML file, with instances from the *apple ontology*.

Conclusions

The paper presented the real value of using ontologies and the Semantic Web (the ability to express the semantics of data, documents collections and systems, using the same semantic resource and that resource is machine-interpretable: ontologies), by presenting an ontology and a software program that demonstrates the use of an ontology. The created ontology was not of a high complexity but it can easily serve as a model for the common problem of disambiguation and it shows how terms disambiguation can be solved. Although the ontology refers to a single term presented in different contexts, its creation wasn't an easy task because the definition of classes in the ontology and arranging the classes in a subclass-superclass hierarchy was quite difficult, a lot of revising and refining of the ontology was needed. The application that makes use of the ontology, identifies the meanings of the terms described in the ontology and represents a model about a program that can respond to queries and retrieve data from programs/web pages that use such ontologies.

The future work will imply the creation of other ontologies and the refining of the existing ones (in the same way an *apache ontology* which will be used for a similar task, with the same software application presented and created for the *apple ontology*).

As middle range intentions (2007-2008) the authors would like to propose a generic methodological framework for designing mini-ontologies tailored to fit trans-cultural interfaces. The long range intentions (after 2008) are to get rid of the "mini" prefix carrying out ontologies for semantic web applications (outside the scope of the paper).

Trans-cultural ontologies should also constitute the object of a trans-disciplinary research in its own rights.

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The Social Capital Of Migrants And Individual ICT use.
A Comparative Analysis Of European Countries

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Abstract

The free movement of people within the European Union is a major political objective in Europe as is the creation of a socially integrated Information Society. The link between social capital and access to ICT is tested for geographically mobile persons, migrants.

Based on results from the EU project SOCQUIT the text reviews the state of the scarce research about migrants and their individual ICT use and the corresponding survey data.

In a globalising world individual communications become a major tool to maintain links between migrants. A new definition of migrant is empirically tested, extending the simple equating of migrants with foreigners. Regular ICT use is then analysed under the effect of social capital, social trust, migrant status, controlled for socio-demographic variables.

It emerges depending on social and context variables migrants more regularly use the Internet than non-migrants, as well the inverse. Migrants are close to others lacking the economic, educational, social and cultural resources that help in taking up the Internet. Using the Internet is linked to living with an extended network of weak links. The effects of social position and the focus an urban areas reflect the ongoing diffusion process. Deviations from this pattern are discussed for groups of countries, as well as demands for further research.

1   Introduction[1]

The free movement of people within the European Union is a major political objective in European policy to create a common European social space. Also, the EU's research agenda strongly incites to use Information and Communication Technologies (ICTs) to further e-inclusion, i.e. social, economic, and cultural integration into the emerging Information Society. However, behind the political will is there any evidence that there is a link between the fact of being a migrant and the individual's use of I? Do migrants differ from non-migrants in their ICT use? Here, stress is laid on the question: does social capital help in getting access to ICT? This is an eminently political question. Do the socially well-connected get more rapidly a place in the Information Society which would translate the social inequality into a technological inequality? In the backyards of the Information Society in this case social exclusion would be translate into e-exclusion, the contrary of what the European

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[1] The text is is based in part on SOCQUIT deliverable D11 [Anderson, 2006 #563] and further develops its ideas, see www.socquit.net

Union intends to achieve.

The link between ICT use and social capital has been examined in detail in a number of studies, and the EU projects e-Living (Anderson 2004) and SOCQUIT (Social capital, quality of life and ICT) (Heres, Anderson, and Thomas 2006) are one of the latest. Here the specifics of a population are studied that might play a strategic role in Europe's way to an inclusive Information Society.

The following paper we shall first overview the policy context of the question at hand, review the research about migrants, social capital, and the use of ICTs, and then define the central research question. After a critical view on the official and survey data on migrants a multivariate analysis will scrutinise the major drivers of migrant's regular ICT use. The paper will then discuss the results and its limits. Finally ways shall be proposed how to integrate the results into mainstream European research and policy.

Although today European countries often do not consider themselves as immigration countries, in fact migrants are numerically quite important. The 1st January, 2005, in the European Union 459.5 million inhabitants lived in the borders of the recently extended Union. In 2002, there was a net migration balance of 1.7 mill. persons, or 3.7 per thousand inhabitants ((Bundesamt 2004, p.29)). This average statistic does not show the large variation between countries. In Cyprus and in Spain, in 2003, there were more than 17 immigrants per 1,000 inhabitants. However, in EU the mean rate is only at 4.7 immigrants per 1,000 inhabitants (European Commission 2005, p.74). To this a non-estimated number of illegal immigrants should be added. The immigrant rate is not an indicator for the level of foreign-born in a country as there is a certain geographical mobility of foreign migrants within the European Union which reduces the rate especially in the Mediterranean countries. The statistics show that migration can be an important phenomenon even if the numbers will not show the social effects a lack of migration or the contrary, a strong influx, can exercise.

Though migration is a phenomenon as old as mankind and was particularly important during the industrialisation of the world economy in the late 19th century and beginning 20th century today international migrations are the demographic bottom-up side of economic and cultural top-down globalisation. There were large migration waves, but in Western Europe countries were more often the senders than the receivers of migrants so their culture was not challenged by newcomers. It is only with the forced migrations due to the First and Second World Wars and its consequences that migrants, though often from the same country or the same culture, became an issue. For instance, in Western Germany in 1950, one-fifth of the population did not live on the same territory in 1939. What is new today in Europe is the numerical size of the immigration, and its origin often from countries with a culture or ethnic background that largely differ from Europe. From 1960 to 1973, the number of foreign workers in Western Europe doubled from 3 to 6% of the workforce. After a standstill due to restrictions after the first petrol crisis immigration resurged. Now, a considerable part of immigrants are often asylum seekers or war refugees, for instance from what once was Yugoslavia. In the last decade in what is today the territory of the EU net migration rose from 1993: 826,000 to 2004: 1,852,000.[2]At the same period, the U.S. received a constant net migration of about 900,000 persons per year. That means that the countries of the European Union now receive a migration that is about at the same level as the USA which is a historic country of immigration. As a result of this continuing net immigration, in Europe outside the countries of the former Soviet Union the percentage of foreigners in the total population nearly doubled from 3.3% in 1960 to 6.4% in 2000 (United Nations p.24, Tab. II.1).

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[2] Data from Eurostat New Cronos:
http://epp.eurostat.cec.eu.int/portal/page?_pageid=1996,39140985&_dad=portal&_schema=PORTAL&screen=detailref&language=en&product=Yearlies_new_population&root=Yearlies_new_population/C/C1/C11/caa14608

1.1 The Policy Context

The starting point of the current European immigration policy is the understanding that the European way of life can not be maintained in the future if the European economy will not be more competitive and, at the same time, socially more inclusive. Therefore, the European policy favouring the coming of the Information Society intends to promote the diffusion of Information and Communication Technologies (ICTs) to wider parts of the economy and fostering research and development in advanced ICT while deliberately counter-steering a socially unequal evolution of the European societies. The central notion for this policy is the so-called e-Inclusion.

Initially, in the Lisbon Strategy in October 2001 the European Union understood with e-Inclusion a better integration of the elderly and the disabled into the information society, in providing ICT, training and other learning to disadvantaged people, promoting digital literacy, mainstreaming a gender equality approach in e-Inclusion policies.

The ongoing eEurope2005 strategy extended this approach in trying to achieve an inclusive digital society. If the Information Society for all will be achieved it will provide economic opportunities for all and will thus minimising the risk of a 'digital divide'. Here, the European policy has to turn to the user and orient policy to the demand of specific social groups (as well as geographic areas).

In 2005, the debate on the social implication of a competitive Europe in a globalising world has widened. A step in this direction has been made with the final report of the eEurope Advisory Group on e-Inclusion (eEurope Advisory Group 2005). The Advisory group understands e-Inclusion as

> "… the effective participation of individuals and communities in all dimensions of the knowledge-based society and economy through their access to ICT."

The Advisory Group recommends a policy oriented towards an empowerment of the citizen-user and not only to facilitate adoption and use.

The new i2010 policy proposal "A European Information Society for growth and employment " (COM(2005) 229) published in late 2005 does not fully follow these ideas as it is stresses more technology and economy as drivers and is less society-oriented, although a considerable way has been achieved compared with the first policy intentions in 2001.

The recent i2010 proposal states that

> "the 2005 Spring European Council called knowledge and innovation the engines of sustainable growth and stated that it is essential to build a fully inclusive information society, based on the widespread use of information and communication technologies (ICT) in public services, SMEs and households."

This is another policy program to reach the Lisbon objectives of higher growth, more and better jobs and greater social inclusion by 2010 in an integrated manner. The new strategic framework promotes an open and competitive digital economy and emphasizes ICT as a driver of inclusion and quality of life. One of the three objectives proposed by the European Commission is

> "achieving an Inclusive European Information Society that promotes growth and jobs in a manner that is consistent with sustainable development and that prioritises better public services and quality of life."

The measures intends to make ICT products and services, especially public services, more accessible, to improve the quality of life of citizens through new ICT enabled medical and welfare services, and to make ICT systems easier to use for larger swaths of the population. Obviously, migrants can be understood as a population requiring integration because they may provide crucial advantages for the future Europe.

1.2 E-Inclusion and migrants

A large part of migrants can be understood as a social group that translates well the notion of a disadvantaged social category as well as a solution for a set of problem that Europe has to solve.

The i2010 policy directive does not explicitly address immigration policy. However, if Europe wants to achieve an integrated Information Society migrants - which constitute about one in 10 inhabitants - have to form a part of it. This is also a conclusion of the eInclusion@EU project (IST-502553) that recommends to class migrant workers as one of seven important target groups in need of a better integration into the European labour market with the help of ICT. [3] Yet an inclusive Information Society comprises more than the question of work, even if it central; a full integration includes the Social, the Cultural, and the Political, too. Thus, the case of migrants can be used to measure the effective levels of inclusion of today's Information Society and analyse the reasons for the current divides.

There is still some way to go to integrate migrant issues in European and national Information Society policy agendas. One example is the e-inclusion example of Ireland. In its policy against poverty and social exclusion the European Union incites member states to systematically report about national policy plans furthering social inclusion[4]. Yet even in Ireland, one of the few countries that explicitly includes migrants in their national inclusion policy and which shows an advanced level of ICT diffusion, electronic tools are not yet part of the instruments used to help migrants getting a job and better training (Minister for Social and Family Affairs, n.d.). As a traditional emigration country the Republic today faces serious social and cultural challenges due to the relatively strong influx of economic migrants, which are, contrary to other countries, seen as necessary and are welcomed. But ICT has not yet emerged as a tool in her policy plans.

eInclusion@EU lists several examples in which ICT themes can be related to migrants:
 (i) the employment potential of multilingual migrant workers in teleworking, (ii) ICT as facilitator and assistant in social integration, (iii) access of migrants to technical infrastructure in public resource centres, (iv) special provisions for digital literacy of migrants, (v) ICT potentials for maintenance of contacts with the country of origin, as well as (vi) migrants and transfer of work-related skills and qualifications. [5]

Recapitulating, the e-inclusion of migrants can be seen as a social challenge, but also as the solution to the problem of an ageing population: Europe needs a larger active working population if it wants to maintain current living standards when a larger part of the population has retired. The inclusion of this population in the emerging Information Society becomes necessary if the expected solution should not become a problem.

2 Current research results on migrants

Two main research lines will be mentioned that can help to elucidate e-inclusion and migrants: The research on trans-national migration and on social capital and migration. But first it has to be defined what can be understood under social capital and under a migrant.

2.1 What means "social capital" ?

There is a long and ongoing debate on how to define and how to measure social capital and its links with ICT adoption and use which had been reviewed in (Ling, Anderson, Døffler, Frissen, Heres, Mooy, Pierson, and Thomas 2004). Social capital can be understood as an element of the social structure of a society based on the social interaction of its individual

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[3] http://www.einclusion-eu.org/Document.asp?MenuID=80

[4] http://europa.eu.int/comm/employment_social/social_inclusion/naps_en.htm

[5] http://www.einclusion-eu.org/Document.asp?MenuID=80

members and its voluntary organisations and on the social attitudes and values that support these interactions and are reinforced by them. Following Ling's et al. literature analysis social capital can be understood as composed of three sub-dimensions:

Bonding capital: the informal, social relations in everyday life between people who know each other well. These are the strong links between kin, friends, and close acquaintances or colleagues. Bonding capital appears to necessary for creating a sense of identity and social belonging.

Bridging capital: the social integration in formal, voluntary associations but also into the new forms of civic involvement, like informal self-help groups, single-issue citizen movements, and the like. In comparison to the strong links with family and friends social links in associations can be considered as weak. There are different levels of social involvement in associations. People can limit their involvement to a simple membership, that is, nominal membership. This can happen when someone wants to show his or her affiliation to an issue without further engagement. An active membership demands participating in meetings, or helping in sending out the membership bulletin, for instance. There is an obvious scale of engagement from simple membership to volunteering but which is not mutually exclusive: people can be simple member in one association and become member of the board in another.

Social trust is closely linked to these forms of social life. Trust can be considered as a prerequisite to a civic engagement, or as a result of it. There are different forms of social trust: trusting well-known persons, for instance members of the own family, should be distinguished from trusting strangers, for instance people met in public transport. The latter form of trust is called interpersonal or generalized trust. Interpersonal trust can be learned in meeting strangers in voluntary associations, or through the parents in childhood. Putnam (Putnam 2000) posits that once people have learned to collaborate with strangers within an association they can then transfer the acquired trust to social life with strangers outside the protected world of an association. Very different from interpersonal trust is the trust in the institutions of a country. But trust in institutions helps to acquire trust in strangers as functioning (legal) institutions will guarantee that deviant social behaviour will be sanctioned. In this way, the social behaviour of an unknown individual becomes more predictable. So, a strong trust in institutions will facilitate interpersonal trust and, indirectly, bridging capital.

2.2   Migrants or foreigners?

Migrants are difficult to define, and should not be confounded with foreigners or minority members. Excluding inner-country removals migrants are, by definition, people that move, more precisely: residents of a country who declare to be born abroad. Foreigners are residents who do not have the citizenship of the country they reside. Thus, migrants can be foreigners but need not be. And foreigners need not to be migrants. The separate definitions are important as Central and East European history shows numerous examples where people stayed put while political borders moved, for instance after the demise of Yugoslavia. So, without any migration nationals became foreigners.

A more socially realistic definition of what a migrant is should therefore integrate several aspects. Dimension of migrant status can be citizenship, the country of origin of the individual and of the parents; visible race, language spoken, subjective cultural identity, and religion, see (Lambert 2004). The advantage of the index Lambert creates from a selection of these indicators is that it can discover second-generation immigrants who might not be visible in official statistics based only on citizenship but who can feel being treated as a foreigner in everyday life. For migrants, their legal status will play a crucial role for their everyday life. There is quite a difference in the legal status and thus, the perspectives for their future social

integration, of "*Aussiedler*" (ethnic Germans from East Europe, unobservable to official statistics because they are automatically considered as German nationals), EU residents, civil war refugees from former Yugoslavia, asylum seekers, refugees declared illegal and in custody attending deportation etc. – In addition, any illegal resident will, of course, remain invisible. Very often, in public discussions, all these categories are just used in completely exchangeable way. According to which migrant definition is used the size of the population can considerably vary.

Getting a representative picture of migrants is expensive due to their small number. The case of resident foreigners is exemplary. Resident foreigners can be considered to be a minority in most of European countries. In most countries they represent less than one in ten residents, besides the special cases of the two small countries of Switzerland and Luxembourg with their high concentration of migrants of 19.8% resp. 36.9% of the resident population. Thus, to get a representative picture the small population demands either over sampling or large representative surveys. Both solutions are onerous and therefore, in standard European comparative surveys migrants – even if well sampled – are only covered at the expense of a considerable sampling error. In addition, there are difficulties in sampling with any geographically mobile individual and the issue of cultural differences also has to be taken into consideration. Interviewees who do not well understand the language of the questionnaire, i.e. in general the official language(s) of the country, are barred from participation. In the Candidate Countries Eurobarometer run by the European Commission up to 2003 residents with other than EU member state or Russian citizenships (in the Baltic states) have been screened. These deliberately set filters seriously distort the data, cannot be undone through weighting and thus considerably reduce the quality of the interpretation that can be run on the basis of these data.

Lambert, in his critique of ethnicity and migration data in major comparative surveys concludes that the available data available is messy and problematic. He notes that it is difficult to develop a classification scheme for migrants that applies to comparative studies in a comprehensive but meaningful way .

As a consequence for the following statistical analysis a migrant will have to be defined in multiple ways and in particular, a wider, more cultural definition than the restricted one based on citizenship will have to be adopted.

2.3   Trans-national migration

A major line of research on migrants is currently focused on what is termed trans-national migration. Under the effect of globalisation today social structures get more fluid, people get less sedentary, and migration becomes part of the life experience of at least a certain part of the population. There is the theory that the migrant worker becomes the new condition of modern Man in the network society (Castells 2000), what Portes calls the bottom-up side of globalisation (Portes 1997). Also, since the end of Communism in Europe new wars, especially in the Balkans, created large waves of wartime refugees (Kaelble 2007; Migration 2005).

It is not only the scope of migration that is changing but, according to researchers, also its form. Trans-national migration can be understood as a new form of diaspora, i.e. of the dispersed global settlement of an ethnic group, but at a more important scale than the historical, Jewish one. The diaspora as a way of living existed since the expulsion of the Jews from Palestine in 70 B.C. but its importance has grown. Trans-national migration emerged with the globalisation process starting in 1980s: mass transport became less expensive, mass media reached even lonely territories, the cost of communication technologies dropped considerably (Dufoix 2003). These processes together allowed that today, a part of migrants do not settle definitively once they arrived but continue to shuttle between country of origin

and new home.

Here the focus is on individual- or household-level communication use. However, trans-national migration at the level of the individual or the household is difficult to study with the data from survey research at hand: there are no data, neither from cross-sectional nor from longitudinal surveys that allow generalising. As this form of migration is more of an emergent phenomenon and sample sizes in international comparative, representative surveys are necessarily small current research on trans-national migration can hardly be representative. So, empirical studies up to now are qualitative in nature. Moreover, as work and organisational as well as mass communications are more visible and thus easier to study there is a general lack of research on private and residential communications of trans-national migrants (see for instance the EU project European Media Technology and Everyday Life Network EMTEL and its studies of diaspora communication).

The implications of trans-national migration for communication patterns are several-fold: due to the shuttle process the migrant remains in his intermediate position between the old and the new world. As a potential consequence the acculturation process of a migrant into the new host society will slow down, and a strong demand for international communication and transport between the country of emigration and of immigration will emerge. The exchange between the sending and the receiving countries of migrants become less one-sided as migrants often work as innovation agents: they are the personified bridging capital, between the new and the old home country. The social innovation is that this phenomenon no longer is restricted to middle-class or elites, but can touch the underclass (Diminescu 1999; Portes 1997).

The implications for social capital will be discussion in the following chapter. In short, trans-national migration can lead to more social cleavages and to more an opener, culturally more diversified society.

2.4   Social capital and migration

Another major research strand that interests here focuses on social capital. Social capital and communication studies can show a certain bias in favour of behavioural analyses which does not sufficiently reflect on the societal context of social capital. When it comes to migrants the bias has been attacked when the debate about the most appropriate integration measures for migrants reached the debate on social capital and on social trust. New immigrants will in many cases differ from the host population and will initially increase the social inequality in a country. The question is: does social dissimilarity or diversity negatively influence the inclusion of migrants? Should migrants be made to rapidly assimilate to the culture of the new home country, as this is the case in the US or in France? Or should they retain a part of their culture of origin so that the host society will become multi-cultural? This is the immigration policy model of Canada and of Great Britain.

The question of ethnic diversity at the level of a country can translate into more or less ethnically diverse networks at the individual and family level. Social capital can have its downsides when the social ties within a family or a neighbourhood become too exclusive, at the detriment of links to non-members that provide a bridge to other informal or formal networks (Portes and Landholt 1996). Thus an immigrant family's supporting network which is necessary for mutual help and can provide identity, can become a cage which enforces conformity with social values of the country of origin (Janssen and Polat 2006). A strong bonding capital without an equally strong bridging capital can inhibit people to adapt to changes in the outside world, for instance accepting a new role of woman. Besides these structural reasons there can be negative effects of effective social capital. The Mafia is the best-known example of a high bonding capital among 'The Family' and a controlled bridging to the outside world. Another effect can be that trust becomes 'enforceable' which means that

it is no longer voluntary, a result of positive experiences or a specific attitudes to fellow man but a result from social obligation the social control (Portes and Sensenbrenner 1993). The relative importance of inner-ethnic family bonds and voluntary associations in comparison to trans-ethnic social relations when marrying, playing sports or voting is a central concern in the current political debates about the relative merits of multiculturalism and or assimilation to a country's way of life (Geißler 2003; Halm and Sauer 2006).

Linked to this debate about the relative importance of bonding and bridging among migrants and their ethnic composition is the question of migrants' bridging capital, in particular volunteering. When we look at the traditions of the originating cultures we are able to see that often there is not a strong tradition of volunteering among migrants. Also, the low social, educational and economic resources of the majority of working class migrants make it improbable that they will rapidly get involved. Tenants of an assimilation model such as Esser will not welcome the founding of immigrant associations because they are understood as an indicator of a ghettoisation process at work and might undermine the social cohesion of the host society in creating an ethnic underclass (Esser 2001; Halm and Sauer 2006). On the other hand, proponents of a multi-cultural model see the civic involvement as a stepping-stone to further inclusion, even if it initially is in socially exclusive migrant associations only (Halm and Sauer 2004; Hoppe 2003). These latter views can draw support from the experience that a social interest such as living as an immigrant has to be organised to be able to get introduced into the policy process in West European democracies (Hartmann 1992).

So the question can be asked: does the civic engagement in separate immigrant associations slow down or accelerate the assimilation and integration process? A historical fact is that in the US, after their arrival, immigrants often lived in immigrant neighbourhoods and later dispersed in the country. This is an historical process whose reflection in space has been called "invasion and succession" by the Chicago school of social ecology. In the American society of immigrants the socio-spatial separation in "ghettos" or ethnic neighbourhoods with a concomitant organisation in ethnic associations was the typical way of social integration for the non-black population into mainstream society (Friedrichs 1977). If we can infer from a number of national policy programmes and accompanying surveys in fact, ethnic self-organisation appears to be the dominant frame of civic engagement in a first phase of integration followed later by a mixture of ethnic associations and membership in associations of the host society (Halm and Sauer 2006; Huth 2003b; Niessen and Schibel 2004).

The civic engagement of migrants is understood by the European Commission as an important leverage used against social exclusion, with the projects MEM-VOL Migrant and Ethnic Minority Volunteering, in the framework of the Community Action Programme to Combat Social Exclusion and the running project INVOLVE in the INTI policy field to integrate non-EU third-country nationals (Huth 2003a)[6]. POLITIS is yet another EU programme which employs civic involvement to advance the social inclusion of migrants (Cyrus 2005). The fact that a public policy programme is needed to promote volunteering and self-help of migrants (and ethnic minorities) already speaks for a problematic relation between migrants and civic engagement. Rarely in any of these programmes individual electronic communications are conceived or analysed as a means to communicate among or with migrants (an exception (d'Haenens 2004) cited in (Wal 2005). The research interest is more on mass media, be it through radio, TV, or the Internet (for instance, the EMTEL project (Georgiou 2003)).

There is another caveat to be mentioned when it comes to the potential for inclusion arising from volunteering. There are probably considerable class obstacles in the way of using volunteering as a tool for better integration of migrants. Historically volunteering was, and

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[6] http://www.mem-volunteering.net

even today more or less still is, a middle-class phenomenon (see for Germany, France, and the UK (Li, Pickles, and Savage 2005; Prouteau and Wolff 2004; Rosenbladt 2000)). However, a large part of today's migrants do not belong to the middle classes. So, they are in a disadvantaged starting position when it comes to civic engagement. From the late 19th century onwards a notable exception to the middle-class bias existed which helped to integrate workers and migrants in voluntary associations and which provided them a bridging capital: namely religious and ideology-based institutions. The Catholic, the Socialist, and the Communist socio-cultural milieus and their institutions overcame these class barriers. But today these milieus have lost much of their binding forces.

So, it remains to be seen whether the involvement in associations can help migrants get socially more included. As national differences, particularly in social policy are known to be still important, inputting the national context into the quantitative models is understood to be important.

The use of ICTs for interpersonal communication at the individual level by migrants has not yet been really treated in an empirical way that allows drawing general results. If existing at all, there are case studies, for instance (Paragas 2004; Pertierra, F.Ugarte, Pingol, Hernandez, and Dacanay 2002; Wolf and Gournay 2005). It is important to note that these studies all concentrate on mobile phone calling and text messaging, and not on email or chat use. In fact, a mobile phone being the most individual and at the same time (geographically) mobile communications means it adapts particularly well to people on the move. (Diminescu 2002) shows how well the mobile phone fulfils the need of continually up-to-date information on security and work of Romanian immigrants. When it was still illegal for them to enter EU members states and to work there the mobile phone allowed exploiting the smallest chance to advance and to fight for a better living. The case of trans-national migrants also confirms the weight of the ICT use for their lives: trans-national migrants are strong consumers of ICT services, and can act as diffusion agents for ICT in their countries of origin. With their desire to reduce cost for individual communications they can be very 'innovative' when it comes to both legitimate and illicit ways of reducing cost (Diminescu 1999). Trans-national migrants can be seen as an indicator for a heavily ICT-oriented population that might presage future ways of life and of communicating.

There is a master piece in cultural and social studies that treats the trans-national communication of migrants at the beginning of the last century: the epoch making enquiry of the acculturation of Polish peasants in North America used the letters exchanged between the Polish family left behind and the new home country as source material (Thomas and Znaniecki 1918-1920).

As a result, the main lines of reasoning can be restated as:
–   Migrants can not be simply equated with non-nationals. A wider definition has to include the cultural dimension of migration.
–   The civic involvement of migrants can probably play a role in social capital but its exact importance has to be determined.
–   The results have to be interpreted with the knowledge in mind that the one-way trip from a sending to a receiving country is no longer the standard way of migration.
–   Individual ICT use of migrants is not well researched and should also integrate the use of mobile phones.

3 The description of a migrant and a review of available survey sources

The main difficulty with comparative social surveys when it comes to migrants is the multi-dimensional character of what can be considered to be a migrant, problems of sampling, and

their small sample sizes.

As a result of the discussion of the definition of the characteristics the term of migrant should not be confounded with a foreigner. The available comparative survey data sets allow more or less leeway and precision in working with a cultural definition of a migrant.

The following comparison of the quality of representative survey data sets for the quantitative analysis of migrant behaviour shows that of all the recent data sets that cover a large majority of the analytical dimensions of the study only the first round of European Social Survey 2002/03 provides the smallest deviations from the official numbers which exclude an unknown number of illegal immigrants. Other surveys cannot match the advantages of the ESS 2002/03. The e-Living survey, which also covers the same dimensions, is slightly less recent and covers far less countries. Eurobarometer surveys had to be excluded because of the exclusion of foreigners from non-member states from the sampled population. The more recent, second round of the ESS which was published in September 2005 is of no use as it does not include the wealth of questions on civic engagement of its first round. Eurescom's P903 fieldwork date from late 2000 already and did not include questions on quality of life. In other words, the quality of the sampling of foreigners or migrants is still a desideratum of survey research.

The ESS allows to base the description of the migrant status on four indicators as Lambert proposes: (i) ha foreign nationality, (ii) having one or two parents born in a foreign country, (iii) speaking a language at home which is not one of the country's official languages, and (iv),self-definition as belonging to a minority group in the country,

Table 1: Comparison of levels of foreign and migrant population in European official statistics and social surveys

Source:	OECD	EUROSTAT New Cronos	EURESCOM P903	EVS	ESS	Lambert (ESS)
Indicator	Citizenship	Citizenship	language	citizenship	citizenship	migrants
Field survey in:	2001	2001	2000	2001	2002/03	2002/03
Austria	8.8%	8.9%		1.4%	4.3%	22.0%
Belgium	8.2%	8.4%		11.2%	4.9%	18.0%
Czech Republic	2.0%		5.1%	0.5%	0.4%	12.0%
Denmark	5.0%	4.8%	12.4%	4.1%	2.4%	10.0%
Finland	1.9%	1.8%		0.5%	1.6%	6.0%
France	5.6%	5.6%	8.7%	1.4%	4.3%	25.0%
Germany	8.9%	8.9%	6.7%	2.5%	5.0%	16.0%
Greece	7.0%	7.0%		1.0%	5.3%	20.0%
Hungary	1.1%			1.1%	0.2%	12.0%
Ireland	4.0%	4.1%		1.4%	3.2%	12.0%
Italy	2.4%	2.5%	5.9%	0.1%	0.3%	5.0%
Luxembourg	37.5%	36.9%		37.3%	34.0%	55.0%
Netherlands	4.3%	4.2%	21.4%	2.4%	1.9%	13.0%
Norway	4.1%		8.1%		2.7%	11.0%
Poland	0.1%			0.3%	0.0%	9.0%
Portugal	3.4%	2.0%		2.0%	2.3%	8.0%
Slovenia	2.3%			0.1%	0.1%	14.0%
Spain	2.7%	3.3%	10.2%		2.6%	8.0%
Sweden	5.3%	5.4%		4.2%	2.9%	19.0%
Switzerland	19.7%	19.8%			10.4%	32.0%
United Kingdom	4.4%		9.6%	3.0%	2.8%	18.00%

Sources: (2005), data from (EURESCOM-P903 2001), (Lambert 2004). Data for Slovenia: (Slovenia 2005). Data for France: Census 1999. The outlier in the Dutch data for EURESCOM P903 incites to interprete them with caution.

Lambert proposed to create a cumulative index based on these characteristics as well as on

the country of birth of the respondent and the length of residence in the country. However as the analyses have proved, the index does not seem to differentiate for ICT use among migrants and non-migrants any better than the original, separate measures. For the sake of the analysis, as the necessary cell frequencies for a detailed study lack, the index was simplified: someone is called a migrant if he or she fulfils at least one of Lambert's migrant indicators composing the index. If not, the person is classified as non-migrant.

3.1 Classification of countries according to their social capital.

A classification of the study countries seems to be helpful in order to take the societal contexts of migrant's ICT use and its link with social capital into consideration. Often, a certain behavioural bias influences the analysis of migrant behaviour as if individual migrants do not live within a society, an economy, and a culture which they can influence but which also constrains individual action. Classifying countries on the basis of their levels of social capital should allow to shed some light on the common conditions of the choices and constraints of European moving towards a socially inclusive Information Society.

There are several country classifications which cover parts of the three aforementioned dimensions. Esping-Andersen and his followers examine the societal context of social capital formation, the welfare regime. He based his three ideal types of welfare regimes on the dominant way of welfare delivery in a country, be it the welfare state, the market or the family (Esping-Andersen 1990). Leibfried further distinguishes a rudimentary, Latin model (Leibfried 1992). And Räsänen extended this model to incorporate former Communist countries in Eastern Europe (Räsänen 2004). These typologies grounding in the institutional and policy structure can be confronted with a typology based on social agency of the individuals. Dekker and van den Broek succeeded in classifying Western societies by the scope and intensity of engagement in voluntary associations. They distinguished a set of countries with high nominal membership levels in the general population and high rates of volunteering among the members (Canada and the US), a second set with low membership rates and high rates of volunteering (basically the South European countries), and a third, intermediate one with high membership rats but low intensity, to be found in Scandinavia, West Germany and the Netherlands (Dekker and Van den Broek 1998). The authors are able to confirm in part the typology of welfare regimes because the institutional structure of a country and its social history interact with the social agency of its inhabitants. This is the case for the extremes constellations, the Scandinavian welfare states and the South European family-based welfare regime. The middle ground, the countries with a liberal, a corporatist, or a welfare regime in transformation, rests to be better explained.

Another, more practical reason for classifying countries is the low number of people of specific types (such as migrants) in the available survey data sets. Regrouping countries on the basis of their similarity allows the aggregation of individuals across countries and thus acquiring larger sub-samples for more in-depth analysis.

The variables that operationalise the analytical dimensions represent a somewhat limited choice as they are to mirror the substantive questions, be representative, cover large parts of Europe, and should be recent. The choice was made to base the analysis on the data from the high-quality European Social Survey 2003 as it covers social capital in detail, as well as a large selection of 20 Nordic, West and Central European as well as Latin and East European countries. Luxembourg was excluded as its small size would distort results. The missing data for the Czech and Swiss respondents had to be replaced by multiple imputation. .

Table 2: Variables and data sources for country classification

Dimension and its operationalisation	Source	Year of field study
Bonding capital		
Mean number of weekly socialising contacts with family & friends	ESS	2003
Family judged more important than friends (calculated)	ESS	2003
Subjective importance of contacts with family	ESS	2003
Subjective importance of contacts with friends	ESS	2003
Bridging capital		
% Nominal membership in voluntary organisations	ESS	2003
% Active membership in voluntary associations		
% Volunteering in voluntary associations	ESS	2003
% Helping outside family, associations, work	ESS	2003
Trust		
Mean Interpersonal trust	ESS	2003
Mean trust in institutions with sanctioning power (police, legal system)	ESS	2003

To classify the countries based on their similarity a hierarchical cluster analysis using the variables shown in the preceding table was done. The procedure resulted in the following dendrogramme.

Fig. 1: Dendrogramme of country clustering
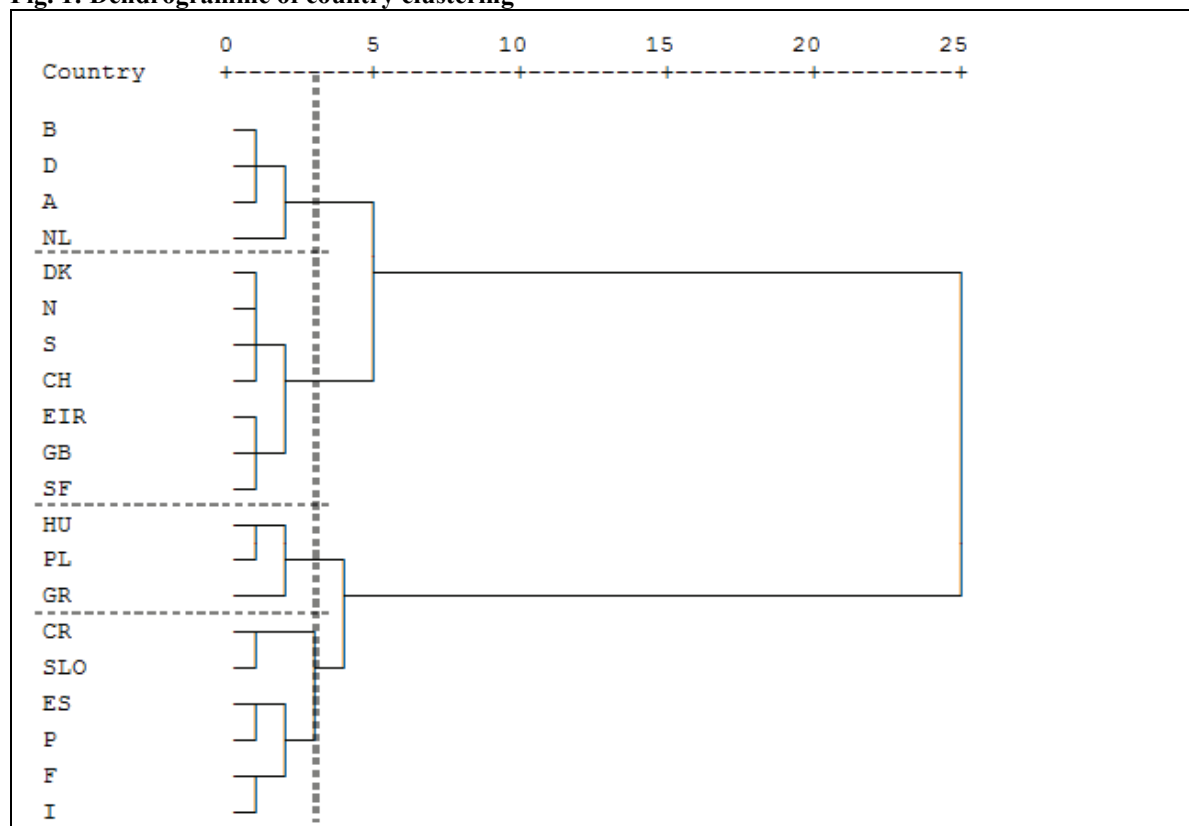
A clear dichotomy appears between countries with different forms of social capital. The theory of welfare regimes allows their easy description. There is a major group of countries from North and Central Europe, composed of countries with a social democratic, a liberal or

- 786 -

a corporatist welfare regime, and another one from the Latin and East European countries, composed of familistic and transformation countries. Both major groups are each composed of two sub groups. The Northern group is composed of countries with a social democratic (Denmark, Norway, Sweden, Finland), or liberal background (Great Britain, Ireland, Switzerland), and a second one with a Corporatist welfare regime: Germany, Austria, Belgium, and the Netherlands. The Southern group consists of Latin countries, but also includes Slovenia and the Czech Republic, two East European countries who either have a long, though broken history of a civil society, or which never closed to Western European influences even when belonging to a Communist state, as in the case of Slovenia. In fact, the classification is not very pure as the group of the transformation countries consists of Hungary and Poland, but also of Greece.

The four clusters can be described as follows: social-democratic and liberal countries are relatively weak in bonding capital but strong in bridging capital. The corporatist countries are slightly stronger in bonding and slightly weaker in bridging capital. Their specific trait is the emergence of a new form of civic engagement in informal and self-help groups. Latin countries is clearly more family-oriented and lacks a strong civil engagement of its inhabitants. Transformation countries are clearly the most family-oriented as they need to replace the lacking welfare state and civil society institutions. All in all, the structure found here in other social capital studies based on a variety of sources (see (Esping-Andersen 1990), (Leibfried 1992), (Fenger 2005), (Delhey and Newton 2005), (Pichler and Wallace in print)).

Table 3: Social capital forms and European country types

	Country type			
	Social-democratic & Liberal	Corporatist	Latin	Transfor- mation
Bonding social capital				
- Socialising	26.4	33.5	34.2	**56.8**
- Importance of family	9.5	9.0	9.4	9.7
- Importance of friends	8.7	8.4	8.2	8.1
- Family more important than friends	33.9	43.3	50.8	**60.0**
Bridging social capital				
- Nominal membership	**80.1**	75.3	40.5	33.1
- Active membership	**44.1**	42.2	26.7	14.7
- Volunteering	**24.8**	21.9	10.6	8.8
- Informal & Self-Help	35.0	**45.4**	25.3	21.5

4 Multivariate analysis

In the following sections an attempt is made to study whether being a migrant makes a difference when it comes to explain the different forms of social capital and of ICT use. Therefore, after introducing a set of influences that mirror the societal context, the individual resources and the different analytical dimensions the last variable introduced is always the migrant status. Tables show the odds of a change in the status of the dependent variable of regular ICT use in a logistic regression. The data source is the European Social Survey round 1 of 2002/2003 (2003).

The independent variables are composed of a group of socio-demographic control variables, indicators for bonding and bridging capital and for trust, and migrant status.

The indicators for bonding social capital are the weekly frequency of socialising with friends

and colleagues, and the perceived importance of the family (on a 11-item scale) and with friends (dto.). To overcome the skewed distribution the variables were dichotomised into a reference group with the lower two-thirds of the distribution and the remaining higher third as the effect group.

The indicators for bridging social capital are being a nominal member in at least one out of 12 different voluntary organisations, being an active member in them, and volunteering in any of them. The voluntary organisations listed were sports club or club for outdoor activities, an organisation for cultural or hobby activities, a trade union, a business, professional, or farmers' organisation, a consumer or automobile organisation, an organisation for humanitarian aid, human rights, minorities, or immigrants, an organisation for environmental protection, peace or animal rights, a religious or church organisation, a political party, an organisation for science, education, or teachers and parents, a social club, club for the young, the retired/elderly, women, or friendly societies, any other voluntary organisation than the ones previously mentioned.

Social Trust is measured with the standard question *"[G]enerally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?"* on an 11-point scale from "Do not trust at all" to "Complete trust". Trust in institutions is measured by a composite index of the questions of trust in norm-setting and sanctioning institutions, i.e. the (national) Parliament, the legal system and the police. Respondents could answer on an 11-point scale from "Do not trust at all" to "Complete trust". For the analysis the variable has been nationally standardised to reduce bias due to skew and national answer styles in opinion polls.

ICT use, the dependent variable, has been operatioas regular use of the Internet and email for private purposes. Based on a question on the frequency of use, respondents were grouped into a reference group composed of non- and irregular users (usage less often than once a week) and users with weekly usage or more often, the effect group. Because of the small size of the sample for migrant internet users the following analysis can neither analyse the intensity nor the content of the use.

4.1   Results

It appears from the following four tables that regular use of the internet can best be explained by, in decreasing order of importance,

– The resource equipment: above all social position (education and household income), the stage in life cycle (age, living with children), gender, size of community,
– Elements of bridging capital: the extent of nominal as well as of active memberships,
– Elements of bonding capital: in some of the countries the frequency of socialising with friends, relatives, and work colleagues,
– migrant status
– Social trust: interpersonal trust in some of the countries.

As a main result in can be stated that after introducing the controls of resource equipment and social integration into the new society in countries with a strong ICT development (Denmark, Finland, the Netherlands, the United Kingdom) migrants have the same odds to regularly use the Internet as non-migrants. In several countries with a a strong young immigration that can work in IT-oriented jobs or that are accustomed to live with ICTs, such as in Norway or Ireland, *ceteris paribus* migrants are more often a regular Internet user than non-migrants. The contrary effect can be observed in Sweden, in Germany, and in Greece: here migrants are less probably regular Internet users than non-migrants. For Germany this might be explained by the visibly disadvantaged situation of the large population of Turkish origin.

It is remarkable that in most of the countries educational attainment exercises the strongest of

all the effects, before household income. In 2003, after half a decade of Internet diffusion, in all of the European countries studied the domestication of the Internet and email still followed the social hierarchy. The strong effects of age on Internet usage, present in all of the countries, as well as the effect of the size of community are all indicators for the Internet still being in a process of social and spatial diffusion process. Effective efforts to take the Internet to help the education of one's children, though well-known to incite parents to take the Internet (Lelong, Thomas, and Ziemlicki 2004), can only be observed in some social-democratic and liberal countries.

Table 4: Results from logistic regression on regular Internet use in social-democratic and liberal countries, by country

	Denmark	Finland	Norway	Sweden	United Kingdom	Ireland
Control variables	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Age group						
- 30-60 yrs	0.356***	0.167***	0.305***	0.323***	0.402***	0.547**
- 61 + yrs.	0.085***	0.051***	0.081***	0.075***	0.119***	0.227***
Gender (male)	1.447*	0.92	1.853***	1.489**	1.12	1.19
Living as a couple	1.11	1.26	1.28	0.79	1.18	1.401*
Living with children in preschool age	1.36	0.88	0.99	1.57	1.15	0.74
Living with young children	1.51	1.679**	1.418*	1.552*	1.454*	1.04
Living with adolescents	1.31	1.471*	1.37	1.00	1.17	1.706***
Educational attainment						
- secondary level	2.149***	2.098***	2.911***	2.2***	3.424***	2.834***
- tertiary level, degree	5.503***	5.539***	7.403***	4.842***	5.045***	6.195***
Household equival. income						
- second quartile	1.27	1.16	1.24	1.689**	1.481*	1.10
- third quartile	2.316***	1.747**	2.462***	2.905**	2.874***	3.034**
- fourth quartile	3.693***	3.815***	3.871***	6.738***	6.105***	4.23***
Size of community	1.31	1.95***	1.822***	1.22	0.85	1.904***
Social capital: bonding						
Informal socialising	1.648**	1.10	1.718***	1.485**	0.78	1.14
Importance of friends	0.92	0.87	0.726*	0.669**	0.91	1.02
Social capital: bridging						
Nominal membership	1.06	1.26	1.461*	0.89	1.44	1.33
Active membership	1.37	1.392*	1.566**	1.378*	1.345*	1.29
Volunteering	1.612*	1.40	1.413*	1.05	1.31	1.22
Informal volunteering	1.15	0.91	1.02	0.87	0.87	0.95
Interpersonal trust	0.86	0.77	1.25	0.90	1.06	1.09
Trust in institutions	1.693***	1.15	1.529**	1.527**	1.25	0.94
Migrant status						
- migrant	0.86	0.61	1.765*	0.658*	1.06	2.02*
Sample size	1,237	1,741	1,918	1,753	1,723	1,572
Missing cases	269	259	118	246	329	474
Nagelkerke's R	0.40	0.47	0.48	0.47	0.46	0.41

Source: European Social Survey 2002/2003.
Table show odds ratios, *$p<0.05$, **$p<0.01$, $p<0.001$

ICT usage a general trend is not Comparing the impact of bonding and of bridging capital on the ,as in Norway ,In some countries with a high social capital .evident in every country the Internet ,Here .integrated life-Internet connection correlates well with a socially well contacts with voluntary associations than the strong helps more to maintain the socially weak This effect is even more visible in countries with a .bonding contacts with friends and family .and the Netherlands ,Germany ,in Belgium ,corporatist social structure

Table 5: Results from logistic regression on regular Internet use in corporatist countries, by country

	Austria	Belgium	Germany	Netherlands
Control variables	Odds ratio	Odds ratio	Odds ratio	Odds ratio
Age group				
- 30-60 yrs	0.325**	0.567**	0.259***	0.432***
- 61 + yrs.	0.078***	0.121***	0.058***	0.122***
Gender (male)	1.881***	1.429*	1.06	1.543***
Living as a couple	1.12	0.80	1.27	0.94
Living with children in preschool age	0.64	1.02	1.05	0.74
Living with young children	0.98	1.11	1.28	1.27
Living with adolescents	1.32	1.586*	1.624***	1.16
Educational attainment				
- secondary level	2.621***	2.924***	2.78***	2.002***
- tertiary level, degree	4.837***	10.443***	7.11***	4.013***
Household equivalence income				
- second quartile	1.531*	1.48	1.29	1.20
- third quartile	1.635*	1.654*	2.029***	1.459*
- fourth quartile	2.949***	3.031***	3.89***	2.311***
Size of community	1.355*	1.44**	1.265*	1.07
Social capital: bonding				
Informal socialising	1.627**	1.35	1.22	1.08
Importance of friends	1.29	1.08	1.06	1.24
Social capital: bridging				
Nominal membership	1.19	1.451*	1.445**	1.589**
Active membership	1.09	1.23	1.20	1.15
Volunteering	1.38	1.19	1.01	1.294*
Informal volunteering	0.90	1.09	1.10	0.90
Interpersonal trust	1.601***	1.33	1.331*	1.04
Trust in institutions	0.94	1.03	1.23	1.321*
Migrant status				
- migrant	2.061**	1.07	0.684*	0.75
Sample size	1,305	1,305	2,208	1,960
Missing cases	952	594	711	404
Nagelkerke's R	0.38	0.43	0.38	0.32

Source: European Social Survey 2002/2003.
Table show odds ratios, *p<0.05, **p<0.01, p<0.001

In the more family-oriented Latin social countries the regular use of the Internet only helps to maintain the weak contacts. Here family members are more prone to call another family member than send an email. In the several Southern and Eastern countries, in Spain, Greece, and in Hungary, the strong correlation of bridging capital indicators with regular Internet use will probably be due to a more elite-oriented recruitment of voluntary associations in these countries.

Table 6: Results from logistic regression on regular Internet use in Latin countries, by country

Control variables	Spain Odds Ratio	France Odds Ratio	Italy Odds Ratio	Portugal Odds Ratio	Slovenia Odds Ratio
Age group					
- 30-60 yrs	0.303***	0.448***	0.523*	1.22	0.307***
- 61 + yrs.	0.057***	0.143***	0.153***	1.11	0.072***
Gender (male)	1.902***	2.017***	2.668***	0.92	0.99
Living as a couple	1.095**	1.33	0.79	0.80	0.64*
Living with children in preschool age	0.82	0.91	2.37*	1.04	1.35
Living with young children	0.71	1.17	0.98	1.00	1.29
Living with adolescents	1.873*	0.99	1.54		1.583*
Educational attainment				1.48	
- secondary level	2.677***	2.37***	4***	1.45	2.392***
- tertiary level, degree	9.487***	5.957***	9.438***		9.2***
Household equivalence income					
- second quartile	1.44	1.593*	1.54	0.74	1.28
- third quartile	1.41	2.639***	1.71	1.12	2.202**
- fourth quartile	3.45**	3.097***	2.498**	0.95	3.67***
Size of community	0.90	1.20	0.84	1.30	1.04
Social capital: bonding					
Informal socialising	1.43	1.09	0.99	1.69	0.80
Importance of friends	0.71	0.96	0.92	1.294**	0.84
Social capital: bridging					
Nominal membership	2.438***	1.41*	1.634*	1.22	1.733**
Active membership	0.99	1.21	1.46	3.04	1.506*
Volunteering	0.65	1.01	0.94	1.166**	0.74
Informal volunteering	1.18	0.95	1.802*	0.48	1.01
Interpersonal trust	1.01	1.661**	1.09	0.815**	1.748**
Trust in institutions	1.53	0.98	1.26	0.96	1.412*
Migrant status					
- migrant	0.57	1.27	0.18	0.18	0.84
Sample size	861	1,209	590	893	1,116
Missing cases	868	294	617	618	404
Nagelkerke's R	0.47	0.40	0.41	0.12	0.45

Source: European Social Survey 2002/2003.
Table show odds ratios, *$p<0.05$, **$p<0.01$, $p<0.001$

With a Nagelkerke's R² of at least 0.32 and in most cases of more than 0.40 the country models explain ICT access of migrants remarkably well. At the same time the considerable loss of information due to missing data should incite to caution when interpreting the results, as do the small cell frequencies for some variables in the case of Portugal and in the transformation countries that lead to inflated odds ratios.

A second major result is that with an increasing cultural and social integration into the host society migrants are also more inclined to get internet access. Today (i.e. in the year of the survey, 2003) the new communication technologies – including mobile communication – can help to overcome integration difficulties for migrants.

Table 7. Results from logistic regression on regular Internet use in transformation countries, by country

Control variables	Greece Odds ratio	Hungary Odds ratio	Poland Odds ratio
Age group			
- 30-60 yrs	0.554*	0.273***	0.169***
- 61 + yrs.	0.096***	0.062***	0.043***
Gender (male)	1.876**	2.241***	1.22
Living as a couple	0.568*	0.276***	0.77
Living with children in preschool age	0.93	1.13	0.453**
Living with young children	1.15	1.06	1.811**
Living with adolescents	1.48	1.669*	2.453***
Educational attainment			
- secondary level	5.738***	3.924***	2.949***
- tertiary level, degree	19.922***	16.981***	25.281***
Household equivalence income			
- second quartile	0.66	0.55	1.25
- third quartile	0.94	1.89	1.829*
- fourth quartile	1.20	2.451**	3.33***
Size of community	3.138***	2.259***	1.53*
Social capital: bonding			
Informal socialising	1.39	1.578*	1.36
Importance of friends	0.88	0.67	1.444*
Social capital: bridging			
Nominal membership	1.39	0.95	1.541*
Active membership	1.01	2.119**	1.48
Volunteering	2.526*	1.00	0.75
Informal volunteering	0.70	1.30	1.04
Interpersonal trust	2.051**	1.20	1.09
Trust in institutions	0.96	1.18	1.01
Migrant status			
- migrant	0.414*	2.19	1.74
Sample size	1,621	1,265	1,545
Missing cases	945	420	565
Nagelkerke's R	0.49	0.52	0.52

Source: European Social Survey 2002/2003.
Table show odds ratios, *$p<0.05$, **$p<0.01$, $p<0.001$

Looking at the results in a more general way, it becomes evident that having an internet access is linked to living with an extended network of weak links, a network that is oriented more towards self-selected contacts, such as friends and acquaintances, than towards prescribed contacts, with the family. The greater social openness of internet users can also be seen by the effect of the various indicators of bridging capital. It is also in this type of social network that mobile communication (not the internet) fosters the development and maintenance of local ties.

5   Conclusions

The study of migrants focused on a migrant definition based on cultural and social factors. This orientation helped to overcome the narrow definition of a migrant based on citizenship and to better understand the more far-reaching effects of migration.

As a main result it emerges that depending on social and context variables migrants more regularly use the Internet than non-migrants, as well the inverse. With increasing cultural and social integration migrants are more inclined to become regular internet users. Migrants show up as being close to others lacking the economic, educational, social and cultural resources that help in taking up the Internet. Using the Internet is linked to living with an extended network of weak links. The strong effects of socio-demographic variables and the focus an urban areas reflect the impact of an ongoing diffusion process.

The patterns of social capital are, to varying degrees, unique to the each of the country groups or common to all of the European countries. The country classification was based on social capital indicators that should have laid the accent on the differences between country groups

in the analysis. In the analysis these differences did not show a real impact.

There are some differences in the levels of internet access between migrants and non-migrants after having introduced control variables. Being a migrant can have no effect at all, it can increase the odds to domesticate the Internet, and it can decrease the same odds depending on the country. In all of the country types it is the social position (income and education) that distinguishes users from non-users. People who become exposed to innovations because of their bridging capital are more prone to use the internet. But class and social influences cannot balance the negative influence of age and often of gender.

There are some implication that can be drawn for European policy and research. Being a migrant does not make the decisive difference in domesticating the Internet. It is more the fact that migrant may lack the necessary economic, educational, or cultural resources. Before this result can be thought as the definite conclusion research is needed that focus on those migrants that are not covered by standard European surveys.

Today, internet access is still uneven due to low income and to skills that are necessary to handle the technologies. But on the supply side high prices in the South European countries or a lack of sites in the national language (see Greece or Hungary) hamper the generalisation of the Internet, too. This is independent of being a migrant or not. Policies that will reduce prices, develop skills, and that increase the utility of the web to the mass-user – and not only the young, male innovator - are necessary in order to close the gap.

There is a considerable lack of information on the links between migrant life and the use of ICTs. In particular, longitudinal data lack, especially one that includes the multiple dimensions of ICT use (most specifically analysis of mobile communication). It is critical that this information be gathered for both users and non-users over several years. It is also rather unfortunate that European high-quality surveys such as the annual European Social Survey lack the minimum data on ICT use. The analysis has also been severely hampered by the incomplete and unsystematic sampling of migrants.

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Information and Communication Technologies
for dvelopment in the Arab world

Kamel TOUATI[1]

Abstract

The objective of this study is to examine the status of Information and Communication Technologies (ICT) in the Arab countries as well as the opportunities which may be obtained from ICT. The absence of a concrete ICT policy poses significant risks for these countries, particularly in terms of development.

This study shows that in spite of the recent development in ICT (connection to the Internet), the problem remains that access to these technologies is limited. As a result, Arab countries suffer from "two digital divides". The first digital divide is between the Arab countries and the rest of the world. One probable reason for this is the chronic insufficiency of financial means devoted to research and development and the lack of a clear strategy with respect to ICT in particular. Also, the high cost of computers and setting up connection to the Internet create this first breach.

The second divide is between the monarchies of the Gulf and the rest of the Arab countries. This digital divide is probably a reflection of the differences in both income (GDP per capita) and human capital (average years of schooling) that characterise the two parties of the Arab world. Empirical results show that the relationship between GDP per capita in Arab countries and the dispersion of ICT is statistically significant while that between human capital and the dispersion of ICT emerged not significant.

Lastly, given the impact of ICT in the development of Arab countries, ICT is a potential source of economic and social development in the area by enhancing economic employment opportunities, promoting economic growth, promoting the degree and the efficiency of work organization. It is note worthy, however, that ICT is not exactly the solution to all development problems.

Introduction

Although it can be proud of its scientific past, the Arab world, which is today a part of the region of the Middle East and North Africa (called MENA)[2], is at the beginning of this XXIth century at the crossroads. Indeed, the development of the economy of the knowledge in the XXIth century is based more and more on Information and Communication Technologies (ICT). And these last ones are able to transform the sources of wealth, which is crossing of the material capital to the human intelligence supported by ICT. However, these ICT, as we will show in this article, are lacking in the Arab world.

This article proposes first of all the status of ICT and their diffusion in the region, by emphasizing the existence of a digital divide within the Arabic world. In a second time will be analyzed the existence of a second digital divide between, on the one hand the Arab countries and, on the other hand, the rest of the world. Then, in the second section, will be explain the reasons which prevent the development of ICT in this region. While section three reviews the

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[1] Phd student at the University of Paris-X Nanterre (France).
[2] The Middle East and North Africa (MENA) region includes all the Arab countries (Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman? Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia and the United Arab Emirates.

potential opportunities and challenges that ICT is expected to create for economic development in the Arab world.

Section I) Slowed revolution or digital divide?

I-1) Digital divide between Arab countries

Henceforth, all the Arab countries are connected to the world network, but they didn't join it at the same time. It is only since 1997 when they really knew an important growth of the number of the Internet users. In several Arab countries, the access to Internet quickly increases. Before 1997, figures were purely and simply insignificant. At the same period Syria, Palestine, Libya, Sudan and Algeria are not connected yet. It is only at the beginning of 1999 when these countries are going to make a timid entry on Internet. Without forgetting that among the last three countries in the world which weren't connected to the World Network was Iraq, a country that embraces a population of about 25 millions inhabitants! The reason is largely attributed to the political disasters which know this country.

According to the most recent available sources, the increase of the growth rate is confirmed and even tends to accelerate. Thus, within the Maghreb, the number of Internet users has more that quadrupled in four years in Algeria. This number passes, according to UNCTAD (United Nations Conference on Trade and Development), from 200 000 in 2001 to 845 000 in 2005 (according to CIA).

During the same period, the number of Tunisian Internet users has more that doubled. It is respectively estimated at 350 000 by the Tunisian Internet Agency (TIA) and 835 000 by CIA (2006). And that of the Moroccan Internet users is evaluated at 220 000 (according to the ajeeb.com web site) and 3,5 millions (according to CIA), that's a multiplication by more than 10 of the number of Internet users in four years.

For the Maghreb[3], the most dynamic countries are Tunisia and Morocco. This last one exceeds all the countries of the region with a rate of penetration of Internet, at the end of 2006, of 15,2 % of the connected population. Morocco is followed by Tunisia with a 9.3 % rate. Moreover, a specific body the TIA was created to promote the Internet in this country, an interesting initiative which deserves to be indicated. Algeria and Libya are lagging behind, with respectively, rates of penetration of Internet of only 5.8 % and 3.3 % (see Table 1).

In the Middle East, the most dynamic countries are Gulf monarchies[4], which are also the most prosperous, in terms of the Gross National Product (GNP) per capita of the Arab world. The governments of these countries began for several years a vast policy to direct the oil revenues to the implementation of infrastructures of communication and high technology. It is there, moreover, that we count most Internet users. Fact interesting to raise: some Gulf monarchies attained a rate of penetration of Internet comparable to that of the western countries and consequently passed so widely the rest of the Arab world. In the head of these monarchies we find the UAE with a rate of penetration of Internet bordering 25 % of the population connected at the end of 2001. This rate passed the European average at the same time[5]. At the end of 2006, it has already reached about 40 %. In the same period the UAE were followed by Kuwait with a rate of penetration of Internet of 26,6 %, then by Qatar with a rate of 20,7%, passed by Bahrain with a rate of penetration of Internet of 21,1 % of its population. Far behind is Saudi Arabia, with a 10,8 % rate.

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[3] The Maghreb include: Algeria, libya, Mauritania, Morocco and Tunisia.
[4] The Golf monarchies include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (UAE).
[5] See Coury Mazen E. ICT Challenges for the Arab World. New York : Oxford University Press, 2003.

Not far from the region of the Gulf, it is Lebanon which occupies an important place, with a rate of penetration of Internet of 15,5 %. At the bottom of the scale is Syria, for a long time suspicious towards Internet, with a rate which does not exceed 4,2 %. Jordan is situated between these two last ones, with a rate of 11.9%. States situated outside this "revolution" are among the poorest of the Arab World: Comoro, Yemen and Mauritania. The rate of penetration of Internet in these three countries borders zero. They share the sad respective records of 3 %, 1.1 % and 0.5 % of the population connected to Internet (see Table 1).

Finally, involving the profile of the Arab Internet user, the access to the network remains still reserved to elite, composed of students connected on dialogue forums, conversations (chat) or the sending of e-mails, etc. To this group are added the academics, the easiest of the society, often searching information concerning their country diffused abroad but censored inside.

The Arab Internet users mostly made high studies. They are distributed as follows: 4 % have a doctorate, 44 % have the high school diploma and 18 % have a university degree. An access mode to the technologies which reproduces a division of the society based on the wealth, the education, age, the sex and the urbanization.

It must be clarified also that really the digital divide concerning the rate penetration of Internet between on one hand, the Gulf monarchies, and on the other hand the rest of the Arab world, extends in all the constituents of the ICT. Indeed, the Gulf monarchies although are under populated - they count hardly 11 % of the Arab population - represent nevertheless about 57 % of the population which has access to Internet, 60 % of the population who have access to the mobile telephones, about 50 % to the main telephone lines and 41 % of the Internet services providers in the Arab world (see Table 1). Therefore, the ICT and their users are concentrated within a minority of states, in particular those of the Gulf ones.

Table 1. Total population, the percentage of the population with access to the main telephone lines, mobile telephones, Internet and ISP in 2004.

Country	Total of the population (millions)	Number of Internet Service Providers (ISP)	Population with acess to main telephone lines (%)	Population with access to mobile telephone (%)	Population using Internet (%)
Algeria Arabia	32	1	9.9	15.1	5.8
Saudia Bahrain	23	42	15.9	39.5	10.8
Comores Djibouti					
Egypt	0.7	1	26.8*	63.8*	21.1
Iraq	0.8	..	1.7*	0.3*	3
Jordan Kuwait	0.8	..	1.5*	3.4*	1.2
Lebanon	69	50	13.8	11,00	7
Libya	4	1	27.7	86,00	36.1
Maurinania	23.33	1	2.89*	..	0.1
Morocco	5	1	11.7	27.2	11.9
Oman	2	13	20.2	85.5	26.6
PT	5	22	15.6	17.8	15.5
Qatar	5.6	1	13.6*	2.3*	3.3
Somalia	31	..	4.3	30,5	15.2
Sudan	3	..	1.4	12.3	0.5
Syria	3	1	9.1	22.8	10.1
Tunisia Yemen	0.7	1	26.1*	53.3*	20.7
UAE	9.94	..	1.1	0.4	0.7
Total of the Arab States	34	1	3.1	2.2	7.8
Total of the Gulf States	18	1	13.2	14.1	4.2
% of the the Gulf states to Arab States	4	..	8,3	30,3	7.5
	10	1	12	37.3	9.3
	20	1	3.6	3.7	1.1
	304,07	139	251.49	588.8	219.5
	32.7	57	116.17	350.09	125.4
	10.75	41	46.40	60	57.12

The determinants of the diffusion of the IC in the Arab world

The digital divide which exists within the Arab world is probably related, on the one hand, to the income measured by the GDP per capita and, on the other hand, to the development of the human capital, measured by the average years of schooling which characterise the Arab world. For instance, table 2 shows that the share of the population accessing the Internet, increases significantly with the improvement of GDP per capita. Thus, the most prosperous countries of the area of the Gulf, such as UAE, Bahrain and Kuwait, have the most connected population to Internet. On the contrary, the poorest countries, such as Yemen and Sudan, have a limited access to Internet.

In the same way, this table illustrates that the share of population accessing the Internet in the Arab world significantly increases with the average years of schooling of the population. Thus, UAE and Bahrain, for instance, which have a high average years of schooling, also count in their credit the highest percentage of population connected to Internet.

Empirical results show that the relationship between GDP per capita in Arab countries and the dispersion of ICT is statistically significant while that between human capital and the dispersion of ICT emerged not significant.

Table 2. Internet penetration in Arab Countries, GDP/Capita (US $) and average years of schooling: a selection of some countries (1996-2001)

Country	Internet Penetration, users as % of the population	GDP*/ Capita(b)	GNP/ Capita	numbers average years of schooling (d)
Algeria	5.8	7 700	6 600[3]	4.72
Arabia Saudi Bahrain	10.8	13 800	11 770[3]	..
Egypt	21.1	25 300	14 370[2]	6.09
UAE	7	4 200	1 250[3]	5.05
Jordan	36.1	49 700	23 770[1]	..
Kuwait	11.9	4 900	2 500	7.37
Lebanon	26.6	21 600	24 040[3]	7.05
Libya	15.5	5 500	6 180[3]	..
Morocco	3.3	12 700	5 530[5]	2.87
Oman	15.2	4 400	1 730[3]	..
Qatar	10.1	14 100	9 070[4]	..
Sudan	20.7	29 400	..	..
Syria	7.8	2 300	..	1.91
Tunisia	4.2	4 000	1 380[3]	5.74
Yemen	9.3	8 600	2 890[3]	4.2
	1.1	900	600[3]	..

Determinants of ICT diffusion: regression results for the period 1996-2001

	For 8 Arab countries		For 16 Arab countries	
	(1)	(2)	(3)	(4)
Constant	-5.220	-3.076	-0.0455	-2.117
	(3.436)	(4.740)	(1.548)	(1.5404)
GDP/capita[a]	0.0076		0.0087	
	(0.000)		(0.000)	
GDP/capita[b]		0.0049	0.0094	
		(0.000)	(0.000)	
Human Capital[c])	0.746	0.935		
	(0.704)	(0.984)		
Ajusted R^2	0.638	0.323	0.598	0.710

Note: Standard errors are in parentheses; The regression is done with 5%level of significance.
Source: (a) CIA (2001) and World Bank (2000) for GDP per capita data and (C) Barro Robert and Lee Jong-Wha database (2001) "International Data on Educational Attainment. Cambridge (USA): CID Working paper n°42, 2000" for the average years of schooling data, respectively.

If there are wide divergence in ICT diffusion in the Arab region, there are also a wide divergence between the diffusion of ICT in Arab world and the rest of the world.

Digital divide between Arab countries and rest of the world

Nowadays we can notice that the Arabic political leaders give importance to ICT. The initiatives which testify to that are diverse. And the main objectives to attain are generally the same: the supply of a context more convenient to the research and the development (R&D) in technology, the creation of an adequate environment for the development of the business, the employment creation and the improvement of the technological transfers between the public and private sectors.

In the Maghreb were multiplied these last years technopoles specialized in ICT. The technological park El-Ghazala, which was launched in 1991 in Tunisia, appears on the list of the sites which can play a leading role in the region, because it is distinguishes by its export performances. More recently, in 2001, Morocco opened its technopark, placed in Casablanca. As for Algeria its cyberpark of Sidi Abdallah is ongoing of development.

It is necessary to note that these technoparks are a part of development plans which include also the creation of research institutes. To implement these plans the Maghreb countries - and also Lebanon - notably rely on a cooperation with France. Their main objective is the transfer of technology, because this transfer would allow them to promote a local research while using local talents. These countries also aim to multiply the existence of advanced structures of research. For that purpose partnership agreements, between the public sector and the private one, of these countries, were signed with French universities and institutions, as the National Centre for Scientific Research (Centre National pour la Recherche Scientifique - CNRS).

As for the Gulf monarchies, which have important financial resources coming from the oil revenues, ICT plans are prominently included in their national programs of development. The governments of these monarchies play an active role in the promotion of ICT and the e-commerce. Most of these states translated their plans carrying ICT in research institutes and technological parks. The objective of UAE consists obviously in becoming the leader of all the activities related to ICT in the region. For that purpose, in the city of Dubai, the authorities' inaugurated free zones specialized in ICT: Internet City (2000) and Media City (2001).

In Saudi Arabia it is King Abdul Aziz City for Science and technology that was born. Qatar, with the famous television channel by satellite Al-jazira, is not in rest on the chess-board of the dynamic media of the region. Other free zones were created in the Arab world, as Smart Village in Egypt, and Silicon Hills in Jordan.

However, few countries have a really forward-looking approach in ICT, as vector of a global strategy of economic and social development. Jordan with its program REACH is one of the few countries who become aware of profits of the ICT. Indeed, some years ago, Jordan saw in the industry of the ICT a generative source of foreign direct investments (FDI), transfer of technology and employment creation. The program with the significant name REACH (achieve), launched in 1999 in cooperation with Microsoft, fits in this logic. This program aims essentially at building in Jordan a sector of ICT directed to the export. Jordan so expected to become a center of excellence in the Arab region: software creation, arabization of their contents and consultancy services. This will allow Jordan to tap the developing but underserved markets of the Arabian Gulf and the levant. Other countries recognized only late the importance of ICT. Oman, for instance, amended its initial plan development (2001-2006) to include ICT[6].

Although most of the Arabian governments have ICT on their agendas, it is important to note that a digital divide exists between the Arab states and the rest of the world. This digital divide is measurable by means of a many statistical indicators, such as the number of telephone lines, personal computers, Internet users and web sites. The Arab region occupied last part of these statistical classifications. Really, Arab countries are forgoing ICT efficiency opportunities by supporting heavy costs by building incomplete and inconsistent national infrastructures. There is no common strategic Arab plan for ICT. On the contrary their approaches are often competing and fragmented. As a result: the Arab world appears as the region which is less advanced in the access to ICT. Concerning Internet, although progress was realized these last years; this region is far, not only behind Europe and the United States - the pioneers of Internet - but also behind the Latin America and Asia. In October, 2006, only a little less than 8 % of the Arabic population used Internet. One of the weakest rates in the world, against 15,4 % for the Latin America, for example, without speaking even about North America where this rate has reached 69,1 %, or still of the average world rate of penetration of Internet which is established, in the same period, at 16,7 %.

The number of web sites in Arabic language, in 2000, was only 2 for 10 000 inhabitants against 30 for the Latin America and Caraibes. Thus, the Arab world is classified in last position for the most important both indications to determine the development level of the information and the society attached to the technologies. The number of telephone lines in Arab countries represents hardly the fifth of the number existing in the industrial world. Also the access to the digital media is among the weakest in the world. There are only 18 computers for 1 000 inhabitants against 39 in Latin America, while the world average is 78,3. The rate penetration of personal computers is only 1,2 %, and only half of this weak percentage is connected with Internet. Globally, the number of computers connected with Internet is situated between 0,1 and 3,6 for 1 000 inhabitants.

The obstacles for the development of the information Arabic society

Accumulating many problems of regulation, inadequate legal institutions, lack of chronic means dedicated to the R&D and excessive dependence on the imported technologies, Arab countries suffer from multiple problems which delay their assimilation of the ICT and the development of the Arab information society. However, the cost remains one of the most important reason that prevents the development of information Arab society: the cost of a subscription to the Internet service providers, added to the cost of the communications and the high price of a computer remain the main obstacles to this development today. The weak number of sites proposed in Arab language (the information available on Internet is for the

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[6] See Bin Said (2001).

main part in English, a language which is not well speaking by the majority of the population, especially the French-speaking and illiterate), the quality of infrastructures and the specific socio-cultural and political reasons, appropriate for the Arab world, complete widely the explanation.

ICT are the consequence of the R&D, now Arab countries possess the weakest levels of financing of the research in the world. In 2002, the Arab region spent only US$ 6 per capita on R&D, compared with US$ 953 per capita in the USA, US$ 779 in Japan, US$ 465 in the European Union, US$ 42 in Latin America and US$ 40 per capita in China. The world average is US$ 124 per capita 124 and the ratio of R&D spending

The infrastructure of telecommunications is an essential factor in any strategy as regards the ICT. In the Arab world this infrastructure is unfortunately inappropriate. Since the end of the Nineties, almost all the Arab countries undertook reforms in this sector. These reforms go from the simple reorganization to - as it is often the case - the privatization of the historical operators. The objective is to create a more efficient competition in the segments of this market and to modernize the structures of control and regulation. And for this reason independent authorities of regulation were created.

However, in spite of a relatively strong legal base, these new institutions face enormous challenges. They suffer mainly from a lack of adequate autonomy and a clear mandate to make important decisions without political interferences[7]. To that is added a lack of coordination in the acquisition of telecommunications networks, which prevents the unification and the connection of the Arab countries. For instance, the incompatibility of the networks of mobile telephony means that the subscribers cannot use their telephones out of their origin network. The access to Internet depends also on the market of the providers. Today except for Syria, all the countries, at least, partially liberalized this sector. And the numbers of Internet service providers increases quickly. However, many difficulties remain. Thus, new entering to the market of Internet service providers have, still today, to require licences in certain countries (in Jordan and Algeria for example).

Some socio-cultural reasons don't plead in favour of a reduction of the digital divide. Without forgetting the political significant character of information in the Arab world. Indeed, accustomed to control information narrowly, some governments hesitate to propose a great mass of national information on line and seek not to completely lose the control of the contents, even of national web sites.

The case of Saudi-Arabia offers a good illustration of this situation. This country makes a great effort to extract from Internet illicit web sites with a sexual or religious content. The difficulty in controlling some web sites which do not respect the religious and political rules of the country are closed. It is the thong that happen in this country to the clubs connected on the site "Yahoo", in 2000. According to the director of the city of sciences and technology in that time: "*however, for little that the clubs connected on the site yahoo are committed complying with the rules of Sharia (Islamic law), the closed clubs could be authorized to open their doors again*".

Although 300 millions inhabitants speak the Arab language throughout the world, which places it at the sixth place of the most spoken languages in the world, the number of Web sites in Arab language represented less than 1% of the total number of web sites in 2001 (against 43 % in English language and 32 % for the other European languages). Therefore, only an educated elite could have access to English language knowledge, and that's not the case of the often illiterate citizens which at least don't speak English.

The access to the ICT based on the sex is the other cultural aspect of the segregation, whose women are often the victims. The Arab women remain socially marginalized and suffer from

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[7] See Benchmarking Regulators (2002).

an inequality which related to the persistence of social attitudes founded on sexual discrimination. The Arab world counts nearly 60 million illiterates, two-thirds of this number are women.

III) ICT: opportunities and challenges for development in the Arab world.

III-1) ICT: opportunities for the development

It is commonly admitted by the decision makers, companies and the whole of the society, that the ICT are in the center of an economic and social transformation which touches all the countries. ICT and globalisation, combined, give a new economic and social structure. They basically modified the way in which the companies and the economies function.
ICT can provide to Arab world an occasion without precedent to reach vital development objectives. The contribution to the development results in several aspects:
1) ICT seem to present new prospects for creation of new activities like e-commerce. Consequently ICT enhance employment opportunities by creating and initiating new jobs and increasing the employment rate of already existing jobs in this region which suffers particularly from a high rate of unemployment. This rate reaches an average of 15% of the population. A rate among the highest in the developing world. These new opportunities could be benefit for the Arab countries because of their comparative advantage of their low cost of their qualified labour: engineers, technicians etc. These countries could thus take as a starting point the Indian example.
2) Improving the knowledge-based economy by (a) increasing the efficiency of the educational system and learning to benefit from long-distance teaching in the near future; (b) developing the communication system through the provision of cheaper, easier, faster and more efficient services; (c) Upgrading skills systems and developing human resources through improved educational and training systems and enhancing the capability of people.
3) Minimizing poverty in the region by creating additional employment opportunities.
4) Accelerating the catch-up effect. The diffusion of ICT can be used to accelerate and facilitate efforts to bridge the gap with the advanced countries
5) To promote the efficiency and the organization of work.

III-2) ICT: challenges for the development

Like any technological progress, in addition to opportunities which they offer, for the development, the TIC imposes also challenges in the Arab countries. In particular, the unfavourable effects induced by the information economy become manifest because:
1) Increased competition : in order to be able to deliver competitive goods and high-quality services efficiently to global markets, the Arab world needs not only enhance its productive capacity but also to increase and accelerate its investment rate in ICT and related infrastructure. This, in turn, creates the need to enhance the technological capabilities of the region, to raise funds for R&D, to develop scientific research that matches both local and global needs, and to promote collaborative research between the Arab countries.
2) Widening regional disparities: ICT has the propensity to increase the already existing gap and disparities within the region.
3) Certain fears exist as for the aggravation of the unemployment which could involve the TIC. The TIC, like other new technologies cause what one call "the skew of the saving of qualified work" (ploughing saving-skilled biased). Indeed, the TIC reduce employment, or through the suppression of the already existing activities, or through the reduction of employment particularly in the rows of those which are not qualified.

Some suggestions to reduce the digital divide

Based upon our research describes in the previous sections, it is possible to advance the following suggestions in order to reduce the digital divide:

1) A pan-Arab planning effort aiming to create a transnational ICT strategic plan[8] is recommended as a starting action item. Based upon a critical assessment of the region's capabilities, the plan would define the overall objectives of the various nations and translate objectives into measurable milestones. This common ICT strategy should be treated with a clear commitment for implementation. The strategic recommendations of transnational Arab ICT-Planning agency independent of national contingencies will nevertheless have to rely on Arab funding. Ensuring that the funding and commitment requirement will be met is key. That implies creating transnational teams devoted to the overall strategy and that are expected to lead the implementation of the initiative.

2) Creating an investment plan for inter-Arab technology development with allocation mechanisms across countries, aimed at financing the creation and growth of the critical components of an ICT industrial base.

3) Coordinating national funding plans with the overall Arab ICT funding program. An inter Arab ICT strategy should build on the complementarities and competitive advantages of Arab nations. We expect this to generate substantial efficiencies compared to the overlaps caused by independent and parallel national approaches.

Conclusion

Without being pessimist, the Arab world suffers from a digital dividee with the rest of the world and the challenge to reach the Information society is great. In spite of the reforms and the policies followed by the authorities, the objective of access of the Arab population to the ICT and the Global Information Infrastructure continue to go growing. The Arab countries must thus speed up the reforms to benefit from ICT. Because, nowadays, the technological developments are indistinguish of another process: that of globalisation. Together, these two phenomena allow a better anchoring to the rest of the world of an area which its integration is in withdrawal compared to other developing economies of East and the South Asia, and of Latin America for example.

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[8] The institutions capable of carrying forward this mission statment already exist, they include the Leaguie of Arab States, for example.

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Digital Divides In Greece: Role Of Culture And Regulation. Implications For The European Information Society

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Abstract

The paper aims to explore the phenomenon of the digital divide in Greece and argues that this phenomenon is mainly a result of culture and regulation. Theories and concepts on digital inclusion lead to a socio-cultural account of the way in which the Internet is regulated, so that the functional link between society, culture and regulation is achieved. The paper firstly draws on the main objectives and agenda of this paper, and then it briefly presents the ground on which the selection of the Greek case of divides was selected. In the third section an in-depth discussion of digital divides as a phenomenon embedded into a wider social context takes place. By viewing digital divides as developing complex interdependencies with other kinds of exclusion, the paper aims to justify the importance of identifying the ties between culture and regulation when exploring digital divides. In this way, the paper gets to the fourth section where a more focused discussion on the possible ways in which the Greek culture relates to internet policy and regulation, influencing the take up and use of the internet in Greece and challenging the dominant discourses on the phenomenon of digital divides takes place. Furthermore, data and evidence apply the overall socio-cultural and regulatory account to the case study of Greece, entailing significant implications for future research on digital divides in Europe.

1. Introduction: Paper Objectives and Agenda

The geographical, demographic, administrative and economic particularities of our country are clearly illustrated at the regional level and present a challenge in view of the possibilities offered by the new information technologies… the importance of applications towards the Information Society is multiplied by ensuring the following three prerequisites: A technological prerequisite, i.e. state-of-the-art telecommunication and radio-television infrastructure, covering almost the entire country at affordable prices…A social and democratic prerequisite, i.e. thorough information of the local population on the importance of modernisation and, also so as to enhance the ability to absorb new technologies…An organisational and functional prerequisite, i.e. securing the local presence of trained "operators"… Prejudice and ignorance, resulting from the lack of knowledge and information often cause resistance to the introduction of new technologies. This, in turn, leads to limited penetration and exploitation of the technology while, in addition, it obstructs participation in decision-making procedures… (emphasis added) (PDGS).

The above quotation points to the prerequisites of an information society and its multi-dimensional character. Among the more or less common technological and organisational prerequisites, the importance of the social and democratic prerequisite in Greece is argued for. In particular, the consequence of this in terms of social ignorance and resistance to new technologies is brought to the fore.

In our country today there is a tendency to distinguish the few (but rapidly increasing in number) users of computers and communication networks such as the internet from the many who treat the new technologies at best as a mystery and at worst as a danger for their future (emphasis added) (Greek Ministry of Economy and Finance, 2002: 12).

This statement in turn goes to further argue about the social deficit in the Greek information society, providing possible explanations of the digital divide phenomenon in Greece. In this sense, both quotations go beyond claims about technological, infrastructural and economic necessities, bringing to the fore cultural and decision-making forces as significant for the development of the Greek information society through the closing of digital divides.

By drawing on the above statements, the paper aims to explore the role of culture and regulation in digital divides in Greece. This is not to say that the paper uncritically adopts the argument that culture and regulation are the only forces driving digital divides in Greece. Rather, the study critically approaches this claim by viewing culture and regulation as two possibilities and through giving enough space for testing this argument as well as for accounting for more common sense factors, such as economics, technology and infrastructure.

But why use culture as one of the two main axes of investigation? Generally speaking, the paper aims to view digital divides from a human and cultural point of view as opposed to a technological and business one. More specifically, it views the new technologies as support for social life. National cultures still have an important role to play in determining the social integration and course of global media technologies. People's technological experiences, expertise and integration of technology in daily life is highly dependent on their daily activities, and the systemic conditions where those activities take place and their symbolic value and meanings are established. Moreover, culture in Greece has historically proven to be distinctive for determining the course of the country in general and the course of technology in the country in particular, as will be shown in the last section of the paper.

Why does the study select regulation as the second axis of investigation? The advent of the information society contributed, according to some views, to the deconstruction of the welfare state legacy under the imperative of liberty and independence (Calabrese, 1997: 20). Contrasting neo-liberal views supporting de-regulation, there is still literature arguing that the state has a significant role to play in technological innovations, as it significantly influences the availability of resources, the establishment of legal frameworks and the development of investments (May, 2002: 150). On the other hand, the necessity for state moderation becomes problematic as the social democratic potential of the information society is perceived as clearly serving market goals, competitiveness and trade (Mattelart, 2003). Thus the debate on regulation in the information society is considered critical for digital divides, whereas regulation in Greece has historically proven to be distinctive in determining the course of the country in general as well.

In this sense, the paper attempts to go beyond the quantitative indicators dominating research in the field. For instance, the OECD reports on the global information society reflect the dominance of quantitative measures, and illustrate the lack of research on cultural and regulatory elements of the information society is not discussed in detail in this paper due to word and time limits, whereas this issues could be a separate paper itself.

The ultimate aim of the paper is to explore the possible dialogue between culture and regulation as explanatory variables for digital divides in Greece. Although no much literature on the dialogue between user and decision-makers in the information society exists, the paper perceives digital divides as a phenomenon in both civil society and decision-making. With respect to the Greek case, the paper aims to explore statements such as '*prejudice and ignorance…often cause resistance to the introduction of new technologies. This…. in turn…obstructs participation in decision-making procedures…*' (PDGS).

Below the paper briefly presents the ground on which the selection of the Greek case of divides was selected, whereas in the third section the literature in the field is presented. Thus an in-depth discussion of digital divides as a phenomenon embedded in social context where other kinds of social exclusion take place is held. In this way, the paper introduces a more focused discussion on the possible ways in which the Greek culture relates to internet policy and regulation, influencing the take up and use of the internet in Greece and challenging the dominant discourses on the phenomenon of digital divides.

2. Greek digital divides: a puzzling case and its research implications

Why explore the Greek case of digital divides? This decision is due to evidence presenting the Greek digital divides as distinctive: Greece has been a long-standing EU member state, with one of the highest national development rates across the EU25 and at the same time it is the country with the lowest internet and new technologies penetration rates on the EU25 information society map.

At this point, empirical evidence with respect to the country's persistent weaknesses in comparison to the European information society is needed. Fundamental Internet indicators, such as adoption and use, remain at surprisingly low diffusion levels. More specifically, in the Flash EB 250 survey (EC, 2006) Greece is at the very bottom of the EU25 Internet use list with only 24% of the population using the Internet. Even Spain and Italy are far closer to the EU-25 average (49%) with Portugal having the next lowest percentage (27%). In general, there is a great variety of Internet use figures in the EU25, ranging from 85% in Netherlands to 24% in Greece (ibid: 6).

Even when looking at the time evolution of Internet adoption within Greece, the conclusion is that Greece does not progress to the extent it should. The latest national survey on new technologies use by GRNET (2005)[1] illustrates the increasing penetration of ICTs in Greece for the years 2001-2003 and the stagnancy of new technologies adoption for the years 2004-2005. Indicatively, in 2005 the five-layered indicator of new technologies use increased by only 0.3% (13.6%), whereas the percentage of population not using new technologies decreased respectively by 2.7% (ibid: 125). Moreover, Internet use in the general population has increased in 2005 (24.6%) only by 0.1% compared to 2004 (24.5%) while still being lower than in 2003 (25.2%). Likewise, computer use increased from 32.2% in 2004 to 34.3% in 2005 and decreased from 32.5% in 2002 to 34.2% in 2003 (ibid: 5).

In addition, Greek culture and regulation are both theoretically and empirically presented as critical forces in the history of the country in general. More specifically, data support the argument that people in Greece are reluctant to use new technologies. Regarding the reasons a large majority of the Greek people do not use the internet in particular, the 2004 survey by the National Statistical Service of Greece (ESYE) concludes that non-appreciation of the internet is the main force preventing use, as 52.62% of non-users maintained that the main

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[1] In this survey 2.741 face-to-face interviews from 21 October to 23 November 2005 were conducted.

reason for not using the internet is the lack of useful and interesting material on the internet (ESYE, 2004).

From a regulatory perspective, telecommunications regulation in the Greek information society has a long history of delays and inconsistencies. More specifically, Greece is a country that appears to have problems in complying with and implementing the EU telecommunications regulation. According to the 10th report of the Communication from the European Commission on the implementation of the EU Electronic Communications Regulatory Package (EC, 2004a), despite the generally positive picture of notifications and legal measures taken in Member States, five countries, Belgium, the Czech Republic, Estonia, Greece and Luxemburg, have not transposed the framework one year after the deadline[.] As a consequence, the Commission has launched infringement proceedings for non-notification, and proceedings are pending before the European Court of Justice against Belgium, Greece and Luxemburg (ibid: 9).

Other evidence of Greece's regulatory divergence comes from research documentation illustrating the varying degrees of regulatory efficiency in the European information society. More specifically, EC research (EC, 2006; EC, 2004b) sheds light on awareness levels and secure Internet use across the EU. Greece is a distinctive case, as Greek citizens have the lowest awareness level among all EU users, while being highly reserved about the internet and insecure when going online (ibid).

In this sense, the paper explores these two forces as being part of the Greek context and to draw conclusions in terms of whether and why Greek digital divides differ from divides in other European countries. Thus the paper explores these two forces as being part of the Greek context and to draw conclusions in terms of whether and why Greek digital divides differ from divides in other European countries. Therefore, the question to be addressed is why the Greek information society diverges from the European information society and whether the cultural or regulatory context of Greece accounts for this divergence.

3. Literature Account of Digital Divides: why culture and regulation?

To achieve the above objectives, the paper employs a conceptual framework that refers to the ways in which ICTs and the internet in particular are viewed from a user perspective, as well as how regulation is linked to this perspective. Theories and concepts regarding the necessity for digital inclusion lead the paper to a socio-cultural account of way in which the Internet is regulated, so that the functional link between society, culture and regulation is achieved. In this sense, the theoretical framework of the paper attempts to highlight the theoretically-based importance of understanding digital divides on the basis of the following tensions: civil society and key actors/decision makers' perceptions of culture's and regulation's role in the course of the medium.

More specifically, the theoretical framework of the paper aims to map out the discourse between culture and regulation in the information society with respect to digital divides, developing a two-sided understanding of the phenomenon of divides. The research literature, therefore, must call for an examination of digital divides on the basis of the 'cultural ecology' (Loader, 1998: 13) of the information society and its interrelations with policy and regulation making, underlining in particular regulatory schemes, which take 'cultural ecology' into account. Of course, this theoretically based discussion will reflect on the Greek case throughout, aiming to illustrate the research relevance to as well as possible gaps of the literature in relation to the case-focused paper objectives.

In that sense, the theoretical framework firstly draws on the literature discussion of digital divides as a phenomenon embedded into a wider social context where various other kinds of

social exclusion take place as well. By reflecting on this wider context and viewing digital divides as developing complex interdependencies with other kinds of exclusion, the paper aims to justify the importance of identifying the ties between culture and regulation when exploring digital divides. Thus it hands over to the last section where the ways in which the Greek culture relates to Internet policy and regulation, influencing the take up and use of the Internet and challenging the dominant discourses on the phenomenon of digital divides are reviewed.

3.1 Discourses on Digital Divides: Dialectic between Technology, Culture and Regulation

'Just as there are different maps of the physical world, so there are of the internet' (Wyatt et al, 2002: 38). In the same way, the course to the 'information superhighway' is not the same or at the same speed for everyone. One of the major concerns regarding the impact of information and communication technologies (ICTs) is what is conventionally referred to as a digital divide. A fairly general definition of the phenomenon is 'the divide created between those individuals, firms, institutions, regions, and societies that have the material and cultural conditions to operate in the digital world, and those who cannot, or will not adapt to the speed of change' (Castells, 2001: 270).

A worldwide debate has taken place over the last two decades concerning the digital divide, its current extent and its variation across social groups. Moreover, this debate is increasingly concerned with the impact of the phenomenon on asymmetry in the distribution and effective use of communication resources and power (Wilson, 2000), as well as on various aspects of social exclusion. Its social importance as well as its evolving nature have attracted the interest of an increasing number of researchers and scholars who point out the importance of the phenomenon, arguing that 'being disconnected, or superficially connected, to the Internet is tantamount to marginalization in the global, networked system' (Castells, 2001: 269).

Generally speaking, the dominant discourses on the digital divide depart from a discussion of 'dystopian' and 'utopian' views of the information society, gradually replacing the term 'digital exclusion' with that of 'digital inclusion' and distinguishing various degrees and levels of inclusion. Nevertheless, most of these discourses have been tackling the various aspects of digital divides by relating them to other social forms of exclusion and, most of the time, adopting a monolithic perception of the ways in which digital divides relate and deteriorate social disparities. In this sense, dominant discourses on digital divides fail to tackle the dialectic between culture, regulation and technology, something that the Greek case of divides illustrates as a necessity in the next section.

This section discusses key debates and discourses on digital divides, illustrating the importance of conceptually and empirically identifying the complex interconnections of digital divides with other social aspects of divides. Thus, the particular role of society, culture and regulation in digital divides is illustrated in this section and further discussed in the next section of the Greek puzzle of divides.

3.2 Digital Divide Discourses: conceptualising 'digital inclusion' and qualitative measurements of exclusion

In light of the above debates on the evolution of digital divides, the theorisations of the phenomenon have evolved alike, increasingly giving more space to the term 'digital inclusion' where qualitative parameters of inclusion and exclusion matter. This progression in the conceptualisation of the phenomenon raises in turn issues of quality, levels and

perceptions of use which are of particular interest, as they allow the paper to evaluate the applicability of those conceptualisations to the Greek case.

More specifically, the first theoretical attention to the digital divide was given in the early to mid 1990s, following the diffusion theory tradition (Rogers 1995). According to this tradition, the acquisition of and access to computers and Internet equipment is a fundamental criterion for overcoming the divides among haves and have-nots (Bradbrook and Fisher, J. 2004; Selwyn 2003, 2004a & 2004b; Warschauer, 2003), presenting thus a rather limited conceptualisation of the phenomenon.

However, a far more popular thesis maintaining that broader access to ICTs does not eliminate the division and exclusion from the current digital opportunities followed this tradition. Hence, from 2000 onwards, scholars such as Norris (2001) presented a rather more complex picture of the digital divide, discarding the dichotomy between haves and have-nots and formulating more insightful approaches where quality and efficiency of use matter. In that sense, work on how increased access might maintain or exacerbate existing divides increased in number, while different degrees and qualitative aspects of divides started to be examined in terms of factors mediating access and use of the internet, such as material, economic, social, cultural and technical forces (Livingstone 2002).

In this sense, the literature increasingly opens up the discussion to include more forces and allow more middle-way positions regarding the digital divide phenomenon. This illustrates that the purchase of ICTs is not 'a one-off purchase that guarantees full access to services over a period of years with no further outlay' (Murdock, 2002: 387), while suggesting a 'thicker description of the various shades of information and telecommunications inequalities' (Wilhelm, 2000: 69-70). From this perspective, scholars such as Selwyn (2004a: 347) argue that content and resource divides matter and access does not determine the existence of divides. Here qualitative parameters of social, cultural and educational character influence the capability of the individual in using the internet, giving more nuances to the concept of access itself, as well as to the issue of effective usage through requisite skills, knowledge and support (Van Dijk 1999).

As a result, 'digital inclusion' is proposed as an alternative concept to that of 'digital divides', intending to highlight variations in internet use which, in the paper by Livingstone and Helsper (forthcoming) on children and young people, are presented as gradations in digital inclusion, suggesting that research should be refocused on the physical, digital, human and social forces influencing the social integration of ICTs (ibid: 6). By tackling the last remark, the perceived meaning of ICTs and individuals' actual practices of use can significantly affect the duration and quality of engagement with ICTs (Balnaves and Caputi 1997), suggesting a rather hierarchical definition of digital divides where access to various forms of technology in various contexts results in varying levels of engagement and consequences (Selwyn 2004a: 351). Hence, in the paper of Livingstone and Helsper (forthcoming: 15-6), the concept of 'a continuum of quality of use' with gradations of use allows the identification of inequalities in use, while scrutinising the efficiency and benefits of use, as well as the reasons lying behind non-use. In this way, the idea of a staged process of going online (ibid: 16) paves the way for researching digital inclusion in connection to various systemic factors influencing gradations of use.

This graduated approach to digital inclusion constitutes a conceptual progression in the literature articulated in the writings from 2000 to 2005 through distinguishing the variety of capital that people have at their disposal and the ways in which the capital influences the ability, willingness and effectiveness of people using ICTs. In other words, factors, such as material resources and economic capacity, socialization in the dominant culture, skills and awareness of the prevalent techno-culture, as well as social networks, are all forces shaping our understanding of digital divides (Selwyn, 2004a: 352-5).

However, this progression is only a one-way concept, as ICTs could equally have the potential to influence the distribution of social, cultural and economic capital, while the literature overlooks the complex interconnections between individuals and political agencies in the distribution of various forms of capital. Thus, elaborate concepts of digital divides within different socio-cultural and political settings are lacking. Hence, on the basis of the overall conceptual progression and the introduction of more qualitative parameters of evaluation of ICT use, the study will attempt to approach internet use and non-use in Greece by taking this conceptual progression into consideration and further extending it. In this sense, the study aims at providing a more complex picture of the interconnections between digital and social inequalities, paving the way for a challenging view of the role of society, culture and regulation in the shaping of divides in Greece, in the next section.

As Silverstone (1999: 21) remarks:

The theoretically unsubtle has its value...But it misses the nuances of agency and meaning of the human exercise of power and of our resistance. It misses, too, other sources of change: factors that affect the creation of technologies themselves and factors that mediate our responses to them: society, economy, politics, culture. Technologies, it must be said, are enabling (and disabling) rather than determining.

3.3 Digital Inclusion in the Context of Social Divides: linearity VS complexity

The notion of digital inclusion described above indicates the importance of systemic factors in the evolution of divides and provides a link to other forms of social inclusion on the basis of how ICTs are taken advantage of in terms of quality, breadth, duration and efficiency of use (Selwyn, 2004a; Livingstone, 2002: 10). The social role of ICTs and the rise of the 'digital inclusion' discussion, call for investigation of further mediating factors, such as social context of use and the ways that context affects people's capabilities, motivations, skills and willingness to use the internet (Livingstone, ibid). In this way, the digital divide discourses depart from the debate about the existence or not of divides, extending their arguments to the social significance of the phenomenon, as ICTs are rather symbolic goods that constitute what is largely known as cultural industry with a part to play in social life and sociability[2].

However, the above progression to qualitatively-focused and layered conceptualisations have led scholars such as Pippa Norris to point out that the internet is 'even more important if certain groups and areas are systematically excluded' (2001: 10), essentially stressing that digital divides might significantly affect other kinds of divides, such as financial, educational, and social divides. This statement illustrates the problems concerning the common perception of the relationship between digital and social inclusion/exclusion in a rather linear way (Cammaerts and Audenhove, 2003), which consists of the failure of identifying the interdependencies of socio-cultural and political capital with the way in which people use ICTs.

Generally speaking, the importance of equal opportunities for accessing ICTs also involves considerations of the possibly harmful effects of non-participating in the information society for both excluded individuals and social life. In this sense, the literature argues that individuals who find themselves digitally excluded become marginalized and socially, culturally and economically disadvantaged. They are socially excluded because people without communication technologies arguably lack access to a number of mediated

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[2] As Haddon (2000: 401) comments, traditional ICTs have become significant social connectors for socially marginal groups, having, thus, a symbolic value that matters.

communication activities and to alternatives for socializing and participating actively in public debates and policy-making processes[3]. In addition, they are culturally excluded because the bulk of information is globally diffused via ICTs in such a way that people deprived of access to the dominant informational resources are deprived of the underlying human right to equal access to information and cultural resources. Finally, economically, the 'have-nots' lag behind, since, according to Katz and Rice's empirical study (2002:19):

The Internet and other communication and information technologies can enhance human capital by providing increased access to education and training. Information labour markets will prefer individuals who have both current and prior access to, experience with, and skills necessary for communication networks.

However, as Loader (1998: 3) remarks, in most of the literature on digital divides perceptions of a rather linear relationship between ICTs and society dominate, with ICTs being presented as fundamentally transforming societies and influencing social divisions, diversity and differences. This early critique about the cause-effect perception of technology and society is illustrated by those who have supported since the late 1990s the notion that '...in the long run, it [information and communication technology] will change fundamentally the characteristics of cultures that have evolved over centuries' (Moore, 1998: 149). From this perspective, uneven and unequal ICT diffusion is taken as a source of social divisions or at the minimum as a force widening existing disparities, whereas the ways in which societal characteristics and patterns of social organisation influence the take up and use of technology have drawn only little attention.

The literature is thus more dedicated to the ways in which ICT diffusion could decrease social gaps and less to how policies aiming at social inclusion could possibly stimulate citizens to further participate in the information society. From this perspective, a growing bulk of the literature refers to digital divides as tightly related to social exclusion and economic deprivation and often ICTs are deterministically perceived as influencing social marginalisation (Loader and Keeble, 2004: 37). On the other hand, there are rather dystopian approaches, predicting that the internet does not have the potential to substantially influence economic deprivation and social disparities, as 'the world has always been a place of haves and have-nots and I can see no way that internetworking is going to change this very much' (Haywood, 1998: 25).

Furthermore, little attention has been given to the role of human resistance and mediation in the course of the information society. In particular, the literature considers culture not as a primary factor but as one of many factors influencing the participation of citizens in the information society: '...lack of financial resources, knowledge, skills, or ''cultural capital'' is said to prevent them from benefiting from ICT developments... (Frissen, 2003: 20). A characteristic example in empirical studies, such as Dekkers' (2003), is the poverty factor indicating that there is a correlation between pre-existing poverty and low diffusion of ICTs. In this sense, questions of shortage of cultural capital could bring to the fore issues of social perceptions of and attitudes to ICTs as well as actual ICT use within particular settings of life which associate in turn with notions of social participation and citizenship: 'The debate on dichotomy in the information society is in fact full of assumptions about specific (non-) user groups on the one hand and social participation and citizenship on the other' (Frissen, 2003: 21).

Therefore, as Loader and Keeble remark, a more 'grassroots perspective' is now needed on the basis that 'whilst excluded communities and individuals are unable or reluctant to use the

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[3] However, the issue of the impact of ICTs on sociability and on social networks constitutes another, equally controversial, issue that raises, in turn, a number of not yet sufficiently answered questions.

technology, their identities and cultures remain invisible (2004: 35). This sheds light on the complex relationship between ICTs and multi-sided social exclusion, and the illusive nature of discourses arguing that digital inclusion can effectively eliminate social exclusion and marginalisation. On the contrary, digital inclusion should not be seen as a solution to the multi-dimensional problem of social exclusion but rather as a facilitator in some instances or even as a result of policies aiming to fight other structural aspects of social inclusion, as Cammaerts, Audenhove and Pauwels remark (2003: 304). Thus, the particularity of societal, cultural and political settings in which ICTs develop and the complex relationship between structural factors of exclusion (economic, social, political, and cultural) inspire the study to explore the dialectic between socio-cultural dynamics and internet adoption within the particular settings of Greek society and politics.

From this perspective, reasonable theses, such as Selwyn's suggestion (2004a: 351-5) that social and cultural capital along with economic and technological assets are mediating factors in shaping people's engagement with ICTs over time, should develop a more complex and dynamic picture of how digital divides can be socially and politically contextualised. Namely, what the paper proposes is a theorisation of digital divides that emphasizes the critical role that socio-cultural and regulatory dynamics play in structuring internet access and use in both qualitative and quantitative terms (Wilhelm, 2000), arguing that socio-cultural gaps and disparities as well as regulatory dynamics are in constant dialectic with technology, shaping together social inclusion and active citizenship.

In concluding, the idea that even if access is ensured people might still not use ICTs to the desired extent in terms of time, quality and breadth (Selwyn, 2004a: 349) should be further developed in a systematic, socio-cultural and political way, as will be further illustrated when the discussion on the puzzle of digital divides in Greece takes place in the following section.

4. The Greek puzzle of digital divides: role of society, culture and regulation. A historical and pragmatic view.

The issue of digital divides is particularly significant for the paper, as the Greek case of divides challenges the above discourses, illustrating the significance of viewing divides from a cultural and regulatory perspective. Hence, this last section aims to establish a more focused discussion on the key angles of the digital divide issue that are of relevance to the Greek case, in order for the argument that digital divides should be seen in the light of culture and regulation to be articulated. In this sense, this section aims to validate the key paper objective, namely the investigation of the nature of divides in Greece and the role of culture and regulation accordingly.

Generally speaking and as it was briefly discussed in section 2, in Greece the large majority of people are still off-line, whereas the minority using the Internet experience different levels of use and satisfaction. In addition, Greece is one of the countries attempting to make a successful transition to the new liberalized information society, marked at the same time by well-established cultural and long-standing regulatory frameworks. In this sense, Greece is an interesting case study for researchers who wish to draw conclusions about the body of countries confronting similar transitions and the role of culture and regulation accordingly.

In what follows, the societal, cultural and political characteristics of the Greek case and their explanatory role in the shaping of digital divides in the Greek information society and within the European context of divides will be briefly outlined from a historical as well as pragmatic point of view, challenging the above dominant digital divide discourses and paving the way for further exploratory and qualitative-oriented discussion of the phenomenon in general.

4.1 Societal culture: impeding the Greek information society?

Greek civil society has been historically marked by an individualistic spirit (Sotiropoulos, 1996) and the dominance of clientelism ((Mouzelis, 1995), characteristics that have been impediments to the evolution of the Greek information society and which will be extensively discussed in chapter 3. Likewise, the lack of active social networks has historically characterised Greece (Petmesidou, 1996), discouraging awareness raising in Greek society. This has entailed significant difficulties for the promotion of the information society, as the latter relates to the public sector, various social institutions and the population in general.

In addition, social heterogeneity, clientelism and individualism have historically marked Greek society, creating an atmosphere of short-termism that neglects the importance of social inclusion and social transformation through new technological devices such as ICTs. Hence, what has gradually been created is an identity of resistance and techno-phobia that is dominant in both society and public administration.

4.2 Culture in policy and regulation: necessity for institutional and cultural change?

As stated above, the picture of anti-developmental and techno-phobic society has historically characterised public administration in Greece as well, restricting innovation to what is called development of 'hardware' equipment, while cultural and social 'capital' seem to be largely under-invested and under-estimated. In addition, complex administrative procedures accompanied by lack of incentives from civil servants are currently marking the top-down character of the Operational Programme Information Society (OPIS)[4] launched in 2000. Indicative of this, is the fact that the OPIS does not touch upon issues of identities of resistance, and thus phenomena of social ignorance and lack of awareness, as well as individualist identities are empowered by shortsighted public administration.

The initial 1999 White Paper (Greek Ministry of Economy and Finance, 1999) emphasised the social dimension of the information society, reflecting the particularities that the Greek case is characterised by such as a culture of short-term activities. Thus, persistent techno-phobia, a weak IT market, inadequate public administration initiatives and governmental ineffectiveness (Constantelou, 2001) draw a gloomy picture of the information society in Greece, where more drastic state and regulatory action is essential for reforming the state/economy relationship and the way in which civil society organisations are positioned in policy making.

Indicatively, the report published by OECD on regulatory reform in Greece points to the direction of the inherent difficulties that the information society of the country faces, bringing to the fore the necessity for more efficient regulatory reforms through more drastic political leadership, as 'although most Greeks will benefit from regulatory reform, the resistance of many protected groups to needed change is hard to overcome' (OECD, 2001: 2). OECD recommends the reform of the Greek civil service in order for an efficient and transparent regulatory system to be established. It pays particular attention to the existing administrative barriers (ibid: 2-3) and the tight state control on the economy and independent regulators as obstructing the regulatory reform and the creation of a competitive telecommunications market in Greece (OECD, 2002: 57). Therefore, OECD highlights the necessity for fundamental structural change' (ibid) and it underlines what key documents in Greece mention as one of the traits of the Greek information society, namely the fact that the introduction of ICTs in Greece has been driven by the private sector while the public sector is lagging behind (Voulgaris and Sotiropoulos, 2002).

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[4] More information at www.infosoc.gr.

In summary, the critical role of state and public administration brings to the fore the necessity for changing the relationship between public administration and ICTs in a way that the culture of techno-phobia and inertia will have no place in civil society and the public domain. Culture in Greece was born in society but goes through the state, so appropriate political leadership is required in order for the information society to develop.

4.3. Greek information society: past legacies & future prospects. Questioning the EU information society?

In pragmatic terms, the Greek information society presents a series of particularities in terms of internet diffusion and use, leading to digital divides in the country and highlighting the role of culture and regulation confirming the significant role that the above historical characteristics of the Greek society and politics still play. The following discussion of the Greek information society illustrates how Greece is positioned within the EU info-society and the features that make the Greek information society a particularly interesting case for studying digital divides.

4.3.1. Greek information society: diverging from the EU information society

Broadly speaking, Greece is behind the EU information society, and yet simultaneously appears as an exceptional case of development with impressively rapid rates of ICT diffusion[5].
More specifically, Greece has failed to significantly increase the indicators of new technologies and information society; while the Internet penetration in December 2001 was an average of 38% in European households, Greece had an Internet penetration of less than 10% (EC, 2002a: 5). Moreover, the 2005 Eurobarometer survey illustrates the weak relationship between Greek citizens and the Internet, as illustrated in the question 'does your household have access to the internet?'; only 24% of the Greek respondents answered positively comparing to an average of 49% of European respondents (EC, 2006: 6)[6]. Furthermore, according to the 2005 Eurobarometer survey, in Greece mobile telephone is more common even among children than the internet, with 30% of children owning a mobile and 26% of them using the internet, whereas the EU-25 average is 36% and 50% respectively (ibid: 19).

4.3.2. The time story of the Greek information society: catching up but further ICT diffusion is needed

The Greek info-society is marked by a mixed picture regarding past legacies and future prospects, illustrating that although Greece still lags behind the EU, it is currently catching up in terms of new Information and Communication Technologies[7].

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[5] Network digitization of connections in Greece was 51.80% in 1997, whereas Sweden had the highest percentage in the EU with 68.1% (Greek Initiative 'Information Society', *Telecoms Infrastructure*). Also, the public telecommunication investment in 1997 was 3.7% in Greece and 5.4% in the EU-15 (Greek Initiative 'Information Society', 1999: 2). However, the investments in the Greek information society have increased 27% more than the gross national product of the global economy per year (ibid).

[6] The 2005 Eurobarometer concluded that Greece is the last in line in internet usage with only 24% of the population using the internet, presenting, however, an increasing rate of access to the internet from 15% in 2003/2004 to 24% in 2005 (EC, 2006: 14).

[7] The annual growth rate of ICT expenditure between 1992 and 1999 in Greece was very strong and slightly lower than the EU average (DDSI, 2001:1). Moreover, in Greece the ICT market is growing rapidly (EITO,

Attempting to sketch the overall picture of the Greek information society, we can conclude that important progress has been made over the last few years. More specifically, the annual GRNet national surveys point out the increasingly improved picture of ICT diffusion in Greece over the last few years and in tune with the 2005 Eurobarometer survey, which argues there is a relative decrease in the digital gap between Greece and the EU (ibid) [8].

A comparative examination of the five-layered indicator of new technologies use that the latest 2005 GRNet survey provides, illustrates the gradual and increasing diffusion of ICTs in Greece for the years 2001-2005. Indicatively, in 2001 only 6.3% and in 2002 10.9% of the population used new technologies, whereas in 2003 there was a 2.1% increase in the five-layered indicator of new technologies used (13%) and in the years 2004 and 2005 an 0.3% increase with 13.3% and 13.6% of the population using new technologies respectively (GRNet, 2005: 125).

Moreover, Internet use in general population has increased in 2005 (24.6%) only by 0.1% comparing to 2004 (24.5%) and still lower than in 2003 (25.2%). That shows a rather non-progressive course of Internet penetration in the Greek society. On the other hand, in 2005 only 0.7% of the Greek households were connected to the internet via ISDN, 10.8% via ADSL and 1.4% of those households declared that they were connected to the internet with the fastest connection, whereas 55.4% of the Greek households declared that they do not know or they just refused to answer (ibid: 95).

The computer use indicator in general population increased in 2004-05 and from 32.2% in 2004 it reached 34.3% of the general population in 2005. On the contrary, for the years 2002-03 there was some decrease from 32.5% in 2002 to 34.2% in 2003 (ibid: 5). Likewise, computer usage in the years 2002-2003 has increased by 1.7%, reaching 34.2% of the overall population in 2003, whereas a decrease by 2% in 2004 and a 2.1% increase in 2005 did not manage to substantially change the overall picture with only 34.3% of the overall population in Greece using computer (ibid). According to these figures, a large majority of Greek citizens are still non- computer and Internet users. In summarizing computer use levels in Greece remain the same, as only in the year 20001-02 we had an impressive increase of computer users in the country (ibid).

4.3.3. Greek information society: 'cultural divides' into shaping?

The national GRNet surveys attempted to go further and explore why the majority of citizens in Greece reject ICTs in general and the Internet in particular. The data collected in 2005 indicate that the reason 'I don't need it' remains the most important reason even if the percentage of respondents supporting that slightly decreased in 2004 (29.3%) in comparison to 2003 (30.7%). On the other hand, a very small increase of the lack of interest from 15.6% in 2003 to 15.8% to 2004 can be observed, whereas 'lack of access' becomes increasingly less important reason for non-use. Finally, with respect to 'cost', and in contrast to what was the case for computer use, the respondents who do not use the internet seem to be particularly concerned about issues of price and cost, as in 2004 10.3% of the respondents argue that, whilst the respective percentage in 2003 was only 4.2% (ibid: 77). Likewise, in 2003, even more people (30.7%) than in 2002 (23.1%) stated that they did not need the Internet, whereas

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2001: 465), although Greece has the lowest percentage of network digitization in the EU (Greek Initiative 'Information Society', 1999: 1).

[8] On the other hand, the Flash EB 125 survey estimated that 11.7% of the Greek households in 2001 and 9.2% in 2002 had an Internet connection (EC, 2002b: 5-6). However, the GRNet 2002 survey assesses that the percentage in 2002 was 13.4%, estimating that a further 8.4% of households will obtain a connection in the next six months (GRNet, 2002: 33-4), something that was confirmed, as 7.6% in 2002 and 8.6% of households in 2003 obtained an Internet connection for the first time (GRNet, 2003: 93).

concern about the cost of connecting to the Internet appeared smaller (4.2%) than in 2002 (9.2%) (GRNet, 2003: 32). Equally important, the lack of Internet connection had been articulated in 2003 (25%) as a less frequent reason for people not using the Internet than in 2002 (30.8%) (ibid), illustrating a persistent culture of Greek society's low degree of interest in new technologies[9].

Even the survey conducted in the first quarter of 2004 by the National Statistical Service of Greece (ESYE) confirms the above remarks, concluding that non-appreciation of the internet is the main reason for people not using it, as the majority of the respondents (52.62%) stated that the main reason for not accessing the internet was the belief that the information provided online is not of particular usefulness and interest (ESYE, 2004).

In conclusion, it seems that Greek citizens suffer from a lack of familiarization with new technologies and electronically mediated ways of communication, pointing to new challenges and bringing to the fore the existence of 'cultural' rather than purely 'digital' divides:

In our country today there is a tendency to distinguish the few (but rapidly increasing in number) users of computers and communication networks such as the internet from the many who treat the new technologies at best as a mystery and at worst as a danger for their future (emphasis added) (Greek Ministry of Economy and Finance, 2002: 12).

4.3.4. Internet regulation in Greece: new challenges at the forefront

Moving to the field of internet regulation in Greece, the Greek government started to liberalize and privatize the broadcasting and telecommunications market in the early 1990s, struggling between two equally important goals: the protection of fundamental rights, such as the right of access and the right to privacy, and the need to develop a legal and regulatory framework that encourages ICT growth (Greek Ministry of Economy and Finance, 1999)[10].

Therefore, the Greek regulator is faced with new challenges[11], while the long lasting shortcomings of the Greek regulatory framework on the information society are increasingly raised: 'first, it is oriented towards regulating "static" situations; secondly, it is primarily concerned with the "material", the "tangible" world, while more and more activities involve "intangible" goods and services' (Greek Ministry of Economy and Finance, 2002: 76). These shortcomings hinder regulation's capacity in the information society (ibid), and therefore the 2002 White Paper acknowledges the necessity for 'new rules for the protection of data, the protection of privacy, the commercialization of material protected under intellectual property rights, etc' (ibid), as well as the need for 'citizens participation' (ibid: 83).

In addition, although Greek regulation covers a range of distinct policy and regulation areas of the information society, it does so in an incomplete, partial and anti-social way. For instance, official terminology regarding the term cyber-crime has not yet been accepted in Greece, and there is no specific and effective regulation for the prevention of on-line fraud (DDSI, 2001). The lack of legal terminology concerning cyber-security, on the one hand, and the fact that the Greek law does not have a definition for 'web' and 'hacker', on the other, are indicative examples of this legal gap. However, the incomplete and static regulatory

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[10] The 2004 ESYE survey presents the cost of equipment (45.50%) and of accessing the Internet (36.55%) as main obstacle to the decision of people to go online. However, methodological divergences and the time-gap between this and the GRNet surveys might explain these differences.

[11] Greek regulation 'is made up of the general legislative framework defined by Parliament. It is supplemented by the individual rules set by the Administration or independent authorities…and it is completed with rules set by private sector entities through self-regulatory commitments' (Greek Ministry of Economy and Finance, 2002: 77).

[12] The 2002 White Paper remarks: 'Technological convergence does not necessarily involve a "convergence of legislation"…' (ibid: 76).

framework on the information society constitutes a key challenge for Greek policy makers and regulators, requiring further research and investigation.

4.3.5. Greece diverging from EU Internet law: following the canon or drawing a line of distinctiveness?

Communication from the European Commission on the implementation of the EU Electronic Communications Regulatory Package states in its 9th report in 2003 that there are major divergences of transposition in most EU member states in key areas of concern of the new regulatory package (EC, 2003a: 3)[12]. The report expresses concerns regarding delays and inconsistencies of implementation of the regulatory package in most member states, including Greece: 'The national measures (and drafts in the case of Member States that have not yet transposed)…give rise to some concerns that the Commission considers should be addressed if the objectives of the new framework are to be realized to the full' (ibid: 5).

Likewise, the 10th report (EC, 2004a) argues that despite the generally positive picture of notifications and legal measures taken in Member States, five countries (Belgium, Czech Republic, Estonia, Greece and Luxemburg) have not transposed the framework one year after the deadline. As an outcome, the Commission has launched infringement proceedings for non-notification, and proceedings are pending before the European Court of Justice against Belgium, Greece and Luxemburg (ibid: 9) [13].

Hence, the delayed and incomplete adoption of the EU regulation in Greece raises the issue of divergence across the EU, and the question of whether the principles of mediation and subsidiarity could prove of use in bridging the gap between EU and national regulatory authorities and monitoring the thorough implementation of the Community laws in all Member States[14]. Nevertheless, Greece remains a distinctive case, as it is the country where regulatory insufficiency has been particularly acute; something which, in combination with the above cultural and broader political characteristics of the Greek information society, raises questions about the role of regulation in fulfilling the user and market expectations in the information society and the possible cultural drivers of that regulatory insufficiency.

Conclusion

This paper discussed the phenomenon of the digital divide in Greece and argued that this phenomenon is mainly a result of culture and regulation. The paper employed a conceptual framework that refers to the ways in which ICTs and the Internet in particular are viewed from a user perspective, as well as to how regulation is linked to this perspective. Theories and concepts regarding the necessity for digital inclusion led to a socio-cultural account of the way in which the Internet is regulated, so that the functional link between society, culture and regulation is achieved.

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[13] The report states that 'as of 1 November [2003], only eight countries had taken action to incorporate the Framework, Authorisation, Access and Universal Service Directives into national law' (EC, 2003a: 3). Greece is one of the countries that had not transposed the EU regulatory package (ibid: 4), as well as the e-Privacy Directive by the deadline of 31 October 2003 (ibid).

[14] The significance of the timely implementation of the regulatory framework is also stressed by the Commission's Communication *Electronic Communications: the Road to the Knowledge Economy* adopted in March 2002 (EC, 2003b). Moreover, the European Council confirmed that more monitoring of law is needed (European Council, March 2004).

[15] The question is whether the EU needs to go further the infringement proceedings and the operation of consultation bodies, developing more bilateral activities with the National Regulatory Authorities and reinforcing the principles of mediation and subsidiarity.

The paper firstly drew on the main objectives and agenda of the discussion as a whole, and then it briefly presented the ground on which the selection of the Greek case of divides was selected, whereas in the third section the literature foundations in the field were briefly presented. Thus an in-depth discussion of digital divides as a phenomenon embedded into a complex social context where other kinds of social exclusion occur was held. By viewing digital divides as developing complex interdependencies with other kinds of exclusion, the paper aimed to justify the importance of identifying the ties between culture and regulation when exploring digital divides.

In this way, the paper articulated and justified in the last section the argument that the Greek culture relates to Internet policy and regulation, influencing the take up and use of the Internet in Greece and challenging the dominant discourses on the phenomenon of digital divides takes place. Furthermore, data and evidence concerning the Greek puzzle of digital exclusion allowed the paper to apply the overall socio-cultural and regulatory account to a case study that presents a particular interest, entailing significant implications for future research on digital divides in Europe in general.

Nevertheless, due to word limits, the paper does not shed light on other possible forces of importance in digital divides, limiting the scope of the discussion to the role of culture and regulation only. On the other hand, the paper does not report on any of the original findings obtained from primary empirical research in Greece, as such research is still ongoing and it has already produced some interesting results on the phenomenon from a citizen and decision-maker perspective. Therefore, this paper can only be thought of as an introductory discussion to the issue, paving the way for further and more original work to come out.

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Generating Agency Within Regional Communities To Foster Inclusive Information Society: Case Of South Yorkshire, UK

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Abstract

This paper describes and analyses the way in which agency located in a regional partnership aims to move beyond access to building regional ICT capacity through fostering agency amongst local people. There has been attention focused on the ways in which Europe develops an inclusive information society and policy makers and service providers have focused on issues surrounding access, the building of skills, the development of broadband infrastructure and the fostering of partnership approaches in the delivery of e-services. These developments have laid a foundation for e-inclusion that has the potential to move beyond issues of access, e-skills and e-services to building capacities both at the individual and community level to enable individuals and groups to participate and contribute creatively in the knowledge economy at local and regional levels. To develop a deep and broad community approach is requiring the rethinking of communication and services at a regional level by fostering networks of interests and domesticating the use of ICT in multiple settings.

Introduction

This paper describes and analyses the way in which a regional partnership aims to move beyond access to building regional ICT capacity through the agency of local people. There has been attention focused on the ways in which Europe develops an inclusive information society and policy makers and service providers have focused on issues surrounding access, the building of skills, the development of broadband infrastructure and the fostering of partnership approaches in the delivery of e-services. These developments have laid a foundation for e-inclusion that has the potential to move beyond issues of access, e-skills and e-services to building capacities both at the individual and community level to enable individuals and groups to participate and contribute creatively in the knowledge economy at local, regional and global levels. However, a key issue still remains, which is how to foster participation by all members of a region. To this end, in the UK, the Cabinet Office instigated a research report called 'Enabling a Digitally United Kingdom'. As part of the drive to improve take up and foster participation the Government set a 'Digital Challenge': a competition based on proposals for the implementation of programmes to foster participation across the local population in a regional framework. The region decided that they would develop a proposal, but given only one chance of getting government money, it decided that it would implement the plan anyway as it fitted with its broader regional strategy of transforming a former industrial region based on coalmines and steel to an information society region. As one example of the current drive in the UK to foster usage of ICT amongst all members of communities, the South Yorkshire 'Making IT Personal' programme, shows were agency is located in generating usage of ICT in broader information society change.

Innovation and policy in European Information Society

In general terms, there is debate regarding the character of an information society on the one hand, and debate as to whether there is any significant transformation to a radically different society on the other hand (Webster 2004). Nonetheless, the use and development of ICT is situated within broader socio-economic and cultural change and is materializing into a networked society (Castells 2001). Social actors in an information age are experiencing the mediated and informational character of contemporary society, seen in new forms of organizing work and education as well as leisure time and everyday life (Dutton 1999; Haddon 2004). In economic as well as social terms, key features underpinning the information age are networked informational appliances and the networks that support them, facilitating new forms of exchange in and between organizations and throughout society (Mansell and Steinmuller 2000, 453). However, it is the complex ways in which technologies are developed, narrated in policy making and informally, used and negotiated through various social and economic factors that influence their cultural significance and meaningfulness to society (Wessels, 2000, 2007)[i]. In many ways, the issue of 'embedding ICT into society' is the focus of continuing debate at the European, national, regional and local level.

Europe was, and still is, a key player in the drive to push forward an information society, and there is a specific European vision of an 'information society', which involves 'achieving ubiquitous and accessible information resources as a foundation for economic growth and development [in which] information is becoming a central feature of social and cultural life' (Mansell and Steinmuller 2000, 453). It is now largely acknowledged by European policy-makers that information societies will develop in different ways: 'depending on the rate and implementation of technological developments, how these technologies interact with users' (Mansell and Steinmuller 2000, 1). EU policy continues to build on papers such as the 1993 EU White Paper: 'Growth, Competitiveness, Employment: the Challenges and Ways Forward in the 21st Century' and the 1994 Report of the Members of the High Level Group on the Information Society: 'Europe and the Global Information Society: Recommendations to the European Council' in the 'i2010: European Information Society 2010' policy initiative.

Developments in 'culture in the digital era', 'e-government' and 'e-inclusion', understood via the notion of a European Information Society, imagine a society where low-cost information and ICT are in general use, with a knowledge-based economy that stresses investment in human and social capital, knowledge and creativity. There are strong policy aims to counter exclusion and digital divides which seek to develop digital as well as social cohesion. At the national level in the UK, for example, the narrative themes of policy show continuity from the 1996 'Government Direct' Green Paper to the 2005 e-government initiative. Thus, for example, in consultation for the National Strategy for Local e-Government, e-government was defined as:

> … exploring the power of information and communications technology to help transform the accessibility, quality and cost-effectiveness of public services, and to help revitalise the relationship between customers and citizens and the public bodies who work on their behalf
> – Cornford et al. 2004, 6.[ii]

As these current policy themes illustrate, the narratives of digitally enabled services contain many of the same themes as the early narratives of digital applications. The EU 'information society' narrative found in the 'Bangemann Report' had very broad themes of 'improving the quality of life for citizens', of providing 'fresh opportunities to build a more equal and balanced society', and so on. However, commentators questioned how 'in tune' (CDW

Associates, 1997; Intellect, 2007) information society narratives were, and remain so, with the everyday lives of British citizens, as well as engaging with the complexities of producing change in communication services. In the context of Europe, Silverstone (ed.) 2005 academic research shows that the new technologies are differentially taken up and domesticated within varying socio-economic and political and cultural contexts. The widespread use and the development of ICT within various populations and groups is complex: to build user capacity in the use and shaping of digital technologies and their application involves considering issues of a multi-layered digital divide (Castells, 2001; Norris, 2004), the processes of domestication (Berker et al., 2006; Haddon, 2004)[iii], and the development of user-led services and media and communication (Harrison and Wessels, 2005).

e-inclusion: rethinking the concept of digital divide

Although research shows that the UK as a whole has undergone some rapid development in the take-up and use of ICT, there is still concern amongst policy-makers that some sections of the population are at risk of being left behind or left outside of developments around the new uses of digital technology both in the home and in the public sphere. Within Europe the e-inclusion is on the policy agenda, with its priorities being laid out in at the Ministerial Meeting in Riga in 2006. E-inclusion can be understood through Castells' argument that the Digital Divide involves:

> The differentiation between Internet-haves and have-nots adds a fundamental cleavage to existing sources of inequality and social exclusion in a complex interaction (Castells, 2001: 247)

Castells (ibid.) points out that digital divides are not simply about access but is multi-dimensional and involves income, ethnicity, gender, family structures, language, and education and skills as they coalesce in social inequalities (ibid.). He also points out that the knowledge gap is a key dimension in building capacities in social actors to use, shape, and prosper from Internet-based activity (ibid.) within regions, nation-states and globally. A further dimensional is the risk of a 'new technological divide' (ibid.) in which some areas may get left behind in not having access to a fast and high bandwidth infrastructure and wireless services and so on. Norris (2004) further identifies political dimensions to the social and global aspects of digital divides. However, these real material and social factors are given meaning culturally (Wessels, 2000), and developments that seek to counter inequalities in digital take-up and use need not only to address the cultural contexts of development and use but also to recognize any particular cultural specificity of the developers and development processes (Wessels, 2007). Thus, although there may be generic aspects to development and use and models of innovation and applications, there is nonetheless specificity to particular developments that are shaped through the values and culture of developers and users. A key aspect of understanding culture in development results from and becomes embedded in strategies, namely incumbent, insurgent, and virtual community strategies (Mansell and Steinmueller, 2000). These strategies recognize the way in which development agendas are located in legacy systems and contexts, in emerging technological innovations (and pathways), patterns of use, and user-developer configurations. Agendas for using ICT to transform society for economic competitiveness, social cohesion, and equality of opportunity encounter, and interact with, the cultural contexts of development and use. The analysis of any implementations of agendas of change requires addressing where agency is located and how agency can be fostered within broader social dynamics.

As one aspect to counter digital divides in the UK, the Digital Challenge programme 'is about setting the vision for and taking the next bold and radical steps in creating a digitally enabled society' (Cabinet Office, 2006: 2). This programme is in line with many of the points made in the Varney Report (2006) that emphasizes the use of ICT in services and communication to foster citizen participation for inclusion in socio-economic and political and cultural life. There is a distinct move away from an overly emphasized focus on customers of services to a more active and connected citizen within all domains of social life: with business, government, community and so on. In the context of discussion of this paper so far, the UK Government argues that 'The Digital Challenge' provides an incentive for a region, city, or similar sized area to drive forward the use of technologies to better meet the needs of its local community and individual citizens. Any local authority, in partnership with other authorities, public sector organisations, industry, intermediaries, and the third sector, can take part in the Digital Challenge competition. The Government brief was that any programme should help to create:

> a country at ease in the digital world. Where all have the confidence to access the new services that are emerging, whether delivered by computer, mobile phone, digital television or any other device. To work towards achieving equitable access and remove the barriers to take up (Connecting the UK: Digital Strategy, published April 2005, PMSU)

The rationale behind the Challenge was that Government saw that information and communication technology has become all pervasive in people's working lives and increasingly in their homes as well. The Government is concerned about how people adopt and use this technology in relation to the future prosperity of the UK and for social cohesion. The Government is concerned, therefore about the evidence that a digital divide does exist in the UK with some groups largely excluded from benefiting from access to electronic services for differing reasons. Government sees itself as having a clear role in helping to promote and increase public awareness about the Internet and harness the economic and social returns in a way that benefits all society. The Digital Challenge is one of the eight actions contained in the Digital Strategy. The Digital Challenge forms part of the core Manifesto and has widespread support across central government. The Digital Challenge programme has high profile within the local and central government community and partners with and suppliers to the Digital Strategy. Success of the Digital Challenge top ten finalists and the ultimate national winner is based on how effective they can demonstrate meeting the key themes of:

> Empowerment – The winning bid will be able to show how they will use ICT to give new choice, voice and empowerment to citizens; it should be about enabling citizens to create not just consume services.

> Service Transformation – This must demonstrate radical innovation in service re-engineering, not just applying ICT to current provision but using ICT to transform the whole way a service is provided; used and experienced.

> Efficiency – Local Authorities must show that after year one their initiatives are sustainable and cost effective and be prepared to showcase these to other local authorities in years two and three, acting as the UK exemplar.

Within the Digital Strategy, digital inclusion is no longer simply an issue of access. The Strategy seeks to help people to get to technology but also seeks to help people use new technology effectively. This is important because, increasingly it is recognized that technology has changed how people live, work, and communicate and interact in everyday lives with government, public services and with each other. Given this context, those not using ICT are increasingly at both an economic and social disadvantage. These themes are

addressed in the successful Digital Challenge proposal by Sunderland City Council, which is called 'Where people matter'. The proposal writers of the Sunderland project argue that the project is driven by the needs of the communities and powered by 'real' consultation. The innovation is as much about how the programme has been put together and how it will be run as about the projects themselves. The proposal is based around individual's needs with services being delivered where and how they are needed and wanted. This could be in the home, a local community point, face to face or remotely - using technology as the enabler. The aim is to drive a transformation in the lives of the people of Sunderland, in particular those that are currently classed as disadvantaged or disengaged. In order to reflect the communities' needs and issues, and to maximise the benefits to as many communities as possible, Sunderland's proposal has been developed thematically. There are seven themes:

- Innovative Telephonies
- Community e-champions – a new direction
- Education and capacity building
- Community empowerment and networking
- Patient empowerment
- Independent living
- Virtual Sunderland

The team from Sunderland argues that these are underpinning by two vital enablers - connectivity and accessibility. The South Yorkshire proposal was on the shortlist but was unsuccessful, nonetheless, the region is undertaking a digital challenge programme called 'Making IT Personal: Connecting the DOTs' in line with its Regional development policy. However, the key question is: how can a region transform itself to an information region given its particular history and context?

Region and development: South Yorkshire

South Yorkshire is situated within the Yorkshire & Humber region. Sheffield is the core city of the sub-region, the next largest urban centre being Doncaster, followed by Rotherham and the historic market town of Barnsley. Sheffield is the main centre of economic activity in South Yorkshire and as a large core city of an extended city region it provides for a range of high-order services for a wide area. Doncaster is a rapidly developing logistics centre of regional and national importance because of its strong position in the national rail and motorway network. Rotherham lies between the two and has strong labour and housing market links with both. Barnsley lies to the north and is a significant market town and sub-regional service centre between Sheffield and Leeds, with a potential for developing strong housing, labour market and employment land supply connections with Sheffield and with Wakefield. Central to the sub-region's future development will be the enhancement of these urban centres in /their complementary roles.

The population of South Yorkshire is largely urban in character, and the rural areas present in the sub-region are "less sparse", small rural towns and villages. There are no really remote rural communities in South Yorkshire however the rural coalfield communities in the area are some of the most significantly deprived in the country. Sheffield has over half a million people, Rotherham over quarter of a million, Doncaster close to 0.3 million and Barnsley 0.2 million. The total population of South Yorkshire is therefore over well over one and a quarter million.[iv]

Although the economy is diverse the Cultural, Creative and Digital Industries are a key sector in the area (S.Yorks profile: http://www.sypartnership.org.uk/coredocs.php). Using a broad definition, this sector employs around 60,000 across the City Region with a high concentration in Sheffield, Barnsley and Doncaster. Barnsley has seen rapid growth since 1998, with some 3,500 people now employed in the Creative and Digital Industries. There is a strong business base in many of the key sub sectors, with over 2,700 involved in Visual Arts, over 1,300 in Audio Visual and 600 in Books and Press. This sector is characterised by new starts and rapid growth, and a comprehensive programme of creative and digital flagship projects with the ability to catalyse the growth more widely are being developed in the City Region including:

• E-Campus, Sheffield;
• Digital Media Centre, Barnsley;
• Digital Knowledge Exchange element of Doncaster Education City;
• A range of digital SME initiatives around CENT@Magna, Rotherham; and
• Business Innovation Centres in Barnsley, Doncaster, North East Derbyshire, Bassetlaw, and Chesterfield.[v]

These industries with investment in broadband and other digital technology means that the region is focused on using ICT to transform itself from a leading industrial region to a information society and knowledge economy (South Yorkshire Public Sector e-forum). However, the Local Authorities in the region, as well as the e-forum and a South Yorkshire online partnership has visions beyond narrow economic transformation to address inclusion by integrating ICT in the everyday life of local people, local business and local services. This vision, is built on an existing focus of a very grounded approach to integrating ICT into the everyday lives of the people of South Yorkshire, seen primarily in the work of the e@sayconnects partnership.

The rationale behind e@syconnects is that not all citizens are able to access information and services on traditional computing platforms such as the Internet. As a EU Objective 1 area, South Yorkshire has a low population of PC's within households therefore necessitating the successful exploitation of alternative channels for delivery of e-government. e@SY Connects was introduced in response to the need to ensure all citizens have equal access to citizen information and services to ensure they were not socially excluded. A primary challenge was to design a simple to use system and provide a front-end interface that non-computer users could use to access information and interactive services. The e@SY Connects approach enables people with no knowledge or experience of using Web/Internet services the ability to access the information and services. e@SY Connects interfaces with back-office and third-party systems to provide truly interactive, end-to-end(joined–up) processes, from the citizen's and business point of view, for example; linking with health service provider systems to allow people to book appointments with their doctor 24/7 through the Internet and other channels such as mobile telephones and Digital Interactive Television (DiTV). Linking with a number of Local Authorities' IT systems in the South Yorkshire region to provide authorised real-time access to housing/council tax benefit statuses and waste collection information. e@SY - (Electronic Services For South Yorkshire) is a public sector partnership consisting of the South Yorkshire local authorities (Barnsley, Doncaster, Rotherham and Sheffield), health authorities, emergency services (Ambulance, Fire and Police), voluntary sector, Yorkshire Forward (Regional Development Agency), South Yorkshire Passenger Transport Executive, Job Centre Plus and a myriad of other organisations all benefiting from working together offering true joined-up services. To summarise, e@SYConnects delivers citizen-centered services, services that include rather than exclude people, successfully

exploiting new and innovative channels such as mobile telephones, digital interactive television (DiTV), the Internet including kiosks, and simultaneously reduce the demands upon service providers (public, private and voluntary sector) enabling real tangible benefits to be realised by both the citizens who use the services and the service partners who collaborate to offer these new services.

The agents as developers in the region are, therefore, the four Local Authorities (Sheffield, Rotherham, Barnsley and Doncaster), South Yorkshire e-forum partnership and the online regional online community partnership e@syconnects. These partnerships include police services, health services, the voluntary sector and the regional transport executive. These actors are linked into other regional agencies such as Yorkshire Forward and the Sheffield City Region. The focus is one of fostering local inclusion and growth through developing regional capacity. This approach, economically and in infrastructural terms does provide a regional resource that is one of the most buoyant having one of the highest rates of growth in the UK. Not only is there economic resource and growth, these partnerships are also drawing on the knowledge and innovation capacities in the region. There is also political support for the inclusion agenda in relation to digital technology and services, with the high-level support of all the Chief Executives of the Local Authorities and other key service providers.

The region, through its 10-year online partnership e@SY, has a deep and grounded understanding of developing e-enabled projects from a community and citizen perspective and base. e@sy started as South Yorkshire Communities Online and became established ad e@syconnects as part of a UK nationally funded programme of Connects projects. In part due to its partnership approach and position as a regional partnership it has been able to undertake innovative projects that have taken a citizen centric approach. The partnership is part of a broader and higher-level partnership called the South Yorkshire Public Sector e-forum. This forum is made up of senior policy officers from a range of service and IT departments in the Local Authorities of Sheffield, Barnsley, Rotherham and Doncaster. The function of this group is to take a strategic approach to information society developments in the region and to develop policy initiatives and design programmes for change as well as implement projects. Currently, the partnership within the region sees itself as undertaking a radical programme of transformations that seeks to build capacity within its communities and to foster agency so that individuals and groups can shape information society developments.

The South Yorkshire Digital Challenge: 'Making IT personal: Connecting the DOTs'

The Public Sector e-forum sees the 'Making IT personal in the following way. The vision is one of a genuinely connected community in which every sector of society - citizens, service providers, businesses - are personally empowered to improve their lives and strengthen their communities and drive change through the use of ICT. It seeks to ensure that everyone has the skills and understanding to make ICT an integral part of their lives and to use their new knowledge to radically transform the status quo. By everyone it means across ages from children to the elderly, across educational and (non) employment capacities, as well as ethnic minority groups that make up the population of the region. The programme aims to do this through, what seems a simple strategy, which is the use of personal outreach where people need and want it most – in the home, streets, shops and community hubs - to ensure that the existing ICT initiatives are meaningfully connected, communicated and accessible to all. It aims to achieve this through Digital Outreach Teams (DOTs) to personally show people what ICT can do for them in places ranging from homes, bingo halls to new media start-up business and skills ranging from novice to advanced. From the mass saturation of DOTs in

which they are highly recognisable and accessibly in community life the second part of the programme is the creation of a social delivery model to connect the DOTs to provide a strong structural underpinning for future developments by the communities themselves. However, although this programme looks straightforward the complexities of transforming a region through the agency of local ICT enabled people is extremely complex with issues ranging from training and regulating DOTs to governance issues across the region. The paper will describe the aspects of this programme, assess the complexities of its implementation taking into account some of the assumptions it has within it to discuss the potential for agency in ICT enabled social transformations.

The rationale of the programme is outlined in four core questions:

1. What do we want to do? We want to create a genuinely connected society where every person is personally empowered to improve lives, strengthen neighbourhoods and drive change through ICT.
2. Why do we want to do it? Our communities struggled through economic change because of traditional industry decline. Citizens will radically benefit from the transformative power of ICT to enrich their lives.
3. Who do we want to help? The entire region – though to begin with our strategy is to concentrate on those who need it most – socially excluded individuals from all communities regardless of background.
4. How do we want to do this? We aim to achieve this vision through a simple yet powerful strategy: the use of *personal* where people want it and need it most – in the home streets, shops and personal interaction points in the community- to ensure all our existing IT initiatives are meaningfully connected, communicated and accessible to all. (SY Public Sector e-Forum / / Making IT Personal /Chris Partridge)

The South Yorkshire team argue that:
- The technology exists. The services are online. The community vehicles are in place. The missing element is people. Rather than introduce new 'Gizmo's', we believe the *real* Digital Challenge is to empower people to shape their own lives (SY Public Sector e-Forum / / Making IT Personal /Chris Partridge)

The South Yorkshire Public Sector e-forum have two core components in their plan, which are: 1) Digital Outreach Teams (DOTs) and 2) Digital Directory.

1) The Digital Outreach Teams (DOTs)
Who are they:
- Volunteers from community programmes:
  ➢ Age Concern
  ➢ National Youth Volunteers
  ➢ Other National Initiatives
- Volunteers from private sector
- Volunteers from public sector

How do they support inclusion?
- Sustain existing progress
- Provide equal opportunities
- Innovate service design and delivery
- Feedback to redesign workflow

- Anticipate and plan for future challenges and trends

2) Digital Directory
What is innovative about it?
- Feedback from socially excluded individuals
- Data used to tailor plans to improve delivery
- Enable local priorities to be linked to mainstream delivery
- Help connect citizens with citizens and all other types of organisation
- Provide companies with listings of neighbourhood resources
- Advertise existing initiatives
- Promote greater e-transactions

The idea is that the Digital Outreach Teams and the Digital Directory will work together:
- DOTs will foster and deepen coordination and integration between community and voluntary organisations by 'cross selling' their expertise and educating the community about their efforts. The Directory will underpin this initiative by acting as an online knowledge base for information sharing.

The benefits of the Digital Outreach Teams and the Digital Directory working together are:
- Give all skills to make technology integral to life
- Give all opportunity to benefit from ICT initiatives
- Eradicate top-down, fragmented service provision
- Ensure existing IT initiatives are connected
- Create limitless citizen centric governance ideas
- Drive service transformation through feedback
- Enhance develop of public service culture
- Connect neighbourhoods across the region

(SY Public Sector e-Forum / / Making IT Personal /Chris Partridge)

Scenario building: How could our bid really transform someone's life?

Personal Profile – Doris
- 72 year old widow of limited mobility
- Lives in Council owned bungalow
- Has weekly home help and Age Concern visits
- Doris has a range of issues that diminish her life

Challenges:
- Doris atteds hospital regularly but sometimes forgets her appointments
- She has to remember to order and collect her three sets of tablets through repeat prescriptions
- If her hospital appointment clashes with her home help or Age Concern visits he misses out on that support
- Her income is her pension which she gets by on, but without much to spare
- She once went into hospital for a week and came home to a threatening letter from her electricity company. She now panics about missing her utility bills
- The hairdresser complains that she loses money every time Doris forgets an appointment

- She doesn't have much contact with scattered family and friends

Solution
- As Doris collects her pension at the Post Office she mentions her problem with the hairdresser. The counter-staff member suggests that Doris talk to a DOT as they have heard about people getting alerts through IDTV. A DOT hub is located within the post office.
- The DOT arranges a discounted IDTV packae and shows Doris how to use it
- The DOT shows the hairdresser how to send a reminder from her mobile phone
- Doris is delighted with the service and wishes this sort of thing could be done for all the other things she forgets, what about timing the hospital, home help and Age Concern visits better?
- The DOT, home help, Age Concern and Doris get together to look at life from her perspective

End point for Doris:
- All her appointments are on eDairy so any clashes flag up an alert to the person making it, and to Doris
- Her shopping is now done online freeing up Age Concern to help Doris with other matters
- There is an automated alert from the utility companies to the home help when a red bill is issued
- She has had her benefits checked and now gets additional income
- With the DOT's help, Doris is starting to send and receive emails via her TV to her children and grandchildren

End point for Services:
- The Council, health services and local CVS (community voluntary services) are developing software to allow integrated diary planning for customer services
- Business link is working with mobile phone companies, email providers and the local business association to develop and extend the use of reminders
- The credit union sets up a one-to-one arrangement with Tesco who undertake a marketing campaign on the estate
- The local community association sets up a fresh produce food buying co-operative service, with discounts from local producers
- And who knows what else….

(SY Public Sector e-Forum / / Making IT Personal /Chris Partridge)

The architecture behind these sorts of services is one networking and within that network developing a structure of feedback loops for information sharing and ongoing development. The components and process is represented in the following two diagrams.

Making IT Personal – DOT and DOT Directory Components
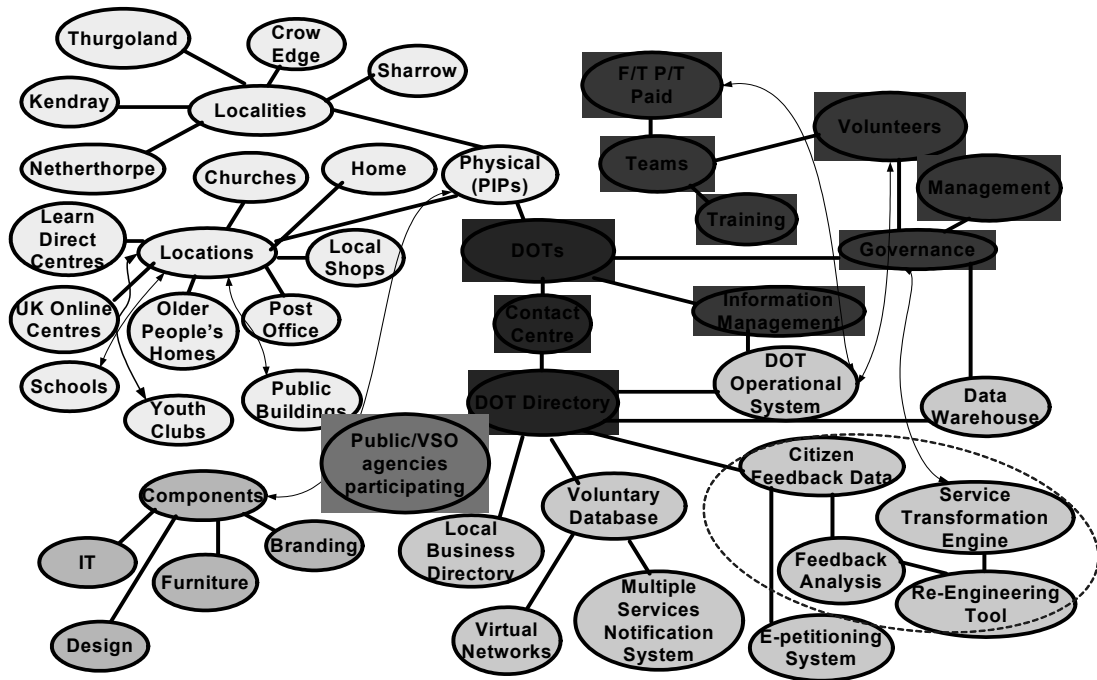
Making IT Personal - Bottom-up Service Re-Engineering Process Map
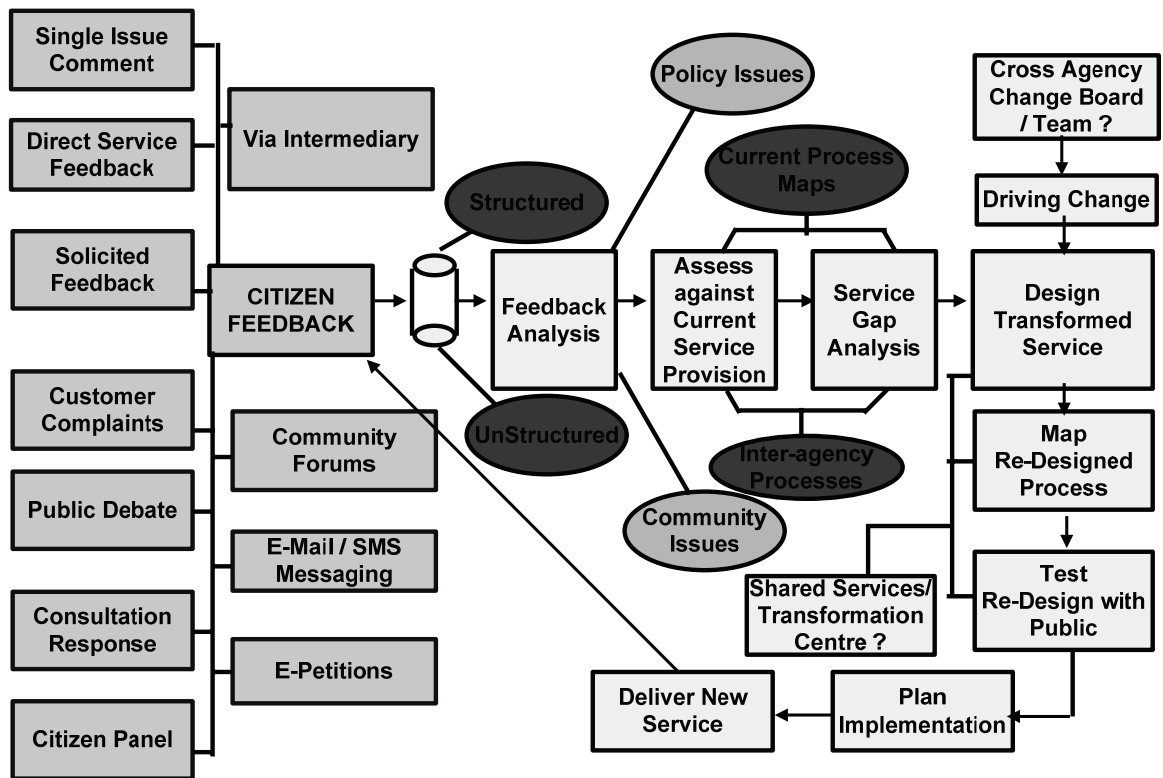
Source: South Yorkshire Chief Executive's Meeting 18th September 2006

These diagrams represent the overall programme for digital inclusion.

The above example of Doris is one aspect in how a regional partnership is beginning to think about embedding ICT into the everyday lives of people within a region. It also shows how they are designing and then aim to implement the programme. The DOTs are seen as important in fostering engagement. Research carried out by the e-forum in the region identified three barriers to use: 1) ICT was often seen as not relevant; 2) there was fear around ICT; and 3) the cost involved in getting and using ICT. The current approach to training DOTS is to use the Accreditation Model that offers people training at various levels from 'basic' to advanced. The growing 'knowledge base' or directory will be used in the ongoing shaping of services and gradual empowerment of all, including the less-well-off in terms of economic, cultural and knowledge capital, to build social capital in new communities.

The accreditation model will drawn on existing information workers such as librarians, wardens, and information providers but will also volunteers from both the public and private sector. A programme management team would manage DOT teams. There would have to be a regulation framework for DOTs as they would be entering private homes and safety of both the residents and workers needs to be ensured; there would have to be police checks for the DOTs; and training in hardware and software skills possibly through Microsoft accreditation. Furthermore, the accreditation process will also help to skill local people and with the deepening and widening of a community knowledge base will generate a base for social change linking into economic (c.f. local hairdresser not losing business) and political activity (public services more accountable and development of local for a). The Director of the Programme (social anthropology, University of Cambridge) hopes that these very grounded developments will create a 'community of place' and a 'community of interests'. These communities will form virtual networks that are grounded in place, thus making e petitioning for example a powerful and relevant tool. Another dimension is that the Digital Regional programme aims to foster intergenerational engagement through school and community initiatives in digitally enabled communities. The focus is on human contact and to counterbalance any isolation, already existing and potential through remote digital communication, by building engagement through active citizenship (Varney Report, 2006). Through innovative developments grounded in community expertise and knowledge, the South Yorkshire team hope to foster interest and participation in communities that will trigger and support change, both technological and social (socio-technical). The overall programme is built on existing work by e@syconnects, on the electronic village Thurgoland, and on a Regional City Connects programme as well as broader regional economic strategies.

Conclusion

The drive for e-inclusion is being taken forward in the UK through a framework of action to enable a digital United Kingdom (Cabinet Office, 2006). However, within the UK different regions and partnerships are forming different visions and strategies for building capacity, fostering participation and 'transforming' the ways in which people communicate and network in their daily lives. Although the amount of transformation and the character of that transformation are unclear in terms of social change, nonetheless, these developments are aimed at changing communication within neighbourhoods and regions. The change involves the development of networks between citizens, business and public services. The first phase of change is largely a broader educational and development one for non/low users of digital technology and services. Built into this educational activity are structures for feedback so that as community-based users can start to shape the digital services develop. In the longer term

users may start to design and integrate digital services that may link into any growing knowledge regional economy. This process, however, means addressing both the development of networks in the public realm combined with the domestication of ICT in the private sphere in a way that integrates the public and the private. This process means revisiting public governance and privacy issues. The key issue in these changes is that there is interdependency between the production, policy and other narratives and user participation so that new forms of participation can emerge to form communities of place and interest. The development in South Yorkshire is ultimately seeking to develop a regional information society that is meaningful to its local residents, which at one level makes for very mundane and grounded development but in the other hand is producing a radical rethinking if networks of communications and services in relation to the domestic and private lives of local people.

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[i] The cultural form is a useful analytical device in that technologies as social and cultural forms are constituted through the relations of production, narratives and policies, and user-participation (Wessels, 2000)

[ii] The National e-gov Strategy identifies three objectives of electronic local government: Transforming services; Renewing local democracy, Cornford et al. 2004, 7.

[iii] Technology IS shaped through a system of relations that consists of four non-discrete elements or phases, appropriation, objectification, incorporation, conversion. (Silverstone and Hirsch. 1992:21).

[iv] The proportion of people of working age is 63% for Sheffield, and 61% for Barnsley, Rotherham and Doncaster. The higher working age population for Sheffield is likely to be due to the younger age profile of the black and minority ethnic community who comprise 9% of the population in that district. The proportion of people over retirement age (65 for males and 60 for females) is 18.8% for the region and just under 18.9% for South Yorkshire. This figure is slightly less for Rotherham (18.6%) and Sheffield (18.7%). It is highest for Doncaster (19.3%), and 19% for Barnsley. In South Yorkshire, Pakistanis form the largest BME group (36%) followed by the mixed race (19.5%) and Black Caribbean (10.0%) groups. The proportion of the working age population classified as active has increased over the period 1995 to 2005 from 74% to 76%. These figures have remained consistently below the figures for England, however the relatively stable position of the English figure has allowed the gap between the Sheffield City Region and the national picture to decrease from 4.4 percentage points to 2.5. The proportion of working age people claiming Incapacity Benefit and Severe Disability Allowance (IB and SDA) in the Sheffield City Region remained above the national average over the period August 1997 to February 2006. This is despite a faster decline in the proportion of claimants across the City Region over this period. In February 2006, IB/SDA Claimants as a proportion of the working age population stood at 9.3%, compared to the national figure of 6.8%. The scale of the issue is not only illustrated by the gap between the City Region and national averages but in the absolute numbers involved: almost 100,000 people are in receipt of Incapacity Benefit in the City Region. Assisting people currently on Incapacity Benefit to return to the labour market is an important objective for key stakeholders. The very high numbers involved helps to explain the numbers of households on very low incomes.

[v] The Digital Media Centre in Barnsley and the Centre 4 Creativity strategy demonstrate the importance of this sector to regeneration. Both of these initiatives are central to South Yorkshire's incubation and acceleration strategy for digital and creative businesses. Other parts of the City Region, notably Sheffield, demonstrate a wide range of digital expertise not only in creative and digital industries but also throughout the rest of the economy. Innovations such as IPTV (Internet Protocol TV), the web-streaming of various media content and the use of alternative platforms such as mobile devices are all areas where the City Region can capitalise on new opportunities.

Future directions

Empowering Citizen Self-documentation: Re-inventing the Diary

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Abstract

The paper outlines a series of assumptions about the future of ICT in the global broadband society and presents the theoretical reasoning behind a conceptual model, posing the notions of the "oikosphere" (from greek Oikos=Home) and the "somasphere", and the formation of adequate reflexive tools as indispensable and necessary basis for any farsighted user oriented developmental agenda.

It describes the background history and prolonged development of an early prototype of a reflexive tool, and goes into details concerning an instrumental innovation: Anticipated collaborative development of a global nucleus of glyphs referring to typicality's of events and phenomena pertaining to the everyday life of citizens anchored in domestic settings, - outside or inside the broadband society.

It places this developmental agenda in the context of a wider vision of an upcoming free-ware information-economy, where each person has a personal laptop, and challenges the traditional role of research as conducted by professionals with the notion of Citizen Science, empowering any citizen to collect empirically validated data concerning ongoing proximal phenomena

Advantages to be gained from this type of approach e.g. in learning and healthcare are explicated, and a call for collaborative cross-cultural efforts to elaborate and refine this type of instrument is made.

Problem

We are, as we all know, situated in a transitory historic phase, where conventional and habitual everyday life forms are undergoing spreading and accelerating transformations.

In force of global waves of demanding and complicated technological and institutional innovations, citizens all over the globe are finding themselves in new uncharted situations and life conditions, for which no adequate precedence exists,

Citizens increasingly find themselves in situations for which conventional tools and problem-solutions are obsolete, and where relevant tools are difficult to recognize and evaluate, pay for, learn and apply, - not to speak of: difficult to integrate with each other and with the sedimented ground of familiar solutions to everyday problems

It is a safe assumption about the future of ICT that more and more citizens will be ever exposed to new demands – and new options - from technological innovations.

Granted such inevitable exposure it is logical to look for ways to "empower citizens in their relationship to technology –and through this hope to increase the quality of their lives"

Theory

My approach to "a human-centred point of view" (in contrast to a technology-, product- or business-centric) builds primarily upon theoretical foundations in the psychology of personal constructs by George Kelly (1), the works on the phenomenological and social structures of

the individual life-world and the categories of relevance by Alfred Schutz (2), the theory of the self as a reflexive project by Anthony Giddens (3) the theory of reflexive learning by Philip J. Boxer (4), the notions of "the new diary" by Tristine Rainer (5) the notions of time-geographical description by Torsten Hägerstrand (6) and clarifications about the domestic ICT by Ian Miles (7) and Roger Silverstone (8)

The further theoretical reasoning behind this approach is further explicated (regrettably only in Danish) in "Principia Domestica" (9)

Fundamental conceptual structures

My point of departure is the Kantian idea of a-priori given possibility-conditions for all experience,

a) A minimum of objectively valid concepts, which have to be based upon the capacity of the subject to distinguish between what is the subject and its state and what is not its self, i.e. a distinction between subjective and objective, which again presupposes a minimum of order & regularity in the world.

and

b) The central importance of the fact, that the experiences of the subject are integrated by a synthesizing consciousness into a uniting biographical conscious personality

A preliminary minimum of objectively valid concepts concerning the domestic a priori conditions for the situated knowing/knowledge acquisition of the habitating subject must acknowledge homes as open diurnal and annual, climatically variable biological and geographical, biographical and historic, ecological and cultural, economical and technological householding system.

As subjects in homes, integrating and synthesizing our experiences, it thus follows, that our knowing must be organized in diurnal cycles: that our orientation must be diurnally organized. This means, that it in principal ways must be understood as something, which consecutively builds itself up through initial phases, as we, from awakening from sleep move through series of cognitive and material operation, toward a state of full, day clear consciousness, in the midst of our own arranged operational frames and their embedding of subjectively significant informative objects (sedimented and distributes from more or less intuitive certainty & uncertainty of their probable relevance.)

The real is not the single objects (e.g. tools) or the single experiences (e.g. errors), but the context, within which they are understood. The real is not the objects and events occasioning the experience, but the comprehensively contextualized understanding (or misunderstanding) by the user.

The order and relations of the objects in the home constitute a spatiotemporal relational system, of central importance, as we shall locate the a-priories of relevance for embedded orientation, understanding, reflection and identification in the home.

It applies generally to inhabited homes, that the relations between their material order (structure) & life processes (systemic state-changes) are dependant upon & consistent of sporadic & periodic exchange & transformation of mass & energy & information between lateral & subordinate & superior systems <u>in</u> the individual(s), <u>between</u> cohabiting individuals, between the inhabitants and the home & between the home and the outer system-world.

Our understanding must acknowledge this multidimensionality of objective and subjective meanings in the constitution of the subject's life-world and its culturally and socially conditioned processes of self-indication.

The comprehensive coherent connection must be seen as

a) The assembled personal life- history & life-plan realization and
b) The personal relations to –and anchorage in – systems of socially constructed meanings.

And we must keep in mind that conscious life, in its progressive nature, by interpreting events and conditions in the light of the world as known up till then, in principle must come to see the world in a new light, becoming another world.

By describing our world, acting in our world, by saying something about our world, we transform our world to something different from before we wrote, before we acted, before we uttered.

Home Oriented Informatics & Telematics
We have all reasons to expect substantial transformation of our experience of technologies allowing information and communication technologies to be used everywhere, all the time and by everybody.
I have extensively charted the area of Home-Oriented Informatics, Telematics &Automation (10). I have there described the polarity of extradomestic space and intradomestic space, and called for a necessary focus on the view from inside, what I term the "oikosphere".

Figure 1. A cluster of related dimensions in the social construction of Home Oriented Informatics, Telematics & Automaton.
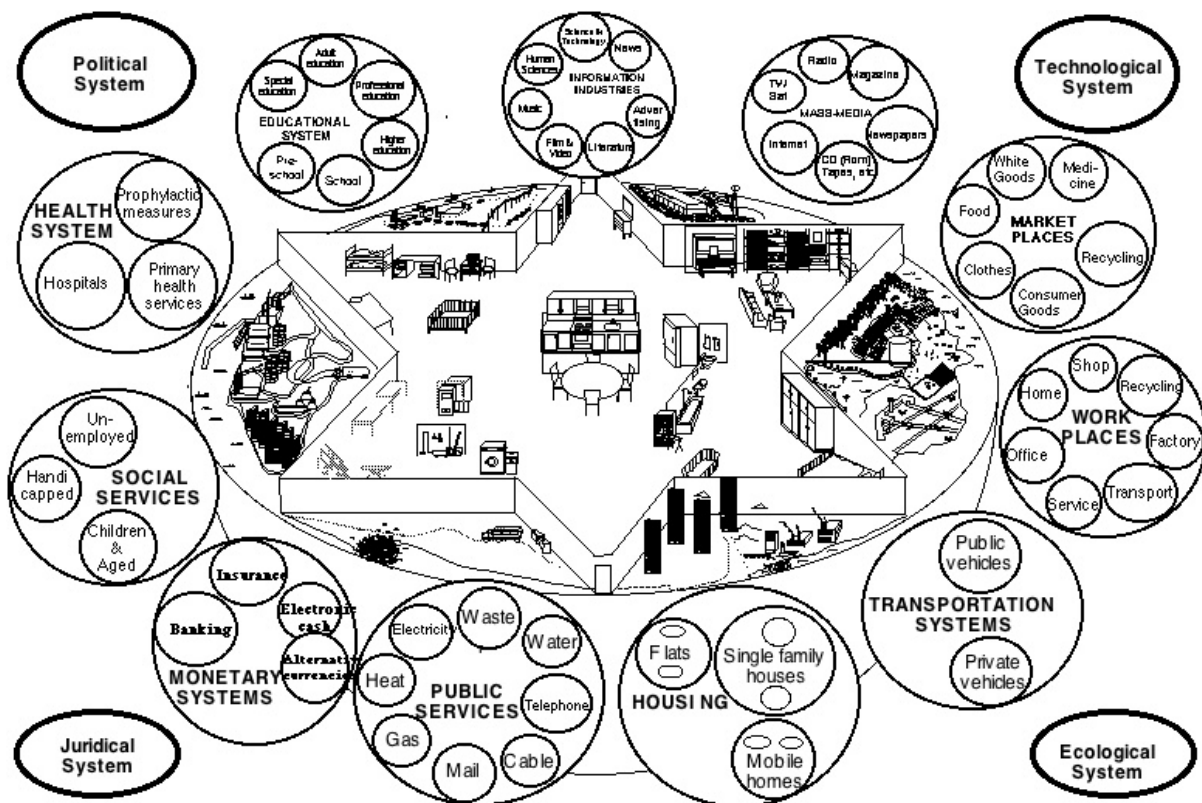
The trends of technological innovation which are converging in the field of Home-Oriented Informatics, Telematics and Automation are linking and merging technical developments within
a) Broadcast and point-to-point telecommunication

b) Environmental and physiological analogue and digital input and monitoring
c) Controllers for feedback regulation of sources and drains and motor-control of physical events.
d) Multimodal sensory inputs, outputs and storage across the previously separate media-cultures (text, graphics and animation, still- and live image, sound)
e) Media of individual information mass-storage in the gigabyte class
f) Hardware and software for information processing and output-generation

The list is not meant to be exhaustive, but it goes to show, that the potential resultant-space, when the immense variety of primary and secondary needs emerging across the life-ages of a household are taken into account, must exceed all imagination.

From outer space to inner space

In the industrialized world, the last 2-4 generations have seen their habitat equipped with ever new technical inventions, - each, in their time, adapted, adopted and integrated in a new everyday life, at the very core of personal human existence: tap-water, cold and hot, water-closet, gas and electricity, stove and sewing machine, vacuum cleaner and electric iron, central heating, telephone and radio, camera, record player, refrigerator, TV, freezer, washing machine, dishwasher, coffee-machine, food-processor, microwave-oven, VCR, CD-player With the advent of answering machines, DVD s, video cameras, home-computers and modems we first experience these as "more of the same". But with cellular telephones & SMS, lap-tops, memory-sticks, powerful domestic multimedia home computers, wireless access, digital cash, digital TV, two-way video telephony, access from homes to two-way traffic in new infrastructures of telecommunication, virtual reality, optical character-recognition, speech-recognition and speech-synthesis and an unexpected range of other technical inventions, previously only conceived in terms of the needs of professionals we are forced to consider the role of the private household in an utterly new light.

With the presence already of a part of this array in the proximal interior architecture of a totally man-made environment, the home is today, for a large number of citizens in the western world and beyond, like a grounded spaceship. As households we are as crews, in continuous intrafamilial and extrafamilial cooperation, communication and navigation in a world of growing complexity and incessant change. Each home is in this sense a permanent construction-site, a vehicle in orbit, a ferry to shuttle between morning and evening, evening and morning with entertainment on board, and a cultural museum and warehouse. Each home is a process constituted by ecological embedding, techno-cultural heritage and human agency. The home-consumer-market has stimulated a global competition to exploit an ever-wider range of technological advances for purposes of profitable marketing [3]. Paradoxically it has been the inventiveness of research in outer space, with its focus on miniaturization, which has released the ultimate flood of consumer electronics now trespassing all national and cultural barriers.
For the home-vessels, being grounded as they are, in place of navigable geographical and extraterrestrial space a navigable cyberspace is expanding. But peculiarly enough the target for all this inventiveness, the internal spaces of the home, and the mental spaces of the crew, is not yet being considered for over-all usability and navigability through weeks, months and years of human co-existence by those, who develop the products. In fact one can say, that we lack a valid paradigm for "the domestic bridge", and its tools for reconnaissance in the travel of life.

What is so special about Home Informatics?

Even when application-context is crucial, as in the construction of cars, airplanes, space-ship-interiors, such applications can be developed through iterated prototype testing with a small number of professional users in one or a few sites. One reason that this can be done with success is, that the work to be performed with the appliances in such cases has a semi-public character, and therefore can be monitored without significantly disturbing its inner coherency and authenticity. Another is that the user can be conceived as relatively impersonal: "anybody, with relevant formal qualifications", who should find the application useful, user friendly etc. But these conditions do not apply to the private sphere. Homes, households and life forms are extremely different. The subjects, the selves, the needs, ends and endeavours, ongoings, states and events of the household members are unaccountably varied and cannot be subsumed under a unifying goal-structure, as can presumably those of a formal organization, be it a commercial or a public enterprise. Already this puts the problems of technological innovation for the home-sphere in a class of its own. But this class of problems is even more unique. The most basic private growth- and life-conditions and the sustaining cultural life forms of the basic cells in the societal tissue (the private households) have already been deeply affected and transformed in lasting ways by the introduction of technologies. For urban citizens in western countries the only reality we can be grounded in is one where a major part of these gadgets and their use is taken for granted and woven into a major part of our endeavours. Most of the technologies here involved are well described and analyzed under separate headings, in this and other technically or policy-oriented publications. This also applies to many aspects of the evidently relevant questions of man-machine interfacing and interaction. But, whereas applications for use in other settings than the private homes can most often be adequately developed and studied in isolation, relative to demand-specifications related to specific, goal-rational ends to be met by users in their professional work, this does not hold true for the domestic applications. Especially the new generations have, by adopting the commercial TV and the cellular phone (including camera, SMS etc), and now even broadband Internet access, as significant and time-demanding elements in everyday life, been brought into a peculiar placelessness, and an exposed, receiving relationship to external fiction, report and persuasion. We assimilate and adapt through tapping and zapping, continuously reorienting and updating, finding ourselves in a global flow of commercials and contemporary and historical knowledge and fiction, heavily decentred outside the home. Thus our senses are extended to reach from the home all around the globe and beyond, and we are daily witnesses to events and narratives in an inexhaustible wealth of natural and artificial realities in the multiversity of the mass media. Psychologically and sociologically all these many devices and their operation are part of a modernity, which few of us would prefer to be without. They are used as tools for sustaining social relations, entertainment, knowledge-acquisition, orientation, identification and the routines of the general everyday survival and recreation.

The future 'electronic habitat' and "the information highway"

No wonder, therefore, that notions of the future "electronic habitat" are cultivated and that model homes-of-the future are built. Frame-programs and consortia are established to develop standards for "Home-Information-Networks", which may eventually tie together the interests of the producers of white-goods, consumer electronics, telecommunication and entertainment.

No wonder that huge investments are put into ensuring more widespread general access to information-highways and development of home-oriented information services. And no wonder that these attempts fall far short of developing an imagery of a future home, with which the private citizens can positively identify themselves. The effects of the invasion of technology into the home in terms of immediate physical comfort, saving of manual labour, ease of communicative reach and wealth of entertainment is indisputable. On the other hand its effects in terms of information overload, external manipulation, rupture of sociocultural patterns and extreme individualisation are equally apparent. Evidently a coherent picture of the whole mess is difficult to frame and present. "Home Oriented Informatics, Telematics & Automation"(HOITA) as a cross-disciplinary, international field of research has hardly come of age. And the rate of innovation is so fast, that thorough empirical studies of the appropriation of these technologies are more or less outdated before they reach the press.

Anticipating the expectable

To convey a coherent and sufficiently contextualised understanding of the relevant dimensions of this field I have found it necessary in my publications (11) to make a few conceptual extrapolations into the near future, In so doing I have introduce 3 concepts: *the virtual home,* the *virtual body*, and the *virtual neighbourhood* , - as logical and necessary constructs for grounding a coherent notion of the demands to future domestic information technology.

I shall not go into a detailed discussion of these matters, as their unfolding as relevant for ordinary users are still beyond reach

But they are thematically relevant, because they can point us to the notion of a fully and coherently contextualized interface, coming to making it possible to refer and annotate to any location/area within ones home and any location/area on or inside ones body.

The Oikosphere and the Somasphere

From a psychological viewpoint it is crucial, that by ensuring for the members of a household a permanent reference to the solid ground-level of their own particular domestic and bodily timegeography as a generic, archetypal virtuality, a personal grounded and rooted stem of self-reference can be grown, that could be made to function as a convenient core and anchor point of further personal orientation and reality-testing.

It implies the emergence of a new, coherent potential of demonstrative identifying reference to re-identifiable individual things and event-types in the private life-world, according to their personal relevance. This potential may provide us new means of self-reflection, evaluation and ordination of actual and possible identifiable and indexicable operations, states, informative objects and persons.

Such a concept can be cultivated for a variety of purposes. The above-mentioned potentials of biotelemetry brings it so to speak "under our skin", and highlights the potential intimate, bodily closeness of this "personal level". Configuring body-state-representational tools for personal state-reflection or expressive messaging is a little-noticed potential, mainly cultivated in circles working with the concept of biofeedback. But seen as the personalised foundation and key to a sane health-education, such tools of self-knowledge may reveal a strong prophylactic potential, and thus be worth adding to the domestic tool kit.

Development of a preliminary prototype

As a psychologist I have explored the emerging representational tools within an experimental home through the period 1976 to 1997.

From this background I will introduce, into the developmental agenda forward from this conference, the kind of basis the domestic scene and the personal body must constitute, and the kind of reflexive tool, towards the chronotopological documentation of proximal events, which I think must have a high priority.

I present a methodological innovation for users to investigate themselves as strategic and tactical innovators. An empowering innovation, which we should wish for prospective citizens to posses- and for the further development of which I want to invite a cross-cultural and cross-disciplinary collaboration.

The tools we have developed are tools of citizen science, enabling users themselves to pursue a sedimenting empirical logging of whatever they find relevant, around the clock, around the week, the month and the year. It is a diary-tool while also being a log-book-tool.

We are so used to conceive of "the researcher" as an external observer, interviewer, questionnaire-designer and statistician. But the time has come to admit, that the only investigator qualified to examine the personal information-flow and the user as strategic and tactic innovator is the user her- or himself

We offer, with this method, a basic instrument with which users, for themselves, can keep track of the personal ongoings and events, not only on the computer, but throughout the everyday life, in an ongoing diary

Background history

I developed at University of Copenhagen, Institute of Psychology an experimental home (1972-1997) where I explored ways to help inhabitants represent their domestic everyday life & communication processes for themselves.

This involved new options for monitoring bodily states, representing domestic space and the time geography of domestic events.

Since the introduction of laptops and interactive programming I focused on the concept of electronic diary, where time indexing of text-entries could be automated.

I have daily since 1997– myself – been the main experimental subject, through generations of laptops and software-programs, and been entangled in all possible ruses and ignorance's, shortcomings and frustrations, meanwhile always trying to put my self into the seat of future users, - a kind of general empathy-state based on a still updated stock of European senior knowledge.

As systems and software tools were optimized I have strived to clarify how the substantial offer of interactivity from the computer can best be brought to use in a tool like the one I had in mind.

A tool which in fact is no more than a further development of the traditions of logging in ships, of journaling in work-protocols for the drawers and shelves of operating rooms, and of personal diaries, in handwritten volumes.

Advantages of an electronic diary

I think it is important, that we enable ourselves to hold on to our personal existence, whom we were, whom we are, whom we shall become, and how we are using the shorter or longer lifespan given us. Enable us, as regards matters of personal relevance, to hold on to this, in order to be enabled to reflect upon it. And thereby perhaps getting a somewhat better hold of this life and perhaps develop it in desirable directions.

The new conditions we all are submitted to pose new demands, create new routines and tear us loose from the life anchors in traditions, and the clear-cut roles, previously furnished to the individual.

Young or old, rich or poor, ethnic insider or ethnic outsider, educated or uneducated, employed or unemployed: we are all forced day after day to re-orient ourselves in relation to some of the old, and in relation to all the new, ever coming our way.

It is my conviction that it is of paramount importance that the single citizen in the broadband society, in the midst of and across the information bombardments from mass media, and the increasing involvement with the broadband society, gets equipped with a kind of "tool of self documentation", so that we can hold on to at least a bit of, what happens to us, what we think about it, and what is practical for us to keep track of: pin codes, passwords, usernames and – numbers, service providers, tariffs, subscriptions, accounts, internet-addresses, e-mail addresses, telephone numbers, birthdays, But also which dreams we have, in all senses of the word, and the frustrations and disappointments we meet.

There will be as many ways to keep electronic diary, as there will be individuals that will do it, and with different advantages

It is evident that nobody could nor should use time to describe everything they do, are exposed to, think and feel each and every day. This must depend upon richness or shortness of time and subjective relevancies. Some may centre upon cooking, gardening, books, news, the Internet - or worries, symptoms, cures. Maybe keeping track of the cigarettes, cigars and pipes smoked where and when, how may holes achieved on the golf course, about the arguments one has, meetings, transportation-problems. or lawsuits against telecompanies, hitting back on the half hidden and disguised exploitations (and seductions) of newcomers difficult to document,(as for example the economic and timing conditions for adapting a g3mobile telephone to use for e-mail and internet access)

I think with Tristine Rainer (5) that the most important aspect of keeping a diary is the establishment of an area/arena/platform – a breathing-hole of absolute freedom and autonomy, where one can permit oneself to be honest, where one can make room for all of ones ideas, feelings, secret thoughts and fantasies, grieves and worries, separated from or contextually anchored in the more trivial, but perhaps quite as meaningful banal occupations and rituals filling ones life.

Some keeping track of what others do for you, and track of own reactions to others may help you deal with more maturely with others.

And accounting, narrating to oneself in writing may often help to clear the thinking, clarify the thoughts.

And the diary can be used to document reactions, one receive from firms and authorities and reactions one receives from hardware and software IT-tools and paid-for services, as well as media-contents and event of personal subjective relevance.

In this way, being equipped with adequate tool, the citizen is empowered for critical action on documentable observations from a consumer vantage point.

But also: If you have habits, which you hope to control: alcohol, tobacco, drugs, medicine, exercise, eating, you can journal the patterns and circumstances of your focussed bad habit, in respect to advances, temptations, relapses and replacement for undesirable fix.

Think of someone devoting 10 minutes of thought-loudspeaking via the keyboard to the day's first cigarette. Or the day's last cigarette.

But not least for persons, hit by illnesses like Sclerosis, Diabetes Alzheimer and/or submitted to stressful treatments, e.g. for cancer, or fighting handicaps there should be a support in a purely personal keeping track of the progress of the battle, both at an outer and an inner level.

Writing a diary, journal or logbook by handwriting, has advantages, for which the present model of electronic diary cannot compensate. The expressivity in sizing and varying the handwriting, ornamentation, mixing written and drawn, dried flowers newspaper-cutting glued in, etc, is lost.
But the advantages of the electronic diary compensates- especially as more and more of the information, which reaches us, and which we can reach for, arrive to the computer in digital form.
A most central aspect is the automatic time-indexing, organizing all inputs relative to the progression of the diurnal, weekly, seasons and years of personal life.
Two special, related functions have been developed, One enabling the user to "write into" specified temporal addresses, earlier in the day, so it gets into the correct slot in the chronology of the day. And another, making it possible to annotate to lines earlier same day, or any of previous days of current diary, keeping track of when annotation was made.
By letting the user create shortcuts, around the diary, to whatever programs or services they utilize and facilitating the users name giving and access to presently 40 thematic drawers, to calendar and contact library, integrated in the diary, we are providing the user a private scene, relative to which the events and phenomena in their home, their garden, their neighbourhood and their workplace can be contextualized and represented.

The advantage of the computer is that it is so simple to copy words, names, paragraphs of what one writes, into the weekday slot of the calendar, and not least: into any of pt. 40 hidden user labelled thematic memo-fields for themes of personal relevance. E.g. One for each of ones children and grandchildren, parents, best friends, theatre, movies, acquisitions, subscriptions, books, music, chat-groups, sermons, medications, prayers, treatments

I have tried to develop at set of demands, to the types of information, which shall be equally easy to self-document.
 I think this is important for an understanding of the full scope of the enterprise

_____

We should collaborate to offer a toolbox for citizens of any culture and age, helping them to keep coherent, contextualized track of (alphabetically ordered)

- Addresses, agreements and appointments
- Childcare
- Browsing WWW
- Cleaning and laundry
- Creative ideas, dreams & fantasies
- Demands & waiting times
- Drug, alcohol, coffee & tobacco use and abuse

- Emerging problems & attempted solutions
- Fees and contributions
- Fitness-measures
- Gaming & gambling
- Handicaps and their handling
- Hygiene
- Illnesses
- Meals, diets and cooking
- Memorable reading, viewing and hearing
- Plans, successes and failures

- Rituals, ceremonies & prayers
- Sex
- Shopping
- Sleep
- Sports
- Stresses and endurances
- Studies, school
- Symptoms & prescription compliance
- TV-consumption
- Usability of habitual and emergent tool

Towards the Glyphs

Already back in the 80s, working with the experimental apartment, I found, that a way to overview and understand the processes and events in a family-home was to use small pictures, fit to represent what took place when and where for the individual inhabitant(s)

There are so many typical generally recognizable phenomena in everyday bodily life in our home, in the daily and weekly life, including the well-known bodily functions and household functions

I started already in the 80'ies in collaboration with students to construct a system of pictograms for this descriptive purpose. And then the technological development suddenly offered a new opportunity:

I found a shortcut to the pictorial shorthand needed by avoiding the icon-format, and instead using the character-format, i.e. designing glyphs in a font-suite.

The idea of using glyphs to support the verbal journaling and reflection of personal phenomena may sound like an attempt to square the circle. But understanding such glyphs not as objective classifications but as private signs of contextualized subjective phenomena I think may point to a future of shared/folk-taxonomy alphabets for the more or less global typicality's of phenomenal event in habitats and in bodies.

The glyphs developed amounts presently only to app. 450, and many are lousy and inadequate, - a series of them are not available in windows version etc.

But there are presently 12 root-stems,

For some, the use of such glyphs in their diary may be uninviting. For others – especially individuals with limited reading writing capacities, lacking language-skills or anybody in situations where motive for journaling is strong, but time or energy is short, - they may provide convenient provisional shorthand.

Fig.2 Glyphs distributed in 12 fonts

I am certainly not proud to present this preliminary suite of glyphs, with all its weaknesses and shortcomings. In the menus, from which they can be chosen, an explanatory label is attached to each, and the ones installed by the user keeps their label as a tool-tip" The glyphs with labels can be closer inspected in www.phenomenalog.dk/glyphs.htm

The Personal Interface

My method has been to develop an investigative tool, which at a minimum could satisfy the needs I met, in daily use on my personal laptop(s) day in and day out, during all seasons of the year, over a period of 10+ years.

Fig.3 The immediate presentation of an interface to new users, version 16.5.2
(Colours have had to be removed in all illustrations for this publication)
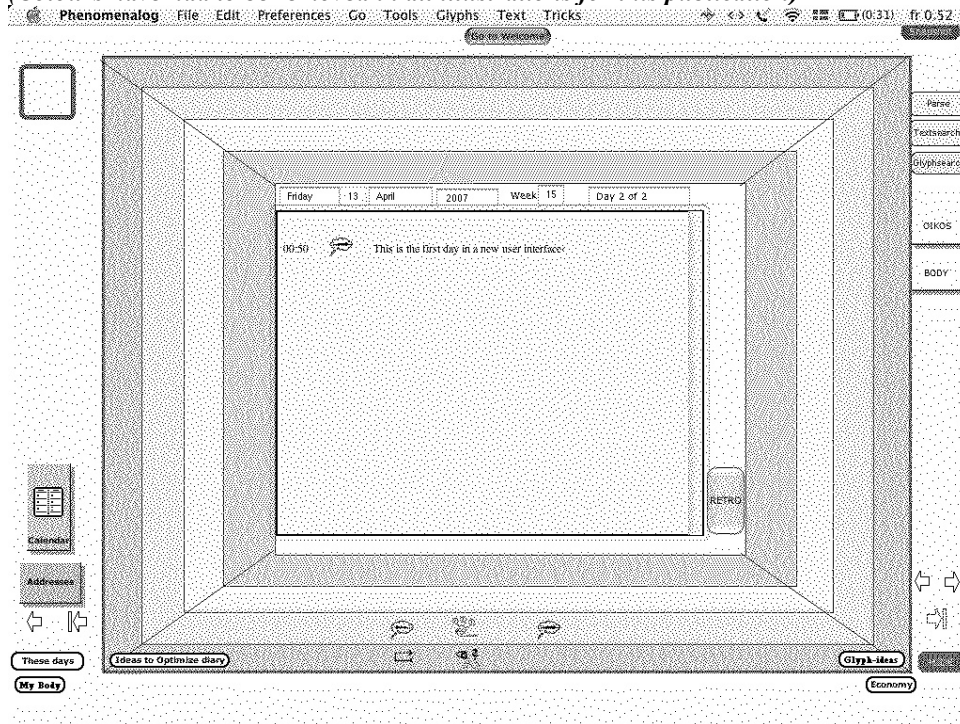
Fig.4 The full range of possible fields and functions
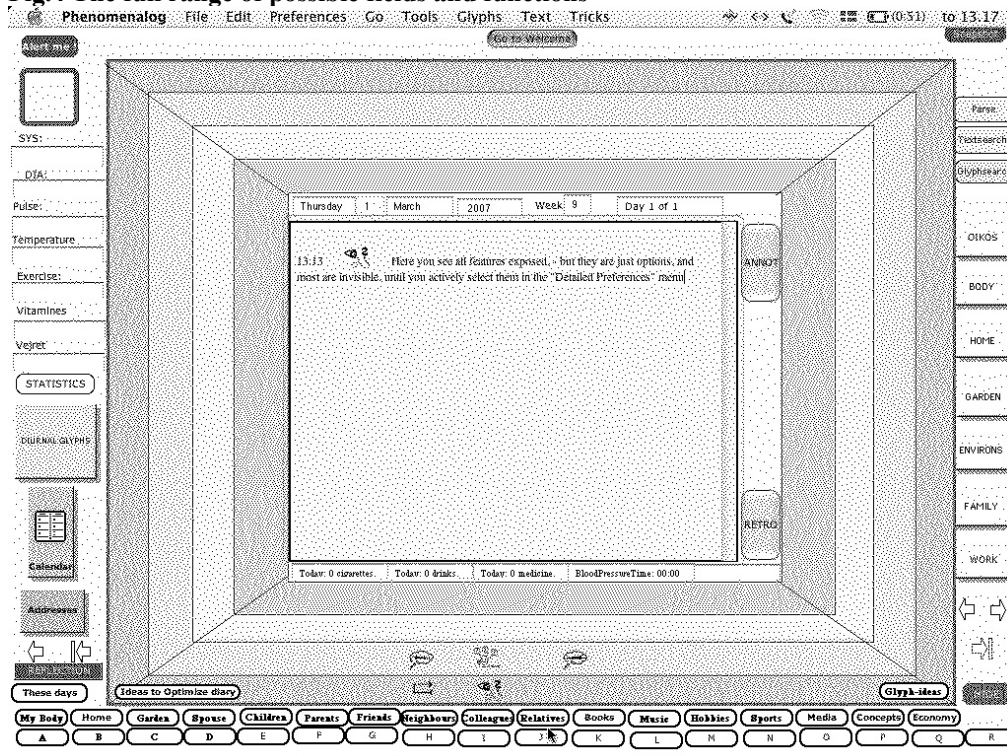
But to give an impression of one users making full use of the potentials presently accessible I include this snapshot from my latest, personal and private journal.

Fig.5. "Inhabitated" diary
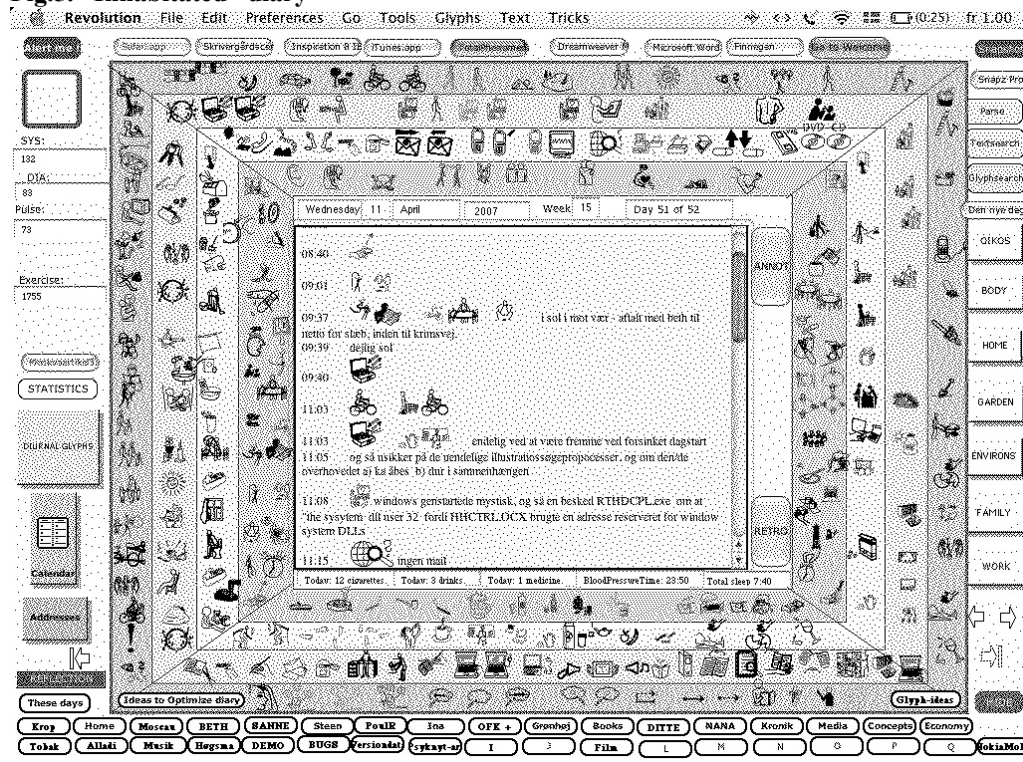
But I must stress, that this is not meant as exemplary. It is an exhibition of the private mess of one single individual.

The Somasphere

One dimension of users life, which we will have to include, is the health dimension.
Enabling the users to keep track of bodily states and symptoms, will most certainly be the call of the immediate future.

The thinking about social processes, around the human body, includes ranges of social workers, doctors, nurses, secretaries, telephone, SMS, patient groups, treatmentcenters etc etc.
And the thinking about technological process, around the human body, includes ranges of diagnostic, maintenance, treatment technologies, prescription and journalizing databases.
But the convergence of all these social and technological processes around the human body has an internal double nucleus: The personal body and the personal home, what we term: The Somasphere and The Oikosphere.
Whatever measures we take in health and medical care, social and technological, the moment we think of just one citizen we must understand, that a convergence of social and technological processes around the body already exists inside the information dynamics of the home.

We must build a counterpoint to the systems notion of a patient or client: a view from below, a view from the vantage point of the person-number, a view from the target of the healthcare.

The consumer, the citizens own local and temporal viewpoint, as conscious phenomena in continued cognitive processes.

Future

Among the assumption about the future going into this developmental agenda is

1. That the cores of homes and bodies will be massive informational nuclei, relative to whatever structures the broadband space will offer
2. That the (time-indexicable) representational options concerning these nuclei with digital text, graphics and audio & video and more to come, inevitably will bloom, as witness with mobile technology, digital video-recorders, mobile monitoring etc.

The Vision of the future, in which Phenomenalog should fit best, is a global One-Laptop-Per-Child (12) -> / One-Laptop-Per-Citizen society with free opensource softwares (GNU etc), and wireless peergroup and neighbourhood networking, embedded in an open Wikipedia 3rd milennium Babel.

With the global spread of personal computers we must re-invent the diary .We must equip the private individual (be it in a home, a hospital, a prison or a wheelchair) with adequate freeware tools for coherent self-documentation.
Citizens in the growing complexities and dependencies of information society need such powers, as "Citizen Scientists", for reflexive self-documentation of activities, events and states, thoughts and feelings in their everyday life.
The endeavour of providing such means for individuals' autonomous self-accountability shall be directed to empower them as citizens to consolidate identity and creatively master the complexities, options and stresses of everyday life in an unpredictable IT-society. Politically: enable their empirically validated critical feedback to public services, commercial and social software and their contributing to social-shaping technologies

I hope this paper, the preliminary freeware prototype and the preliminary sample of glyphs (all available from www.phenomenalog.dk) are sufficient to rouse the interest of at least a small number of researchers to participate in further (personal) testing and strategic planning concerning desirable functional and interface improvements, translating prototypes into many languages & implementation of the user-based processes of working up a truely cross-cultural glyph-library

Insisting on the essential freeware character of the project has precluded commercial funding. Thousands of hours of unpaid programming has been contributed by a friend.
 Is it possible - though this conference - to gain a basic recognition/recommendation of the endeavour sufficient to justify a modest COST financing for further programming and translations?

Resume

I have stated the reasons for and detailed the demands to an open source toolbox for individual journaling:
Integration of automatically time-indexed inputs of text, symbol characters and other inputs with calendar, address-book & maps of body, home & neighbourhood,
Quoteability to ranges of user-labelled accumulating memos,

Options for searching, parsing, annotating,

Facility for creating shortcuts to documents and other programs

Provisional core of glyph characters anchored in general human processes of household, body care and childcare

The tool shall be conceived as cross-platform and fit to pass across barriers between civilisations, ever improvable and modifiable: A partly user-designable vehicle for practical, existential and healthcare support for the individual. Potentially running continuously on any laptop, on & off with a click.

It shall also be constructed with a view to future facilities of wireless input from physiological sensors, gadgets like lighters (for smoking-pattern awareness), SMS, camera-snapshots, voice-messages and eventually speech recognition.

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IT Tools For Technology Foresight

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Abstract

The challenges of broadband society amplify the need of foresight research for designing science and technology policies. The success of a foresight study depends on bringing together different stakeholders, building consensus among divergent views and committing the policy makers to relevant action plan.

The paper argues the use of advanced collaborative tools to support vision-creation activities. In particular, a special emphasize will be given to Group Support Systems (GSS) - a collection of software tools successfully used in the last two decades for strategic planning in industry. In addition to overcoming the temporal and spatial limitations of conventional meetings, GSS gives the possibility to have anonymous inputs that avoid individual inhibition and groupthink. The insights are drawn from our experience of using GSS technology in the FISTERA project - "Future Prospects in Romania: Scenarios for the Development of the Knowledge Society in Romania". For designing the scenarios we carried out an expert survey biased towards a structured brainstorming coupled with rating. The preliminary results identified the most relevant drivers (trends, issues and events) and clusters of views considered to be critical to the knowledge society development in Romania.

Keywords: group decision support, foresight studies.

1. Introduction

Research foresight is the process involved in systematically attempting to look into the long-term future of science, technology, the economy and society with the aim of identifying the areas of strategic research and the emerging generic technologies likely to yield the greatest economic and social benefits (Martin, 1995). The common aims of foresight are: direction-setting, determining priorities, anticipatory intelligence, informing debate, increasing involvement, building social capital, building identities, advocacy, consensus –generation, communication and education. *In foresight research is commonly assumed that there are numerous possible futures and the future is influenced by the actions we take today.*

To describe the images of the future the scenarios term is commonly used as an analytical tool for assessing the impacts and the robustness of policy measures in case of unanticipated events (Enserink, 2003). The scenarios do not predict the future and do not prevent the unexpected from happening, they simply help institutions to be better prepared for unexpected events. For this reason, a sets of scenarios are defined to describe the possible futures not only one single scenario that can be considered the most likely to happen.

They are two types of scenarios: policy scenarios and context scenarios. Policy scenarios describe how the future would look like if specific alternative policies will be implemented successfully or partial successfully or they won't be implemented al all. Policy scenarios usually present a wanted or unwanted future situation and depict how to reach that situation through different policies. Context scenarios depict possible futures despite different policies. In this paper we refer to the context scenarios methodological issues.

Scenario construction is a rare combination of art, craft and science, whereas the outcome of the process is often a mixture of creativity and rationality (Enserink, 2003). In order to design creative and plausible scenarios a good scenario-logic is required (the skeleton of all the scenarios that are created). It implies a deep understanding of the system under study and the identification of trends, issues and events that are critical to the system. In most cases, this identification process is a collective activity which brings subsidiary objectives to any scenarios design (Martin and Irvine, 1989): communication among a group of people, concentration of the participants on a specific problem and a further look into the future than they are used to do, coordination for productive partnership, consensus to create a shared vision of the future that participants would like to/expect to be achieve, commitment of the participants to implement changes in light of their foresight findings.

The requirement to have multiple interactions among participants in inter-organizational settings makes traditional scenarios construction workshop to be very slow. Time is very important so the participative process is under the pressure of being completed as soon as possible to minimize the cost and to receive benefit as quick as possible. Consequently, short and intensive workshops assisted with GSS are well-suited. GSS consists of a set of software, hardware, language components, and procedures that support a group of people engaged in a decision-related meeting (Huber, 1984). In addition to overcoming the temporal and spatial limitations of conventional meetings, GSS gives the possibility to have anonymous inputs that avoid individual inhibition and groupthink.

The remainder of this paper is organized as follows. Chapter 2 describes the typical process for scenario designing workshops. For the FISTERA project, this process is adapted and presented in chapter 3. Finally, our experience in employing this process is concluded in the last section.

2. Scenarios Designing Workshops With GSS

Numerous methods have been developed to create scenarios ranging from simplistic to complex, from qualitative to quantitative (Porter, 1985; Huss, 1988). Most methods have fundamental similarities, although they may have unique features and use different terminology. Generally, they recognize the need to understand the system under study and to identify the trends, issues and events that are critical to the system. In this section of the paper the classical process for creating scenario-logic with the use of GSS is briefly presented.

Fig. 1. The typical group decision process for scenario building
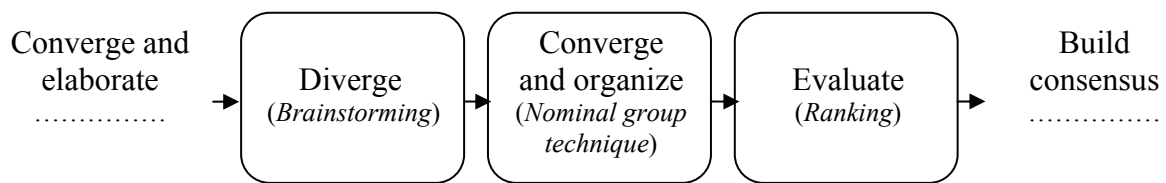
(simplified from Enserink, 2003)

In the Fig. 1 are depicted the main activities, in the brackets is nominated the GSS tool with the help of witch we can accomplish these activities. Is worth to mention, that despite the employed technology, a GSS tool may create one of the five interaction patterns (Brigs, de Vreede, Nunamaker. 2003): diverge(move from having fewer to having more concepts), converge (move from having many concepts to focus on and understanding of fewer concepts), organize (move from less to more understanding of relationships among concepts), evaluate (move from less to more understanding of consequences for choices toward attaining group goals) and build consensus (move from less to more agreement among a group of stakeholders).

The first activity ("Converge and elaborate") consists in getting acquainted with the system and loosening up with an introduction to the topic by organizing a dialectical debate between participants. During this session the participants are confronted with a statement that they have to support or reject with arguments. The statement must be well prepared and should focus on key issues. In this fashion a lot of pro and con arguments are generated and the problem area is uncovered in a better way compared to a descriptive presentation.

The second activity is brainstorming on factors that influence the problem ("Diverge"). The objective of this activity is to get insight into all kind of factor or their relations. In this session we do not have to follow the traditional system of brainstorming composed of: generation, elaboration and organization. The results from this brainstorming are the basics for generating driving factors and trends.

In the third activity ("Convergence") a joint list of trends is created employing the Nominal group technique. Each participant is asked to make a short list of driving forces. After making his/her own list with trends each participant can send it to the public list, then the resulted list is further discussed and organized. In this way all driving forces are collected and before the next stage the participants already have a clear understanding of the meaning of the topics from the public list.

In the fourth step ("Evaluate"), the driving forces are ranked according to their impact/importance and to the uncertainty and/or unpredictability. For designing context scenarios the most important and the most uncertain trends are needed. The results from the ranking determine the basis for scenario elaboration. On the selected driving forces is important to have a clear consensus among participants. Even if in principle the number of driving forces that can be considered for designing scenarios is unlimited, in practice however a limited number is selected.

In the final step ("Build consensus") a certain number of scenarios are selected for further detailing. It is important to have consensus on the selection of the driving forces without

consensus problems might appear at a later stage of the scenario development process. The standard deviation is a one of the means to check if important differences in opinions exist. The whole process presented above can be repeated until consensus is reached.

3. A Simplified Scenarios Designing Process

The subject of our paper is the utilization of GSS tools in a foresight study, more precisely the FISTERA project. The aim of the study was to contribute to the pool of knowledge on foresight in Europe with updated information on the latest developments related to the Foresight programs or initiatives in Information and Communication Technologies (ICT) in Romania.

From the beginning the foresight study was under the pressure of generating credible results in very short time and with very low workforce. The approach strategy was to deliver results focusing on major issues (criteria, driving factors, trends, etc.) and shorting the conventional methodology described previously, clearly inapplicable in the given context.

The methodology followed in this study was focusing on providing the generative framework for scenarios building, also known as scenario logic or scenario skeleton. Despite the fact that going through the process of scenario construction is very important, it is widely accepted that the scenario logic is the main step and the basic requirement for designing creative, plausible and internally consistent scenarios. A context scenario type was chosen to show how the world might look like when the endogenous factors (effects of political will) and exogenous ones (factors that are independent and cannot be controlled by the policy makers) interact.

The scenario building process was following the classical framework of scenario workshops, but with significant distinctions imposed by the specific context (the second and third phase can be considered collaborative activities but in the study they were realized by authors themselves):
- identifying the relevant drivers (trends, issues and events together with their relative importance and their level of uncertainty) to the Knowledge Society Development (KSD) in Romania
- recognizing the driving forces (trends) behind the identified drivers.
- designing the scenario skeletons.

From the scenario logic pattern presented in the previous chapter only 3 activities were considered: diverge (brainstorming), converge and organize (nominal group technique) and evaluate (ranking). In the adopted methodology we used a bottom-up approach, so the activity four and two were merged together and conducted at the beginning of the process. For finalizing the process, activity 3 was not a collaborative one being accomplished by the authors. In this way, the conventional process has been transformed as depicted in Fig. 2: the drivers were ranked at the beginning and then clustered in driving forces to implicitly capture a high degree of consensus, importance and uncertainty. Of course the main advantage of this condensed process is its efficiency. To be effective, it requires a high number of participants in order to delineate the main clusters during the next step ("Converge"). In this fashion we have been able to identify the most important drivers, but inevitably overlooked some important ideas expressed by the participants.

Fig. 2. The adapted scenario designing process
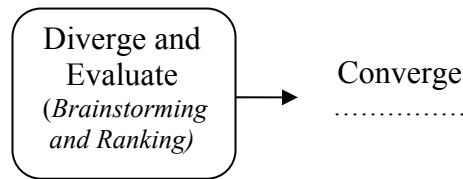
The GSS tool that was used contains: survey, brainstorming and voting modules. The survey module allows survey creation with more than fifteen different types of elements. The participants can give the answers at any time from any place because the access to the GSS program is through Internet. If they desire, the participants can give anonymous answers as well. The results are generated very quickly. Using this tool was more efficient at least from the point of view of time-consuming process.

Consequently, in the first step a small-scale expert survey was used to identify in a ten years timeframe the most relevant drivers (trends, issues and events), cluster of views considered to be critical to the KSD and indicators for a successful KSD. In the survey the experts were asked to contribute with their views regarding the main drivers together with a short explanation of their impact on KSD in Romania. Next the experts were asked to evaluate the drivers by their importance and uncertainty regarding their future impact as shown in Fig. 3. The drivers that were evaluated as most important and most uncertain formed the basis for the identification of driving forces.

Te second step in designing scenarios workshop consisted in identifying the driving forces. The results of the survey have been divided according to their positive and negative influence on the KSD. In Table 1 (Zamfirescu, Filip, Bărbat, 2006) are represented the identified driving forces according to the STEEP dimensions. They represent drivers with the highest impact on the KSD and are accounting for the highest degree of consensus. The identification of the driving forces was accomplished by focusing on the positive and negative drivers with the highest uncertainty regarding their future development. In this way were identified those driving forces witch are potentially maximizing the positive drivers and minimizing the negatives ones. Based on the identified driving forces three relevant scenarios were selected (Zamfirescu, Filip, Bărbat, 2006).

Fig. 3. The print screen of a GSS tool
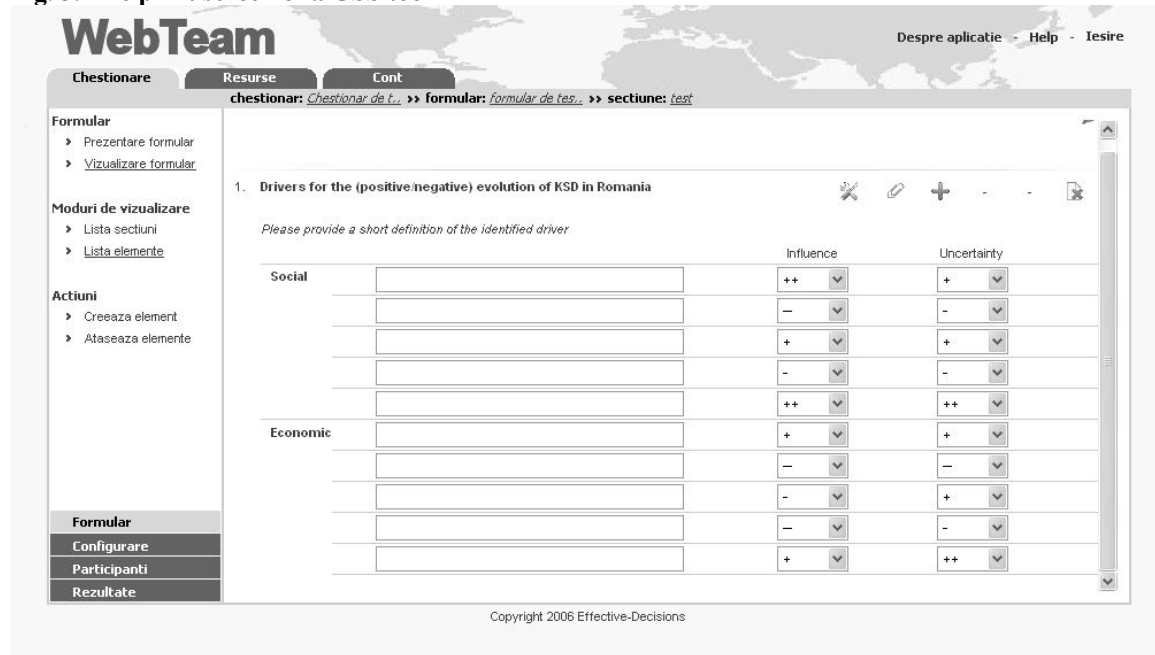
Table 1. Driving forces and their aspects for each STEEP dimension

Social	Social acceptance/rejection of IST[86].
o Predominance of social needs versus IST solutions	
o Insufficient awareness regarding social aspects of IST	
o General social doubt due mainly to minor improvement in quality of life.	

Technological	User involvement in IST design (anthropocentric vs. technocentric perspectives on IST design)
o Insufficient involving the end-users in every important IST development (ethnographic methods)	
o Distorting user needs in line with the trend to improve performance/price ratio (neglecting cognitive ergonomics, trends towards technological determinism etc.)	
o Predictable development of IST due to Moore's law	

Economic	Seamless integration in EU market
o Sound market-driven economic development under EU norms	
o Monopolistic tendencies in IST corporate culture	
o Unstable economic development in Romania combined with low progress in EU.	

Environmental	Ecologically-driven attitude in designing and using IST
o Validity of optimistic models regarding climatic changes	
o If ISTs are low polluting technologies, environmental factors are less important	
o Further neglecting of global changes and increased plausibility of pessimistic models.	

Political	Group influences on general development
o Successful efforts in swift integration in EU	
o Significant political influence of major IST companies degenerated by lack of transparency	
o Low progress in political stability in line with EU values (insufficient reduction of corruption, lack of transparency, failure of antiterrorist campaign)	

4. Conclusion

In literature is generally recognized that the use of GSS in designing scenarios is very helpful for collecting and organizing the generated information. Using GSS leads to clear choices and preferences for limiting the number of the driving forces. Another advantage of GSS is the instantaneous availability for discussions of the results. The main disadvantages are the high costs of a complete GSS software suite together with its associated complexity for an effective use.

The employed methodology to design the scenarios skeletons proved to be very efficient. To be effective it requires a high number of participants in order to delineate the main clusters. In this way we have been able to sort out the most important drivers but, inevitably, overlooked some important ideas expressed by participants.

The scenarios designed during this project were not meant to be predictions of the future; instead, they depict a shared vision among the participants about the possible futures of KSD in Romania. They have been used later on as input for the elaboration of R&D National Strategy 2007-2013.

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A transdisciplinary study design
on context aware applications and environments
A critical view on user participation within calm computing

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Abstract

In this paper, we explore the notion of user participation in context aware applications and environments from a transdisciplinary perspective. A critical view on user participation within calm computing is discussed and some problems are identified. The reflection of these problems in current context aware applications and environments are described. We propose a set of recommendations and possible realizations to overcome these problems and empower users in configuring and using these kinds of applications.

Keywords

Calm computing, context, Science & Technology Studies, transdisciplinary, empowerment, user participation, information technology systems, future, user-developer, meaning

1. Introduction

Nowadays there is intensive research in academic circles as well in the industry on the topic of context awareness. This strong interest is also stimulated by European policy makers (Ducatel, Bogdanowicz, Scapolo, Leijten, & Burgelman, 2003), but no real breakthrough in research is perceived. If context aware environments are so intelligent as some people maintain and context aware applications make the life of the people better, why are not all environments context aware?

We believe that current vision of user participation on calm computing is one of the causes of the problem. To clarify our concerns we start with following simple example of a context aware application that is still very often described in papers (Meyer & Rakotonirainy, 2003): the light is switched on automatically when some conditions are satisfied, e.g. a person enters the house while it is dark. A lot of questions arise when taking a closer look to this use case. People often don't know why the light suddenly goes on, which causes a feeling of fear and hostility by the environment. Often programmers have decided when the light goes on while 'ordinary users' cannot change it and in a lot of context aware applications the user doesn't even has the possibilities to switch off these 'intelligent' functionalities, so that the user just has to obey what the programmers defined for her/him. 'Dark' has a different meaning for different persons and in different interactions. At last we also doubt the usefulness of this applications.

It is clear that context is a difficult topic to tackle; we assume this is because it touches upon the basic structures of interactions in the everyday life world. Together with the evolution of

putting the focus on 'the user' in innovation research, these became an important inspiration source for development of context-aware applications. Two difficulties encountered are the integration of the knowledge of different disciplines within a research set-up and the interpretation of the meaning of giving a central role to the 'user'. We doubt if the current 'user centered design' vision puts the user at such a central stage as they often claim. The 'simple and easy' design is often putting a veil upon the technology and drifts far away from the initial vision on participatory design. This goes together with the vision on ubiquitous computing as letting disappear (graphical user) interfaces or technology in general disappear as much as possible. In this article we discuss if this goal is the one we have to follow if we want context-aware applications success. Maybe the vision on ubiquitous computing as initially defined by Weiser maybe not the way to follow completely?

In this article a transdisciplinary look is taken to the evolution of context-aware applications and environments. We start with the deconstruction of the concept of 'user participation' and study how they are relating to the current trends in design of applications. In the next section we describe how these problems are reflected in current context aware applications and environments. A brief history and some major trends of creating, configuring and using these types of applications and environments are outlined focusing on the shift of power relations and control. Thereafter we define some important conditions that have to be realized to make a shift in these relations and empower the user when interacting with context aware environments. At the end we make some conclusions and link them to future work.

2. Questioning user participation in calm computing

When searching for the causes of the failure of a real breakthrough of context-aware applications we can determine dominant discourses and trends, which, from our opinion, are important influences on the process of creating context-aware applications. In our vision we focus on the empowerment of the 'user' in the process of giving meaning to the interaction between humans and non-humans. We situate ourselves in the tradition of others who focus as well on this empowerment perspective in building context-aware applications (Gajos, Fox, & Shrobe, 2002, Dey, Sohn, Streng, & Kodama, 2006).

2.1. Calm computing incompatible with feelings of fear?

The contradiction we want to discuss first is the tension between 'ubiquitous' computing which focus on the disappearance of computing and the fear of humans for technology they cannot perceive or control.

2.1.1. Dominant vision in context-aware application building

Nowadays humans predominantly interact with computers mediated by a (graphical) interface. What the impact of context-aware applications will be on the interface as omnipresent interlocutory space is uncertain, but it probably will loose its central stage as mediator in interactions. Mark Weiser writes about the disappearing interfaces as following: *"Ubiquitous computing names the third wave in computing, just now beginning. First were mainframes, each shared by lots of people. Now we are in the personal computing era, person and machine staring uneasily at each other across the desktop. Next comes ubiquitous computing, or the age of calm technology, when technology recedes into the background of*

our lives" (Weiser, 1991). It assumes that technology will be an integral part of intra-actions, but that the technology behind will 'disappear' and often be invisible integrated in everyday life world. The different metaphors used for context-aware applications assume this disappearing interface and invisibility of technology: ubiquitous computing, calm computing, ubicomp, pervasive computing, ambient intelligence, everywhere or calm computing (Sterling, 2006). A disappearing interface is inextricable linked with an intrusive way of communication and with black boxing the technology even more than nowadays.

However, it is not because physically the computer will disappear that the logics of the computer will do so and the context-aware environment will become 'intelligent'. Already in 1983 Philip J. Hayes en D. Raj Reddy, both computer linguistics, quoted two important differences between interactive computer systems and human communication which make them fundamentally different: a) interactive computer systems do not possess the capacity to answer unanticipated circumstances; and b) interactive computer system do not possess solutions to detect communication problems (Hayes & Reddy, 1983: 12). And we would complete this with c) interactive computer systems never work perfect. The impregnation of the life world by ubiquitous computing is limited because machines lack a certain amount of common sense (Dreyfus, 2001) Or as Lucy Suchman writes on the difference of (human) situated actions and (machine) planned actions: *"The circumstances of our actions are never fully anticipated and are continuously changing around us. As a consequence our actions, while systematic, are never planned in the strong sense that cognitive science would have it. Plans are a weak resource for what is primarily an ad hoc activity"* (Suchman, 2005: 20). Interacting with machines is very different from interacting with humans because machines can never understand the intentions and the meanings humans give to communication acts. We cannot speak of a *general thesis of reciprocity of perspectives* in communication acts (Schütz & Luckmann, 1974) between humans and machines.

2.1.2. Fear for technology

When looking at recent research on ICT use (Broos & Roe, 2006) and the meaning of information- and communication technologies (ICT) in everyday life (Bakardjieva, 2005, Claeys, 2007) we notice that feelings of fear for ICT, but also of fear of the (as precipitated fast) evolutions in the network society, are related to feelings of self efficacy, locus of control regarding ICT and the occurring evolutions. Heavy ICT-users perceive less feelings of fear regarding technology than light ICT-users Broos, 2006 #739}. The digital literacy level plays an important role in the feelings of control (and of fear). Without discussing the different models of digital literacy (Barton & Hamilton, 2000) we want to stipulate that without digital literacy, and without feelings of control, people will stay scared of technological developments and changes regarding their individual lives and the society they live in.

Combining the dominant vision on ubiquitous computing with the findings on causes of the feelings of fear for technology, we can already define one problem space: disappearing technology and not having feelings of control exclude each other.

2.2. User participation as empty signifier?

The development of new (context-aware) applications envisions a central role to the user. In research in industry different participative methods are used to learn about the future users, or even to co-create applications together with future users (Van Rompaey, Van Der Meerssche, Godon, Vanden Abeele, & Charliers, 2005). Also in promotional material of Ambient

Intelligence applications for the home, the words 'connectedness', 'control', 'easiness' and 'personalization' are predominant. But in the same research the researchers determined that, in contradiction to the discourse of 'putting the user central', almost half of the pictures used in the promotional material contained no humans but devices (Ben Allouch, Van Dijk, & Peters, 2005). What does it mean to have the users participating in the development process, and what is the impact they have? Is this concept an empty signifier (Laclau & Mouffe, 1985)?

2.2.1. The origin of user participation

Since the 80's there is growing attendance for the role of the 'user' in innovation. This is translated by co-employing usability designers and ethnographers in teams that existed before only of engineers. It is not traceable who focused for the first time on the 'user'[i], but the research area known as Participatory Design (PD), from origin Scandinavian, played certainly an important role. Participatory Design is a research area that initially was started from Trade Union Participation (Beck, 2001). A central concern was that workers needed to be able to participate in the means of production. Therefore representatives needed to understand new technologies to be prepared for negotiations with management about technology (Nygaard & Bergo, 1973). Thereafter different political, and non-political, researchers focused on the development of specific techniques for involving users in design {for an overview, see: Bjerknes, 1987). In Participatory Design 'user participation' was in no way related to business issues or forecasting the market, but was only seen as a vehicle for empowerment of the user in different ways.

From social science perspective the rise of the Social Shaping of Technology (SST) research area gave a growing attendance on the role of the 'user'. Although SST is an umbrella concept for different socio-constructivist visions on technology, which rose as a reaction on the dominant technological deterministic visions, all of the visions focus on the mutual shaping process of use and development, of society and technology. SST examines the politicization of technological culture, the interpenetration of materiality and identity and the role of users as agents of technical change (Boczkowski, 2004). More than in PD which especially deal the changes technology brings when inserted in existing work relations, SST focuses on power relations that are inscribed or embedded in technology. This means that scripts can sustain, enforce or transform existing power relations.

2.2.2. The notion of participation

Participation has been used to refer to a wide variety of different situations by different people, and is a very contested concept. Therefore some refer to it as an *empty signifier* (Carpentier, 2007). The history and origin (and radicalism) of the concept as related to power issues is fading away under the diversity of meanings it is covered now. Servaes refers to the importance of power as central entity that must be linked to participation. As he writes: *"this 'real' form of participation has to be seen as participation [that] directly addresses power and its distribution in society. It touches the very core of power relationships"* (Servaes, 1999: 198 in: Carpentier, 2007 #874: 87).
Carole Pateman makes a differentiation between 'partial' and 'full' participation. She defines partial participation as: "A process in which two or more parties influence each other in the making of decisions but the final power to decide rests with one party only" (Pateman, 1970: 70). Full participation is: "A process where each individual member of a decision-making body has equal power to determine the outcome of decisions" (Pateman, 1970: 1971).

2.2.3. The impoverishment of 'user participation'

Nowadays different R&I departments of IT-company (Xerox, Nokia, Philips, Alcatel-Lucent) work with transdisciplinary teams. Performing user research and organizing co-design sessions are commonly used practices in these environments; different methods are gathered under the name 'user centered design', and all of them lean on the participation of the user in the innovation process. Although the concepts are still currently fluid and under discussion, the 'user centered design' process puts users at the center of the innovation process. Within co-design the user is integrated in a very early stage of the conceptual and interface design process and the focus is on the mutual learning process of developer and user. Within user-informed design information about the user(s) is gathered before developing a design and the user is integrated at a certain moment in the design process (Geets, 2007). Within user-informed design we can further distinguish e.g. interaction design (Arnall, 2006) and experience design (Forlizzi & Battarbee, 2004, Jones, 2006).

This widespread adoption of the concept 'user participation' and diversification of design methods that put the user central does not mean that the original ideas on participation and user participation, as historical rooted within PD, are also widely disseminated. The question even is if in these kinds of design methods we can speak of 'participation' if we look at the interpretation and meanings attached onto the concept of 'participation'.

Where in PD empowerment and participation was a central and political aim, the different user-centered design models are mostly not political and not concerned with power relations and empowerment. It seems like the success of 'user participation' is accompanied with an impoverishment of the concept of 'user participation'. As Beck formulates it: *"participatory design has come to include practices that share only the historical link to participation as a vehicle for empowerment. In the non-political extreme, user participation, once politically radical, has been picked up as a slogan for marketing and other uses"* (Beck, 2001: 6).
When we talk about user participation in the development of applications and refer to the definitions of Pateman, we can in the 'best' cases speak of a certain form of partial participation, but in no way of full participation.

2.3. Design trends incompatible with full participation?

If the existing design trends are compatible with the vision on participation as formulated above is the next question discussed. By attaching our vision on the interpretation of participatory design onto the existing trends regarding (GUI) design.

2.3.1. The goal of getting it simple and easy

User-centered design is currently the dominant trend in design processes. Designers try to know as much as possible of their future users. However the problem is that when applications are getting tailored for the particular likes, dislikes, skills, and needs of a particular target population, they will less likely be appropriate for others (Norman, 2005). An other drawback is that when working with specific target groups the design tends to become quickly a strengthening of existing stereotypes. To put it simple: it makes everything pink and round for women, and blue and angular for men. This may conduct shortage to individual preferences and the reality of a liquid identity, preferences and life of users. Don Norman, who is perceived as a leading voice regarding user-centered design questions the current direction of design, he states "human-centered design considered harmful" (Norman, 2005).

Cecile Crutzen criticizes also the current vision on 'user friendly design'. She starts from the differentiation between 'readerly (lisible) text' and 'writerly (scriptable) text' as made by Roland Barthes (Barthes, 1977). In 'readerly' texts the author is an autonomous, authoritarian producer and sender, and the reader is a prototyped passive consumer and receiver. The 'writerly' text in contradiction invites the active participation of the reader. Crutzen states that ironically, design 'readerly' text is described as userfriendly while 'writerly' texts are referred to as unreadable and userunfriendly because they require more effort (Crutzen, 2005).

2.3.2. User participation within 'simple and easy' design

From our perspective the vision on 'simple and easy' is not compatible with user participation, when going back to the initial meaning of participation as linked to power relations and empowerment. We assume that in these kinds of design the outcomes of decisions in the user-centered design process stays in the hands of the developers. When looking at the development process we see that the possible impact of the user on the development of applications is narrowing further the development of the application is completed. So we can not in any way speak of more or less equal power relations. The involvement of the users are very limited. Mostly the existing patterns of behavior are observed during the contextual investigation (pre-application time), and the interaction with the application is studied when the application is already prototyped.

If we look at the possible impact of the user on the development of applications, we see it roughly as following:

Fig. 1: Possible impact of user on application related to the development phases of applications with an 'easy and simple' design concept
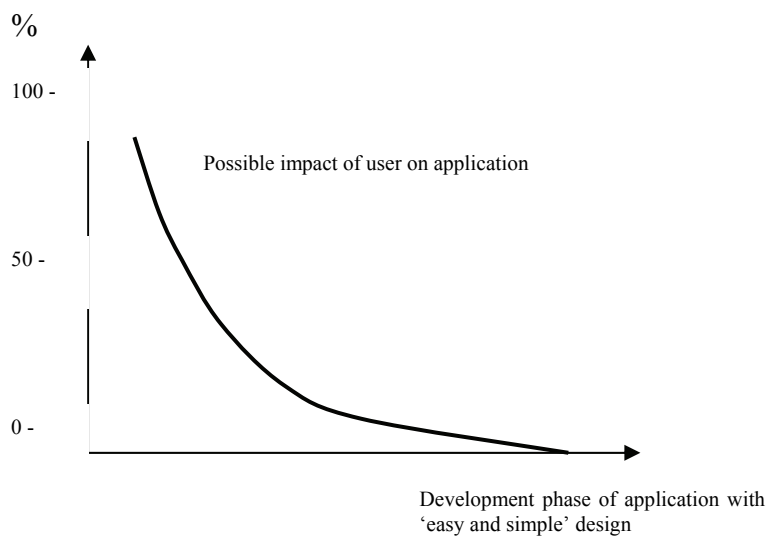
When looking at the highest point, the beginning of the curve, we see it never attains the 100% level. This is because the development of applications is driven by or building upon existing technologies, we assume that in the initial phase of the invention of a new application the user impact is always restricted by the existing technological boundaries. Even if the idea for a new application is born out of the mind of users, the application that will arise will have the limitations that are set out by the technology. When looking at the end of the curve, we see that with the closure (Bijker, Hughes, & Pinch, 1987) of the application, the possible impact of the user is reduced to zero. Although this is not the fact for

all applications (see next paragraph), the system design 'easy and simple' interface design often does not accept any user impact after closure. This probably is linked to the costs for bringing changes into programs over time. The later changes have to be made within programs, the higher the costs. If a product is designed for 'simple and easy' use and only one path is possible, then it must be the 'right' path (whatsoever 'right' may mean in this case) because changing it in a later stage brings massive costs.

3. Context and their meaning for context-aware applications

In this section will be described how the problems stated above are reflected in current context aware applications and environments. First we will take a short look at context from a transdisciplinary perspective. Afterwards we take a look at the shift of who is in control involved over the years.

3.1. Context from a transdisciplinary perspective

Although defining concepts is a fundamental step in doing scientific research, the 'context' definition is still under discussion. In his PhD thesis Dey (2000) gives an extensive overview of existing definitions of 'context' (Pascoe, 1998, Schilit, Adams, & Want, 1994, Chen & Kotz, 2000, Hull, Neaves, & Bedford-Roberts, 1997, Brown, 1996), which are used in the literature on context-awareness.
Dey himself quotes that context-aware applications look at the who's, where's, when's and what's of entities and use this information to determine why a situation is occurring. From this perspective he defines context as: "*any information that can be used to characterize the situation of an entity. An entity is a person, place, or object that is considered relevant to the interaction between a user and an application, including the user and application themselves*". (Dey, 2000)

Our question regarding this very strong, and often used, definition is when context is not mere about meanings that are constructed in interaction with persons, places or objects and not about entities as persons, places or objects as such. This remark can be situated within the current evolution within human sciences when political, economical, cultural and social context are token into account for explaining social interactions[ii]. This evolution must be seen in the growing critics on the (post) positivistic and empirical-analytical tradition, which started in the '60s. This evaluated into more attention for contextualizing behavior when looking for explaining social behavior ((Kuhn, 1962, Schütz, 1962)). The central critics on this statement were that quantitative research, beside disempowering the research subjects, also decontextualized the research subjects. This all in view of reaching 'objectivity' in research. But, as constructivist researchers emphasize, interactions are always contextual situated, and meaning to it is given within this (changing) context. This is related to the view on reality not as a world that consists of facts that represent objects, but as one of intersubjective constructed meanings that are defined in interaction. Context then defines as interaction, but interaction is also changing under influence of the context. Context is then intertwined with the view on reality and the ontological structures of the life-world, what makes it a very philosophical discussion.

From an engineering point of view, and within the constraints of existing technologies, taking meaning into account is a strange switch to make. It undermines the existence of a 'model of the user's world' of a 'model of behavior'.

3.2. Control shift in development and configuration of context-aware applications and environments

In this section is described how context-aware applications development changed over the years and how developers, and especially users, can configure these applications. We will discuss the basics of context-aware applications, how context knowledge can be represented within computer systems and how the creation of context-aware applications evaluated over the years.

3.2.1. Basic architecture of context aware applications

Figure 2 represents a rough scheme of a context aware application. Two types of input can be noticed. On the one hand context data (such as location, person presence, weather…) are acquired from (hidden) sensors or software equivalents. On the other hand explicit user input is gathered through e.g. keyboards, graphical user interfaces or GUIs…). Based on context data and explicit user input the application logic defines which (new) data can be inferred or which action(s) should be performed, e.g. a light which is switched or a message which is send or the notice that, when two persons are at the same location we could infer that they are near by each other. The inferred data can then be seen as new context data. We should also be aware that all user input and output have to be situated in a certain broader context than can be applied by computer systems and which every user will perceive differently.

Fig. 2: Basic architecture of a context aware application
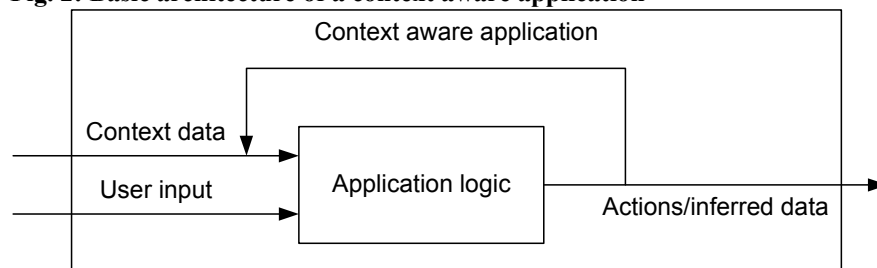
We will focus on following technological differences between different context aware applications: the way in which and how context data is modeled (and acquired), how easy it is to understand and change the logic of context aware applications.

3.2.2. Context models

To be able to deal with context in a computerized way a context model is needed. This is the way context knowledge of an environment is represented within computer systems based on the definition of context. However, doing this remains a difficult task.

Context models have involved over the years from very static, unexpressive representations to more flexible, semantic and extensible ones. In the beginning attribute-value pairs were quite frequently used e.g. in the Context Toolkit (Dey, 2000). More recent models have the capabilities to define concepts, relations and constraints on them. The most common models at the moment are ontology based (Gu, Pung, & Zhang, 2005, Chen, Fenin, & Joshi, 2004,

Korpip, Malm, Salminen, Rantakokko, & a.o., 2005) (although other models like object oriented (Hofer et al., 2003) and 4-ary predicates (Rom et al., 2002) exist).

Ontologies are very suitable for context models because they are so expressive and also because often the possibility of applying ontology based reasoning techniques (see next paragraph). Numerous representations to define ontologies exist but probably Resource Description Framework (RDF) (W3C 2000), Web Ontology Language (OWL) (W3C2004) and W3C' semantic web activities (W3C 2001) gave a boost to ontologies.

Although much technological progress has been made to create more semantic models, only little research has been performed on how models can be designed by communities (e.g. DOGMA-MESS (De Moor, 2006) and even fewer by 'ordinary users'. Almost all models are technological driven and expect that it is, in one or another way, possible to model a domain, or even worse, the world. A domain or world model is mostly based on user groups but context aware applications are very dedicated for every user and can therefore more difficult or even not be defined. Moreover, mostly little attention is paid on what model users really need. In addition models involve over time, because with every action context changes as in real life.

As a result most current models can only be used in protected research environments but not in real world situations.

Although ontologies allow a more semantic description of an environment and many authors claim to be able to model emotions and feelings of persons but they forget that the meaning of context differs for every person and is modulated through interactions. A rudimentary example for instance is the difficulty to model 'having cold'. This feeling is subjective and we will probable never be able to model such entities.

3.2.3. Evolution in context aware application creation

In the previous paragraph we discussed different ways how knowledge in a context aware environment can be represented. This paragraph describes the evolution in building applications that can populate data into a context model, which is acquired by hardware, or virtual sensors and how actions/events can be triggered through that model. Instead of enumerating existing context aware applications we will focus in this paragraph on the shift of who is in control over time.

When investigating context aware application we notice a shift from who is able to create and configure context aware applications or, with other words, who is in control.

Before 2000 almost all sensor specific programming code was hard wired (programmed) into applications. Those applications have a lack of sensor abstraction and separation of concerns. Building these types of applications was very cumbersome and money consuming and was very difficult to reuse. The consequence was that only very few specialized programmers where able to create context aware applications.

Around the year 2000 context aware frameworks arose which helped programmers developing context aware applications (Dey, 2000, Chen et al., 2004). Programmers could use generic software components of the context frameworks which allowed acquiring context information without having to know all boring details of the hardware sensors (sensor abstraction). These components also allowed making already existing applications context aware without having to recode the whole application (separation of concerns). Although this lowered the barrier to develop context aware application for developers this still doesn't give the control to the user. Moreover in most of the frameworks and applications the control logic was still hard coded by programmers for a specific application, it was difficult to change for

programmers after going into production and almost impossible for users without having to become a general purpose programmer.

The last years step-by-step research starts on how context frameworks/applications can be adapted in the way that programmers can implement the logic in a more declarative way. Reasoning engines that use rules for declaring the logic, play an important role. A rule consists of conditions and consequences (that can be action/events or inferred data). When the conditions are satisfied the consequences are processed. Two examples in natural language: the first when a person enters the room and it is dark in house (two conditions coupled by Boolean logic) the lights are automatically switched on and the music starts playing (action as consequence); the second when two persons Mike and Pat are in a distance of 1 m of each other (condition) new inferred context data 'Mike is near by Path' is added to the context model.

These rule based systems or reasoners make it easier for developers but logic to define rules is still to complex too for an average user.

Last years research started on how to give users control of context aware applications (Dey, Hamid, Beckmann, Li, & Hsu, 2004, Dey et al., 2006) and on which context topics are really relevant for the users, or even better to make that the users can define the context topics that are relevant for them.

4. Defining boundaries for the development of critical user participatory context aware applications and environments

After stating our critics on user participation and the evolutions in the development of context aware applications and environments together, we want to formulate a non-exhaustive set of recommendations for the development of what we name 'critical[iii] user participatory context-aware applications and environments'.

We identify six key conditions that from our point of view need to be fulfilled to be able to speak of 'critical' user participation in the development and configuration of context aware applications in our urge to start to shift existing power relations in the advantage of the user. The conditions are formulated from a technological and human perspective, because developers and users both need to be accountable and knowledgeable actors.

The formulation of the conditions starts from our critic that persons perceive context aware applications at the moment as black boxes. Developers define what the output/inferred data will be for a certain input. The opening of the black box onto a certain level is inevitable for empowerment of the users. They should be able to look into the black box and define themselves for which context data (and possibly user input) a certain action should be performed. But these requirements have implications for development and use.

To demonstrate the technologically realization of our recommendations we use in our current prototypes the combination of rule engines and domain specific languages (DSL) because is probably the most appropriate way at the moment. Herby it is important that all rules are part of the context model itself. Each rule is defined and takes place within a certain context and cannot be separated from each other. This critic was also launched by Singh and Conway (2006) but then from developer's perspective.

First of all people should know about the computerized context that surrounds them. Therefore they should be aware which context can be 'sensed' and understand what it means.

This doesn't mean that users should know all sensor details but at least what's possible to detect and what not. A way to tackle this problem from our perspective is that users could retrieve which context is measured in the environment surrounding them at any time and any place. Therefore (maybe separate) context aware applications should be available to sense the environment and present the context topics that are measured in a human understandable way. Without access to this information users will always experience an ambient environment as suspicious or even hostile and will fear the unknown.

Secondly users should be able to understand the logic that is applied in context-aware applications. This means that they should always be able to know why something happens. When things happen without the understanding of a person but only by the developer, the developer is determining the behavior of that person in a non-democratic way. Users for example do not appreciate when screens pop up from 'nowhere' (just look to some web pages to see that programmers do it even deliberate for un-honorable purposes). A lot of applications have these problems but in context aware applications the life of the person is affected without the feeling of direct computer interaction (and have no keyboard to beat when they are angry). It can be nice that lights are switched on without pushing a button, but people should always understand why this happens. Moreover, the reasons why something happens should not be explained in a mystic computerized way but in a human understandable one.

To give users a better understanding in the context aware application logic, we propose that for every action that takes place in the context aware environment a diagnosis is presented to the user that explains why something happens (if the user wishes this) in human understandable language or in a graphical way. Diagnosis is already often applied in case of errors but seldom when things go as expected. Error reporting still often happens cryptic and so not understandable by users, but diagnosis should be human understandable

Technologically backwards rule chaining could provide the means to derive the conditions when a certain action took place. Domain Specific Languages (DSL's) can then be used to translate the conditions in a (quite) human understandable way.

A third, probably one of the most simple but important condition is that users always must be in the possibility to switch off the context aware interactions. The ultimate control may not lay in hands of developers or others, but in hands of the persons the application is related to. Although this sounds quite logic this is most often not the case in current context aware applications or environments. Without being a programmer you cannot manage the application yourself.

A fourth condition is that users should be able to define by themselves what should happen when certain context conditions are satisfied. It could not be that developers define when and what happens without the user can intervene or adapt it afterwards. Because the inherent feature that context aware application are very personal, developers can never create the logic needed for or wanted by the individually users. Technologically rule engines combined with DSL's (or rule editing GUI's) could allow users composing their own context aware logic by defining their own rules without having to become a general-purpose programmer, this means in a quite natural way. We are, however, aware that it will still be the developers who define the most basic context topics and actions that can be used by users to create their own rules.

A fifth condition, probably the most difficult one to realize, is that users should be able to define there own meaning to context topics. Meaning is so personal and evoluating in time that programmers (also when applications are developed in transdisciplinary teams) never can

define it for the user, although this is what often happens at the moment. Just as in the previous condition, rules with inferred data as consequence could be used to implement a very basic form of meaning. Users could for example define what they understand as 'cold' under certain conditions. This can be 5 degrees Celsius, or 20 degrees Celsius. We know that this basic example is only a start of solution to put meaning in the hands of users. We still have to take into account the constraints of technology and technology cannot handle meaning, although meaning is constructed in the interactions themselves.

A last, but very important condition, is the fact that not only developers may not design from a *'view from nowhere'* or *'detached intimacy'* but from a *'located accountability'* (Suchman, 2002), but users also have to take their responsibility. Living in a networked society makes it necessary to develop some critical digital literacy, and also some critical literacy of the digital. A necessary condition to shift power relations regarding technology, and more specific related to context aware applications, in favor of the user is inextricably linked with the will of users to take their responsibility in autonomous behaving and controlling their everyday life world where context aware applications will possibly get integrated. To invest time and energy to develop critical skills, to get empowered.

Although these conditions will never take away the feeling of intrusiveness completely and users will never full participate in the development and configuration of the context aware logic, we believe that consequent satisfaction of these conditions will make the users more confident in context aware environment and give them a greater feeling of being in control. When these conditions are not met we even believe that context aware environments will never break through.

5. Case study design

Currently we are further elaborating, testing and researching the prototypes that can realize the conditions stated above. Moreover research is done in how rules can be defined by users in a tangible way. Results will be published at a later time.

6. Conclusions and future work

In this article we studied the reasons why context aware applications and environments didn't really break through until now. We started with scrutinizing the concept of user participation and their relation to current design trends and the implication for the development of context aware applications and environments. We formulated some recommendations with the goal to shift power relations in the development, configuration and use of context aware applications. We assume that without allowing users to open and configure the context aware logic, users will never have trust into the systems, never use it and stay in a very weak power position in relation to the developer. We are aware that this is only the beginning of research and the research on the implementation of mentioned recommendations should be evaluated. We are evenly aware that the fulfillment of this conditions will never take away completely the feeling of intrusiveness and users will never 'fully participate' in the development and configuration of context aware logic, but we believe that consequent satisfaction of these conditions will make users more powerful and confident in context aware environment. When these conditions are not met we even believe that context aware environments will

never break through and the real research for useful user programmed context aware applications will never happen.

[Future work will be proposed at the conference]

Acknowledgements

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[i] As all changes in practices or theory different authors create simultaneously a new research direction.

[ii] Typical for an interaction is that there is always an exchange of meanings. I concur with Cecile Crutzen' definition of interaction when she writes: "we speak of interaction when there is a process of exchange of representation(s) between actors and when these actors give meaning to these representation(s) while observing and representing, in short when these actors construe meaning by means of representation(s)" (Crutzen 2000: 44).

[iii] By using the concept 'critical' we estimate the relation to the tradition of critical theory as defined by Max Horkheimer of the Frankfurt School.

'Thick' Personas – Using Ethnographic Methods For Persona Development As A Tool For Conveying The Social Science View In Technological Design

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Abstract

Designing and developing successful technological innovations requires interdisciplinary research teams, where engineers and social scientists profoundly interact with each other. In this kind of co-operation it is often the challenge for the latter to present the social science findings in such a way that they are understandable and actionable for engineering. One of the tools to bridge both worlds is the use of 'personas'. In this paper we want to explain our experience with the development of well functioning personas. We believe that an optimal approach is multi-methodological. Based on the scope of two research projects this paper will first elaborate on the advantages and limitations of using personas in an interdisciplinary environment. Second it will also discuss the ways in which a combination of different (quantitative and qualitative ethnographic) methods of data collection served as input for the construction of efficient personas and the added value of this approach. The different methods make it possible to obtain 'thick descriptions' (Geertz, 1973) about the different user practices. To communicate these results without losing the advantages of 'thick descriptions', 'thick' personas are necessary.

1. Introduction

Together with other applied social scientists (e.g. Hughes et al. 2000), we experienced the problem to embed our user insights early in the development process. Communication is the main obstacle: the different partners often do not or cannot read the classical, extensive reports with the output. A possible solution is making use of personas, as introduced by Cooper (2004). However there is still too little information available concerning the practical implementation of this approach for sharing key research findings in an interdisciplinary way.

The paper takes a closer look at the creation process of personas, based on two different projects within the IBBT (Interdisciplinary Institute for Broadband Technology) framework. The key question is whether this creation process is easily transposable to different research projects in different phases of the product development process. In other words, has the phase in the development process wherein the research project is situated an impact on the actual creation process of personas? How does creating personas coincide with the research and the scenario development?
Before discussing these projects and the different approaches in creating personas, we introduce some theoretical aspects of personas and how they are created.

2. Personas in theory

In the first part of this paper we will discuss briefly the theoretical background of the concept 'persona', as well as the advantages and disadvantages, and some issues on the practical

creation of personas: which steps are considered crucial in the development of personas?

2.1 Theoretical background

2.1.1 Personas as a solution for a failing communication strategy

A problem that frequently occurs during the design process is the use of notions like "the user" and "user profile" when referring to the people one is designing for. These concepts are too vague and therefore impractical to use as design model or as definition for the communication within design teams. A fuzzy concept of "the user" often results in a bad compromise, overburdened with usability issues. Cooper (2004, p.127) calls the phenomena *"the elastic user"*: the user folds and stretches, adapts to "the needs of the moment". This happens especially when developers put forward a specific image of the possible user of their particular technology or application under development. The design does not take the target audience, but the designer's perspective of the user as the point of departure. When a single user or an "average user" plays the central role in the development process, the risk of failure is considerably high. On the one hand, within the perspective of the single user one is designing for a too small niche audience. On the other hand, when developing with the "average user" as a point of reference there is a high possibility that no user is satisfied with the final product of service, but a "virtual user" (Flichy, 1995). If the designer identifies himself with the design, there is a great risk that he/she designs for himself and not for the intended user: they become prisoners of their own environment (Frissen, 2004).

A solution, to overcome this problem, is to replace the "user" by using a very specific (fictional) individual – a persona – and adjust the design on this. Personas are presented as a powerful tool to preserve the user experience in a multidisciplinary design process (Pruitt & Adlin, 2006). The concept has its roots in the Human-Computer Interaction field and was introduced by Alan Cooper in his book "*The inmates are running the asylum. Why high tech products drive us crazy and how to restore the sanity*" (2004). The word persona 'an sich' illustrates already an important characteristic of the concept: a user model should comprise some personality. Cooper (2004, p. 123) defines a persona as:

> *'A precise description of our user and what he wishes to accomplish'*

Calde, et al. (2002, p. 5-6) go one step further and give a more detailed definition:

> *'User models, or personas, are fictional, detailed archetypical characters that represent distinct groupings of behaviours, goals and motivations observed and identified during the research phase.'*

The linguistic description of the word 'persona', with its origins in Latin, refers to a role in a fictitious story (novel, movie,...). There is also a strong psychological connotation, which refers to the social component of someone's personality. Within the interpretation framework of the symbolic interactionism, Blumer (1986) would refer to it as the '*Me component*'. These associations - the fictitious and the social- are crucial to understand the meaning this concept can have within user research. Although personas are no real persons, they represent them during the design process, since they are based on knowledge about the goals and personal characteristics of real people. The fictitious details are added to make them more concrete, vivid and user friendly for the designers (Blomkvist, 2002; Calabria, 2004).

The definitions also emphasize the underlying motivations of the user. Cooper (2004, p.149) stresses the fact that good design only has meaning in the context of the actual use by a person and for a specific goal. Therefore a persona always is goal-oriented. Those goals are crucial since they give direction in the development of the artefact. It is important to make a clear distinction between goals on the one hand and tasks at the other hand. A goal is a final condition, whereas a task is an intermediary process, necessary to accomplish the goal (Blomkvist, 2002).

2.1.2. Advantages and disadvantages of the persona

The main advantage of working with personas is putting one self in someone else's shoes. By using personas we try to transfer the so-called '*verstehen*', referring to the social researcher's attempt to understand both the intention and the context of human actions (Weber, 1968/1914). During the user research that '*verstehen*' is gradually constructed. In order to convey this to other partners, who did not participate in the actual user research, personas are a useful instrument.

Personas are a tool for a more **efficient context-rich communication,** wherein the user plays a central role. "Using personas has proven itself as a valuable approach for designers to switch between a developer's perspective and a user's perspective in the design process." (Johansson & Messeter, 2005, p. 231)

Personas help to define the design by replacing the abstract, virtual, elastic user by a **vivid representation of a specific user** who becomes an integral part of the design process (Sinha, 2003) and thus helping designers to keep a clear focus by making the user present in the design process (Johansson & Messeter, 2005). Precise descriptions of users create a shared base for communication and thus **avoid the use of an elastic user** since the focus is placed on a specific user rather than on "everyone" (Rönkkö et al, 2004). By making use of personas as communication method a substantial amount of information can be shared in a well-known and attractive manner (Pruitt & Grudin, 2003).

The strength of personas lies in the fact that they **make assumptions about users very explicit** for the design process, on often very nuanced knowledge. This leads to a prioritisation in the discovered values, actions and motivations. When a persona is portrayed very vividly, the design team can better imagine the goals and motivations, which leads to better oriented discussions (Pruitt & Adlin, 2006). Or like Johansson and Messeter (2005, p. 233) state:

> " Real users are complex, and inconsistent in their wishes, whereas personas are well
> defined and clear and therefore better suited as a starting point for design work."

Another important benefit of using personas is that in this way the design process emphasizes the user and his goals and not on his tasks. Designing by tasks instead of goals is a common mistake, which leads to ineffective interaction, since tasks are not steady and transient (Blomkvist, 2002).

Because of their specificity, personas **are unique for a project and cannot be simply reused** for a new domain (Goodwin, 2001). In this sense Pruitt and Adlin (2006) talk about the life cycle of a persona, which also includes his or her retirement at the end of a project. Each research project has its own cast of characters, but some personas are only defined to illustrate that the design will not take place for this group of users, the so-called negative

personas. Depending on the influence they will have on the design process, each persona has a different status: primary, secondary, supplementary and negative. Each cast of characters has minimally one primary persona: the individual that is the most important to focus the design on (Blomkvist, 2002).

The most important reason for us to try out personas, is because they are said to be very **supportive in switching from a traditional (more passive) communication strategy to an active one** (e.g. workshops) in informing the design team, since extensive reports with the output of user research are often not read (Baird, 2002).

Representing the user very vividly has also a potential drawback. The narrative aspect of a persona can sometimes be complicated by an overload of distracting details, which makes it difficult for a designer to know what is relevant and what is not. Another possible pitfall when making the persona more real, is adding characteristics to a persona that are not based on actual research findings but rise from a 'gut feeling' or intuition. The main risk when building personas on assumptions is that those personas turn into stereotypes. The danger of not linking the personas to the data or not demonstrating the clear relationship with the
data, is the creation of unbelievable personas and therefore creating non-workable personas.

The advantages stimulated us to try out the use of personas in some of our recent projects, taking into account the potential pitfalls. To start this creation process, we relied on the few practical guidelines that are available.

2.2 Rules of thumb

Since the use of personas is a relatively new technique, the practical advices and guidelines about constructing them are scarce. The basis for the creation of personas can be found in some documents wherein the '*tacit practical knowledge'*** concerning the construction of personas is shared. One of the practical guidelines can be found in the six-step model of conceptualising personas from Pruitt & Adlin (2006, p. 163-271).

According to the literature available, the **first step** in the creation of personas starts with the **identification** of the most significant target **user segments**. Therefore it is important to look at the assumptions of the stakeholders in the project (Pruitt & Adlin, 2006).

As motivated in the theoretical background section (supra), to identify patterns of behaviour, expectations and motivations of the user, **data must be gathered and analysed (step 2).** However, there is no consensus on the research methods that have to be used. Cooper (2004) suggests that personas have to be based on interviews and observations with a limited focus on the identification of the representative users. Contrary to this vision, Grudin and Pruitt (2003) state that the identification of representative users is the key in the creation of personas. They claim that the creation process of a persona has to comprise as well qualitative as quantitative data (Sinha, 2003). This more structured tradition was also preferred here, because it is more in line with our research practice.

The development of personas usually starts with the collection of demographic information. Furthermore the persona can grow by conducting e.g. ethnographic interviews with real and potential users (Calde et al, 2002). During the phase of data analysis different patterns of attitudes and behaviour will appear. Those patterns are clustered, based on the common

goals, attitudes or behaviours, and serves as a basis for the different personas (Goodwin, 2004). Although this phase of clustering is presented as a whole new step in the creation process of a persona (supra), it is already an essential and standard stage in social science research to achieve result. Not the data collection, but the clusters are the real starting point of persona development for us.

By creating several personas, the whole spectrum of behaviour will be taken into account. The **creation of the skeleton** is therefore the next step (**step 3**). Ideally the behaviour of the different persona cannot coincide and thus reduce the number of personas to a minimum (Blomkvist, 2002). To structure the personal information a skeleton for each persona is first created. It is a basic document that grows with regard to details and contextualisation as the research process progresses. Per skeleton, characteristics on different features are bulleted. The selection of the characteristics described, depends on the research question on which an answer must be communicated. A skeleton is not written in a narrative form (Pruitt & Adlin, 2006).

In **step 4** the **priority** of the developed **skeletons** is determined, which implies that you are determining which skeleton will function as a primary persona. Also the total number of skeletons has to be determined, and if one needs a negative persona or not. This selection depends on the aims of the project. It could be the one with the most complex aims or the one with the most clear need. The primary persona is not necessary representing the largest market segment. This step can or should be tackled together with the other stakeholders in the project (Pruitt & Adlin, 2006).

Knowing how many skeletons are made and which is their bone structure, we have to put flesh on, embody them in step 5. Building on the previous made skeleton(s), a foundation document per persona is made in which a description of the identity is being made, with a name, a face by selecting a picture or drawing, and other socio-demographic information, specification of his or her targets, competences, tasks, expectations, and relations with other. In this document there is room to add data pieces, to illustrate e.g. the targets, the goals, the problems, the needs of this persona (Pruitt & Adlin, 2006).

The final **step 6** is devoted to the **validation of the personas**. The goal in this phase is to examine whether the developed personas are still a reflection of the research data. A possible way of validating the developed personas is reviewing them with fellow researchers, who met the real users during the data collection phase or by putting them to the test together with real users (Pruitt & Adlin, 2006).

3. Personas in practice

Taking into account the advantages, pitfalls and descriptions of persona creation, we made an attempt to put this knowledge into practice. After a brief sketch of the aim of both presented projects and their differences, we reflect on the theoretical steps to take in the creation process of personas and compare them with our experiences during these projects.

3.1. Projects

Based on two research projects of the Flemish research centre IBBT (Interdisciplinary Institute for Broadband Technology) this paper explains our experiences with the development of personas. The first project is called MADUF (Maximize DVB Usage in

Flanders) and focuses on the user needs and expectations for mobile television[1]. The second project is ROMAS (Research on Mobile Applications and Services), which concentrates on user research of information retrieval and use in a wireless city environment[2]. Within both projects our goal was to convey the social science findings in such a way that they are understandable and actionable for development.

The MADUF-project has a more technological focus as it explores the essential possibilities and constraints for the mobile television standard DVB-H (Digital Video Broadcasting on Handheld devices). It is a one-way standard for one-to-many communication, thereby replicating standard television broadcasting. It has lower battery power consumption than DVB-T (terrestrial), which makes it appropriate for handheld devices. The standard is characterised by an improved robustness in the difficult reception environments for indoor and outdoor portable use of devices with built-in antennas. The technology also enables interactivity via a parallel access to a mobile telecom network. For translating the technological viewpoint to everyday user practices, we need to involve the two main practices at stake: watching television and being on the move (in a nomadic sense as well as in a mobile sense).[3] Our final goal was to create contextualised personas as a translation of our user research, to guide the technological design of mobile television devices and services. A multi-methodological research set-up enabling data triangulation among mobile television users was seen as starting point for the persona development. We combined the following (mainly interpretative) research methods: desk research, observation with contextual inquiries, profiling questionnaires, logging, diaries, cultural probes, visual clues (photographs) and in-depth interviews. This rich data set was first analysed and reported on in the form of a classical project report.

The overall objective of the ROMAS-project was to conduct a user-oriented assessment of (future) wireless applications and services within a large-scale living lab environment from an interdisciplinary approach[4]. The i-City living lab environment in the city of Hasselt (Flanders - Belgium) is used as the setting for studying the users in real life. This environment consists of 600 users (and 4,000 in the end), equipped with a mobile device (PDA) and running a city services software platform, which enables a range of dedicated mobile applications. In the first phase of this project a number of archetype users for wireless city applications are identified and selected based on the purposeful sampling (Sandelowski, 1995). The sampling was partly derived from the main application ideas within the ROMAS project: a mobile local news application and a mobile city guide application. The affordances[5] of these two applications were translated into two more abstract practices. The two central practices for selection were on the one hand 'searching and finding news and information linked to the city' and on the other hand 'the different ways inhabitants (and not so much tourists) move around in the city'. The archetype users became the subject of our ethnographic research. The main goal was identifying applications and concepts that fit in the everyday life of those inhabitants. In order to incorporate as many characteristics and information as possible, a multi-methodological data collection was chosen. Since the focus

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[1] This part of the project was carried out during the first half of 2006: from January 2006 till August 2006.
[2] This part of the project was carried out during: from December 2006 till February 2007.
[3] A distinction is made between nomadic and mobile use. The first kind of use refers to users that connect to the network from arbitrary and changing locations, but do not use the service while moving. Mobile use refers to the use of services during movement (Podnar, et al., 2002).
[4] This project was conducted from September 2006 until February 2007.
[5] Affordances are defined as the combination of 'perceived and actual properties of the thing - primarily those fundamental properties that determine just how that thing could possibly be used.' (Norman, 1988: 95). A term borrowed from Gibson's ecological theory of perception (1977)

is on the invisible of the everyday city life, we tried to collect as many context information as possible by making use of observations (registration on video), diaries, visual clues (photographs), cultural probes and in-depth interviews (Pierson et al, 2007). After this first explorative phase we experimented with a number of applications that are developed in real live with living lab users. In the end the ROMAS project will deliver a set of personas that can better guide the development team.

3.2. Differences and similarities in projects

Although the two projects were situated in the same stage of the development process, the conceptual phase, their position with this phase is somewhat distinct. In the MADUF-project the technology (mobile television) was already clear whereas in the second project, ROMAS, the applications were still vague (Figure 1).

Fig. 1. Different stages in the development process
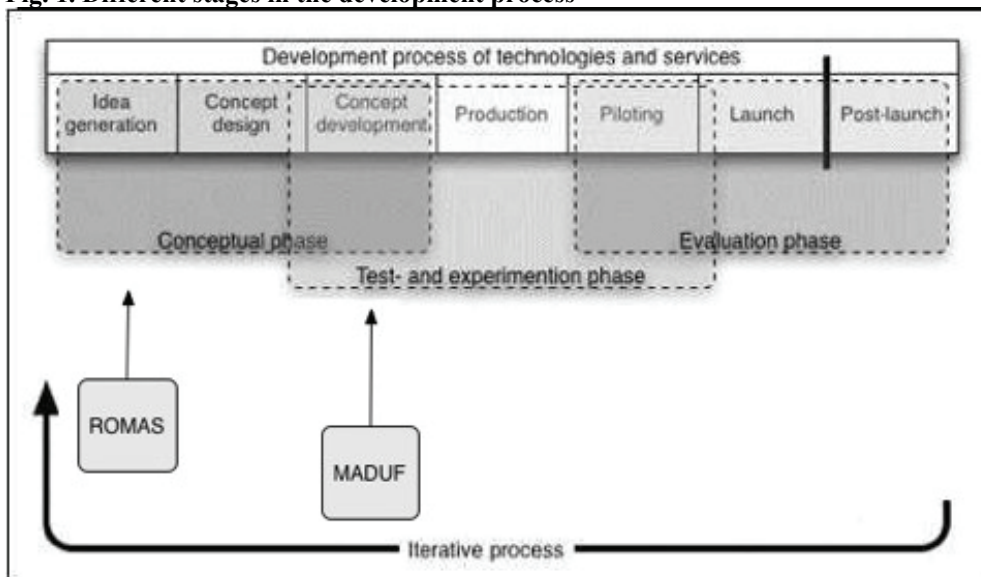
In the MADUF-project we introduced technological probes (Hutchinson, 2003) and we called them proxy technologies. These techniques refer to the use of devices and applications that incorporate as much as possible similar functionalities and characteristics as the future media technology (Pierson et al, 2006). For the respondent it is not always easy to reflect on a technology that only exists at a conceptual level. Moreover when only referring to a concept, there is the risk that people are talking with different images of the concept. By using proxy technologies as an illustration tool, the conceptual level not only becomes tangible, but it also provides the respondents with an identical reference framework. This enables a better basis for in-depth questioning (Pierson et al, 2006). The actual use of those technological probes or proxy technologies is closely related with the maturity of the technology and is therefore not always possible. The maturity of the technology has also an influence on the actual persona and scenarios: a higher level of maturity of the technology also implies a higher level of technology present in the personas and scenarios.

The second project, ROMAS, followed an explorative approach. Since the preferred applications were not clear, the main goal was to explore the everyday life in a city environment and identify practices in which mobile city applications could offer some added value.

In both projects several methods are combined. Since the final goal in both was the construction of several personas and scenarios, ethnographic methods were chosen in order to collect as much contextual information as possible. A technique used in both projects was the integration of cultural probes. The main reason for incorporating this method was to get to know the attitudes of the respondents. The cultural probes allowed us to investigate very broadly how the different respondents thought about different aspects related with mobile television and mobile city applications. In each project different themes, closely related to the research questions, were identified and printed on a post card. The information risen out of these cultural probes are not facts, but opinions and attitudes, which served as input for the concluding in-depth interview.

Fig. 2. Example of cultural probes as used in ROMAS

Another common method was the use of diaries. The main advantage is that they encourage the respondents to record, in a very structured manner, the details of their everyday life as a research diary (Toms & Duff, 2002; Corti, 1993). After all, gaining an insight in the daily user patterns and the associated experiences (annoyances and aspirations) is crucial in the identification of the possibilities of mobile television and mobile city applications. In order to collect as much contextual information as possible, the participants were also asked during the diary period to photograph their location when they were watching mobile television or when they were visiting the city (with a camera they received for this purpose). Those photographs, as well as the information from the diaries, were used as a prompt during the final in-depth interview as a mean to investigate some aspects linked to the research questions more in depth.

Fig. 3. Example of an observation route as used in ROMAS

In both projects also observations were conducted as a way of collecting as much contextualised information as possible. During the MADUF-project observations were carried out in public settings, for example in trains, to study the use of mobile devices to watch audiovisual content.[6] In the ROMAS-project the participants were observed during their visit of the city centre. During those observations the respondents were encouraged to think aloud. In this way it was easier for the observer to follow the movements and motivations of the participants, to understand recurring patterns as well as investigating in-depth certain issues. In the course of the observations notes were taken, the followed route was marked on a city map (Figure 3) together with taped fragments of certain activities on video. All this observation material served as input for the actual observation report.

3.3. Creation: step by step

In this part we elaborate on the steps taken to develop the personas in both of the projects, MADUF and ROMAS. We largely follow the different steps available in the literature, as discussed above. This was not always self-evident in both projects, since the framework for the persona development is not smoothly transposable to any project: every research project has its own focus and set-up, which sometimes implies in taking another strategy. In the first project MADUF we followed a deductive approach, while in the second project ROMAS we pursued a more inductive strategy.

In the MADUF-project we developed the personas in three phases (Figure 5). The first phase started with the construction of a hypothetical primary persona – the train spotter - based on preliminary findings in the literature and foreign trials of mobile television. In the next step that hypothetical persona was questioned by looking at the other clusters or codes of the collected and analyzed data in an internal workshop[7]. Other members of our research team, not involved in the project, participated in this workshop. The goal of this involvement was to see the collected data from another point of view, in order to identify the patterns in attitudes and behaviour and subsequently to cluster those identified patterns. This corresponds largely with step two: data analysis and assimilation as discussed in the rules of thumb (supra). This can not be seen as a whole new step in the creation process of a persona, but is in fact an essential and standard stage in social science research. The data answered our main question – who is going to watch mobile television – with several clusters or categories that collectively were part of a recurring pattern and formed the first user group: **the pluggers.** They use their mobile television during a waiting period to quickly inform themselves, to keep in touch with the latest developments. Their most important motivation in the use of mobile television is an information need; they want to fill their waiting moments as constructive as possible. Based on this information, a skeleton document was composed which would later form the basis for the persona, which matches with step four discussed in the rules of thumb (supra).

In the subsequent step we looked at other codes that were important to determine the practice of watching mobile television. More in particular attention was given to the codes that describe the non-use of mobile television. This would normally lead to the formation of a negative persona, but still some interest in mobile television could be retrieved. We called the

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[6] This research part was largely done the partner IBBT research centre CUO (Centrum voor Usability Onderzoek) from the Katholieke Universiteit Leuven.
[7] This workshop took place the 22nd of August 2006.

group: **the social fillers**. They are mainly using mobile television as a means to reduce boredom. When no form of social contact is possible, they resort to mobile television with as primary goal relaxation.

During the final phase of this first step a remaining cluster was incorporated which appeared rarely, but formed the basis for a user group that is a potentially interesting client although it is a small niche. This group are called the long viewers. They consider their mobile television more as an individual television, as a supplement to their fixed television set. The mobile viewing behaviours of these people are not only limited to short fragments to kill time when they are waiting. They also found longer programmes are appropriate to watch on the mobile device. This last group will serve as basis for the last persona.

In the second phase of the persona development the skeletons constructed in the first phase, were completed with more details like identity details, goals, roles, and attitudes and became foundation documents. This matches with step 5 in the rules of thumb: putting flesh on the skeletons (supra). For each group of users a persona was created. The primary persona was rooted in the group of pluggers, because this user pattern was encountered the most. The translation of the abstract level to the narrative, concrete level resulted in three personas: Pedro (plugger) , Laurence (social filler) and Vincent (long viewer) (Figure 4).

Fig 4. Personas (Pedro, Laurence and Vincent) in MADUF

The next step in this phase was the development of one scenario – a semi-factual narrative of a day or days in the life of the person- for each persona. Only one one-day scenario was developed, since the analysis focused on only one practice, 'watching mobile television'. All other practices (e.g. social activities) go with that central one in competition. In the scenarios a day in the live of each persona – pre-mobile television stadium - was developed with a focus on storytelling rather than on the representation of a task analysis.

The final phase was the translation of the scenarios to mobile television scenarios wherein different practices related with watching television are incorporated (e.g. zapping, video on demand). The amount of final scenarios is dependent on the number of central research questions and the topical distance between them. But the total of scenarios has to be kept limited, otherwise the advantage of vivid representations gets lost. Other members of the project use those final scenarios as a guide for the paper prototyping. A communal meeting is organised with the other partners in the project to translate the scenarios in concrete requirements.

Although the organisation of a workshop between social and technical partners is strongly encouraged in the literature, in practice it is often a difficult exercise for numerous reasons: agenda-problems, different language and different kind of thinking.

Fig. 5. Persona and scenario development process in MADUF
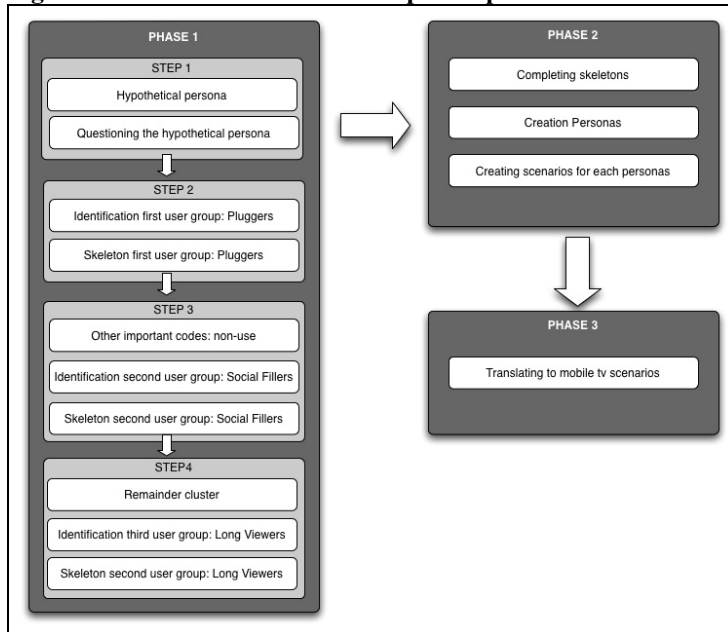
In the second project, ROMAS, we followed a quite different approach. Given our experiences with the MADUF-project, we realised that organising an internal workshop between social researchers, as a first step in the creation of personas is very useful. Provided that the participants already are somewhat acquainted with the research data, which was not the case in the workshop of the first project. A preparation time is therefore necessary, so that the participants get to know the data in advance.

The original idea was the creation of the primary persona, based on the clusters visible in the analyzed data. But since the focus of the ROMAS-project was on the identification of everyday city practices and the possible implementation of mobile city applications, those practices were more central in the data than differentiating characteristics. Compared with the MADUF-project the variation in practices was considerably higher, which resulted from the explorative nature of the ROMAS-project. Therefore it was much easier to construct the scenarios prior to the personas, since scenarios are more action directed. Nevertheless a persona is still required in order to construct a scenario as a means to translate the practices. This led to the construction of a primary persona: Roel. This corresponds with steps two until five in the rules of thumb as discussed above. The data brought a typology of city visitors to the surface: from a very structured planner to an on the spot improviser. Nevertheless the analysis also showed that this classification was very dynamic: people can take on different roles during one single visit tot the city: they can change from planner to improviser. By looking at other clusters in the data it become clear that not all practices could consistently be comprised in one one-day scenario. This expressed the need for a second scenario and subsequently also the creation of a second primary persona: Marleen, which also matches with the four different steps (two to five) described in the rules of thumb. After identifying clusters of opposite acting in the data, different negative personas were created and incorporated in the two scenarios. Those scenarios made clear that a city visitor could easily change in role (from an active planner to an improviser) dependent on several dimensions, like time, place, and goal of the city visit. In order to communicate those shifts in roles that are present in a city visit, scenarios were the most useful tools.

Fig. 6. Persona and scenario development process in ROMAS
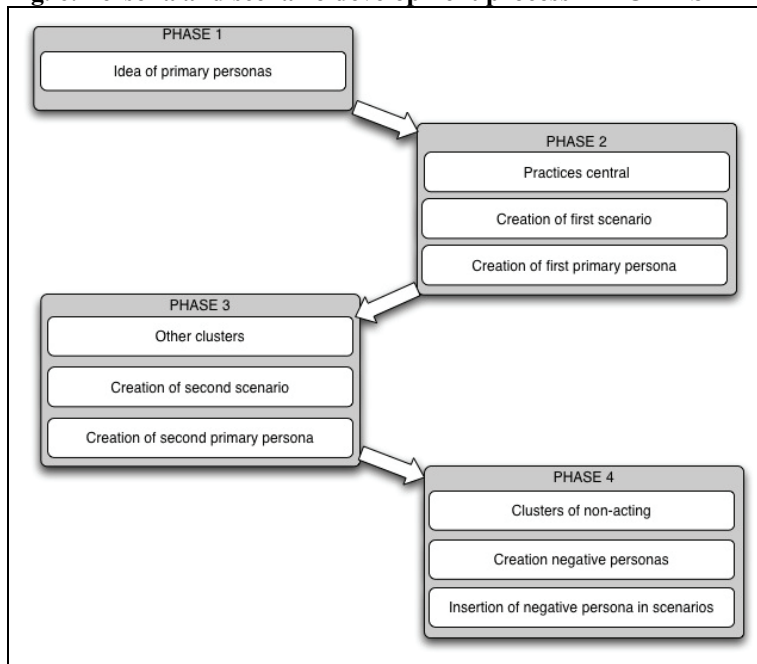
Subsequently an external workshop with the different (social and technical) partners in the project was organised to discuss the developed scenarios. In contrast to the MADUF-project in which we presented the personas 'an sich' during an external workshop, this time the scenarios with the personas in action were introduced. During the presentation we made clear that the scenarios and personas were based on the research data and explicitly showed were the data was situated. Previous experiences taught us that the border between data and fiction in the construction of personas and scenarios is a very thin line. To reduce this risk of sliding into a dominant fictitious approach, it is better to show how the data are incorporated in the persona or scenario. Another way to reduce the fictitious level to a minimum is, as already mentioned, constructing the persona or scenario in a group, e.g. within the research team.

4. Conclusion

In this paper we reported on our practical experiences with the persona development in two recent projects, MADUF and ROMAS. By clarifying the different approaches followed in both projects, we hope to contribute to the rules of thumb related to the persona development. The guidelines for creating a persona are not as rigid as described in the literature: the different steps to follow are not very distinct and often overlap. Some research is still required with regard to formalizing the persona development process even more.

We strongly believe that the main advantage of building personas on collected contextual information lies in the fact that a lot of incorporated details arise from the collected data and therefore the risk of inventing details or using the 'gut feeling' is strongly limited. We also recommended, when communicating the persona or the scenario, to show were the data are exactly hidden in order to prevent the use of unbelievable personas.

Although the use of personas is strongly recommended we believe that a persona is the logic step to a scenario framed on the research question, since otherwise all the actions go lost. Or to put it differently: we see the raw data as the necessary pre-montage material for a movie, the scenario as the script and the actor as the persona. Without the construction of a scenario, the persona can be seen as an actor without a script.

The practical experiences with both projects convinced us that the way to create personas heavily dependents on the research project. If there is only one practice central and the gathered data focus on characteristics of that practice, it is easier to create the personas prior to the scenarios. For example, in the MADUF project the personas are used for an already defined application and device (mobile television broadcast via DVB-H signals on a dedicated device). However if there are more central practices in the data, the most logical first step is creating the scenarios prior to the personas. In the ROMAS project, for example the personas are brought in for guiding the design choices on applications in a wireless city setting, linked to a broad range of practices on exchanging news and information and moving around in the city.

Depending on the place in the product development process in which the personas are developed, the preparatory work is done differently as well as the choice for creating the persona prior to the scenario or vice versa.

'Personas' in action within scenarios are presented in literature as powerful boundary objects between the world of social research on ICT user practices and the world of technological design. In our own research practice we feel the potential, but the main problem using them as active boundary objects remains the timing. The technical partners are already developing prior to the user research. This implies that decisions are already taken based on a 'gut feeling' and not on the actual user research. Personas and scenarios should optimally be constructed before the actual development, so that the design based only based on the designers perspective is strongly limited.

The personas and the scenarios are communication tools. Using them in interaction between the different partners is crucial. One way of doing this is organising a workshop to discuss the developed personas and scenarios with the technical partners, in order to come to a communal vision concerning recommendations. Giving our experiences in both projects, conducting a workshop is the first step towards interaction with the different partners, but even a more interactive format needs to be implemented.

It is however clear that personas fit in the vision that:
*"If users' appropriation of a technology innovation is viewed as the completion of the innovation's design process then understanding the influences on, and outcomes of, the appropriation process provides the basis for improving design." **(Carroll, 2004)***

In order to translate these influences and outcomes in a more successful way making personas 'thick' enough will help in bridging user research and technology design.

Acknowledgement

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A Systemic Evaluation Of Obstacles Preventing The Wider Public Benefiting From And Participating In The Broadband Society

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Abstract

In the context of a regular COST 298 management meeting, the authors have organized a structured democratic dialogue co-laboratory to study the obstacles, which the Cost298 community faces in their effort to engage the wider public in the wideband society. Through a process known as Structured Design Process (SDP), the experts of the COST 298 network collected and structured all their ideas concerning obstacles to achieving this goal. The process was initiated asynchronously before the co-laboratory by sending to all participants the following triggering question by email: "What are the obstacles to the wider public benefiting from and participating in the broadband society?" They were requested to contribute one or more ideas expressed as single sentences, but with the option of providing separate clarifications. During the co-laboratory all ideas were presented again and participants were guided through a structured process to cluster and prioritize their ideas. Subsequently, with the help of special software (Cogniscope[TM]), the relative influence of one idea on another was systematically studied. This process resulted in a root cause influence map, which provides a clear picture of which obstacles need to be tackled first. Two ideas emerged as root causes: the inadequate public promotion of its importance and the lack of user friendliness.

Keywords: Broadband; interactive management; structured design process; dialogue; social system design; agora; stakeholders; society

Introduction

According to the Memorandum of Understanding, the objectives of the Cost298 Action were defined as follows: (1) to examine the modalities in which users actually use information and computer technologies (ICTs), to discover their current forms of creativity; 2) to look ahead to technology related developments in the more medium term; 3) to suggest new approaches and methodologies for constructing a more user- driven model of innovation in order to overcome the limitations of current models of 'user-centered' development; 4) to produce a new phase in interdisciplinary cooperation. To achieve these goals, the Cost298 community must ensure that the public at large uses broadband technologies widely and effectively. To achieve that goal, a co-laboratory has been organized to define possible obstacles that prevent meeting this target

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Keywords: Broadband; interactive management; structured design process; dialogue; social system design; agora; stakeholders; society

Introduction

According to the Memorandum of Understanding, the objectives of the Cost298 Action were defined as follows: (1) to examine the modalities in which users actually use information and computer technologies (ICTs), to discover their current forms of creativity; 2) to look ahead to technology related developments in the more medium term; 3) to suggest new approaches and methodologies for constructing a more user- driven model of innovation in order to overcome the limitations of current models of 'user-centered' development; 4) to produce a new phase in interdisciplinary cooperation. To achieve these goals, the Cost298 community must ensure that the public at large uses broadband technologies widely and effectively. To achieve that goal, a co-laboratory has been organized to define possible obstacles that prevent meeting this target

Method

The Structured Design Process (SDP) methodology was chosen to serve the needs of the COST 298 community. An SDP co-laboratory is specifically designed to assist inhomogeneous groups to deal with complex issues in a reasonably limited amount of time (Banathy, 1996; Warfield & Cardenas, 1994). It enables the integration of contributions from individuals with diverse views, backgrounds and perspectives through a process that is structured, inclusive and collaborative (for a complete review see Christakis and Bausch, 2006). A group of participants, who are knowledgeable of the situation are engaged in collectively developing a common framework of thinking based on consensus and shared understanding of the current state of affairs. The SDP promotes focused communication among the participants in the design process and their ownership of and commitment in the outcome. In sum, an SDP co-laboratory provides an excellent opportunity for experts, to not only expand their shared understanding of the current *problematique*, but moreover to develop a roadmap for their future work and achieve a consensus as to how to move forward.

The first two authors have extensive experience in the method and have used it in many other analogous forums to facilitate organizational and social change (Hays and Michaelides, 2004, Laouris, 2004, Laouris & Christakis, 2007, Laouris and Michaelides, 2007, Laouris et al. 2007).

The specific objectives set for this Cost 298 co-laboratory were:

1. To create a shared understanding regarding the obstacles that prevent the general public exploit broadband technologies (referred to as the problematique);
2. To build commitment within the COST 298 community to an action agenda for collaboratively addressing the 'system of obstacles, and
3. To serve as a model for other European networks working on complex problems.

A slight variation of the methodology was applied, inspired by previous work (Laouris and Michaelides, 2007, Laouris and Christakis, 2007), in which the authors attempted to exploit virtual communication technologies to reduce the time required to obtain results. This involved the following steps:

1. The third author, in consultation with other experts of the Cost298 community, formulated a triggering question three weeks before the face-to-face phase of the co-laboratory. The triggering question was sent by email to all participants in order to stimulate their interest and encourage them to begin generating their ideas before the actual co-laboratory. It also served to reduce the time required to explain the methodology at the onset of the workshop. The triggering question was: "What are the obstacles to the wider public benefiting from and participating in the broadband society?"
2. During the following weeks and until the day just before the workshop, participants were allowed to forward their ideas in writing by email sent to the authors.
3. All ideas were recorded by the authors, entered into the Cogniscope program (see below), and a compilation mailed back to all participants just before the actual co-laboratory.

The face-to-face part of the co-laboratory took place in a spacious conference room equipped with comfortable chairs, screen, computer, and beamer. The space, the surrounding walls (where messages can be posted) and the overall structure and organization of the room was carefully chosen to meet the standards set by Christakis and Bausch (2006). Further details of the method are explained in connection with the presentation of their corresponding results.

Results

The results presented here stem from a co-laboratory, which took place in Larnaca, Cyprus on the 29th (4 hours) and 30th (4 hours) of September 2006. A total of 26 experts produced 82 factors in response to the triggering question. Table 1 lists all factors perceived by the Cost298 experts as the most important obstacles, which prevent the wider public benefiting from and participating in the broadband society.

Table 1. List of all "obstacles" generated by the participants of the Cyprus (Larnaca, 29-30 September 2006) co-laboratory in response to the triggering question: "What are the obstacles to the wider public benefiting from and participating in the broadband society?" Participants have generated a total of 82 factors.

#	Factor
1	inadequate definition of universal service
2	lack of infrastructure
3	lack of consistent broad band knowledge
4	low level of digital literacy
5	no attention on microbarriers
6	lack of ease to use
7	absence of specific services oriented to user needs
8	lack of time to adopt new technologies
9	existence of social inequalities
10	low educational level
11	high cost of service
12	lack of digital content in the mother language
13	general negative attitute against computers
14	lack of access in the personal formation process
15	lack of competence towards ict
16	social resistance to pay the costs of broadband technology
17	the obstacles for the new eastern and central eu members are different from those of the old members
18	lack of interest
19	fear of intrusion and risk of falsification of personal data
20	lack of awareness among politicians
21	slow ubiquitous adoption on mobile phones
22	underdevolpment of the isp market in eastern and central european countries
23	flaws of technology in terms of hardware, software and content
24	lack of user participation in ict design
25	lack of confidence in data security
26	fear of new technologies
27	badly designed intellectual property systems
28	low perception of user relevance
29	inability to predict benefits for individuals
30	inadequate public promotion of its importance
31	weakness of european coordination
32	lack of legal framework on broadband issues
33	weakness of regulatory implementation of the legal framework
34	overestimation of the potential risks of the internet
35	inadequate government policies on services to the public
36	low individual interest about the content available on broadband
37	bad prioritisation: first technology, then content
38	lack of political organization of users and non users
39	resistance to learn new practices
40	technophobia, the fear of technology
41	the too big power of technologists
42	poverty in the new central and eastern eu countries
43	lack of self confidence in mastering the technology
44	too much time consuming and risk of addiction
45	moral panic regarding the internet
46	inertia
47	lack of user friendliness
48	poor interface design
49	fear of technomafia
50	lack of software design capacity
51	dificulties to choose between service packages
52	fear of being watched by the big eye
53	shorterm national political decisions
54	frustration because of the lack of reliability of the content
55	snobism
56	not having a computer
57	telecom focusing on 3g, whereas people on wifi
58	non use as a deliberate lifestyle

59	age
60	lack of understanding of advantages
61	predictable male domination among users
62	fragility of it systems
63	technological determinism
64	lack of consensus to fight against technological domination
65	bad software design
66	lack of organization of promotion activities
67	spam
68	technology pushed services
69	slow absorbtion of new technologies within organizations
70	viruses
71	interference of health and safety regulations
72	lack of understanding of the need to define the digital citizens rights
73	viability of existing technologies
74	lack of standartization of quality issues
75	ivory tower of humanist sociologists
76	lack of interoperability between systems
77	other preferences eg. sports, tv, etc
78	lack of open design interfaces
79	neophobia, the fear of the new
80	bad spam filters
81	fear of globalization
82	ethics

The next phase was implemented by a small number of four experts during the break. They were requested to cluster the factors in categories, using common attributes. They came up with 12 categories as shown in Table 2. The table was printed and handed over to all participants. They were given a few minutes to discuss and study the table. Subsequently, they were asked to choose the five factors they considered the most important. Their votes were counted and inserted into the Cogniscope software. Table 3 documents the prioritisation of factors, which resulted through this voting process.

Using the method as explained above, participants were encouraged to engage in a structured dialogue with aim to develop a "map of obstacles." The items were projected on the screen in pairs with the following Relational Question:

> *If obstacle X was successfully addressed, will that*
> *SIGNIFICANTLY support addressing obstacle Y?*

During each comparison, the participants were engaged in a focused dialogue aiming to explore the particular relationship as it was projected on the screen. This usually presents an opportunity for participants to refine the meanings, uncover relationships and dependencies and generally to develop a much better understanding of the situation. This discussion also serves as an educational exercise, because it helps all participants achieve the same level of understanding and knowledge about the particular field.

Table 2. Clustering of the 82 factors in 11 categories.

Cluster 1 — TECHNOLOGY
- Factor 1: INADEQUATE DEFINITION OF UNIVERSAL SERVICE
- Factor 23: FLAWS OF TECHNOLOGY IN TERMS OF HARDWARE
- Factor 37: BAD PRIORITISATION: FIRST TECHNOLOGY
- Factor 62: FRAGILITY OF IT SYSTEMS
- Factor 70: VIRUSES
- Factor 73: VIABILITY OF EXISTING TECHNOLOGIES

Cluster 2 — PEOPLE
- Factor 8: LACK OF TIME TO ADOPT NEW TECHNOLOGIES
- Factor 43: LACK OF SELF CONFIDENCE IN MASTERING THE TECHNOLOGY
- Factor 59: AGE
- Factor 61: PREDICTABLE MALE DOMINATION AMONG USERS
- Factor 69: SLOW ABSORPTION OF NEW TECHNOLOGIES WITHIN ORGANIZATIONS

Cluster 3 — ATTITUDE
- Factor 13: GENERAL NEGATIVE ATTITUDE AGAINST COMPUTERS
- Factor 16: SOCIAL RESISTANCE TO PAY THE COSTS OF BROADBAND TECHNOLOGY
- Factor 18: LACK OF INTEREST
- Factor 19: FEAR OF INTRUSION AND RISK OF FALSIFICATION OF PERSONAL DATA
- Factor 25: LACK OF CONFIDENCE IN DATA SECURITY
- Factor 26: FEAR OF NEW TECHNOLOGIES
- Factor 28: LOW PERCEPTION OF USER RELEVANCE
- Factor 34: OVERESTIMATION OF THE POTENTIAL RISKS OF THE INTERNET
- Factor 36: LOW INDIVIDUAL INTEREST ABOUT THE CONTENT AVAILABLE ON BROADBAND
- Factor 39: RESISTANCE TO LEARN NEW PRACTICES
- Factor 40: TECHNOPHOBIA, THE FEAR OF TECHNOLOGY
- Factor 44: TOO MUCH TIME CONSUMING AND RISK OF ADDICTION
- Factor 45: MORAL PANIC REGARDING THE INTERNET
- Factor 49: FEAR OF TECHNO MAFIA
- Factor 52: FEAR OF BEING WATCHED BY THE BIG EYE
- Factor 55: SNOBBISM
- Factor 75: IVORY TOWER OF HUMANIST SOCIOLOGISTS
- Factor 77: OTHER PREFERENCES EG. SPORTS, TV, ETC

Cluster 4 — CAPABILITY
- Factor 3: LACK OF CONSISTENT BROAD BAND KNOWLEDGE
- Factor 4: LOW LEVEL OF DIGITAL LITERACY
- Factor 15: LACK OF COMPETENCE TOWARDS ICT
- Factor 29: INABILITY TO PREDICT BENEFITS FOR INDIVIDUALS
- Factor 50: LACK OF SOFTWARE DESIGN CAPACITY
- Factor 60: LACK OF UNDERSTANDING OF ADVANTAGES

Cluster 5 — INFRASTRUCTURE
- Factor 2: LACK OF INFRASTRUCTURE
- Factor 21: SLOW PACE OF UBIQUITOUS ADOPTION OF BROADBAND ON MOBILE PHONES
- Factor 56: NOT HAVING A COMPUTER
- Factor 57: TELECOM FOCUSING ON 3G, WHEREAS PEOPLE ON WIFI

Cluster 6 — GOVERNMENT
- Factor 30: INADEQUATE PUBLIC PROMOTION OF ITS IMPORTANCE
- Factor 31: WEAKNESS OF EUROPEAN COORDINATION
- Factor 32: LACK OF LEGAL FRAMEWORK ON BROADBAND ISSUES
- Factor 32: WEAKNESS OF REGULATORY IMPLEMENTATION OF THE LEGAL FRAMEWORK
- Factor 35: INADEQUATE GOVERNMENT POLICIES ON SERVICES TO THE PUBLIC
- Factor 71: INTERFERENCE OF HEALTH AND SAFETY REGULATIONS

Cluster 7 — ECONOMIC STRUCTURES
- Factor 11: HIGH COST OF SERVICE
- Factor 42: HIGH COST OF SERVICE

Cluster 8 — SOCIETAL STRUCTURES
- Factor 9: EXISTENCE OF SOCIAL INEQUALITIES [LOW INCOMES–HIGH COSTS]
- Factor 10: LOW EDUCATIONAL LEVEL
- Factor 14: LACK OF ACCESS IN THE PERSONAL FORMATION PROCESS
- Factor 17: THE OBSTACLES FOR THE NEW EASTERN AND CENTRAL EU MEMBERS ARE DIFFERENT FROM THOSE OF THE OLD MEMBERS
- Factor 22: UNDER DEVELOPMENT OF THE ISP MARKET IN EASTERN AND CENTRAL EUROPEAN COUNTRIES
- Factor 66: LACK OF ORGANIZATION OF PROMOTION ACTIVITIES

Cluster 9 — POLITICS
- Factor 1: INADEQUATE DEFINITION OF UNIVERSAL SERVICE
- Factor 20: LACK OF AWARENESS AMONG POLITICIANS
- Factor 30: INADEQUATE PUBLIC PROMOTION OF ITS IMPORTANCE
- Factor 38: LACK OF POLITICAL ORGANIZATION OF USERS AND NON USERS
- Factor 41: THE TOO BIG POWER OF TECHNOLOGISTS
- Factor 53: SHORT-TERM NATIONAL POLITICAL DECISIONS
- Factor 63: TECHNOLOGICAL DETERMINISM
- Factor 64: LACK OF CONSENSUS TO FIGHT AGAINST TECHNOLOGICAL DOMINATION
- Factor 72: LACK OF UNDERSTANDING OF THE NEED TO DEFINE THE DIGITAL CITIZENS RIGHTS
- Factor 74: LACK OF STANDARDIZATION OF QUALITY ISSUES

Cluster 10 — DESIGN
- Factor 6: LACK OF EASE TO USE
- Factor 24: LACK OF USER PARTICIPATION IN ICT DESIGN
- Factor 27: BADLY DESIGNED INTELLECTUAL PROPERTY SYSTEMS
- Factor 47: LACK OF USER FRIENDLINESS
- Factor 48: POOR INTERFACE DESIGN
- Factor 76: LACK OF INTEROPERABILITY BETWEEN SYSTEMS
- Factor 78: LACK OF OPEN DESIGN INTERFACES

Cluster 11 — CONTENT
- Factor 7: ABSENCE OF SPECIFIC SERVICES ORIENTED TO USER NEEDS
- Factor 12: LACK OF DIGITAL CONTENT IN THE MOTHER LANGUAGE
- Factor 51: DIFFICULTIES TO CHOOSE BETWEEN SERVICE PACKAGES
- Factor 54: FRUSTRATION BECAUSE OF THE LACK OF RELIABILITY OF THE CONTENT
- Factor 67: SPAM
- Factor 68: TECHNOLOGY PUSHED (AND NOT DEMAND-PULLED) SERVICES

#	Votes	Factor
4	12	low level of digital literacy
9	9	existence of social inequalities [low incomes-high costs]
18	9	lack of interest
7	8	absence of specific services oriented to user needs
26	7	fear of new technologies
2	6	lack of infrastructure
11	6	high cost of service
10	5	low educational level
47	5	lack of user friendliness
30	4	inadequate public promotion of its importance
36	4	low individual interest about the content available on broadband
39	4	resistance to learn new practices
16	3	social resistance to pay the costs of broadband technology
19	3	fear of intrusion and risk of falsification of personal data
24	3	lack of user participation in ict design
40	3	technophobia, the fear of technology
45	3	moral panic regarding the internet
48	3	poor interface design
57	3	telecom focusing on 3g, whereas people on wifi
63	3	technological determinism
12	2	lack of digital content in the mother language
15	2	lack of competence towards ict
17	2	the obstacles for the new eastern and central eu members are different from those of the old members
29	2	inability to predict benefits for individuals
32	2	lack of legal framework on broadband issues
33	2	weakness of regulatory implementation of the legal framework
35	2	inadequate government policies on services to the public
41	2	the too big power of technologists
43	2	lack of self confidence in mastering the technology
58	2	non use as a deliberate lifestyle
68	2	technology pushed (and not demand-pulled) services
77	2	other preferences eg. sports, tv, etc
1	1	inadequate definition of universal service
6	1	lack of ease to use
13	1	general negative attitude against computers
25	1	lack of confidence in data security
28	1	low perception of user relevance
44	1	too much time consuming and risk of addiction
46	1	inertia
50	1	lack of software design capacity
52	1	fear of being watched by the big eye
53	1	short-term national political decisions
56	1	not having a computer
60	1	lack of understanding of advantages
62	1	fragility of it systems
67	1	spam
72	1	lack of understanding of the need to define the digital citizens rights
74	1	lack of standardization of quality issues
76	1	lack of interoperability between systems
78	1	lack of open design interfaces

The technique uses the simple mathematical concept of 'If A>B and B>C then we can safely assume A>C,' to minimize the number of combinations needed to examine the influence interrelation between a number of statements in a reasonable amount of time. The fact that we are not dealing with quantities, but with ideas makes it necessary to go deep into the meanings of the statements thus supporting the process of creating a common knowledge base.

Table 3: Prioritisation of Factors. The numbers in the left column correspond to the numbering performed for the coding of the proposed factors (i.e., same as in Table 1). The middle column contains the number of votes each element enjoyed. Elements that have received less than four votes have not been used in subsequent phases. One element received 12 votes, two received 9 votes, one received 8 votes, one received 7, two received 6 votes,

two received 5 votes and three elements received 4 votes each. A total of 12 elements were used to structure the influence map shown in Fig. 1, whereas the remaining elements were not considered further.

After going through all the necessary pair comparisons, a schematic presentation of the "obstacles map" was created automatically by the Cogniscope™ software and projected on the wall. This inter-relationships diagram is given in figure 1. This particular tree has five levels. The items shown at the top of the chart are those with the lowest influence. The ones with the greatest influence or the "deep drivers," as they are usually referred to, are gathered at the bottom of the tree. This method of presenting the results makes the interpretation of the outcome of the participants' observations easy and visual. One should read the map as follows:

> *The deepest drivers are Factors 30 i.e., the inadequate public promotion of its importance and Factor 47, i.e., the lack of user friendliness. These are the obstacles, which must be addressed with priority. Their resolution will significantly help address all other obstacles.*

Fig. 1. Influence tree of obstacles. The way to "read" this map is by using the direction of the arrow: Resolving obstacle A – lower level – significantly enhances the possibility of addressing and resolving obstacle B – higher level. Items at the bottom of the tree must therefore be given higher priority and are usually easier to resolve. Their resolution has the greatest impact. The experts of COST 298 generated this tree during their co-laboratory in Cyprus in September 2006.
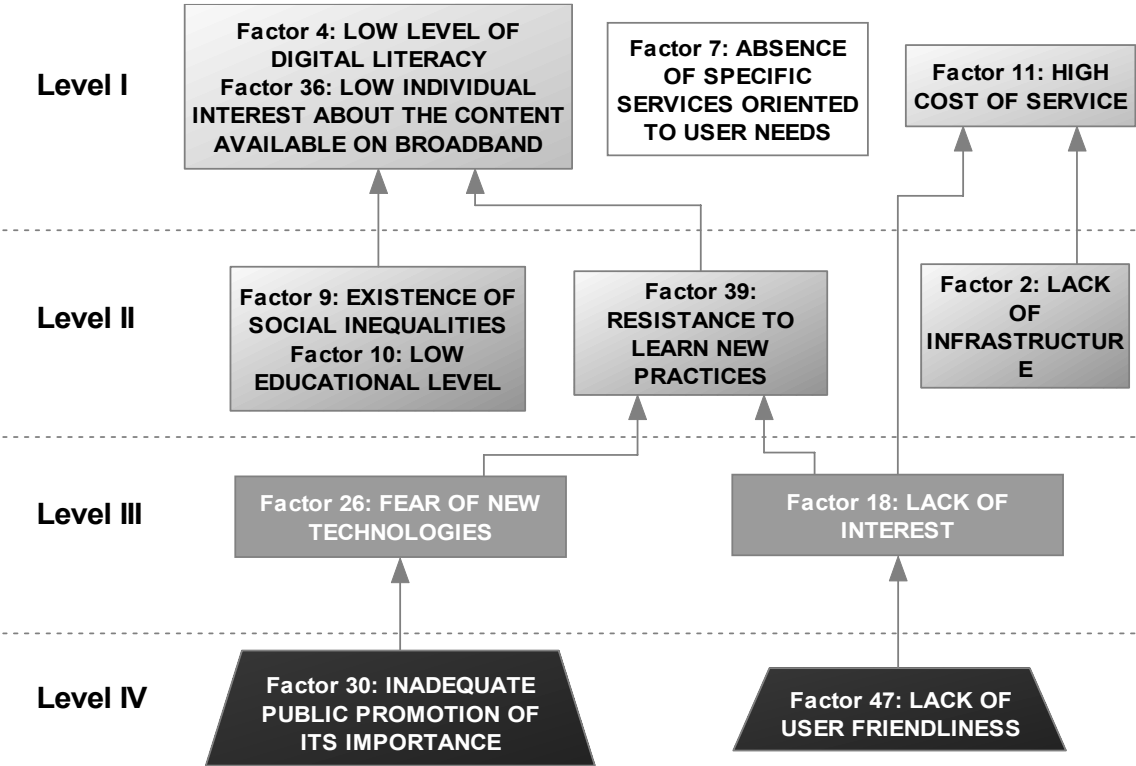
Discussion

According to the collective wisdom of the Cost 298 community, the deep drivers, or the root-causes that prevent the wider public from benefiting from broadband are two:
Factor 30:   The inadequate public promotion of its importance

Factor 47:   The lack of user friendliness

This result helps the Cost 298 community focus its activities towards two directions. One, approach and work more with the designers and developers of new technologies in order to encourage them pay more attention to user friendliness. The second direction involves public bodies, media and decision makers to promote more enthusiastically its importance and benefits. This map is not to be considered as a rigid map. Moreover, the map must be seen as the collective consensus mapped on paper in ways that enable the stakeholders discuss and plan their action. The stakeholders have the right and the possibility to review issues, re-do some of the structuring and place more elements on the map. For example, in some cases it is possible that elements in one of the clusters have not received any votes and are therefore not included in the map. If the group feels that they are still important factors, they may add a few elements in the system and continue the structuring process to place them in their map. The stakeholders remain always in control and they are the owners of their data.

Placement of factors with highest votes in the influence map

The experts in the Cost298 community perceived factors 4, 9, 8, 7 and 26 as the most significant. During the voting process, these factors received 12, 9, 9, 8 and 7 votes respectively. It is interesting to analyse where these factors that were identified as being the most important, were finally placed in the influence tree of obstacles. The instinctive expectation is often be to think that they will prove to be root causes and would therefore be the first issues that need to be addressed. This is clearly not the case: of the five factors that received the most votes, one is in the second layer (factor 9), one is in the third layer (factor 26), while all the rest did not even make it to the tree. This means that during the structuring phase of the SDP, the "collective wisdom" of the experts favoured other factors as having priority to be addressed first. Herein also lies a particular strength and value of this methodology. It yields a structured road map, that none of the individual experts could have foreseen, let alone drawn up, showing the order in which the obstacles need of be tackled in order to address the triggering question.

Table 4. Factors that received the highest votes

Factor	Votes	
4	12	low level of digital literacy
9	9	existence of social inequalities [low incomes-high costs]
18	9	lack of interest
7	8	absence of specific services oriented to user needs
26	7	fear of new technologies

Critical assessment and limitations of the method

An SDP co-laboratory is specifically designed to assist a group of stakeholders to deal with a complex problem in a reasonably limited amount of time (Banathy, 1996; Warfield & Cardenas, 1994). It uses structured democratic dialogue to enable the integration of contributions from individuals with diverse views, backgrounds and perspectives. The process is inclusive and collaborative (for a complete review see Christakis and Bausch, 2006). It has been applied to over 600 complex problems around the globe. According to one of its founders, Dr. Aleco Christakis, the level of success in these co-laboratories was over 90%, therefore securing a very high confidence level. The methodology is, however, bound to fail if either one of its six laws is violated, or if the stakeholders are not truly engaged. Indeed, the first author, working with Dr. Christakis, has recently proposed a new constrain (i.e., the "Law of Requisite Action"), according to which "*the capacity of a community of stakeholders to implement a plan of action effectively depends strongly on the true engagement of the stakeholders in designing it.*" In other words, disregarding the stakeholders is not only unethical, but moreover it guarantees that the plans are bound to fail.

The SDP is scientifically grounded on six laws of cybernetics recognized by the names of their originators. If any of these laws is violated in the process, the results will deteriorate. Ashby's Law of Requisite Variety (Ashby, 1958) calls for appreciation of the diversity of observers (i.e., invite "observers" with diverse views). Miller's Law of Requisite Parsimony (Miller, 1956; Warfield, 1988) emphasizes the fact that humans have cognitive limitations, which need to be considered when dealing with complex multi-dimensional problems. This is secured by the fact that participants are asked to focus on one single idea or one single comparison at a time. Boulding's Law of Requisite Saliency (Boulding, 1966) calls for comparisons of the relative importance across ideas proposed by different people. This is secured through the voting process. Peirce's Law of Requisite Meaning (Turrisi, 1997) says that meaning and wisdom can only be achieved when the participants search for relationships of similarity, priority, influence etc. within the set of ideas. Tsivacou's Law of Requisite Autonomy in Decision (Tsivacou, 1997) guarantees that during the dialogue, the autonomy and authenticity of each person contributing ideas is protected, and distinctions between different ideas are drawn as a method of deepening our understanding of each idea. Finally, Dye's Law of the Requisite Evolution of Observations (Dye et al., 1999) tells us that actual learning occurs during the dialogue as the participants search for influence relationships. The SDP method is designed to fully implement these laws, but if they are compromised, the results are bound to suffer.

In sum, an SDP co-laboratory provides an excellent opportunity for experts, to not only expand their shared understanding of the current *problematique*, but moreover to develop a roadmap for their future work and achieve a consensus as to how to move forward.

Credits

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Exploring And Designing Wireless City Applications
By Way Of Archetype User Research Within A Living Lab

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Abstract

In the paper we demonstrate the process and the outcome of 'archetype user research' for exploring and designing wireless broadband applications in a city environment. This type of research is based on ethnographic research of a number of persons that are each purposefully selected as being an 'archetype' user of a number of broadly defined application ideas. The archetypical character here refers to potentially interesting socio-economic background features and city-related practices. This leads to the identification of dimensions that define the practice of a city visit. In the project being discussed in the paper (ROMAS) these qualitative data are integrated with a quantitative scanning of potential application ideas among different stakeholders. In this way two approaches of ICT user research, diffusion and domestication, are combined. The outcome of this bottom-up investigation is then coupled back to the applications ideas, leading to design suggestions based on what potential users say, do and experience in everyday life situations in the city. This fits in the current evolution to increasingly involving the user in service innovation, especially in the 'fuzzy front end' of the new product development process.

Introduction

An increasing number of services and applications are being developed and marketed within the emerging mobile and wireless environment. Former experiences with unsuccessful mobile and wireless technologies - like WAP and MMS - have already demonstrated that user-oriented approaches to technology design are required. We experience increasingly a reversal order of the value chain, where we need to investigate people's needs and context before or in parallel with the development of new applications. One way of doing so is making use of ethnographic research in the early stages of new product development. A number of ICT companies have already adopted this kind of approach in their innovation processes.[i]

In the academic research on product and system development we are witnessing an evolution towards a more interdisciplinary study of ICT use. Traditionally the latter can be situated in three different domains: Human-Computer Interaction research, social shaping approach and the adoption/ diffusion tradition (Frissen & Pierson, 2004). These three perspectives are beginning to share common approaches and methods. For example the typical HCI perspective of cognitive psychology has broadened its approach with theories from the social arena, like sociology, anthropology and other social sciences (Rogers, 2004; Clemmensen, 2004). Within the social shaping and ethnographic approach different methods of cultural and technological probing are being introduced to gather richer insights (Pierson et al., 2006).

In this paper we report on the experiences of the enrichment of the social shaping perspective, more in particular the domestication school, with the adoption/ diffusion perspective. In this way we interpret the design of technological innovations as a continuous and interdependent process of influence between 'technology push' and user initiatives (De Marez, 2006: 259), as "*two sides of the same innovation coin*" (Boczkowski, 2004: 255).

Secondly, the results gathered from within a diffusionist framework complement the results collected from within a domestication framework, using a particular procedure: archetype user research. Using this procedure we try to make explicit our expectations on the user characteristics in relation to 'taming' the technology to be developed. This delivers a framework to question those assumptions. The latter is done by investigating the everyday life of the people participating in the study based on these criteria. In the end, by using an ethnographic research approach, we find a new - more interpretative grounded - categorisation of the previewed habitualisation of these technologies to be developed.

To illustrate both aspects we first introduce the project ROMAS on which these insights are build. Secondly, we explain our archetype user approach and demonstrate the value of the domestication framework. Next, we illustrate the approach and enrichment from the diffusion framework as applied in the ROMAS project. In this way we want to show how they are indeed two sides of the same coin, taking care of data with their own procedures.

1. Research set-up

The methodological and empirical findings are based on the two-year ROMAS project (Research On Mobile Applications and Services) within the research centre IBBT (Interdisciplinary institute for BroadBand Technology). The paper is based on research in the first phase of the project (September 2006 until February 2007). The overall project objective is to conduct, in the conceptual phase of the development, a user-oriented assessment of (future) wireless applications and services within a large-scale living lab environment from an interdisciplinary approach. The living lab is an 'experimental field' within a socio-technological scope with specific goals and a specific structure, but simultaneously dealing with the uncontrollable dynamics of everyday life. In ROMAS this refers to the i-City living lab in the city of Hasselt (Flanders - Belgium) for studying the users in real life. This environment consists of 600 users, equipped with a mobile device (PDA) and running a city services software platform, which enables a range of dedicated mobile applications. In the ROMAS project versions of the wireless applications are being put to the test of social value, market relevance, legal preconditions, usability and interface requirements as well as quality of experience performances within the i-City living lab.

2. Archetype user research within a domestication framework

The overall goal of the first stage in the ROMAS project was to generate a prospectus of relevant and user-oriented wireless city applications to generate ideas. In order to achieve this from a domestication perspective we worked in an explorative way, based on ethnographic research helping us to anticipate the paths of domestication of these applications, grounding them in the actual everyday city life experiences and practices of inhabitants. The main goal is to identify the situational dimensions that are related to the city life of people - more in particular the practice of a 'city visit' - and the mobile city applications under development. This outcome is taken into account for the creation of personas and scenarios, as an essential input for the subsequent phases of the development process (Jacobs et al, 2007). We focus on

people's practices and explore the implications on future practices of potential mobile city applications.

2.1. The domestication framework

The domestication framework is a central perspective of looking at the meaning and experiences of technologies in the everyday life of users (Haddon, 2007; Silverstone & Haddon, 1996). The concept, originating from anthropology, consumption studies and media studies, starts from the context in which ICTs are experienced.

Domesticating refers to the integration of technology in the daily patterns, structures and values of users. It also refers to the activity of domesticating or taming wild animals in order to make it a pet, a metaphor for absorbing a strange technology into the context of the everyday life. This kind of research is essentially based on qualitative research methods since the aim is gaining insights in the contextualised behaviour and needs of users, as well as in the interest for and the meaning of new devices and applications to people (Haddon, 2007; Van den Broeck et al, 2006). Within this approach ICT innovation is considered as a social process, because it helps to understand how social structures and power relations are being reflected in individuals and households' ICT use.

This process of incorporating the technology in the normal structures of everyday life is not a one-way stream. The innovation is tailored by the user to fit in his or her daily life, but the user and his environment change as well (Punie, 2000; Frissen, 2004). Therefore, the domestication perspective is not only about how users or potential users behave in relation to the technology and vice versa, but also about how people deal with ICT, which can also be an articulation of existing practices, conflicts and meanings within the user community (Pierson, 2005). Central is the 'mutual shaping' or mutual dependency between technology and social change, whereby technology influences the everyday life and everyday use transforms the technology. Or to put it differently: the domestication is anticipated in design; while at the same time the design is completed in domestication (Silverstone & Haddon, 1996).

Within this domestication approach we focus on an ethnographic research approach, where ethnography refers to a set of methods that aims at perceiving the world from a perspective of the people one is seeking to understand (*'verstehen'*). More in particular we aim at doing design ethnography in very early stages of the new product development process (Crabtree, 2002; Haddon, 2001).

2.2. Archetype user research: selection of archetypes

For doing this kind of an explorative exercise we have set up an 'archetype user research' process. Central in this procedure is making the pre-categorisations from the literature and former studies explicit and recognisable as selection criteria in real people (sampling). Those pre-categorisations are questioned during the exploration of the practices of the people selected by these criteria, giving room for new categorisations. By using an interpretative approach with ethnographic methods, the categories are then grounded in the everyday experiences of people.

The two main steps for conducting this kind of research are the selection of archetypes based on a threefold purposeful sampling technique (maximum, phenomenal and theoretical variation) and the compilation of the archetype panel. These different steps will be illustrated.

For the ROMAS project we first identified eight archetype users for wireless city applications. The number and identification of these archetypes is based on a specific purposeful sampling technique (Sandelowski, 1995). To organise the purposeful sampling, we first look at a 'maximum variation' using typical central social characteristics for explaining social change with regard to communication and media use in everyday life (age, gender, employment, life stages,...). In addition we ensure 'phenomenal variation', which refers to the characteristics that are significant for the application setting to be investigated.

An input for the phenomenal variation could have been clusters of all applications that are of interest for potential users (infra, diffusion approach). However due to the structure of the project we had to choose for a comparison a posteriori of our insights. In complement, we look to what extent daily practices, experiences and routines of people selected on other phenomenal dimensions can be involved and we try to match these insights with the overview of all (high) potential applications, identified by diffusion research approach.

To determine our phenomenal variation within the project constraints, we start from the supply side choice of applications within the project: a mobile local news application and a mobile city guide application, both with a photo sharing functionality. In order to direct our phenomenal variation in the selection of archetypes we translated the affordances[ii] of the first two applications into two more abstract characteristics. Those characteristics referred on the one hand to searching and finding news and information linked to the city and on the other hand to the different ways inhabitants (and not so much tourists) move around in the city. By focussing on inhabitants and not on tourists we could expect a higher variation in the acquaintance with the city. Moreover the different gradations of being acquainted with the city determine the need for more or less information during the inner-city movement. Although the scope of this research is explorative, in this way a certain amount of attention was given to the applications under development while selecting.

Based on the phenomenal variation, eight archetypes profiles are identified and withheld, which all have strong connections with the mid-sized Belgian city of Hasselt: retired inhabitant, pupil, city guide, home nurse, shopper, student living in a student house in the city, working man, working woman with children. They are interested in different sorts and in a different degree of city news and information, and they all move around in diverse ways throughout the city. The selected archetypes were distributed over the different quadrants in a matrix (Figure 1). The research process was subdivided in three iterative phases in order to strive for 'theoretical variation'. This entails that the final selection of the (last) archetype users is based on (in between) findings. In this way preliminary findings feed and steer the research, which means fine-tuning the selection of archetypes for enabling theoretical variation as well as adjusting the research methods. After the second iteration there was a need for an adjustment in the selection of archetypes: the archetype of 'pupil' was replaced by an archetype of a working man who, because of his job, needs to keep informed about city news (for example a practitioner of a political post i.e. a 'politician'). This adjustment in the selection was directly related to an application under development in the project: mobile news. To explore the integration of this application in everyday life it was necessary to incorporate an archetype that frequently and actively seeks for rich city information.

Fig. 1. Matrix of archetypes
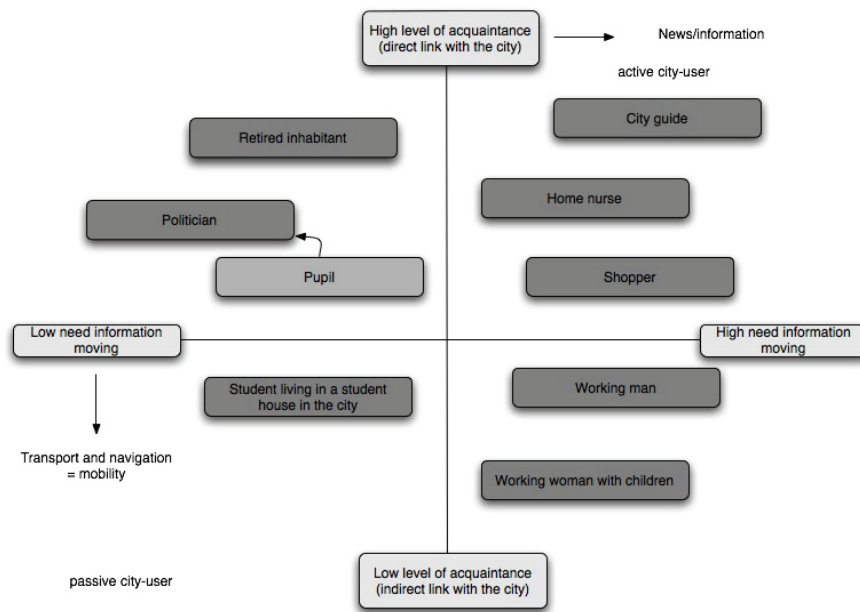
After the selection, a representative of each archetype was recruited. He or she was the subject of a field study, based on in-depth interviews and complementary ethnographic methods (observation, diary method, cultural probes and photo elicitation) in order to collect as much contextual information as possible. The goal was to identify the applications and functions within the digital city environment, which fit the most in the context of the archetype's everyday life environment. The latter can - dependent on the kind of application - refer to daily activities like listening to music, contacting local government, contacting friends in their online community, looking for the latest local news items etc. This analysis of the social context of the archetype users will however focus on his or her mobile behaviour, in order to identify instances when wireless applications are meaningful.

2.3. Archetype user research: practices of inhabitants

The research generated a 'thick' description of how the practice of a 'city visit' takes form, among the different archetype users. In the results we first identified the kinds of activities that typically take place in relation to the common visit to Hasselt by the archetype users. Next we took a closer look at the ways the city is visited during these activities by inhabitants and the dimensions that configure the different experiences. Finally we find out the reasons for doing different activities in the city. In this first part of the ROMAS project, the archetype users are not part of the test panel that the i-City living lab has set up, because the focus is here on their ordinary behaviour and experiences, without any specific technological issues at stake. Nevertheless it is important we involve inhabitants that live in the space where the envisioned wireless living lab applications are available for testing. In the second phase of the ROMAS project, we will explicitly involve test panel users that have some experience with the wireless applications being offered.

We found that a city visit can be the subject of a broad variety of activities, yet experienced in a diverse ways. The city is experienced as an *in-between phase*, since a great amount of activities occur when a person is moving or on the go (Paulus, Anderson & Townsend, 2004).

Throughout the analysis it became clear that a city is being used for relaxing purposes[iii] as well as utilitarian activities.[iv] However a fixed classification cannot be made since activities are often hybrid: a utilitarian activity can be at the same time relaxing or vice versa.[v] Based on the research findings it became clear that utilitarian activities frequently occur while being on the move, since one wants to finish those activities as quickly as possible. Nevertheless the city is also a place where people go to perform an activity on a fixed location. Those kinds of activities are referred as nomadic ones.

The findings also show that the experience of activities during the city visit also greatly varies: the rhythm of a city visitor is strongly dependent on several dimensions, which determine the actual experience. The two most prominent dimensions in the results are time and place. The place refers to the familiarity with a specific locality, to what is perceived as the entry and the borders of the city and on what places, buildings or monuments are seen as major symbolic reference points. In this view our archetype user Myriam refers to a specific monument in the city of Hasselt that is seen as an important reference point.

"It's been standing there for several years. When only the rocks were placed there, I found it more beautiful. Afterwards they've put the horses on top. No, not especially beautiful. But it's indeed recognizable. We're always saying to people: there where the horses are standing on the rocks. And then it's like: oh yes there" (Myriam, Home nurse) [vi]

Concerning the borders of the city, they are also differently perceived by the archetypes. The figure below illustrates how our archetype user Rita, the shopper, sees the city as the small city centre. Her entrance to the city is located on the side of the city where she lives. Contrary, the retired inhabitant Theo perceives the city much bigger; his borders are not limited to the city centre. His entrance tot the city is located at a different side, since he is living in that area and his habitual route starts there.

Fig 2. Entrance and borders of the city according to Rita (shopper) and Theo (retired inhabitant)
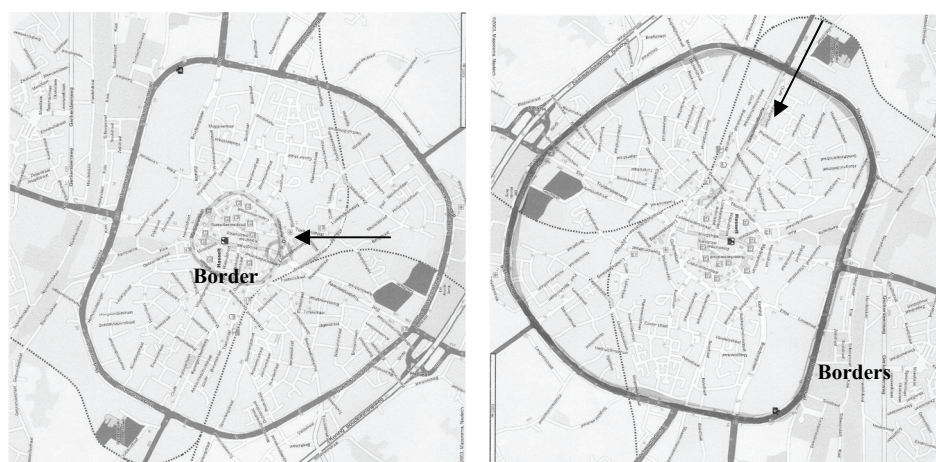
Yet also the time dimension heavily influences the practice of the city visit. Having plenty of time gives of course a chance to be more involved with different activities. If time is more restricted, the archetype users keep a closer time management and try to choose more rationally their means of (public) transport. Another dimension is preparing or doing a city visit in a structured or a non-structured way. When, how and with what kind of sources the preparation for a city visit is done, also has an important influence. The latter is linked to

official sources of information versus more informal sources like social contacts. In addition whether or not people are alone or together with family, friends or other people frames the way the city is visited. Finally routines in place or time determine heavily the way inhabitants interact with the city. The quote below by David describes how certain routines take control during a city visit. He always visits the same restaurant when coming to the city: he associates eating out with a specific location.

"No when I'm coming to the city for eating out, than it's usually the same restaurant."
(David,
Working man)

The way an activity is experienced is often difficult to categorise given the interdependency between several dimensions. Each dimension is linked to each other and influences the actual experience. The different dimensions can change throughout the visit and thus transform the city visit, which means that city visits are divers and complex situations wherein constant variation and transformation takes place. One needs also to take into account the changing character of people: they act differently in various situations. A city visit can therefore be described as a flow or a series of activities. People move throughout the city with certain rhythms, which can change from day to day as well as from activity to activity. The city forms a space where al those activities and the way they are experience continuously change, based on different dimensions. This means that the archetypes are not stereotypes or fixed market segments that constantly behave in the same way.

Based on these findings a dynamic typology of city visitors has been compiled. It is dynamic because it is not a fixed classification since people can take different roles during a city visit, based on the aforementioned dimensions. The different roles are positioned on two axes: one refers to kind of information source (official versus informal) and to what extent the city visit is structured in time and place. This leads to the following figure.

Fig. 3.Typology of roles in the practice of a city visit
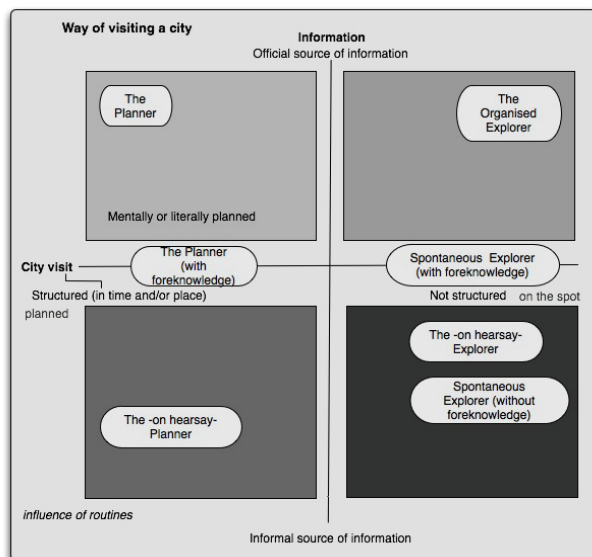
2.4. Archetype user research: recommendations for technology design
Finally in our analyses we also identified the needs and reasons for doing different activities and taking different roles linked to various dimensions. This mainly refers to need for (utilitarian) information, for fun and relaxation, for sociality and for efficiency and

convenience. These results, together with the former findings, were integrated in a number of general technology design recommendations.

It became clear that people are often on the go for utilitarian activities they want to end as quickly as possible. This is an area wherein mobile services and applications can offer a contribution. Clearly it is important to take into account the type of activity and situation since some utilitarian activities are better suited for the use of a desktop computer, like for instance online banking. The reason that an application can be used mobile is dependent of several of those dimensions.

A city is also a place where people spend a lot of time. However the literature states that there is often little space for meaningful social contacts, the so-called *Third places* (Oldenburg & Brisset, 1982). This was also noticeable during the research and therefore a stimulation of social contacts can become an important and social function of mobile devices. The perception of a city is often closely connected with busyness, whereby encountering trusted people is perceived difficult or seen as a threshold for making appointments. Mobile applications and services that simplify this process can find a positive approval by certain users. This is not necessary valid for everyone: it depends if the situation asks for an online or real life social experience. Since the dimension of place has an important function in a city it seems recommendable to develop mobile services as a means for real life encounters in specific kinds of situations.

A city is also an important relaxation area which offers room for several relaxing activities or is on its own a way of leisure. The potential of mobile applications lies in the fact that they can inform people and thus help in making the activity as relaxing as possible, for instance concerning navigation and transport. Information is an important element in the experience of a city. Keeping people posted of relevant information, for instance contextualised information, can also contribute to a better experience of the city or a more efficient organisation of everyday life.

Although every person has different needs, mobile city applications can especially offer an added value in the field of utilitarian activities and the practical organisation of everyday life; for instance a parking application, bus navigation application, friend finder, best deal finder, city information application (possibly with integration of user generated content), event application (mobile programme guide).

3. Two sides of the same coin: enrichment from a diffusionist perspective

To date diffusion and domestication perspectives are too much considered as opposite and competing perspectives (Boczkowski, 2004: 255). With diffusionism as the more quantitative research tradition with the focus on acceptance and adoption decisions, and the domestication as the more qualitative research tradition with the focus on the use and appropriation of technologies, both traditions are clearly complementary (Punie, 2000). After explaining the archetype user research in the previous section, we now look at the enrichment from an explorative study within the adoption and diffusion tradition as applied within the ROMAS project. We first give a brief introductory overview of this theoretical perspective.

3.1 Diffusion perspective
According to this framework the diffusion of innovations in a social system always follows a bell-shaped normal distribution, in which there can be successively distinguished between innovators (2,5%), early adopters (13,5%), early majority (34%), late majority (34%) and laggards (Rogers, 2003: 298). These segments are distinguished on dimensions of time-based innovativeness, reflecting the timing of adoption decisions of the members of a social system (Rogers, 2003: 297; Trujilo, 2003: 2).

A person's innovativeness or its 'degree to which an (s)he is relatively earlier in adopting an innovation than other members of the social system' (Rogers, 1983: 22) is assumed to be determined by the perception of the following set of innovation characteristics: (1) **Relative Advantage** or the degree to which an innovation is perceived as better than the successors or alternatives (e.g. Rogers, 1983: 3); (2) **Complexity** or the degree to which an innovation is perceived as relatively difficult to understand and use' (e.g. Rogers, 2003: 266); (3) **Compatibility** or the degree up to which the innovation is perceived to be compatible with a person's lifestyle and technologies (e.g. Lin, 2003: 354) ;(4) **Trialability** or the degree to which an innovation may be experimented with on a limited basis' (e.g. Rogers, 2003: 266); (5) **Observability** or the degree to which the results of an innovation are visible to others (e.g. Rogers, 2003: 266).

During the past decades, the theory and its assumptions served as a valuable basis for user-centric research purposes in multiple studies. In some cases the typical innovator and early adopter profiles are used to select to the so-called 'lead users', in other cases the assumptions on adopter profiles, segment sizes and determining perceptions of product characteristics are used to detect the different adopter segments in order to investigate their needs and wants (e.g. innovativeness scales by Goldsmith & Hofacker, 1991; Parasuraman & Colby, 2001 or Moore & Benbasat, 1991).

3.2. Enriched by the diffusion perspective: broadening the set of potential mobile city applications

From the outset of this i-City Living Lab environment, several mobile city application(s) (ideas) were already developed and implemented (e.g. mobile news portal, mobile city guide,...). Each of these applications is integrated in our study, but to ensure the user-centric focus of our research this 'supply-side driven pallet of applications' could not be the solely starting point. Since engineering and development departments are often susceptible to 'field of dreams thinking' (Baldwin, Stevens McVoy, Steinfield, 1996: 190) or the 'if we build it, they will come'-virus (Dholakia, Mundorf, Dholakia, 1996: 3; Lennstrand, 1998a: 3) it would have been naïve to assume that each of the developed applications is a priori a 'high potential' application, and that there would not be any potential left for other (overlooked) mobile city applications.

Hence, we started with a user-based scan or listing of possible mobile city application(s) (ideas) by means of qualitative focus group research and supply side interviews with (potential) application developers.

With diffusion theory and the assumptions on perceived product characteristics as a framework, 18 consumers were recruited for focus group research on mobile city applications. A first focus group consisted of 8 consumers (non i-City panel) familiar with mobile technology and applications. The second focus group consisted of 10 respondents from the i-City test panel (already familiar with the PDA's and testing the applications on the mobile city network). This selection aimed to overcome the problem of lack of familiarity with future technologies. Due to this lack and the lack of imaginative capacity of consumers, it is often very difficult to do user research on the identification of opportunities for future technologies. Referring to diffusionism's 'perceived innovation characteristics' this familiarity also overcomes the problem of a high-perceived complexity or low trialability. Which made the focus groups an ideal starting point for a reliable detection of a relative advantage (e.g. added value of mobile news consumption compared to the way one is consuming news today) or compatibility (e.g. compatible applications to their current news consumption, usage of navigation technology or lifestyle patterns and interests) for certain applications. As 'teasers' or probes for this application detection, and to avoid remaining

stuck around specific types of applications, we constructed three fictional users for a hypothetical framework of 'time spending dimensions[vii]' in a mobile city context was developed. The first fictional user is Dimitri, a 27-year old manufacturer, playing volleyball, single, game-addict, …. The second one was Patricia, a 40 year-old mother of two young children, working full-time, commuting between Hasselt and Brussels, and with a passion for classical music and cooking. The third fictional user, Gerard, 57 year old active senior, diabetic, often taking his wife for a long walk, and with a passion for wine, painting and musea.

Starting from the time spending patterns of these three invented persons, the respondents were asked to think about their own context and to suggest (wild) ideas of possible mobile city applications that would have a relative advantage to them and the way they do certain things to date. The resulting demand-side based list of application ideas was then presented to potential suppliers (supply-side) of such applications (e.g. the idea of mobile video surveillance was discussed with a security company (G4Securicor), just as school related applications were discussed with Hasselt's High School PHL) in order to check for feasibility, and the degree up to which these ideas were already existing or 'in development'. In the end, the combination of these focus groups and interviews resulted in a long list of 80 possible mobile broadband city applications.

3.3 Enriched by the diffusion perspective: Clustering applications on potential for test-users mobile city platform

However, an overview of possible applications can evidently only be a first step [viii]. The sole purpose of it was to avoid limiting our scope to a strictly supply-side driven view on 'mobile city applications'. A next step should help to tell something about the potential of these applications or mobile city applications in general.

Again, a reliable investigation or forecast of such potential is not evident due to the lack of familiarity, trialability and the limited imaginative capacities of the average user. In the context of the ROMAS project however this problem is overcome, since the 600 test users are already working and experimenting with the PDA's and mobile city applications in the i-City Living Lab setting (cf. supra). In order to investigate the potential of the detected application ideas, these 'test users' were presented an online survey in which they were questioned about their interest in the applications and the perceived relative advantage to their current way of life (5 point scales + open question in which respondents were asked to describe their current way of doing things and the situation in which the mobile application could have an added value). 312 respondents completed the questionnaire. For 64 of the 80 applications the correlations in interest and perceived relative advantage were strong enough to summarize or group them into 13 factors or 'application clusters' (Principal Component Analysis, 28 iterations, R² 67,5% + cronbach alpha > 0.65 and item-total correlations > 0.40 for all factors). In the table 1 we see these 13 application clusters and 16 remaining single applications ranked by their average interest scores (average score on 5 pt scale 1: not interesting at all – 5: very interesting)[ix].

Clearly, not all applications are equally appealing. The average interest ranking learned that the most important are not the most innovative applications, but ones enabling time saving and ensuring and improving life quality. Of the 13 application clusters the most important 'main lines' are the clusters 'Payment & money affairs' and 'Help with serious health issues'. Of the separate applications the 'indication of parking spaces and availability', 'public transport schedules' or 'practical and administrative information for students' seemed to be

perceived as most interesting mobile city applications. But these are still conclusions on a more general sample level.

Since is it is likely that not all applications are equally appealing to every single respondent of this sample, we thought it would be interesting to investigate up to which degree the correlations in interest and perceived relative advantage allowed to distinguish between a number of internal homogeneous and external heterogeneous user clusters. Despite the skewed nature of our sample (test panel, more than average interested in technology and mobile applications), K-Means clustering allowed us to detect six user clusters.[x]

Table 1. Clustering applications by using Principal Component analysis

Application (cluster)	Average Interest *	User clusters					
		1	2	3	4	5	6
Very appealing							
Indication of parking spaces & availability	4.23 / 5	++	++	+++	+++	+	+++
Practical & administrative information for students	4.20 / 5	+	+++	+++	+++	+	+++
Public transport schedules	4.11 / 5	+	++	+++	+++	+	+++
Payment & money affairs (mobile payment, mobile banking, parking ticket on mobile, e-ticket, automated tolling)	4.01 / 5	-	++	-	++	+++	+++
Traffic jam alerts	4.01 /5	+	++	-	+	+	+++
Help with serious health issues (blind aid, crib death alarm)	3.99 / 5	-	++	--	+	+	+++
'Independent living support'	3.93 / 5	-	++	++	+	-	+++
Free mobile surfing	3.92 / 5	--	+	+++	++	+	+++
Find shops	3.92 / 5	-	++	-	++	-	+++
Tourist information (museum tour, tourist portal, event information, i-map, reader)	3.87 / 5	--	+	+++	++	+	+++
Moderately appealing							
Mobile search	3.78 / 5	-	+	++	+	-	+++
Doing 'usual, daily tasks' more effective by mobile (mobile domotica, smart domotica, smalrt machines on mobile, restaurant order & payment, e-meal, business card exchange, shared agenda, mail/agenda on mobile)	3.73 / 5	--	+	-	+	-	+++
Consultation of available places in cinema	3.72 / 5	-	+	-	+	-	+++
More effective health care (prescriptions, medication prescriptions & schedules, health monitoring, e-care)	3.68 / 5	--	++	--	-	-	+++
Doing 'unusual tasks' more effective by mobile (accident reporting, manual download, school agenda & report, monitoring organisation aid, identity & medical info on mobile)	3.68 / 5	-	+	--	-	-	+++
Download presentations or other information	3.65 / 5	-	+	--	+	-	++
Administration (heartbeat info, mobile admin., dentist appointment, CV on mobile)	3.63 / 5	--	+	--	-	-	+++
Multimedia (note taking, mobile video calling, photo service)	3.57 / 5	-	+	+	+	-	++
Movie choice	3.54 / 5	-	-	--	+	--	++
Mobile help for studies (& work) (mobile learning, study mentor, study choice guide, mobile academy, mobile terminal)	3.43 / 5	--	+	--	-	--	++
Mobile 'high tech' (video surveillance, webcam, i-nanny, finding lost elderly, mobile auction, scanning information)	3.43 / 5	--	+	--	-	--	++
Keeping up hiking & cycling routes	3.42 / 5	--	+	--	+	-	++
Not appealing							
Food & Shop Help (eQuick recipes, meal help, receipt download, making appetizers, shopper, shop alert, restaurant finder)	3.23 / 5	--	-	--	-	--	++
Mobile news & information (mobile news, mobile feed reader, mobile information services, mobile blog)	3.11 / 5	--	-	++	-	--	+
Spare time suggestions	3.10 / 5	--	-	--	-	+	+
Mobile social contacts & Friends (mobile chat, finding people with same interest, mobile flirt, mobile dating, smart mobile messanger, MapQuest find me)	2.94 / 5	--	--	--	+	--	+
Carpooling system	2.93 / 5	--	-	--	-	--	+
Location based advertising	2.78 / 5	--	-	--	-	--	+
Sport events on mobile	2.74 / 5	--	--	--	-	--	-

*Legend: 1: Not interesting at all – 5: Very Interesting

3. Conclusion: coming together

Although the two different approaches (diffusion versus domestication) guided the research and two different sets of methods were used, similar findings related with mobile city applications were encountered. In the domestication approach we found that utilitarian activities frequently occur while being on the move, and that people want finish them as

quickly as possible. This is in parallel with the finding of the diffusion approach that time saving applications are very wanted. These kinds of parallels illustrate the potential complementarities between the two different approaches. Combining both in one project, offers a more complete picture of usage patterns of mobile city applications.

Because of these complementarities, it would be useful to apply them sequential. In that way the diffusion approach could explore the most likely application ideas. The latter could then serve as the basis for the phenomenal variation in selecting between the adequate archetype users.

We found that archetype user research gives the opportunity to 'tune in' to a practice-oriented categorisation to start the ethnographic research on from within a domestication perspective. In the same sense that the Jungian archetypes are innate and primitive prototypes for ideas, our archetypes start of as primal categories of people. The purposeful selection of the latter categories is based on a priori assumptions by the researcher about relevant socio-demographic characteristics (maximum variation) and about the attributes that seem to have relevance in relation to the applications being developed (phenomenal variation). Also during the iterative cycle of data collection and interpretation, adjustments can be made in the selection of archetypes (theoretical variation). After selecting the (primitive) archetypes, the archetypical possibilities are refined with additional dimensions based on related literature. Making explicit the researcher's underlying assumptions is one of the main elements of added value of the archetype user approach. Subsequently, it is necessary to involve representatives of the identified archetypes in a multi-methodological research plan, e.g. ethnographic research, to reach a higher degree of sophistication. The data collection of real life behaviour and practices enable grounding in the field and by this a re-adjustment of the initial primitive categorisation.

By using archetype user research we were able to get grip on the conceptual phase of the development of wireless city applications. With this we could give essential input for the following phases of testing, experimenting and evaluating applications within the development process, based on social requirements and user experiences.

Also diffusion theory can be again a valuable framework again for some of these phases. One of them is the evaluation of applications in terms of forecasting adoption potential or the size of its potential innovator, early adopter, majority and laggard segments.

In conclusion, we may refer to Bockzkowski (2004) again. By means of the conducted research in the context of the IBBT-ROMAS case, we hope to have contributed in the search and illustration of how social shaping/domestication and diffusion can indeed be two intimately tied sides of the same innovation coin.

Acknowledgement

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[i] Well-known examples of companies are Philips, Microsoft, Intel, Google, Motorola or Nokia. One of the meetings where anthropologists and social scientists involved in this kind of innovation strategic research and development gather is the yearly Ethnographic Practices in Industry Conference (EPIC).

[ii] Affordances are defined as the combination of 'perceived and actual properties of the thing - primarily those fundamental properties that determine just how that thing could possibly be used.' (Norman, 1988: 95). A term borrowed from Gibson's ecological theory of perception (1977).

ⁱⁱⁱ E.g. Window shopping, going out, dining in a restaurant,…

^{iv} E.g. Shopping for food, doing payments at the bank, bringing in laundry,…

^v E.g. Shopping at the market, bringing books back to the library and reading a magazine there,…

^{vi} The quotes are from the original Dutch transcriptions translated to English.

^{vii} Around 8 main domains (social participation, household, study, work, transport, spare time, health, sleep) and several sub domains

^{viii} It may be valuable starting point for further diffusion-based research, but also for domestication based research it may be of a certain value: e.g. as an input for the phenomenal variation in the archetype research.

^{ix} The factors are marked by the label 'Factor' between brackets and an enumeration of the application numbers (cf. table supra) of the applications being member of that factor.

^x 1 - The out of (mobile) potentials: This segment contains 19 respondents (6,6% of the sample) for which hardly any of the 80 applications has potential. This group is characterised by a dual profile. On the one hand we find a group of students with a high school degree, younger than 25 years old, not married and still living with their parents. On the other hand, this cluster consists of a group of (female) users between 45 and 54 years old, who are married and having children. We can consider both groups as laggards when it comes to the adoption of mobile city concepts. The only application they have a 'special interest' in is 'indication of parking spaces and availability'.

2 - Global interest I: Organisation & Health: As a first of two 'global interest' clusters, this segment has a special interest in applications which can be useful in an organisational and working context or in a health context. It represents 28% (81 respondents) of the sample. Compared to the other clusters, its members are between 35 and 54 years with a family life (married with children). Because both parents have a job and a rather busy lifestyle they are interested in applications that can help them organise their life by finding shops, more effective health care, making appetizers… In this type of applications they perceive a lot of potential added value.

3 - Specific interest I: Information junkies: This clusters contains only 3 members with a very interesting profile. These people have an outspoken interest in information and news related applications. Due to the small size of the cluster, no generalisable analysis was conducted for this cluster.

4 - Global interest II: Leisure: The members of the second 'global interest' cluster are most interested in applications that can be used during leisure time. The cluster has a young profile since there is an overrepresentation of (male) respondents younger than 25, students, not married and still living with their parents. This cluster contains 20,1% of the sample or 58 respondents. Some of the most interesting applications for this cluster are free mobile surfing, movie choice, keeping up hiking & cycling routes… They also perceive some added value in applications as mobile dating, note taking, find shops, tourist portals, finding people with the same interests…

5 - Specific interest II: Payments: The 35 members (12,1%) of this cluster are mainly interested in 'payment' related applications. More than the rest of the sample they are married, higher educated, between 35 and 44, and living in a busy household with children. This cluster is mostly interested in applications concerning money and payment affairs but also perceives some added value in rather practical applications like public transport schedules, smart machines on mobile…

6 - Mobile innovators: This cluster contains 93 respondents or 32,2% of the sample. This is a cluster of people to which practically all mobile application ideas are very appealing. Most of the cluster members are younger than 34 years old and have a fulltime job, but do not have a family of their own yet.

Using Video To Support Co-Design Of Information And Communication Technologies

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Abstract

In this text, we explore the possibilities video affords for co-design activities in the case of information and communication technologies. We present an overview of the current approaches and a categorization of the approaches of using video in design and research into four main strands: video ethnography, video recording of experiments, design videography and professional video production. Through case examples of videos done in our research group over the years, we discuss three potential video genres that suit the needs of co-design. After that suggest five considerations on what should be taken into account when using video in co-design. Finally we conclude by considering potential future directions for the use of video in design and research.

Introduction

Video is becoming an established tool and material in the research and design of interactive systems and ICTs. A large and diverse body of research is available, which accounts how video has been used to inform and support particularly design processes that follow the principles of user-centered and participatory design. The previous research shows that there is much potential in embracing audiovisual media as a way of conveying the lessons learned from contextual inquiry and user studies to developers and other stakeholders in the process, but also as a medium to construct and process design ideas not only inside the team but also with the other stakeholders of the process, including users. In this paper we extend these insights by examining the possibilities and challenges of using video as *part* of co-design activities.

By co-design, we understand a collaborative design approach that entails *strategies for active participation of various stakeholders* building on the tradition of participatory and user centered design approaches (Schuler Namioka 1993). Co-design strives not only to look at the position of users during the design process, but also the producers, designers and researchers (Botero et al. 2003). Second, co-design attempts to recognize *use situations as sites of design* in their own right (Fischer 2003). The products need to have co-designable qualities and their *designs* need to be aware of the systemic issues in the larger ICT ecosystem so that their collaborative evolution can continue further away from those first involved (Kommonen 1999, 2003).

Current Approaches In Using Video In Design And Research

We have categorized in a basic fashion, how video is most often used in design and research processes (Table 1.). The categorization of these approaches is based on the disciplines of the

people involved in the video production and the different uses of the video artifacts and concerns that these disciplines bring to the process, because these reflect the ways how and when video is applied into the design process.

Table 1. An overview of four approaches of producing and applying video in design and research processes.

	Video ethnography	*Video recording of experiments*	*Design videography*	*Professional video production*
Examples of artifacts	Observational videos from the design context	Instances of usability problems and issues, documentation of use situations	Video prototypes, sketches and scenarios, design fictions, contextual inquiry videos	Pitching videos, reportages, documentaries
Representation in the video material	"Hard" data from the potential design context	Ways how users use a product and how the product behaves in a controlled test setting	A use situation is constructed with a technology product or some features	Coherent and compact representations of technology and the context
Ways of using the video material	To influence and evaluate design implications and to identify and extract potential design drivers	As data to support usability analysis of products, as evidence to support claims in making feature decisions	To speculate and communicate design ideas, product features and practices	To convey a clear and unambiguous message across organizational and disciplinary boundaries
Production formats and genres	Raw video material from the design context	Recordings of test situations	Acted- and crafted-out videos, inspiration videos	Presentation videos, documentary videos
Disciplines involved	Anthropology, sociology, social psychology	Usability, ergonomics, cognitive science, experimental psychology	Industrial and product design, interaction design, computer science	Disciplines of professional video production, like directing, acting, writing and editing.

Video ethnography

Use of video ethnography is influenced by the research tradition of anthropology and ethnographic research methods. People who contribute to the creation of these videos are often educated in anthropology or some other tradition of social science. Ethnographic uses of video are about capturing evidence and observational videos from the site of the design context. These videos are then moved into the site of research and design, to the office or the research laboratory. Video ethnography treats video as hard data, which is undisputed evidence and as close to reality as possible (Buur et al. 2000a).

One of the first articulations of the ethnographic uses of video in relationship to the design of interactive technologies can be seen in the work of social scientists in the Interaction Analysis Laboratory at Xerox Parc at the end of the 80's (Suchman et.al 1991). The ways of working and methodologies were then developed further with contributions from the Human Computer Interaction (HCI) research community (Tatar 1989) and Computer Supported Collaborative Work (CSCW) research community. Contemporary research reports, for example, Faulkner (2007) presents a clearly strategic approaches of using ethnographic video to present accountable, for example, to make clear and visible the difficulties people have in operating consumer technologies and personal computers.

Video recording of experiments

Using video to record test situations as part of usability studies or record real-world use situations for further task- or goal-analysis, is influenced heavily by the traditions of experimental and cognitive psychology. Central to these activities is that the recording situations are mostly constructed, controlled and planned in advance. The uses of video are not concentrated in reconstructing reality but more assuring correct and detailed documentation to support specific analysis and construction of usability claims (Jordan 1998). In professional design practice this might be the most common use for video material and production that exists.

Design videography

Design videography is by its definition practiced by the people inside the design organization during a design process. It includes the light-weight, pragmatic and resource effective creation of video prototypes, sketches, scenarios and design fictions. These are video artifacts which are created by individual designers or the whole design team to fuel the design process, to increase speculation on technology features and the possible forms the applications might take or the impact the technology might have on the life of the users. In design videography, video material and the production activities function not only as content which can be analyzed analyze but as design inspiration and evaluation (Buur 2000b), designers and users can create collaboratively video scenarios to create shared understanding (Ylirisku 2001) and through materializing the design possibilities and watching them repetitively, evaluate the designs (Mackay et al 2000; Binder 1999). In design videography, video is considered to be a full-fledged *design material.*

Professional video production

In some cases, design and research projects employ people who are specialists in communicating with audiovisual media. These people have a background and expertise in professional video production. The purpose of involving media professionals in this context is to be able to communicate something in a very compact and concise form. These videos construct new visions of technology in a high-end video scenario or a pitch video, which are created to communicate and 'sell' the idea of the product or the hypothetical product, before any technology development has taken place. They are shown to audiences who typically are not part of the design and development process and thus don't necessarily have the expert knowledge to comprehensively understand the design choices made in the development of interactive technology products. Classic videos of this genre are the Apple Knowledge Navigator (Apple 1987) and StarFire (Tognazzini 1994) video scenarios, which were very influential in presenting technology visions and pitching potential product ideas to their viewers.

Another case of employing media professionals, are those which deploy professional documentary film-makers to create more concise and edited video documentaries and reportages from the design context. These videos, as opposed to the pragmatic, quick and dirty solutions of of design videography, focus heavily on narrative conventions, cinematic language and techniques, careful planning of the shooting, story angles, efficiency of production, ability of thinking in genres, familiarity with conventions, ability to condense and summarize (Strickland 2000; Raijmakers et. al 2006). This way they can provide impressive

video material which is less likely to be misunderstood than those created by designers or video ethnographers.

Summary of the four approaches

Video is a medium that captures and represents flexible, efficiently and tangibly activities in time and space. These qualities makes it well suited to research the context and possible future constructions and designs of interactive technologies and media. From the examples and the disciplines involved, we can see that video as a medium, has the potential to connect many disciplines. Successfull videos are linear, structured presentations of some complex topic, which can be used to communicate across disciplinary and organizational boundaries and increase the participation of users.

When examining Table 1. and looking at the examples, the potential uses of video for the purpose of co-design cross over multiple categories. Buur (2000b) discusses Video Card game, an experimental media environment created to fuel design conversation and collaboration. It is a combination of video ethnography and the pragmatic needs of design to participate the users in a creative and engaged way. Video portraits created by Rachel Strickland (2000) are then again genre cross-overs between the ethnographic video and professional video production. They presented in a conscious and compact 5-minute format what people are carrying with them and they were used to inform and inspire the design processes of the early portable computers. Raijmakers et al. (2006) discuss 'design documentaries', which are light-weight video documentaries created from ethnographic research material into video personas, scenarios and other creative forms of audiovisual media. And the sketchy video prototypes by Bossen et al. (2004) can be seen as audiovisual mockups of the high-end video prototype but done with the pragmatism of a designer.

In the light of this overview we argue, that the most interesting and potential directions for further inquiry are those which have the ability to scale the production to the resources and schedules of the design process, can maximize their impact to the audience, can enlarge the size of the audience by intentionally creating genre cross-overs, consciously attempt to communicate across disciplinary boundaries and those which submit the videos as a subject of inquiry in multi-disciplinary discussion and decision-making sessions, which are at the core of co-design activities.

Supporting Co-Design With Video: Case Studies

Since co-design is a strategic approach that attempts to increase the involvement of a large number of stakeholders and stretches in time from formal design activities to use situations, scaling the design process beyond disciplinary, organizational and time boundaries puts a special emphasis on how communication in the process all-in-all takes place (Kommonen 2003). *What is communicated? How that is understood? What impact does that communication have on the design and development activities?*

As presented earlier, video production activities and the resulted materials seem to support the creation of conditions, which are appropriate to facilitate the reflections and discussion of technologies through out their whole life-cycle. It seems that from a co-design perspective the issue of applying video is not so much of what kinds of videos are produced, but rather *how, where and when* they are applied into the process. What kinds of impacts the artifacts and production process are allowed to have? How these videos are used and re-used? What

kinds of knowledge and understanding is produced when they are watched and discussed? And in design terms, what kinds of *materials* these videos are for the purposes design process? By presenting case studies of work done by members of our research group, we will try to present arguments of how video can be used in co-design.

Conversation starter

Co-design work usually includes the introduction of a complex topic to a variety of stakeholders with conflicting interests. It is useful to step as quickly as possible to discuss the concrete practices and wishes of people and not get lost into unfruitful argumentations about minor, irrelevant details. For the bigger context, we have used videos to create focus for design conversations. These *conversation starters* are videos that contain and represent a theme and pose a question to the viewer from that theme. This question can then be answered in the discussion and collaborative design session succeeding the screening of the video.

Consumeter video (1:10 min) presents what appears to be a typical shopping bag that is powered by a "consumeter". It is something that allows the bag to react to the products that are placed inside it (Ellonen, Westerholm 1999). The video presents a very stereotypical shopping situation where a woman is walking in a supermarket, placing consumer goods into a shopping bag. When she places one product into the bag and it blinks a green light, she keeps it, when another product is placed and it blinks a red light, she places the product back into the shelf. Finally, the video asks a question: "What would you like to know about your shopping?"

Fig. 1. Six still-frames from the Consumeter video (Ellonen Westerholm 1999).
First slide text: "It looks like your average bag, but it has Consumeter."
Last slide text: "What would you like to know about your shopping?"

According to our experience conversation starters present a theme, in similar way to how graphic illustrations work, in a slightly ambiguous in. Conversation starters encourage its audience to speculate the possibilities of the technologies presented, construct their own technology visions and bring forth relevant themes into the collaboration. The Consumeter story has certain elements that are very ambiguous, which support multiple interpretations

that are good ways to start a conversation that is follow by concrete design suggestions and negotiations. For example the video does not explain the inferring mechanism, which makes the bag blink in green or red. Nor does it tell what in reality, this thing called 'Consumeter' might be. The video only hints that the bag has some kind of embedded technology in it with functionality to support decision-making regarding shopping, and leaves the rest to the spectator.

Conversation starters like this are typically viewed in focus group interviews, exhibitions, presentations and design workshops. The video is always shown first and concept components introduced later. The Consumeter-video has been used many times for discussion starters in a design workshop situation, where everybody's focus and mindset is needed from the beginning to work on a shared theme. In the case of the Consumeter, the topic has been consumer choices and tools, shopping preferences and values tied to consumption, the experience of shopping and attempts to identify and map the stakeholders to the theme and project at hand. Despite being several years old, the video still manages to bring forth in the audience, for example, clear ideas about possible and desired mechanisms to create consumer profiles, alternative display options and suggestions for new stakeholders of everyday consumption.

Throwaway video prototype

For the communication to work, co-design requires a shared understanding among the team and other stakeholders, of what the form and function of the final outcome might be. In the early stages of a design and research project, there most often are no shared ideas between the stakeholders about the future of the project. Developing concepts and vocabulary requires continuous reframing and the assumptions for design should be questioned and they should be subject to change, especially in the beginning of the process. To present pre-conceptions of the design artefact with high-crafted things that looked very finished, don't prompt discussions, suggestions and critique (Erickson 1995). People simply believe that the changes are difficult or too expensive to make and that everything is too well thought out.

For this reason we have experimented with *throwaway video prototypes*. Influenced by paper-prototyping (Rettig 1994), the throwaway video prototypes are short videos that represent a use situation or a design scenario. The idea is that all the necessary placeholders for the technologies and other props are made using paper in a very short time (while brainstorming and designing) and then recorded in to the video and edited. Similar video has been also created by Bossen et al. (2004).

Fig. 2. Still-frames from a sketchy video prototype, which explored an aspect of context-aware technology and the issue of interruptions (Tikkanen & Botero 2006).

A video called Cooking Configurations (Fig. 2.) explores the notion of etiquette in human-technology configurations asking the basic question: when should phone calls take place and when not and could humans and technology together somehow take this into account? The video starts with a situation where a woman is cooking in the kitchen. She uses a "switchboard application" in her phone to configure her telephone so that no-one else but her mother's calls are connected through to her phone. When her boss tries to contact her, the switchboard application notifies him that she is baking and prompts him to leave a message. He leaves a voice message to the switchboard and the existence of this message with the information who has left it, is then displayed in the GUI of the woman's phone. But she doesn't react to it. When her mother calls the call is connected straight through and she answers the phone happily.

The paper props and background elements facilitated a short but playful and enjoyable production period for the video. The videos also experimented with pre-made speech bubbles that contained question marks and exclamations to represent different types of mundane chatter. This and a voiceover created in the post-production of the video, relieved the non-professional actors from the burden of performing and made the end result also a bit humorous and cartoon-like. This has resulted in a surprisingly well-received format, with minimal effort in producing it.

Fig. 3. Still-frames from a video prototype exploring media archiving (Tikkanen 2006)
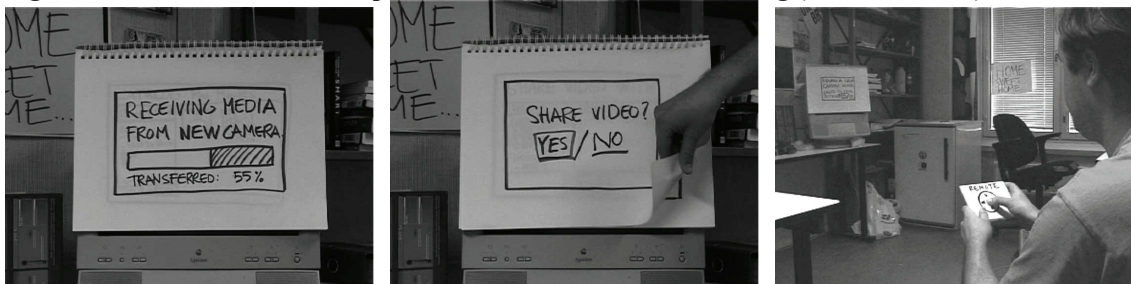
The same technique was applied in a another project in six sketchy videos related to management and archiving of personal audiovisual media (Fig. 3., Tikkanen 2006). The videos were based on observations from the field research material of investigations into six personal video collections. This material was used as an inspiration in the stories which looked at potential change factors in the ways personal media collections are born and maintained. The videos had the devices and other props made from paper and cardboard. This time the interactions with the devices were slightly more complex, so the screens were done using a pad of paper and separate screens were drawn on each page. The feedback of users interacting with the devices, on the screen, were drawn using a red pen and the drawing was many times included into the editing. Also the turning of the pages was edited into the video. These "disillusioning techniques" were explained to the viewers before and they caused no problems in the interview situation: the content of the videos was what mattered to them.

These videos have been both used in conversational, small-scale settings to propose and sketch out potential directions for design and technology applications. These are straight-forward sketches from a situation where no clearer focus has yet to emerge and they focus on the user's practices and the relationship between the people and the technological artefact. This makes it easy for the people to relate to them. Also, the idea of these throwaway, sketchy videos is that they can be easily modified and adapted if they 'miss the target' and

are not well-received. To be feasible in this way the end result must be very sketchy and the production of the videos must be fast and carried out with the basic assumption that the video prototypes and sketches are going to be thrown-away after they are used and remade if necessary (Löwgren 2004).

Video documentation

In co-design, transparency of the design and development activities and processes is important. Video documentation can be used to create shared understanding and comprehension about how the project functions as a whole. It can be used to represent the practices of the users, the research and observations made from these practices, how the design and development activity is influenced by this research and how the collaboration between the stakeholders works. It is about representing the practices of the users, the technology and media designers and developers and tying these activities together with the means of cinematic storytelling.

Fig. 4. Still-frames from video documentation of co-designing a collaborative video-editing application with snowboarders and skateboarders (Linkola 2006).

A project which dealt with co-designing a collaborative video-editing application in collaboration with snowboarders and skateboarders, was documented in the form of a video report (Fig. 4., Linkola 2006). In the video, the design researcher used video to support observation of young boys' snowboarding and parkour hobbies and the self-documentation videos as part of those hobbies. Three groups of boys, some younger and some older, were interviewed about their activities and a collaborative design session is presented in the video. The report also shows videos created by the boys.

In Table 2. We present the five different phases how video was part of the project. As co-design extends the design situation to be a part of the use, the self-documentation material made by the users was included in the process. The main raw material are the observational videos and interviews created by the design researcher then edited a 7 minute video report of the whole process. Later in the project another design researcher has created a compilation

video of the former material to communicate the process to outsiders in a more efficient manner.

Table 2. Five phases of video use in the process of co-designing the collaborative video-editing system.

What is the content of the video?	Who produced the video?
Recording of the sport hobby activities	The skateboarders, snowboarders and parkourers
Editing the best parts together accompanied by a rock video	The skateboarder, snowboarder and parkourers
Capturing and observing the boys activities, interviews	Design researcher #1
Editing these into a video document, which contains a selection of material produced by the sport groups, observational clips from recording situations and interviews.	Design researcher #1
Editing the report into a short, dynamic summary with background music	Design researcher #2

Another more a thematically oriented video deasl with photo-sharing practices and their digital evolution (Rajanti et al. 2005). The EnComPAs project in which this video was made, worked in collaboration with an association of winter swimmers, people who swim in the icy waters of Finland's wintertime. In the project they mapped among others, the practices this particular winter swimmer community had regarding photo-sharing and developed tools to support that.

Fig. 5. Still-frames from a video which presents ways of working and the Themes of the project regarding photo-sharing practice (Rajanti et al. 2005)
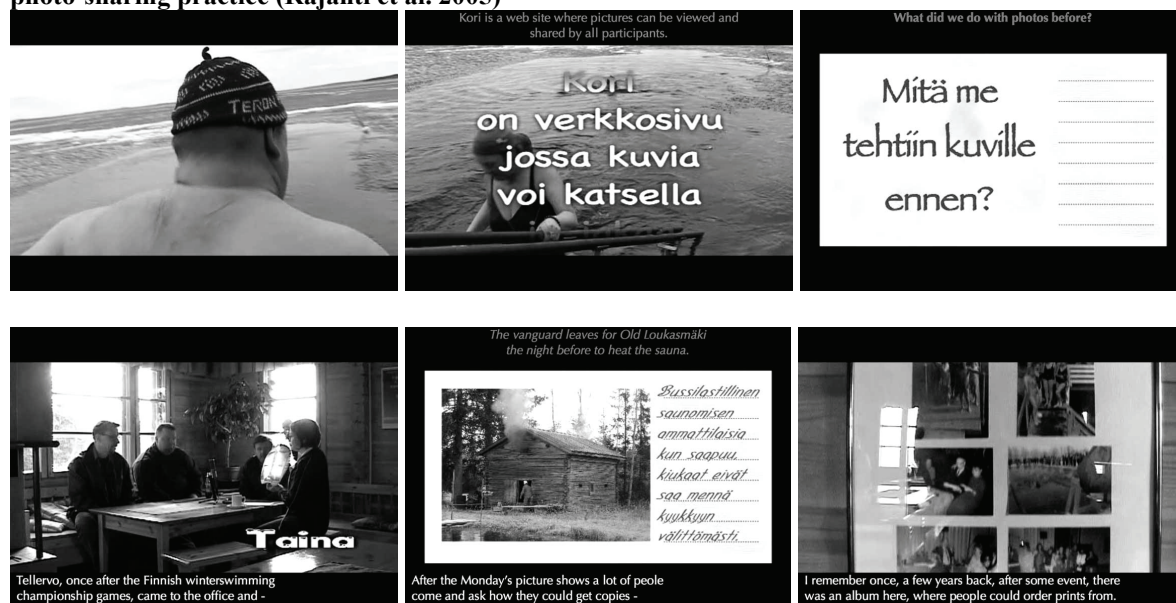
The video (Fig. 5.) presents the sauna and cabin of the winter swimmers and some of the winter swimmers going to swim in the icy water. During the whole video, an interview is made of three men regarding the changing practices of photo-sharing. The stories are then given rhythm by using illustrative still photos from the associations photo archives and in-between titles to make clear what the section is about. In the discussion they talk about the software prototype developed in collaboration. Even though the video doesn't show the application at all, all the practices and uses people have developed with it are very tangible. The material could be easily used to support designing such systems.

These two examples show how video can make visible the invisible work done by the users as of their practices and this way improve the understanding of those practices. Video can be

also used to make the design process more understandable, to present connections between individual acts of design and the larger scale developments in the project. Because videos can use editing to condense material produced over a longer period of time, it is an ideal tool for creating these communication artifacts which support the building of shared vision inside the project team, of what is it that the project is aiming for or to communicate the process to people outside the process.

Lessons Learned

We have encountered a set of practices in video use that benefit co-design. These uses for video have been born when the incentives and aims of the different stakeholders in a process have been realized and observed correctly. By presenting the way video is used to support the creation of specific situations, we hope to promote the way in which video could be used as a design medium.

Strategic use of ambiguity and conflicting technology representation

As one of co-design's main characteristics is to empower the users and other stakeholders to design the future technologies together in collaboration, videos that successfully provoke opinions and function as conversation starters are considered more useful than those that silence people. Total technology visions and objective, neutral views on the possibilities of new technologies, tend to be like that. In the case of the Consumeter video, the video did not explain what the red and green light meant (Fig.1). This made it possible for the spectators to fill in these blanks and in a group discussion, share their own understanding about how "consumeter" would work for them. The discussions and especially the moments of observation that take place in the discussions after a video like this, should be analyzed very clearly. They can be powerful leads for inspiring and informing design activities. The technology's features presented in the videos can be ambiguous and even conflicting, but there has to be an awareness of that from the side of the designers and the sensitivity and sophistication to notice, what the collaborators and spectators make of those ambiguities and conflicts.

Make technology play a leading role in the story

In the case of the Consumeter video (Fig. 1) and the throwaway video prototypes (Fig. 2 & 3), technology plays an active role in the video. The intelligent shopping bag actively supports decision-making regarding shopping, providing information about the products of consumption. The personal switchboard provides means for smarter filtering of incoming telephone calls and the personal media archive enables its user to connect and share their own media and media consumption and this way share their everyday activities with the people they want to share it with. In these videos the technologies act as positive enablers of human activities central to our culture: consumption and keeping in touch with people. They *augment* human capabilities. When showing these videos to someone, they start either commenting on the credibility of the role the technology has or the ways in which the technology should work in their case and fit into their life, or not. There could be also videos that portray technology in a negative role. The key thing is to not portray the technology in a neutral role, or it will get unnoticed. These video-supported interventions should have technologies that have *character* and the technologies should be dramatized and their meanings emphasized or even over-stated.

Support those appearing in the video

Performing in a video can be a burden for most people as video is relatively ruthless in presenting us how we look and sound. Amateur's acting should be made as fun and as easy as possible as every second someone is not enjoying herself in front of the video camera shows immediately. As video production is by its nature participatory activity involving often a larger production team, it should be done so that people have fun and enjoy themselves. If you don't have a movie production crew in the project, don't try to push the limit and try to make something which you don't have the skills and resources for. In the case of the throwaway video prototypes, we pushed these two limits to the other end of the spectrum: we gave people the possibility to use the speech bubbles (Fig. 2.) to perform a talking act. And we created the paper props to fuel their imagination and not make the situation painful for them: it was obvious that the situation was completely fictional and make-believe. This resulted in acting that was more play-acting and the design of the technology artifacts resembled more paper-crafting than actual user-interface design.

Craft the viewing situation

When a video is made, it is then shown to people in some particular occasion. It is not obvious, how this should be made. The viewing situation should be crafted to make the most out of the video. The viewing as such, is not interesting, but the impact of the video is: the discussions, the design proposals, debates, feature wishes and other activities sparked by the video are those which are aimed at. One must put special emphasis on what is being told about the video before and after it is shown, because that will direct how it is watched and comprehended. Another thing worthy of considering is, when the video is showed. Faulkner (2007) has used compilation videos created from ethnographic videos, in the beginnings of meetings to introduce some theme, similar to how the Consumeter video has been used in our research group's projects. To be able to craft the perfect viewing situation, one must know what the video is being applied into? What are the desired and potential outcomes of showing this video? When framed like this, the intentions of creating the video don't matter any more: one must only think about what needs to be gained from showing it.

Don't own the meaning of the video

People who have been involved in the production of the video, have a biased comprehension of what is the meaning of the video. This is hard, if the only thing worthy of concentrating in the viewing situation, is the feedback. Spectators should be allowed to appropriate the video for their personal agendas, and project their own meanings to the video. The discussions and debates that result from watching the video are results of people trying to convince each others of the video's true meaning. The ultimate goal is to understand the diversity of people, but also the need to have consensus on some key ideas.

Conclusion

We have presented how video as a medium holds true possibility in engaging stakeholders over organizational and disciplinary boundaries into co-design activities. As the video production, authoring, storage and distribution technologies are becoming more and more accessible for a larger audience, new potential uses for video in design and research of information and communication technologies can also emerge.

Through case examples we have presented three potential *genres* of videos which suit the co-design process particularly well. These genres can help us as practitioners to think how their production could be organized and streamlined to make their production and use more efficient, and as researchers, what kinds of insights, values and meaning the particular genres have the possibility to convey. As design organizations are not media production organizations and design projects are not media production projects employing movie directors, actors and screenwriters, these three genres are to be understood as light-weight techniques that suit the purposes of pragmatic design research and co-design. It is important to scale the production right, so that is feasible to make the video and that the end result does the thing it is intended for. Video has been so far mostly used in the academic research context and the next steps should be transferring it to the industry and society, in general. Raijmakers et al. (2006) present successful, real-world cases of informing and inspiring the design processes of medical equipment. More of these documented cases regarding contemporary and future technologies and products are needed in order to fully start exploiting the possibilities video as a design medium has. Video as a material is still relatively hard to produce and handle, as opposed to still images: special expertise and maybe also novel tools and techniques are needed to apply video to the needs of design projects.

To create representations of users, their practices and the design context, is the privilege of those who develop technology. How about letting the users document themselves and construct their own identity on their terms? Ethnographic research has the history being supported by the colonialist: it has been used as an instrument of power by those who sought to understand the foreign cultures to benefit from them in an economic sense (Faulkner 2007). Later on, critical approaches to anthropology have tried to find ways in which to empower these people to create ethnographic research and films about themselves. This ethical agenda creates a potential for also using video in design and research of interactive technologies: could people make audiovisual representations about themselves and represent themselves to those who develop the technology? Wouldn't this be a potential to get the main observations right, also? Empowering of users to take part like this requires skills and the right, efficient tools not only for creating the videos, but also to distribute and process them collectively. The more and more pervasive self-documentation of people's lives and this way their practices using (audiovisual) media might give people powerful tools to explain and justify what they do and why.

Because video is by its nature extremely portable - a direct result of more affordable equipment and the ever-increasing penetration of devices that can be used to record, author and display videos - we would like to consider a possibility of *mediating design activities with video*. The possibility to capture and represent time and space and transfer that representation to large number of stakeholders, is already here. The challenges are more organizational than technical. The example with the snowboarders (Fig 4., Linkola 2006) presents how video can be interrelated to videos created by other stakeholders of the process, to construct new meanings. Experimentations are already happening with the so-called open design platforms in the context of making physical things, but they don't include or use video that much and are concentrated on linear processes of creating objects. But they are the first step. Harrison et. al (1990) present a general, experimental technological solution, based on video conferencing technologies, that was created before the birth of the World Wide Web and diffusion of consumer broadband. The project shows the other end of using video for collaboration, to support intensive collaboration work.

As in today's society, there is an increasingly higher level of literacy in watching and creating audiovisual media, there are also increasing opportunities to benefit from that fact. High-bandwidth Internet access is an enabler for large scale co-design using video and video could be used as an instrument of civic participation in these kinds of activities.

Acknowledgements

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Factors of Broadband Development – The Importance of Enablers

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Abstract

Access to broadband technology in the vast majority of EU countries has increased significantly in recent years; however the growth has spread unevenly. The current situation and reasons for the differences are analyzed in the paper. With factor analysis we found three significant underlying components: 'enablers & incentives', 'usage of information services' and 'the ICT sector environment'. These findings lead to the recipe for implementing strategic policies. In the paper a framework, which can help in assessing those initiatives, is presented and tested with the application to a case study of Finland national broadband strategy.

Introduction

In recent years technological and market developments have contributed to quick growth in the adoption of broadband (BB) in the EU – a topic that is also attracting growing political attention. Several project and initiatives have been undertaken to further enhance technology and to deliver state-of-the-art solutions to consumers. But are our policies for strengthening the adoption of BB appropriate? Should we focus not only on the most appropriate and economically efficient technologies in a short run but also try to understand the complex relationships within the mix of technologies, services and user needs?

There is still a long way ahead to achieve the key message of the current EU initiatives – the focus on the strategic objective of 'Broadband for all.' This can also be seen from Figure 1 that depicts the relationship between the growth of BB penetration in 2003-2006 and the current level in 2006 and shows that both penetration and growth levels are quite uneven across Europe.

The figure nicely illustrates the fact that the OECD leading countries (Denmark, Netherlands, Norway) are quickly catching up/overtaking Korea in terms of BB penetration levels. A few outliers (such as UK and Australia) are trying to close the gap to the leading group, while the majority is following a similar path. Still a few countries (Greece, Slovakia, Poland) do not experience considerable rates of growth.

Similarly, the analysis in (Trkman, Jerman-Blažič, & Turk, 2007b) showed that, while GDP is the most important predictor of BB penetration, several countries have far higher (Korea, Finland, Denmark, Netherlands) or lower levels (USA, Ireland, Greece) of BB adoption than predicted by their economic development.

Figure 1: Growth and current state of BB penetration
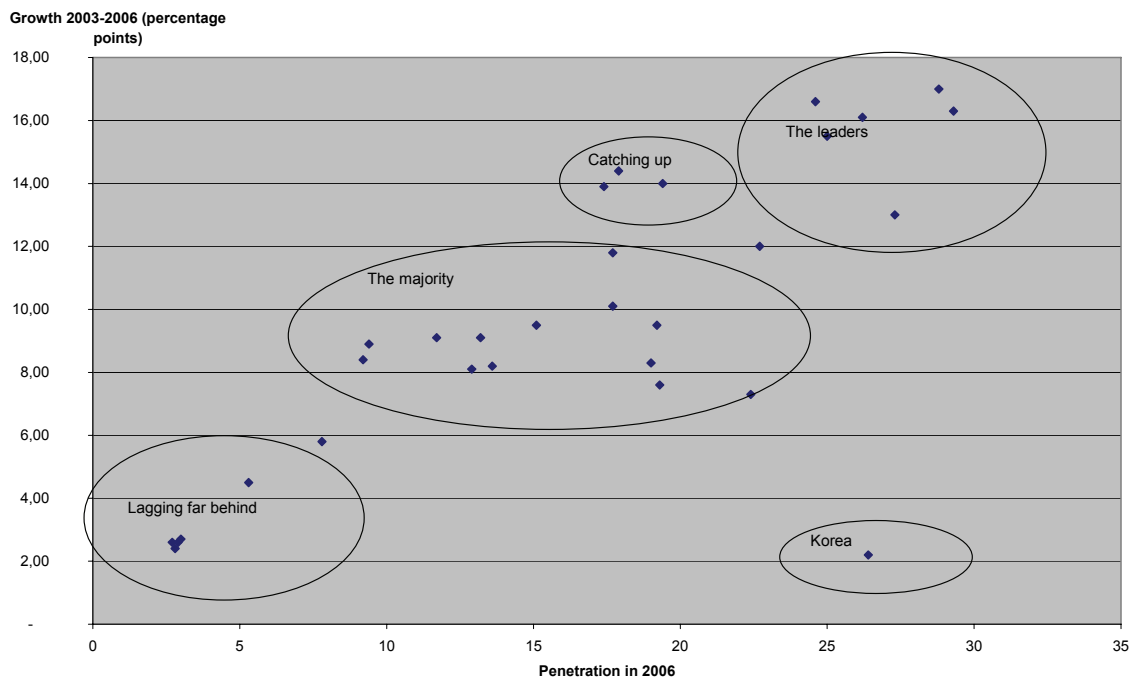
Data source: OECD; own interpretation.

However, even though rankings matter, because leading-edge nations are likely to be more economically competitive (Atkinson, 2006), increased attention on the BB adoption levels can blur the other, probably even more important, aspect – namely the usage of services and the benefits BB should bring to individuals, companies and society as a whole. Unfortunately, technology/ infrastructure development alone is not enough to guarantee the adoption of BB technologies and services by the inhabitants of a certain region. Use, not just access, is crucial (W. Chen, Boase, & Wellman, 2002). It can be claimed that widespread deployment is a necessary but not a sufficient condition for the widespread BB development (defined for the purpose of this paper as the use of BB technology & services (Trkman, Jerman-Blažič, & Turk, 2007a).

In the paper we will concentrate on residential access although the access of companies, especially small and medium-sized companies, is also an important topic; even for increasing residential access, since people who use BB at work are more likely to adopt it at home (Hollifield & Donnermeyer, 2003).

In the paper we firstly summarize previous research findings. In the next section factor and correlation analyses are presented along with the interpretation of results. A strategic framework is then developed, described and applied to the case study of Finland national BB strategy.

Background and motivation

Several researchers have undertaken the challenge to identify additional influences on BB adoption levels. As mentioned earlier economic wealth (measured as GDP per capita, personal income etc.) is usually the main predictor of BB adoption (or Internet adoption in general).

Unsurprisingly, the price of BB access is usually found to be the second-most influential variable, while effective regulation is also often found to contribute significantly to the adoption level. On the other hand, the research results differ in findings of the importance of other factors such as:

- education level: more educated people should have higher incomes and also a greater inclination to accept new technological solutions. However, several studies in recent years (e. g. (Baliamoune-Lutz, 2003)) have found no correlation between education level and BB adoption on a national level;

- English language proficiency: since most web pages are in English, people in countries or regions with better knowledge of the English language should be more inclined to invest in new technologies. However, the amount of content in other languages is increasing; also the required level of English proficiency to surf the web is not very high. Newer studies (e.g. (Kiiski & Pohjola, 2002)) usually do not find a correlation between Internet adoption and the languages spoken in a particular country;

- level of democracy/political system: less democratic countries often try to stifle the development of the Internet as this could reduce their autocratic power. See e.g. (Milner, 2006) for an interesting analysis of the political factor and country's regime on BB adoption;

- age: younger people usually adapt new technologies quicker and integrate them into their everyday lives. Therefore several surveys have shown that the majority of users hail from the young and middle-aged groups; however the older age group consists of mainly non-adopters (Choudrie & Dwivedi, 2006); and

- appeal of the content: last but certainly not least – a wide array of available and attractive services, especially but not limited to those that require large bandwidth, is one of the main stimulations to upgrade from dial-up access.

Sometimes even further influences were found – such as the influence of religion/culture (Beilock & Dimitrova, 2003), (Erumban & Jong, 2006), credible payment channels (Oxley & Yeung, 2001), social networks (Madden & Simpson, 1996) or human capital and the importance of trade (Caselli & Coleman, 2001)[1] to mention just a few of several studies and identified influences. Indeed stimulation of BB development poses a policy problem related to the use and deployments of ICTs with multiple geographic, social, economic and organizational components (Baker, 2005).

The wide variety of studies, approaches and identified influences illustrates the complexity of the subject and leaves one to wonder which study to take into account and which actions to take in order to achieve higher BB development levels. Secondly, previous studies often concentrate on BB adoption rather than usage and do not reveal interplay among various indicators (Dutta & Roy, 2004/2005). Further, those studies usually stop at the identification of influential variables but do not provide any guidance for decision-makers in companies or governmental bodies.

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[1] The latter studied the adoption of computers in general. Their findings are also relevant since computer is a prerequisite for BB adoption and the overcome of digital divide in computer ownership is believed to be one of the more efficient approaches towards stimulation of BB adoption (Stanton, 2004)

Our approach to studying these issues brings two important benefits:

- it reduces the vast number of studied variables to three separate but inter-connected factors; and

- it provides some strategic guidance for creating or assessing strategies to achieve BB development.

Analysis and Discussion

We tried to identify the underlying factors that are common among a chosen set of BB development indicators in EU-25 countries. The main advantage of this approach is that no prior assumption is made about the number of factors to be extracted or the distribution of variables.

To achieve this, we selected a set of variables at the country level while focusing on countries within the European Union. We used a dataset from Eurostat (Eurostat, 2006) for 2004. Based on a thorough review of previous work in this field, a specific set of variables that reflect the situation in EU-25 countries was selected – those variables are most often mentioned as important indicators of BB development (see (Jerman-Blažič, Trkman, & Turk, 2007) for analysis of included variables and reasons for their inclusion). The complete list of variables can be found in (Trkman et al., 2007a). France and Malta were excluded from the analysis since many values in the Eurostat data were missing for them so the dataset contains 23 cases. We used mean-corrected data in our further calculations.

First we studied the correlation between each variable pair – an approach that is often neglected in other studies. The correlation analysis showed that the variables are relatively well-related. Since we are interested in BB penetration we checked for any extraordinary results in comparison to the findings of other similar studies. For instance, we noticed that some variables which are often regarded as BB stimuli (like Internet gaming) are not directly correlated to BB. This could mean that while Internet gaming/downloading music does account for the majority of traffic on the Internet[2], it is not one of the main incentives for BB uptake. This is in line with the finding in (Park & Yoon, 2005), that found entertainment as a main killer-application for early adopters, but lists e-business as a main incentive for the uptake of the majority. Most EU countries have obviously entered the second phase. Therefore we believe that the answer to the question "whether broadband diffusion is due to killer applications driving broadband demand or due to users' mature use of Internet" (Ferro E, 2007) is certainly in mature and extensive usage of BB and its "always-on" connectivity.

After that factor analysis was conducted (see (Trkman et al., 2007a) for a detailed description of applied methodology and the results). The results of the factor analysis revealed three factors. The interpretation of these factors depends on the strength of their relations with observed variables. According to this, the three factors may be interpreted as:

1. 'enablers & incentives', including the variables BB penetration, telework usage, household income, BB service price;

2. 'usage of information services', including the variables Internet usage for information retrieval, Internet usage for gaming; and

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[2] Peer-to-peer communications account for 50-70% of online traffic, while playing games should account for more than 30% of USA traffic by 2007 (Whitman, 2004)

3. 'ICT sector environment', including the variables communications technology expenditures, population density, education level and Internet access over the phone.

The interplay between factors and variables is presented in Figure 2 (BB penetration is emphasized), where variables are grouped together if they are related to the same factors. The arrows denote a factor's direct relationship with these groups. Statistically stronger relations are represented with thick arrows. BB development indicators with negative correlations to related factors are shown with a dashed border.

We can see that three groups of variables are strongly bonded to corresponding factors (like Internet usage for gaming and information retrieval to the factor 'usage of information services'). These groups explain the nature of the factors. Other 'mixed' groups of variables are connecting two factors together, like frequency of Internet and PC usage, IT expenditures and electronic purchasing connect the factors 'usage' and 'enablers & incentives'. These groups show how the factors are related to each other. For instance, the PC and Internet access mixed group shows that, for enablers and incentives to be successful, the development of infrastructure is important not only in a technological sense but also in the form of the acceptance of previously developed technologies.

The 'enablers & incentives' factor is strongly connected to economic factors like household income and BB service prices, with the latter being negatively correlated (this was expected; the higher the prices the lower the value of this factor). The mixture of these economic indicators provides information about the influences that enable people to use advanced ICT services. This factor also includes variables (BB penetration and telework) which directly express the means and strong incentives for access to information services. Telework is obviously more than just the intensive use of services and it is also not an information service but rather its foundation. It also requires a new job organization paradigm (Perez, Sanchez, & Carnicer, 2002) and poses several non-technology-related questions (Kurland & Bailey, 1999).

Figure 2: Structure of relationships between variables important for the adoption of BB.
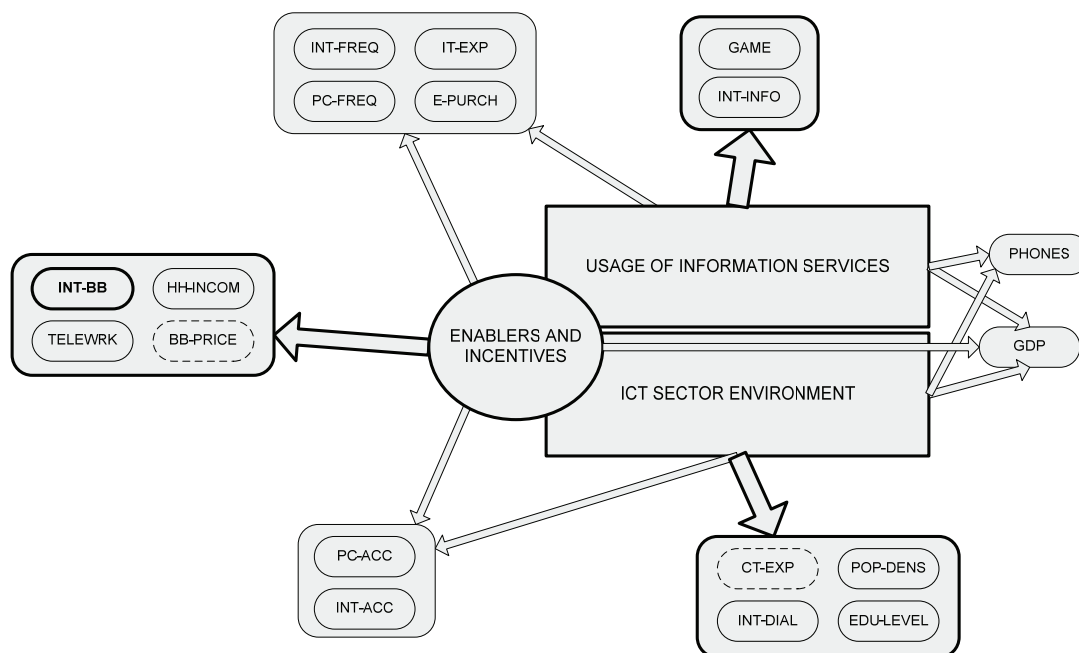
Source: (Turk, Jerman-Blažič, & Trkman, 2007).

The 'usage of information services' shares some variables with the enablers & incentives factor (electronic purchasing, IT expenditures, frequency of PC and Internet usage). This shows that these variables reflect both enablers & incentives and the usage of information services.

The 'ICT sector environment' factor is connected to indicators which show the state of the ICT environment within a country (like communications technology expenditures, population density, education level, Internet access over the phone). PC and Internet access are also related to enablers & incentives. Variables such as population density and education level greatly influence the 'absorption capabilities' of the given society. Low population density presents additional costs for telecommunication service providers and a low education level may affect the adoption processes. On the other hand, expenditures on communication technologies (CT expenditures as a percentage of GDP) are only correlated with the third factor (ICT sector environment), but negatively. Behind these findings probably lies the fact that countries with less developed CT sector have relatively large investments for providing the core communication infrastructure.

GDP per capita is almost equally distributed among all three factors. This confirms the findings of previous researchers that economic development lies behind all the studied factors – unsurprisingly 'GDP is everywhere'. The split in the number of phones variable between the second and third factors shows a similar structure – the use of information services by citizens and the infrastructural development within each country.

The actual use of services is obviously very important. 'Use not just access' is crucial because the requirements of broadband services and applications will drive the next phase of the development (Houghton, 2003). The composition of the first two factors confirms this claim. On one hand, the first factor expresses economic enablers (household income and BB service price), strong incentives (telework) and means of access (BB penetration, PC and Internet access). On the other hand, the second factor is connected to variables that measure the actual use of services.

Although many experts claim that no 'killer-application' has been developed to justify the price of BB, the cumulative effect of improved possibilities for services usage may be sufficient to replace a 'killer-application' as a motivation to adopt BB (Savage & Waldman, 2005). Our research confirms this thesis and emphasizes the importance of the wide mix of services that are in use.

Framework Development

Government at different levels are not satisfied with the speed of adoption process. This is vital since BB access is not simply a consumer good, but rather a mean of citizens cooperation in the society (Winden & Woets, 2004). Internet is becoming a significant component of society's communications structure (Gillet, Lehr, & Osorio, 2004). Together, the potential benefits at the national, individual and organisational levels contribute to something of a consensus that the adoption of BB should be promoted (Xavier, 2003).

The classic approach of encouragement of infrastructure development, seems to reach its limits (Ramos et al., 2004), therefore governments and other stakeholders (e.g. service, infrastructure providers etc.) have to pay attention to the various factors that influence BB adoption and usage levels. Understanding the underlying logic of BB adoption is therefore

crucial for them in preparations of their strategy/business model and to justify the costs of investment in a new technological solution or their deployment.

It is important to bear in mind that meaningful analyses require a conceptual framework (Vicente Cuervo & Lopez Menendez, 2006) that has not previously been developed. It is obvious that a strategic framework must address all factors identified in the previous section along with a combination of different policies.

This is reflected in the proposed framework that has two main dimensions:

1. influencing factor: which of the three factors does the action attempt to influence? and

2. type of influence: in general, the economic laws of supply and demand also apply to the adoption of BB technology and services . Therefore, either demand- or supply-side stimulation (Frieden, 2005);(Cava-Ferreruela & Alabau-Munoz, 2006)[3] can be used:

   2.a. supply-side: to either influence the business orientation and diversity of the business models of providers with incentives or other actions (supply-side economic influence) or to directly influence the supply-side with legislative or regulative acts (supply-side social influence); or

   2.b. demand-side: to increase the demand for services by consumers either the real (demand-side economic influence) or perceived (demand-side social influence) value of BB should be increased.

Figure 3: Strategic framework

type of influence / influencing factor	I supply-side economic policies	II supply-side social activities	III demand-side economic policies	IV demand-side social policies
1. enablers and means	e.g. economic development; price caps for BB services	e.g. legislation in support of e-business/telework; universal service obligations	e.g. improved access to PCs; tax incentives for investment in PCs, Internet connection	e.g. general increase of e-awareness, encouragement of the usage of telework
2. usage of information services	e.g. support of service development; public-private partnerships	e.g. development of C2G and B2G services	e.g. encouraging of C2G	e.g. increase of e-services awareness; education
3. ICT sector environment	e.g. techno-economic modelling; public-private partnerships	e.g. regulation (different sorts)	e.g. actions to decrease switching costs	/

Source:(Trkman et al., 2007a)

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[3] Combination of demand and supply side influence has also been identified as crucial for a development of BB showcase – South Korea (Han, 2003).

See (Breath, 2007) for a detailed description of policies that can be used in various quadrants of the framework. It does seem that a general consensus is that stimulation of competition is the best way to influence all three factors in the framework, while the entry of new firms influences both the demand and supply side (Agarwal & Bayus, 2002). For example, new entrants in the market can increase e-awareness due to an increase in promotional activities (Agarwal & Bayus, 2002), while competition is also one of the important incentives for using services (Hackney, Xu, & Ranchhod, 2006). Therefore, effective competition and the continued liberalisation of infrastructure, network services and applications were recommended as being crucial to stimulating broadband development (OECD, 2004). While a full analysis of the effects of competition would be beyond the scope of the paper - see e.g. (Cave, Prosperetti, & Doyle, 2006) for a review of various issues - we point out some of the most relevant areas for policy-makers.

On the supply side, regulation at different layers (Mindel & Sicker, 2006) is important. Access to infrastructure, competition between different technologies (Fransman, 2006) and the relationship between content and infrastructure providers has attracted most attention in the regulation/promotion of competition. Local Loop Unbundling (LLU) is another important issue since it can offer BB access to end-users for entrants without their own local networks (Fransman, 2006). Therefore, LLU is likely to lead to more competition probably faster than would have happened without regulatory intervention (De Bijl & Peitz, 2005). See (De Bijl & Peitz, 2005) for an overview of EU countries' experiences with unbundling, while limited success in LLU has been identified as one of the main reasons for Ireland's lag in adopting broadband (Analysys White Paper, 2006).

However, competition alone cannot guarantee widespread adoption of BB. Early competitive telecommunications providers tend to 'cherry pick' in the largest markets (Malecki, 2002), therefore the progress of competition in rural areas has often been slow (Fuentes-Bautista & Inagaki, 2006). Even further: it has been shown in (Foros & Kind, 2003) that competition can in fact lead to lower welfare for rural areas in a (usual) case of uniform prices in the whole country.

We could summarize that policy questions could be "how to create a co-evolutionary dynamism by means of ICT innovation, enriched functions, reduced price and competitive environment" (C. Chen & Watanabe, 2006).

Case study – Finland National BB Strategy

Finally, the suitability of the framework was tested with the application on a case study of Finish national Broadband Strategy ("Government Resolution on Finland's National Broadband Strategy," 2004). According to (IMF World Economic Outlook Database, September 2006) Finland is 11th in terms of GDP per capita (37.504 $) and is in 7th in 2006 e-readiness rankings (Economist Intelligence Unit, 2006). Finland is one of the leading ICT producers and also one of the leading countries in terms of "New Economy" (Jalava & Pohjola, 2002). ICT has grown substantially during the past decade. In the beginning of the 1990s, Finland was one of the least ICT-specialized industrial countries; now its amongst the most ICT-intensive countries in the world (Koski, Rouvinen, & Yla-Anttila, 2002).
Finns have been considered to have very positive attitudes towards new technologies. The share of broadband households was about 10% in the year 2002, ca. 13% in the year 2003, 25% in the year 2004, and already about 40% in the year 2005 (Frank & Hirvonen, 2006). Fixed BB infrastructure networks (along with mobile telephony) today constitute the key ICT

"backbone" infrastructures for the further development of the Finnish model of the knowledge economy (Dahlman, Routti, & Ylä-Anttila, 2006). Recent data show that now already over 95% of the households could get broadband. At present about 50 % of households has actually purchased a broadband connection (Kohtala, 2006). On the other hand, business-government transactions performed over the Internet are on the rise and are a key ingredient of success (Economist Intelligence Unit, 2006). According to an analysis in (Bouras, Giannaka, & Tsiatsos, 2004) Finnish politics can be considered above average in most categories (except price and obviously the growth rates).

Finnish Internet users do not differ markedly from other leading Internet nations in service usage patterns. (Dahlman et al., 2006). This fact can also be observed in (Eurobarometer, 2006) where exceptionally high usage of finance services can be observed – Finland is and has historically been world-leader in e-banking (Karjaluoto, Mattila, & Pento, 2002).

However, regional digital divide is still a problem: The peripheral regions in the northern and eastern parts of the country have been increasingly losing population and lacking entrepreneurship (Pelkonen, 2005). Some believe that the Finnish broadband policy has resulted in regional differences and spatially uneven impacts in terms of availability (Frank & Hirvonen, 2006).

We also conducted cluster analysis of EU-25 countries based on the previously found factors (Trkman, Turk, & Jerman-Blažič, 2006). Finland has been distributed into groups B, A and C respectively. This means that Finland is among EU-leading countries in terms of usage of services, while close to the top in the "enablers and incentives" factor. The relatively "low" grouping in 3rd factor is mainly due to low population density, that lead to afore mentioned regional differences[4].

The 50 actions of national broadband strategy of Finnish government ("Government Resolution on Finland's National Broadband Strategy," 2004) were distributed in the appropriate quadrants of the framework. The purpose of this section is not to provide a detailed overview of the situation or strategic efforts of a single country but to test whether the framework can be used to assess a previously developed strategy.

Action 20[5] was decomposed into demand and supply side social activities as it is a rather broad action. All other actions generally belong to a single quadrant. Actions 31, 46-50 are support actions in implementing the strategy – mainly concerned with the provision of security and measurement of progress/realization of strategy.

As seen from Figure 4 the Finish government is well-aware of the complexity of the strategy development and addresses most of the quadrants of the framework. Economic policies for demand stipulation were however not adopted and only few economic measures for supply-side are mentioned. It could be argued that Finland as one of the most economic developed country in the world does not need to provide additional economic incentives to its citizen in order to accelerate the adoption of new technological solutions or services. Nevertheless, some believe that the resignation from subsidies to the construction of BB infrastructure

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[4] It should be noted that cluster analysis should not be used for general ranking purposes but rather for identification of countries that might have similar critical success factors.
[5] »Municipial on-line services will be expanded substantially in line with the Government's Information Society Programme; a considerable proportion of municipial procurement will be handled online; all the main municipial service processes will be charted; and joint services in public administration will be expanded substantially«

seems to have increased the regional differences between the Finnish regions (Frank & Hirvonen, 2006)

Figure 4: Finish government strategic action distributed in the framework

type of influence / influencing factor	I supply-side economic policies	II supply-side social activities	III demand-side economic policies	IV demand-side social policies
1. enablers and means		3, 8, 9		21, 22, 23, 27, 28
2. usage of information services		5, 6, 13, 18, 19, 20/a, 26		11, 14, 20/b, 29, 30
3. ICT sector environment	1, 7, 16	2, 4, 10, 12, 17, 24		/

Additionally the analysis showed that the actions are well-defined and not too broad as each action (except one) belongs to a single quadrant. As such, the actions are also operational enough that their progress can be monitored (see e.g. ("Broadband Strategy: Interim Report 2: Implementation of the strategy," 2005)).

Finally, the case study also showed the main enhancements needed in the framework. Firstly, a possibility to provide an overview of current problems (regarding each of the studied factors) and critical success factors for specific country/region should be included. Secondly, the framework should enable the inclusion of desired outcomes of each action along with a possible measurement instrument.

Thirdly (and probably less importantly) the classification of support actions (such as actions to increase safety[6]) should also be possible – probably as a "bubble" around the framework.

Conclusion

In the paper we dealt with the question of BB adoption and reviewed the current BB adoption in EU/OECD countries. Our research work showed that the majority of differences between those countries in terms of BB development can be explained with a combination of three factors. This finding was used in creation of a framework for assessing strategies in this area.

The analysis showed that the framework is a suitable tool, because all proposed actions of a national government of an EU country can be classified according to the framework. It does provide additional insights into the strategic planning of a government, serves as a tool to and identified areas that the proposed strategy is not tackling (i. e. economic support for demand side). The framework could also be used as a tool when preparing a new strategic plan.

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[6] E. g. The legislation on data protection in the workplace will be actively enforced once it has been enacted ("Government Resolution on Finland's National Broadband Strategy," 2004).

However, currently the previously developed framework (Trkman et al., 2007a) only illustrates a point of time without the ability to list strategic needs and measure outcomes.

This area offers several interesting topics that need further research such as:

- the application of the framework to various case studies on national or regional level;

- further monitoring of situation and changes in the underlying factor structure;

- the further study of relationships between three factors and their influence on BB penetration.

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Politics online: comparative perspectives,
theories and methodological innovations

Online Discussions In China: Towards A Definition Of Politics In A Post-Communist Country

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Abstract

The most observed aspect of the flourishing Internet in China is censorship, because of concerns for more political participation. But it does not entirely explain the large preference for fun contents on the web, and we should better define "politics" as our research object.

In the latest evolutions of the Chinese society, social issues and prosperity seem to have become a crucial concern for both the people and the governants. It could be considered as a principle of political legitimacy, whatever the source of the political organization and the definition of the roles. In this context our aim is to understand how the individuals perceive their own position and involvement.

Our observation of Internet usage suggests that consumption and material comfort are a great concern for the people indeed, and they seem to rely on an unquestionable structure. But on the other side, very casual issues like the management of dogs, related to public order, can emotionally move some Internet users and lead them to take position in front of official decisions.

So there is no total ignorance of politics. Not only publication and debate, but also indifference, are various ways to express one's position towards the political system.

Introduction

The Internet censorship system in China is famous under the name of "Golden Shield". It is a technical solution based on electronic packet filtering[1] that is able to select sensitive key-words within the contents exchanged on the web. It has become very famous because an increasing number of observers believe that the Internet will be the tool for citizens' political participation in the near future. Indeed, there are now over 137 million Chinese people on the web, writing blogs, chatting on QQ, reading information on Sina or Sohu, and sharing videos on Youtube-like 6room.com[2]. Many observers thought this quick development would immediately create a wave of political expression on the web, which did not actually happen. Indeed, the most well-known Internet portals are mostly filled with innocuous content like music, and leisure activities.

This can not all be explained by the censorship tools implemented by the authorities. True, the multi-layered system of censorship is very sophisticated[3]. Apart from technical solutions implemented by the authorities, most of the censorship is actually made by the different

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[1] HUGHES, Christopher, "Pourquoi Internet ne démocratisera pas la Chine", in *Critique internationale*, april 2002, n°15

[2] www.6room.com or http://video.qihoo.com

3 www.opennetinitiative.net/, or WU, Vivian, "Internet police keep tight grip on blogs", *South China Morning Post*, 08/03/2007

actors of the field themselves. Internet providers are responsible for the contents so they are obliged to watch them closely, and end users are aware of a certain danger so they most often choose to avoid political expression on the web. But the quantity and diversity of the contents, as well as the number of paths for exchanges between the people, leave more space for political activity, and even for other debates that are not necessarily political.[4] We believe that people's attitudes towards information technologies are more significant than the technical features themselves, as some "minjian" (private/unofficial/independant) political writers prove. They are people who find alternative ways to post political comments through e-mail, or who often change their blogs' address. But they are still very few, sometimes marginalized, and one can wonder if they really have a "sense of holding something in common, as in community of interests"[5] and if they are representative of a more general situation among "netizens". So the tough question may be: do the people want to get involved in politics? What do politics mean for them?

Context

In many post-communist countries, the people seem to lose more and more interest in political debate. Despite the implementation of democratic institutions in several countries, including universal suffrage elections, some of them eventually chose authoritarian leaders. Indeed, the implementation of democratic mechanisms does not automatically lead to their adoption by the people, and the people sometimes even seem to reject democracy[6].

In China, no such form of democracy has been officially launched, though some institutions have been reformed to integrate a greater part of popular voice (especially at the local level). Above all, the Communist Party has remained in power and the official hierarchy has remained more or less the same. Thus the relative weakness of the claims for a free political participation can lead one to wonder whether there is a largely spread will for it.

Indeed, the example of Russia has given very efficient arguments to the opponents of democracy. The fall of the communist ideology in USSR was not replaced by strong values, and the reorganization of the State has left much space for corruption and clientelism. Because of this phenomenon in post-communist countries, the relationship to politics is often described as very distrustful. It did not even lead to more economic prosperity for the people, who suffered more from disorganization than they benefited from the new system. In other terms, the hopes raised by the fall of communism have been deceived. At least, this vision is very wide-spread in China.

This could suggest that the people, disappointed with that unsuccessful example of political participation, have decided to leave the management of the country to the leaders, who belong to a separate world, while they seek their own interests in terms of daily prosperity[7].

In addition, researches towards a "nascent civil society" in China, defined as a group of citizens who would oppose the government to get involved into the political debate, also conclude that there is no such thing as a civil society in China.

The word "civil society" in itself refers to the relationship between individuals and the society, and to its political dimension. This relationship is often defined as an organized struggle of

[4]MAC KINNON, Rebecca, *Chinese blogs: censorship and civic discourse*, Berkman Center for Internet Society, Harvard Law School, online version: http://rconversation.blogs.com/rconversation/

[5] ZHOU, Yongming, "Living on the cyber border. Minjian political writers in Chinese cyberspace", *Current anthropology,* vol.46 n°5, Dec.2005

[6] HERMET, Guy, *Le peuple contre la démocratie*, Fayard, Paris, 1989

[7] HIRSCHMAN, Albert, *Bonheur privé, action publique,* (1982), traduction française de Martine Leyris et Jean-Baptiste Grasset, Fayard, 1983

citizens against an overly authoritarian State[8] . This concept leads one to look for clear and institutionalized oppositions to the State. There are such dissident movements in China. But it is hard to say how representative they are, and how much support they could get from other groups in the society. Moreover, numerous movements are not opposed to the State because they are interlaced with it[9].

This interweaving between official structures and informal initiatives suggests that there is no real civil society in China[10]. Another solution is to redefine it, and make it become a reticular "Chinese version" of a civil society[11]. But isn't underlying more and more what belongs to local specificities a way to empty the concept and make it useless? Some prefer to adopt a very flexible definition of the term civil society, and consider it as a "moral community", a form of life in which the authority is reliable for common norms based on rational, open discussions, largely spread between citizens[12].

This highlights the fact that the very object of research is not clear. What is politics? What does it mean to be involved in it? It seems that this term requires more attention in the context of China. It is necessary to better define what politics means for the Chinese people. The Chinese case is particularly interesting because it is a post-communist country – it functions with a capitalist system now – but the Communist Party is still ruling the country with the same institutions as before. Keeping the same terminology, life and economic conditions are evolving, so are the social contract and the perception of the political domain by the people.

In the case of China, participation in the government is very restricted and it also suffers from a lack of trust by the population. Indeed, the PCC has a monopoly on the word "politics" and has always linked it to the official socialist ideology[13]. This has led a large part of the population to think that ideological movements, long unfruitful PCC meetings, and the term "politics" were synonymous. People usually spend their time and energy in other kinds of activities which they think more effectively defend their personal interests. These activities include aspects of what is called "politics" in Western countries, and which Chinese people often call "social issues" or "economic issues". Consequently, we should be particularly careful when using the term politics.

The scope of the concept of "politics" can vary between almost nothing and almost everything according to the definition. It can be limited to the choices of the leaders, and the work of the official institutions, in other words "the art or science of directing administrating states or other political units"[14]. According to other definitions, it can include all parts of social life because this is about negotiating the conditions of life together, the allocation of resources, and public order. In other terms, this larger definition of politics is about negotiating the common good.

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[8] COLAS, Dominique, *Sociologie politique*, PUF, Paris, 1994, p 386: la définition utilisée par les critiques des régimes communistes est en général celle "d'une appropriation de la politique par les citoyens et d'une affirmation des Droits de l'Homme".

[9] For example BEJA, Jean-Philippe, "Regards sur les 'salons' chinois, Embryons de société civile et sphère publique en Chine (1978-1989)", in *Revue française de science politique* n°42, février 1992

[10] DAVIS, Deborah, KRAUS, Richard, NAUGHTON, Barry, et PERRY, Elizabeth, *Urban spaces in contemporary China*, Woodrow Wilson center press et Cambridge University press, 1995

[11] SAICH, Anthony, "Naissance d'une société civile aux couleurs de la Chine?", *Esprit*, n°302, 02/2004

[12] MADSEN, in *Modern China*, vol.19, N°2, Symposium: "Public sphere/Civil society in China? Paradigmatic issues in Chinese studies, III (04/1993)

[13] ARSENE, Séverine, *L'enseignement idéologique dans les universités chinoises,* Masters thesis, Sciences-Po, Paris, 2005

[14] Iain McLean &Alistair Mc Millan, *The concise Oxford Dictionary of politics*, Oxford University Press, 2003

Tradition and political involvement in China

It is sometimes argued that the Chinese people are socialized with traditional social patterns that are not compatible with any involvement in issues of common interest. This would explain the alleged lack of political involvement, or political apathy, in China. Is there really so little involvement in the definition of the rules of daily life?

One very common assessment, best represented by Lucian Pye's works [15], is that Confucianism is almost the only organizational and moral basis of the Chinese society, so the most important value of the people would be the respect of the hierarchy within one's own community. Like in a family, where the father should be respected and obeyed in all situations, the country is ruled by a paternalist government (or emperor), who is supposed to protect the interests of the nation. With this image of the Chinese conformist "political culture", it would be understandable that dissident discourse, or even simply critical discourse, would be at most a marginal phenomenon. In this vision, the Chinese "rule themselves" because they are socialized in such a way that they strongly depend on the groups they belong to. In this vision, the hierarchy existed long before and the people respect this hierarchy for the sake of the common good. This argument is also used to justify authority in the eyes of neo-confucianist countries. The hierarchical pattern of the society would be the basis for a very efficient kind of economic development.

Other anthropologists also describe a kind of traditional Chinese social network that would determine social interactions, but contrary to Pye, they analyze the Chinese society as very much individualist. For example, Fei Xiaotong [16] says that there is no sense of common interest in the Chinese society because anything "public" would be outside one's personal network which is the only relevant horizon. Common interest issues, public order, would be solved more within the local paternalist hierarchy, based on the family structure, than at the level of the government, which almost does not govern at all.

In one pattern, authority is more a top-down process in which the community imposes its necessity on the individuals (Pye). In the other model, individuals have much more autonomy, and the authority follows a more bottom-up trend, adapting to the consequences of the local interactions between selfish individuals. But both of these interpretations conclude that the structure of the Chinese society is not conducive to the development of political participation within the Chinese society. They tend to essentialize a so-called "Chinese culture", which would explain the absence of any political involvement. According to these visions, the Chinese, seen as a homogenous block of people, would be determined by the way they are socialized in their childhood, what Stéphanie Balme calls a principle of "homeostatic reproduction of the Chinese culture" [17].

Here, politics are defined as the right to rule, to set up the framework for the collective life of the society. It is thus conceived as totally separated from the life and actions of the people who live within this framework. In the case of a stable society, the government should actually do nothing but let the framework be (Fei).

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[15] PYE, Lucian, *The Mandarin and the Cadre, China's Political cultures*, University of Michigan, Ann Arbor, 1988

[16] FEI, Xiaotong, *From the soil*, University of California Press, Berkeley, 1992, translated from Fei Xiaotong, *Xiangtu Zhongguo*, 1937, reed. Beijing Chubanshe, 2004

[17] BALME, Stéphanie, *Entre soi, l'élite du pouvoir dans la Chine contemporaine*, Fayard, Paris, 2004.

The social and the politic: about China's modernity[18]

On the contrary, Balme looks at the phenomenon of "guanxi" (or relations), as a system of interdependence between the individuals, in which interpersonal relations are "merchandized". She encourages us to understand interpersonal relations as permanently changing, constantly rebuilt and reinterpreted by the actors. This approach does not put a priori any hierarchy between the individual and the collectivity, but focuses on the functional nature of interpersonal relationships. So she proposes to question the impact of modernization on this permanent re-composition of interpersonal relations.

This underlines another definition of politics, not as an organizational framework, but as a system of reciprocal powers and influences. In this sense, politics are a kind of daily negotiation of the rules. They are potentially everywhere, even if they are not openly expressed as a facet of the government.

In this context, Rocca says that the formation of the institutions should be understood as the result of the guanxi, not as opposed to it. "The reference to the model of representative democracy should be understood at the light of a plurality of strategic projects: construction of a 'viable' capitalism, recomposition of the elites, will to know and to control, ambition to survive or to get higher in the social hierarchy, desire to create a new political legitimacy, attachment to certain practices and to an economic morality. All these projects, supported by diverse forces, constitute a strategic situation from which a certain form of representative democracy can (or can not) come out." [19]

These forces and strategies can actually act in any kind of sphere. As the ambiguous form of the civil society shows, the fields of the private and the public, the official and non official, political and non political are overlapping. This makes it difficult to follow the path of the political debates. But for Rocca, this structure should not be considered as pre-modern (traditional), or post-modern (reticular, multiple identities), but on the contrary, they are an element that belongs to the modernity of China.

Arendt[20] stated that one aspect of modernity is the politicization of the social. As *vita activa* has surpassed *vita contemplativa*, it has become a necessity for men to work and participate to the common good. Thus the modern ideal is more prosperity than freedom in terms of detachment from the obligations of life. So the government is legitimated by its ability to provide a kind of well-being in exchange for the amount of work provided by the people. This pattern has developed in China as well, especially during the last 20 years, which Rocca calls "trivialization of China"[21]. The social has emerged as a goal, and politics, as a technique of government, is a mean to reach it. In this sense, there is a survival of the principle of "people's good", *wei renmin*, as a principle of legitimacy. This is also what Xu Zhenzhou underlines when he explores the evolution of the principles of legitimacy in China since the 1980's[22]. According to him, the most relevant source for legitimacy now is the promise of prosperity.

In this case, politics could be defined as a kind of governance[23]. In that particular case we could define it as a practical, professional technique to rule the country, aimed at letting the people reach prosperity, and which would be the basis for the legitimacy of the governants.

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[18] ROCCA, Jean-Louis, *La condition chinoise*, Karthala, Paris, 2006
[19] ROCCA, op.cit., p77. We translate.
[20] ARENDT, Hannah, *Condition de l'homme moderne,* Calmann-Lévy, Paris, 1961
[21] "banalisation de la Chine", ROCCA, op.cit., p297
[22] Xu Zhenzhou, Communication at the *Ateliers Doctoraux de Pekin*, Qinghua University, 29/03/2007
[23] Governance is a complex term developed in Western countries. We do not want to apply all the controversial aspects of this term to the specific situation of China, but we only mean that practical decisions in the complex economic field could justify the position of specialists as rulers. This could also be named "technocracy".

Thus, the main criteria to judge their activity would be their economic efficiency. But this does not automatically imply any participation of the citizens in politics. Arendt[24] underlined the difference between two ideal-types, egalitarian democracies on the one side, in which the participation of everyone in the government is the condition for its freedom, and enlightened despotism on the other side, in which the people's freedom consists in the guarantee to own one's life and properties, and does not imply participation in the government.

So one question is: if prosperity is really the most common principle of legitimacy, then in what way do the people feel concerned by the ways to protect it? Do they feel involved in it, or totally not concerned by the definition of the rules?

Method

It seems to us that the debates on the web can reflect the position of the individuals regarding this relationship to the state. Indeed, posting a comment on the web means addressing friends, acquaintances, unknown people or officials with any kind of topic. Web users have to arbitrate at any time and decide what they should say or not, what their role is, what they want to get involved in. So we believe that we can learn a lot about the role of politics for the Chinese Internet users, by studying their habits and perceptions.

So our inquiry deals with the perception of the Internet as a tool for political debate. The Internet provides interlaced conversations. Internet users do not necessarily post comments to be read by all other Internet users. Some of them post information that is available to all, but destined to few. Some small specialized BBSs are mostly frequented by the same group of people. It is the same for blogs. Although they are available for everybody to read, they often remain a communication tool within a small group of friends. On the other side, very public platforms like Sohu or Sina can be considered as too public by the people because they are too famous. But they are a way to get informed about some general topics, and it is still possible to get in touch with other people through one-to-one conversations, like instant messaging. The barriers between the different conversation tools do not stop information. It travels between them thanks to the users themselves.

This interlacing[25] also highlights the fact that people's behaviors are sometimes more complex than what they declare. They may declare that they are absolutely not interested in some topics, on open spaces. But they may be well aware of what the debate is about (within certain limits, given the true influence of the official propaganda on certain topics). And they may also talk about it in other spheres, including other kinds of web based conversations. People's attitudes and reactions toward this fluid information seem to us more determining than the technical possibility to make it public.

Indeed, the Internet is a good opportunity to examine at the complex interlacing between the official and the unofficial. It can help us to better understand how individuals arbitrate when it comes to expressing their own opinions. In what kind of topics are they interested? When do they feel concerned, involved?

Of course what happens among some Internet users can not represent the whole country. The emergence of the Internet phenomenon concerns the very specific category of urban, young, educated Chinese people[26]. Most of the Internet users were born after the opening of the country and under the One Child policy (after 1978). They often belong to the growing "middle class", roughly defined as a category of urban people who have access to private

[24] ARENDT, Hannah, *Qu'est-ce que la politique?*, Seuil, Paris, 1995, p109

[25] BEAUDOUIN, Valérie, BEAUVISAGE, Thomas, CARDON, Dominique, et VELKOVSKA, Julia, *L'entrelacement des medias dans la constitution des publics de Loft Story*, Etude France Telecom R&D, 2002.

[26] www.cnnic.net.cn; or GUO, Liang, *Surveying Internet usage and impact in twelve Chinese cities*, www.markle.org, oct.2003

property, and a good educational level. So they represent a very peculiar phenomenon, which specificity will need to be questioned in the near future.

We intend to approach this issue through the study of some of these users' perceptions of online conversations on IM, e-mail, forums, and blogs, which are the spaces where most online social interactions happen. Our inquiry is founded on 40 ongoing in-depth interviews with young adult Internet users (more than 8 hours per week) in Beijing, which we hope will give us more clues about their understanding of themselves as individuals in the society.

Consumerism as an important value

The importance of consumption sounds overwhelming when one listens to Beijing middle-class Internet users for the first time. Lots of people search for the best prices in the city, they purchase diverse articles, and they sell out old stuff. It is also a great source of information to know about the quality of the different products, and deal with the lack of trust in this field. In a word, the Internet has become a very important tool to improve one's comfort and protect one's financial interests.

> "Of course I don't talk about such topics as politics, for example like the China-Africa summit, I couldn't express any objection about these topics. Or rather about the price of the housing, recently people talked about how prices have jumped in Beijing, on this I could express my objections, this is very closely linked to personal life, and we can also discuss with my colleagues whether the prices could lower or not. Finally it is very closely linked to our personal lives."

At first sight, it seems that only economic and financial issues are important, and in a larger way everything that concerns the personal life of every individual. Whoever we interview, the first answer is more or less the same.

> "Yes, but what I post has no link with social topics. I generally post things that are related to me, like children, purchasing clothes, work etc… But concerning comments on the society, I seldom participate, because sometimes, if you say something bad about somebody, you can be sued or something, so I don't want to participate in such things. For example if this sentence is against other people's interests, they can use the law and accuse you."

Some people do not evoke any fear of a trial, but the very large majority of our interviewees say they only pay attention to topics that are directly related to their everyday life. This example is particularly interesting because the interviewee clearly states that she does not want to interfere with other people's personal interests. As Boltanski states it[27], one of the aspects of the attitude of concern for a common interest is what he calls "distanciation" (detachment). This means that the people should be able to consider a situation not only from the angle of their own interest or damage. Instead, they should consider it according to a certain number of common values that are constantly negotiated and validated within the community. Boltanski shows that in such a scheme, one would find a witness that is not involved in the situation, in order to promote an "objective" point of view. This requires a

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[27] BOLTANSKI, Luc, *La souffrance à distance*, Métailié, Paris, 1993

sense of involvement in other people's cases in the name of common values. In this case, the interviewee seems to be far from adopting this kind of detachment and involvement. Personal consumption and comfort is more important than the common benefit.

Very often, this behavior is justified by a vision of a segmented society. Every part of the society, every "class", every group, has contradictory interests and thus it is impossible to tell them what would be better. No interest is worth more than the interest of another group. So no common discussion is possible between the different groups to find a common interest. Only an external referee can settle controversial issues. This is how our interviewees say it.

> "I think perhaps some people can represent an association, that is to say one can represent a fixed crowd, for instance a profession, perhaps some people can represent the workers, some people can represent the farmers, some people can represent the white collar workers, but the person who speaks on behalf of the white collar workers benefit definitely cannot represent the lowest level citizens, this is certain, and the lowest level of the society definitely cannot represent high level social stratums like white collar workers, they therefore definitely cannot represent each other."

> "Given that everybody has different points of view on each problem, and that everybody has different ways of life, different educational levels, we do not understand things the same way, so it is very difficult to say that we are going to post our viewpoints, sometimes maybe you find that it is not true, you find that it is not correct, and somebody else finds it is correct, he finds this is good. Everything is possible, I think any thing has two faces, there can not be only one opinion on one thing."

For Arendt, politics can emerge only *between* individuals, when their discussions create a world between them. On the other side, in such a segmented society, when the people stand beside each other without perceiving and discussing the objects that link them, they remain lonely, and there can be no politics[28]. Here, the individuals hand over the power to arbitrate, to discuss what is between the different individuals, or the different interest groups, to someone else, certainly the authorities. It seems that in one sense, politics is outside everyone's life.

That vision of the society often serves as a justification of the one-party system. The government is given the role of the external part that can decide for all the different groups.

> "It is almost impossible to be representative [of the opinions of the people], because the Chinese are too numerous, there are more than a billion common people, and this political power organization only has how many people? It is impossible to be proportional, China's ruling organization is one party in power, and this could raise many questions, but in fact we don't pay a lot attention to these things."

According to our interviewee's statement, politics look like a kind of management technique. It is not the responsibility of the citizens, who would be unable to synthesize all the interests

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[28] ARENDT, Hannah, *Qu'est-ce que la politique?*, Seuil, Paris, 1995

of every kind of group. The individuals are described as selfish people who can not take into account other people's interests. Everyone is supposed to search his own interests, and the resolution of conflicts relies on a transcendent authority, not really on the citizens themselves. Nevertheless, this quite pessimistic profile of Internet users is not complete. There are some new patterns of sociability, which can develop even quicker on the Internet because it provides a very convenient way to get in touch with various kinds of people. People have the occasion to step out of their traditional sociability networks like family or colleagues[29]. They can build new relationships that they have chosen by themselves. And they progressively constitute new groups of friends, acquaintances that would not have existed otherwise.

Groups of interest

One abundant phenomenon in China is the constitution of thousands of "groups", most often QQ Groups. Those are very popular and they are a way to discuss not only with one person, but also with several persons in the same conversation. Usually the different groups correspond to different stages in one's life. There are high school friends, university friends, colleagues… All these categories are not "selected" sociabilities. They are directly related to one's background, social environment. But most of the time, they are completed by a series of other groups of people who were met through the Internet, or through friends, who share the same hobbies, who are interested in the same questions, and who often discuss these topics together. This can also happen with small BBSs opened by a member of the group, on which other people post comments.

This has led one of our interviewees to create and actively participate in a group of "pregnant women". They first met on a generalist forum about pregnancy; they debated, exchanged some ideas and finally built up their own "group" and their own small forum. We have also seen some cases of people who build small thematic groups about cars, or dogs.

These various discussion groups can be considered as "interest groups", not only because they gather people who have the same hobbies, but also because they gather people who have the same "interests". They share a common concern for one topic, and they develop material involvement in such topics. For example, all the pregnant mothers who purchase large quantities of clothes for babies and sell the surplus on their Taobao shops are linked to each other by a consumer interest. They benefit from this cooperation, and they need it to be guaranteed and protected. Car owners who build up forums about car outings can eventually see themselves as a large group of trend-setters (cars are the sign of an outstanding social situation). They would hardly appreciate new rules limiting their right to enjoy their brand new cars.

These new kinds of groups may be closed, separated from each other. This may be the sign of a "tribalization" of the society, each person belonging to very small groups of his own, and after all remaining very selfish. They could be only the sign of an unlimited consumerism, which is not necessarily linked to a specific political attitude. In what conditions could these new groups of interest be the beginning of a political awareness? Where do politics start in this context?

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[29] See ARSENE, Séverine, *The Internet in China, a favorable environment for discussing public interest?*, paper presented at the conference Living the Information society, Manila, April 2007

"Concernement"

Let us think back to Boltanski's theory. One gets closer to a sense of common interest when getting involved in other people's issues in the name of common values. That actually happens sometimes through the mediation of the Chinese web. Most of the time, this phenomenon is provoked by events that are immoral in the eyes of some Chinese web users. Committing adultery, doing harm to a pet, insulting poorer people can lead you to be tracked by hundreds of people who spread your story on the web and share your personal information to threaten you at your home until you apologize.

Occasionally, some people get organized to help other people through NGOs, or post their comments on environmental questions. Even corruption can call for some reactions, when it is not that of a powerful political leader. Generally, people stay within the limits of the official agenda of the government's policy. Indeed, social order is viewed by the majority as the condition to protect one's own prosperity, security, and economic opportunities.

But what happens when the rules of social order and one's private interests or comfort are in contradiction? Or when there is no consensus about the rules that should be implemented to protect such order and prosperity? Wouldn't the people try to gain recognition for their point of view? This is where the most common, grass-roots decisions can have a strong political impact.

Dogs, a political issue

The very banality of some topics encourages people to participate. For many of them, such topics are closer to their own lives, and they represent no threat to the authorities. But sometimes it leads, accidentally or not, to "generalizations", it can lead some people to underline the political or social background of a small problem, and make it become the symbol of a larger issue.

For example, one of our interviewees is a dog owner. When big dogs were forbidden in central Beijing in the context of the preparation of a "clean" and secure city for the Olympics in 2008, he expressed his disagreement on a web forum.

> "For instance recently on the "pet forum", about the question of raising dogs, that is to say the question of the control of dogs, I said what can we make as the populace? In fact in my point of view we can do very few, what we can do is not any rivalry to the government's policy, it is not this way. It is rather, with a kind of smooth behavior, we can tell the average people around us, at what position dogs should stand,[…]then why we think raising a dog can not have any influence on everybody's life, and why we think that even such things as rabies, the control question does not rely on dogs, it should rely on the people, […] in fact it is a city management question, not dog's question. Then when I said this, I said […] we need to move and tell our acquaintances that people who raise dogs have standards, we cannot touch everybody's public benefits. Then at that time I received many people's messages, they asked in private, they discussed in private, not openly, to say shouldn't we undertake such things, for example on a small scale we print our own propaganda materials, of course it would not be opposed to anybody, we print some things to encourage a civilized way to raise dogs, we propose a legislation

protecting animals, shall we do that. This was our discussion, because they possibly thought what I said was rather orderly, rather careful, it corresponded to their opinion […]. Then there were these discussions in private. They believed that, they possibly thought this kind of thing does not suit in the public field, they possibly had this kind of scruples, so they contacted me in private, and because of that some of them became my friends." P10

This interviewee is very different from the majority of the people we have met. He declares that he is very much interested in politics. But in this long extract, we can understand how he draws general considerations from a small casual example. All his vocabulary is that of someone who cares about public interest (rabies, pollution, city management, public benefits). Contrary to the people who get involved in moral questions like adultery, his arguments are not about feelings or morality. They are about common rules and rationality (legislation, orderly, careful). In our understanding, that interviewee is definitely building his own small public space to discuss with other people about their common interest as members of the Chinese society. He is getting involved into a kind of political discussion.

Some people agree with him and propose to organize something. But as we can see, they would not have chosen the forum itself to answer and get organized. They did so through the private messaging, as they believe that no one else can know about it. This tells us that criticism, involvement in public interest questions can actually happen on the web, but we can see only a very small part of it.

We have known since Kundera that the control of dogs can be a political question, because it is about public order, and it touches the population in a very sensitive way. So it can cause a conflict between personal interests and public interest. This might impact the legitimacy of the authorities and the way they manage to protect the people's well-being.

But everyone does not react like this interviewee. He is actually quite exceptional. In this case of a contradiction, and because he is personally concerned by the question of dogs, he chooses to express his disagreement (*voice*[30]) despite the specific constraints of expression in China. But other persons, when confronted to the same question, happen to react quite differently.

The following interviewee, for example, chooses to ignore the question, even though she feels rather touched by the fate of the pets.

> "We can not change things. Recently, a child has been bitten by a dog, so now they are catching dogs again very seriously. Now we can only have one dog, but many people still have two or three dogs, do you think they can catch them all? It is not possible. Many of them are big pets, […] but finally I feel that it is much ado about nothing. Sometimes I think they say it like that, but in reality it is not that severe, so I think it is enough to know about it. Now they are catching them, but I think it is not much linked to me, so I don't pay attention to it."

This person has obviously been in contact with the debate about dogs. She has decided to remain indifferent even though her first reaction was to feel pity for these dogs, as the rest of the interview has shown.

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[30] HIRSCHMAN, Albert, *Exit, Voice, and Loyalty: Responses to Decline in Firms, Organizations, and States*, Harvard University Press, 1970

Another person has talked to us about this issue. Her first reaction was pity as well, but afterwards her attitude towards the issue is rather different. The first thing we can notice is her emotion when faced with dogs-related news.

"Sometimes I can pay attention to other things, during the last days the municipality of Beijing has been against dogs, and lots of dogs have died. I am very angry because of that, sometimes I see it on forums, everybody talks about it, but there is no solution. The only possible thing for netizens is to send their outraged articles and their own opinions to each other, but in reality it is impossible to change. Sometimes I feel that the Internet is rather helpless."

This interviewee feels helpless like the former one. They almost react the same way: at first, they are touched by the "tragedy" of dogs being caught and killed in the streets. They both find that they have no power to change the situation. But in the case of this last interviewee, she reacts differently when it comes to expressing her own opinion. When the other woman prefers indifference, this one can not help but say something, though useless.

"- In fact I find that such things as Sohu, Sina and the dailies like "Beijing Evening News", "Beijing Youth Daily", they all reflect the opinion of the government.
- Why do you have this feeling?
- Before this feeling was not so strong, but through the events about beating dogs this time, on the newspapers and on Sina they made propaganda saying that wandering dogs are bad for the people. But I read on a small BBS, and also on some people's blogs, that we directly go beat dogs, and there are lots of small dogs on their own, and they are beaten to death because they can not have a hukou. And they said that the dogs raised at people's homes can not catch rabies. But one of them was registered on Sina, and the article was deleted, other people could not see it anymore.
- It was deleted after a long time?
- Within about five minutes. It was deleted, and then that person sent the article on a small BBS, and everybody answered it after reading it, and it was transmitted to another small BBS, or to e-mail boxes."

Here we can really see that censorship does not stop exchanges between the individuals, and how sometimes it can even draw the attention of the people on some topics. Emotion, anger, pity are some feelings that can lead the people to decide and says what they think about a topic. It can be the starting point of a new way of thinking. Some persons may want to argue with more developed ideas to make other people understand why they feel bad about an event or a policy. Even the most casual topics can be the source of such a process. Anyway, politics lay everywhere in people's lives.

Conclusion

Some interpretations of the Chinese culture state that the people can not get involved into politics because they belong to a traditional framework in which political decisions are not the tasks of the individuals. Indeed, some aspects of the netizens' attitude towards political

discussion on the web seem to consider that their role is only to try and reach prosperity. In that sense, politics in China would only be a technical activity, and the competency to solve economical problems would be the main source of legitimacy. But some grassroots questions like the controversy about dogs in urban areas also highlight that the people are not unaware of common interest questions, and that they do have opinions about it. So the individuals are not totally outside of politics. They are confronted by it every day, and they need to position themselves with respect to it. Sometimes they choose not to disturb what they believe is public order and prefer to remain silent in public areas. But sometimes they can also choose to express their point of view, their emotions, and get in touch with other fellows who share the same interests. They may not even consider it as a political matter. The Internet is a very hybrid space indeed, and it allows a large renewal of social links and activities.

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Bulgarian Online Discussion Forums on Politics:
Comparative Analysis of Structures and Agenda Issues

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Abstract

The paper presents a comparative analysis of discussion groups on politics and public affairs hosted by the biggest Bulgarian portals, on the one hand, and popular discussion forums in online versions of Bulgarian print media, on the other. The research question is whether the structural differences in the two types of discussion forums produce major discrepancies in the process of agenda setting and issues negotiation. The study provides empirical data on the problem of mass media infiltration into the principally autonomous discussion zones of forums hosted by Internet portals. It is ultimately suggested that the different kinds of forum domains generate specific audiences which share common issues of importance but also have their own distinctive agendas.

The Research Question

The agenda-setting concept in mass communication studies calls attention to the act of prioritisation and hierarchisation of issues addressed by the media and by the public. As McCombs and Shaw (1972)[1] pointed out in their seminal study mass media play an important part in shaping political reality; by determining the level of importance of a given issue the media influence the setting of social agendas. Nowadays, the notion that the media can construct audience perceptions of the social world faces such new media characteristics as increased interactivity, convergence of mass- and interpersonal communication, dominance of the networked individualism. As a result the new media environment provides grounds for further hypotheses and examinations of the agenda-setting process.

The present study focuses on online discussion forums as an interesting arena for agenda-setting development. Online forums offer easily accessible opportunities for exchange of information and personal comments on a variety of public or private matters. At the same time, online forums function as a two-directional open information source – access is available not only for active participation but for passive use (i.e. reading) as well. Thus, the exchange of information taking place within the space of the forum concerns both the set of individuals initiating it as well as a potentially unlimited majority of Internet users. Additionally, as a general tendency, in online forums there is a strong polarisation toward the non-formal and non-institutional forms of debate. An important question is to what extent such a polarisation affects the shaping of agendas within the forums, and, to put a further emphasis – to what extent contributors to online discussions are (not) influenced by the mass media in proposing and selecting issues for debate. A precise answer, in turn, is to take account of the fact that online discussion forums differ in structures and location.

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[1] McCombs, Maxwell E. and Donald L. Show (1972) The Agenda-Setting Function of Mass Media // *The Public Opinion Quarterly*, Vol. 36. No. 2. New York: Columbia University Press, pp. 176-87.

In the present paper attention is paid to two kinds of discussion forums on politics – forums hosted by online versions of Bulgarian print media, on the one hand, and forums hosted by the biggest Bulgarian portals, on the other. The research question is whether the structural differences in the two types of discussion forums produce major discrepancies in the mechanisms of topics selection and actually in the prioritisation of issues.

The forums in the online versions of print media are organised as exchange of postings on the given paper articles. At the same time, readers' and discussants' interest respectively vary from article to article, indicating that some publications are more relevant to their personal needs or public engagements than other. Thus, some issues appear to be really prioritised, at least by those active part of the public. Most importantly however, this type of discussion forums are structurally dependant on the papers' editorial policy of gate-keeping and framing of information.

On the other hand, discussion forums hosted by the Internet portals are developed by participants' self-initiative and subjective choice of issues of significance. The agenda produced by such discussion groups is a bright mosaic of many individually determined agendas exposed to debate, evaluation, augmentation, or rejection. Structurally, the agenda proposed in such a way, compared to the forums in the online versions of print media, is to a higher level set on a basis of non-institutional and non-editorial negotiation process. The authorship is initially heterogeneous and equally accessible to those who are interested. The agenda issues are not necessarily adequate to traditional media daily priming, developing in a temporal autonomy. Nevertheless, a basic source of topic proposals in this kind of discussions is namely information published in the mass media. As a result the mass media are, to different extents, infiltrated in the principal autonomy of such forums. The study aims at examining this phenomenon by providing relevant empirical data.

Method of Research

The above sketched two types of online discussion forums are represented by those forums attached to the online versions of the Bulgarian dailies *Sega* (*segabg.com*) and *Dnevnik* (*dnevnik.bg*), on the one hand, and the politics forums hosted by the biggest Bulgarian portals – *Gyuvetch.bg* (*forum.abv.bg*) and *Dir.bg* (*clubs.dir.bg*), on the other.

The four discussion arenas are analysed separately and comparatively through quantitative indicators generated by the structural specifics of the corresponding domain.

The first step of the investigation is registration of the number of topics and comments produced within the chosen period of time – from 1-15 January 2007. In the case of the *Sega* and *Dnevnik* online newspapers the number of topics equals the number of information units, i.e. the interactive technologies offered by the websites of these papers make each article a potential incubator of a discussion. It is the readers' subjective choice that imposes the final decision whether an article is worth to be commented. The number of comments attributed to a given piece of news is used to measure its *discussability*. 'Discussability' is a herein used term to illustrate the level of a topic's/article's potential for generating comments. It is considered to relevant in terms of agenda-setting in the environment of online forums since it simultaneously entails the notions of public interest, interactivity and valid feedback. The

herein conducted study relies on the discussability of a topic for an indication of its place in the hierarchy of readers'/participants' agenda issues.

The registration of the number of topics and comments in the domains of *Sega* and *Dnevnik* is distributed by rubrics according to the dailies' own structural organisation. Among the chosen rubrics are those devoted to news and analyses on domestic and world socio-political problems. All information units available in those rubrics within the selected period of time are taken into consideration. The completed registration allows the calculation of the average number of comments posted by each rubric – thus it is easily observable where there are differences in the levels of discussability of rubrics and whether such differences correlate with rubrics having certain potential for priming and framing of information such as 'Front Page', 'Accent [Important Headlines]' or 'Comments and Analyses'.

In the domains of *forum.abv.bg* and *clubs.dir.bg* the number of topics containing posts from 1-15 January 2007 is recorded as well. The results are ranked in terms of discussability of topics. Additionally, attention is paid to the origin of topics – topic proposals are distributed by source (such as references to mass media, personal reflections, and so on).

In a final step, the study attempts to compare the topics with high discussability produced in the two kinds of forums and to evaluate the corresponding level of differences or similarities.

Findings

The online discussion forums of the *Sega* and *Dnevnik* dailies were chosen to complete the purposes of the present study because of their established popularity among Bulgarian Internet users. Dating back to 2000 and 2001 respectively,[2] they are among the pioneering examples of Bulgarian print dailies offering this form of feedback in online environment. According to the current status of the regulation requirements of the two online newspapers, there is one basic difference in the corresponding discussion forums: participation in the forums of *Sega* requires a registration of a user profile (including nickname, password and e-mail address) while posting comments to *Dnevnik* articles does not call for existing registration. In both occasions participation is free.

The pieces of news published on the two media sites are arranged in rubrics with similar appearance. For the *Sega* daily they are 'Front Page', 'Bulgaria', 'Abroad' and 'Observer'. *Dnevnik* offers rubrics such as 'Accent [Important Headlines]', 'Bulgaria', 'World', 'Interview', 'Comments and Analyses', 'Special Theme', 'Columnists'. The enlisted categories deal with information about domestic and world affairs of socio-political character. There are also rubrics devoted to economics, sports and weather news, cultural events, and so on but they were not taken into consideration in the course of the study. As suggested from the rubric titles, such a structural organisation of the information offer denotes not only descriptive but evaluative editorial actions as well. The 'Front Page' and the 'Accent' rubrics are typical examples of how special emphasis is paid to selected news. Another model of prioritisation of news can be seen in the 'Comments and Analyses', 'Special Theme',

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[2] For further information about the initial status of these discussion forums and the interesting early rivalry among the users of the two forum domains, see Eftimov, Yordan (2004) The Forums in the Digital Version of Bulgarian Newspapers and the New Communities // *Sociological Problems*, No 3-4. Sofia: Institute of Socioogy, pp. 191-202.

'Columnists' and 'Observer' rubrics where socio-political problems are directly and analytically identified as such in correspondence with the editorial policy.

Findings about the discussability of the papers' rubrics can be seen in Table 1 and Table 2. It is obvious that the readers of the daily *Sega* generate a much bigger number of comments than the readers of *Dnevnik*. A more important observation however is that the average number of comments per rubrics match the editorial policy of prioritisation and hierarchisation of issues. In *Sega*, the peak numbers of the average discussability are concentrated in the 'Front Page' and the 'Observer' rubrics producing a high level of polarization in comparison with the average number of comments posted in the other two rubrics. The findings in the case of *Dnevnik* lead to a similar conclusion although such a vivid polarization is not evident. The rubrics 'Accent', 'Comments and Analysis' and 'Special Theme' generate the largest average numbers of comments.

Table 1. *Segabg.com*. Distribution of comments by rubric.

	Front Page	Bulgaria	Abroad	Observer
Number of information units	29	225	104	58
Total sum of comments∗	1149	2319	1186	2769
Average number of comments per rubric	39.62	10.3	11.4	47.74

∗ Total sum of comments for all rubrics – 7423.

Table 2. *Dnevnik.bg*. Distribution of comments by rubric.

	Accent	Bulgaria	World	Interview	Comments and analyses	Special theme	Columnists
Number of information units	10	154	144	11	50	8	5
Total sum of comments∗	137	1206	615	38	526	96	36
Average number of comments per rubric	13.7	7.83	4.27	3.45	10.52	12	7.2

∗ Total sum of comments for all rubrics – 2654.

The discussion forums hosted by the portals *Gyuvetch.bg* and *Dir.bg* are arranged in internal rubrics the variety of which is much greater than that of the examined online papers. The current research focuses on the *Politics* sections of the chosen Internet portals. In *clubs.dir.bg* there is a discussion arena entitled *Politics, World* consisting of sub-forums *Politics*, *Power*, *Emigration*, *Macedonia* and *Bulgaria*. Most actively used is the sub-forum *Politics*. It deals with both domestic and foreign public affairs and is a subject of analysis in the presently described project. As for the other sub-forums in the section, the topics discussed are either irrelevant or the postings are too scanty to be taken into consideration. In *forum.abv.bg* the *Politics* section comprises six sub-forums: *Bulgaria*, *World*, *Macedonia*, *The Eastern Question*, *Parties and Politicians*, *Elections*. Detailed examination is given to the *Bulgaria* and *World* sub-forums which host discussions on Bulgarian and world politics respectively and, as such, are analogous to the *Politics* sub-forum in *clubs.dir.bg*. As for the other sub-forums in the section, they are assessed as being of minor significance in terms of generation of topics and exchange of comments for the researched period.

In accordance with the figures in Table 3 and Table 4, a conclusion may be drawn that the participants in the forums of *Dir.bg* are far more active in initiating discussions and posting comments than the contributors to the forums of *Gyuvetch.bg*. To this initial observation, however, a further remark should be added. It refers to what is here determined to be a major difference between the administrative practices in the two forum areas. Within the forums of *Gyuvetch.bg* discussions are strictly regulated, with too little tolerance for divergence from the aims of a discussion such as use of off-topic postings and chat-like irrelevant notes. In contrast, in *clubs.dir.bg* regulation is rather loose and moderation takes place on an infrequent basis. As a result, discussability in the *Politics* sub-forum in *Dir.bg* is partly diluted and replaced with a pseudo-essential exchange of personal attacks among the participants.[3] Additionally, discussions in *clubs.dir.bg* are often fragmented, some topic proposals being repeated by different users or, in other cases, topic proposals causing low level of discussability being given response under the form of a new topic proposal.[4]

Another observation, partially illustrated by the figures in Table 3 and Table 4, concerns the continuance of discussions. In *clubs.dir.bg* the exchange of postings on a given topic usually does not last more than a few days. In comparison, discussions in the forums of *Gyuvetch.bg* often develop in longer periods of time; there are even topics which keep participants' interest up for a few months although this interest is not necessarily actively expressed through the whole period of discussion. That is why, Table 4 shows records for the number of postings produced strictly within the researched period as well as data for the overall discussability of topics containing those postings.[5] In this respect, the remarkable difference in the average numbers of comments per topic entails the suggestion that participants in those particular sub-forums have a specific understanding of topicality and prioritisation of issues.

Table 3. *Clubs.dir.bg*: Forum *Politics, World*: Sub-Forum *Politics*. Number of topics and comments.

Number of initiated discussion topics	133
Total sum of comments	3184
Average number of comments per topic	23.94

Table 4. *Forum.abv.bg*: Forum *Politics*: Sub-Forum *Bulgaria* and Sub-Forum *World*. Number of topics and comments.

	Sub-Forum *Bulgaria*	Sub-Forum *World*
Number of discussion topics	27	13
Total sum of comments	1147 (430)∗	586 (111)
Average number of comments per topic	42.48 (16)	45 (8.54)

∗ Figures in brackets indicate sum of comments/average number of comments within the specified period (1-15 January 2007).

Especially interesting findings related to the selected forums in *Dir.bg* and *Gyuvetch.bg* are the figures describing topic proposals in terms of the sources that motivated their authors to launch a discussion (Table 5, Table 6 and Table 7). In a comparative perspective, it can be

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[3] This phenomenon is undoubtedly part of the interconnected processes of identification, role-playing and community building within the forum. However, it easily transforms into pseudo-discussability when such comments fill up whole postings, thus leading to deviation from the subject under discussion.

[4] For example, a topic proposal entitled 'The [Bulgarian] nation will not extinguish...' generating 10 comments is followed by a new topic entitled 'The [Bulgarian] nation is extinguishing' which, in its turn, leads to 82 postings (*Clubs.dir.bg*: Sub-Forum *Politics*, 07.01.2007).

[5] The findings refer to comments posted till 31.03.2007.

summarised that participants in the *Politics* sub-forum in *Dir.bg* use a greater variety of resources in the process of topic initiation than the authors of topic proposals in the domain of *forum.abv.bg*. Furthermore, special emphasis should be given to the fact that topic proposals in the analysed sub-forum in *clubs.dir.bg* are predominantly based on references to news media while the corresponding sub-forums in *forum.abv.bg* rely mostly on participants' personal stories, experiences, observations and reflections as a basis for discussion initiation.

Table 5. *Clubs.dir.bg*: Sub-Forum *Politics*. Distribution of topic proposals by source.

Source of topic proposals	Number of topics	Percent
Quotation and/or references to online media resources (online versions of print media, information agencies, news sites)	56	42.1
References to other online resources (websites of governmental and non-governmental institutions, online encyclopaedias, video sharing sites, etc.)	10	7.5
Copies of and/or references to pieces of information without identification of the exact media sources	15	11.3
References to offline media (TV, radio, press)	5	3.8
References to topics from other online discussion forums	8	6
References to calendar and historical events	4	3
Personal stories, experiences, observations, reflections	26	19.5
Other (anecdotes, pictures, poems)	9	6.8
	Total 133	Total 100%

Table 6. *Forum.abv.bg*: Forum *Politics*: Sub-Forum *Bulgaria*. Distribution of topic proposals by source.

Source of topic proposals	Number of topics	Percent
Quotation and/or references to online media resources (online versions of print media, information agencies, news sites)	5	18.5
References to other online resources (websites of governmental and non-governmental institutions, online encyclopaedias, video sharing sites, etc.)	2	7.4
Copies of and/or references to pieces of information without identification of the exact media sources	4	14.8
References to calendar and historical events	2	7.4
Personal stories, experiences, observations, reflections	14	51.9
	Total 27	Total 100%

Table 7. *Forum.abv.bg*: Forum *Politics*: Sub-Forum *World*. Distribution of topic proposals by source.

Source of topic proposals	Number of topics	Percent
Quotation and/or references to online media resources (online versions of print media, information agencies, news sites)	4	30.8
Copies of and/or references to pieces of information without identification of the exact media sources	2	15.4
Personal stories, experiences, observations, reflections	7	53.8
	Total 13	Total 100%

Finally, an overview of the discussability of topics in the four studied domains leads to the conclusion that there are major issues of importance typical for all forums in question. These issues can roughly be summarised as: Bulgaria's membership in the European Union; local nationalism; Russia's politics and strategic interests; foreign policy of the USA. However, it is not the concrete subject matter of these topics that is taken into consideration in the present

study but the fact that there are common issues among the topics with highest levels of discussability in the different forums. At the same time, each of the analysed forum areas offers a much broader list of peak discussability topics than the above mentioned. A comparative look at those themes shows that the highest level of inter-forum reiteration of issues concerns the online newspapers *Sega* and *Dnevnik*. The second highest level of reiteration of themes can be observed in a comparison between the *Sega* and *Dnevnik* online dailies, on the one hand, and the *Politics* sub-forum of *Dir.bg*, on the other. The situation in the forums of *Gyuvetch.bg* is most intricate because of the dominant role of non-media derived topic proposals in addition to the specific topicality of issues achieved there. As a result, the high discussability topics in the *Bulgaria* and *World* sub-forums are partially comparable with issues discussed in the comments-and-analyses rubrics of the online papers, and partially comparable with topics from the equivalent sub-forum in *Dir.bg*. As a whole, similarities with the latter are to a greater extent evident.

In a further remark regarding this final step of the study, attention should be paid to the fact that there are discernable dissimilarities in discussion issues among the forums. Each forum creates particular sensitivity to certain issues, which, in turn, are of minor or insignificant importance in the other examined zones for online debate, or are not even present there. In this respect, it is assumed that each of the four different forum areas generates a distinctive public response and, subsequently, agenda priorities.

Conclusions

In a summary of the main observations derived from the present study, there are two central conclusions. First of all, part of the findings give a verification to the classical postulation that the media are successful in telling people what to think about. It is evident in the case of the *Sega* and *Dnevnik* online newspapers where discussability of topics is in accordance with the editorial prioritisation of issues. This leads to the implication that the given media agenda setting is absorbed by the audience and, as a matter of fact, discussion of socio-political issues is set in a top-bottom manner.

The second major conclusion concerns the problem of news media infiltration into the autonomy of online discussions which are not attached to media sites. In the case of the analysed sub-forums of the Internet portal *Dir.bg*, this infiltration is clearly observable since the prevailing number of topics is initiated under the form of direct reactions to information published in various news media. This model of debate structuring is to a great extent similar to the model provided in online newspapers. At the same time, the subjective choice of information to be quoted or referred to and deliberately proposed for discussion should not be disregarded. Ultimately, this type of forums offer an interesting hybridisation of media-related and subjectively-motivated selection of agenda issues.

A different model of discussion initiation is visible in the case of the sub-forums hosted by the *Gyuvetch.bg* portal. In this particular domain preference is given to the analytical talent of participants themselves. Socio-political problems are presented as such through a process of personal generalisation and evaluation of events. Of course, it is assumed that information about contemporary political affairs, especially in world politics, is hardly to be derived from personal experience and this kind of knowledge is most probably dependant on media news. However, in such occasions there are no direct references to mass media and topic proposals are presented in a manner that points to the very discussability potential the author finds in

them. Additionally, there are even topic proposal stated as invitations for debate on theoretical issues in the sphere of politics, which, in turn, is another example for the developing of a specific topicality of issues and it significantly differs from the topicality offered in mass media. Consequently, those forums generate an agenda model enabling the setting and negotiation of key issues in a bottom-up way.

Ultimately, the dissimilarities in the directions of the agenda setting processes in the forums of *Dir.bg* and *Gyuvecth.bg* only partially confirm the hypotheses that the differences in the structures of forums hosted by online newspapers, on the one hand, and by Internet portals, on the other, affect the modes of issues prioritisation. However, as it has been implied, each one of the four forum domains generates its own audience and when compared with one another it turns out that these audiences share common but also have unique preferences in terms of agendas.

Approaches to Cross-National Analysis:
The *EU Kids Online* Project

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Abstract

This paper draws mainly on the first nine months of the project *EU Kids Online,* an 18-country[1] study evaluating European research on children's experience of the Internet. The project is funded[2] by the EC's *Safer Internet Plus Programme*. Although this is work-in-progress, and the first formal reports at not due until the autumn[3], there is already enough material and experience from the project to provide some first reflections for any other research that plans to consider cross-national analysis.

The areas of the project[4] that will be considered in this paper are:
   a) the goal of charting empirical studies conducted in this area of research,
   b) the analysis of factors shaping why certain types of research are conducted in certain countries and
   c) the strategies involved in the comparative evaluation of the actual data.

Since one working group within COST298 is also covering these issues, albeit in relation to research on the Internet in general, the final section of the paper reflects on synergies, similarities and differences between the two projects.

Charting a field of study

Potentially the most problematic area involved actually mapping research in this field within the participating countries. Here the aim was to chart the pattern of available data, including where there is a preponderance of material and where there are gaps. In the course of doing so, we would create a repository, a searchable database, containing the details of projects that would then serve as a general resource for researchers in this field and an output from the project in its own right.

The first step involved scoping the project in terms of specifying what types of studies we wanted to document. Any charting exercise entails a process of drawing boundaries, making decisions about what to include and exclude, setting cut off points and providing definitions[5]. One simply has to bear these boundaries in mind when evaluating the patterns that emerge from this process.

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[1] Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, France, Germany, Greece, Iceland, Norway, Poland, Portugal, Slovenia, Spain, Sweden, The Netherlands and The United Kingdom.

[2] This funding pays for the coordinators of the network, in this case based at the London School of Economics, and it pays for the meetings. As in the COST system, much of the data collection and analysis by other participants is not funded.

[3] For more details see www.eukidsonline.net. The researchers involved in the coordination of the study are Sonia Livingstone, Leslie Haddon and Panayiota Tsatsou.

[4] *The EU Kids Online* project also has a component writing a methodological literature review and best practice guide relating to the research on children, research on Internet use and cross-national comparisons.

[5] An example here would be who to count as being a child. In this particular study, we followed the common legal definition, specifying someone under 18 years old.

Ultimately we decided to consider those research projects that had been carried out since 2000 that examined children's experience of the Internet, including studies of parents' and teachers' in as far as they commented upon or were relevant for children's online experiences[6]. Since the aim was to chart what was publicly available, the search excluded proprietary commercial research if the details were not in the public domain. In countries where a good deal of research existed, we prioritised searching for the more recent studies. If there were fewer studies in other countries, we would be more likely to consider documenting doctorate and masters theses in this field at an earlier stage in the collection process[7].

The original project outline noted that one challenge to providing a comprehensive account is that members of the team came from a range of disciplines and had different types of familiarity with the subject matter. But they were generally very competent researchers and the workshops as well as communications in between meetings provided an opportunity to share experiences in this respect and try to develop some common strategies. Since other work packages in the project required the input from this charting exercise at early stage, we took January 2007 as the deadline for our initial first analysis of the field. At that point we had collected 235 studies, enabling us to comment tentatively upon the patterns existing at that stage[8].

For anyone intending to carry out such as charting exercise in their own field of study, a number of lessons were learnt in this process of collection and documentation.

- A number of practical decisions had to be taken as team members sometimes discovered that, however much we attempted to anticipate all possibilities in advance, there was more than one way to code the details of a project. For example, multinational studies could be coded once in a section for such studies and/or they could be listed under each country[9]. Inevitably grey areas were also thrown up, even when great care was taken over the scoping of the study. For example, when some studies had really only very little on the topic of children and the Internet we decided they were not worth including.
- The amount of publicly available information that exists about studies varied and there were sometimes difficulties with tracking down missing information. In this respect, the most common problem was that the findings of studies were reported without sufficient details of their methodology (e.g. the nature of the sample). *EU Kids Online* team members tried to find the missing information (e.g. sending emails to the relevant researchers asking for details) but this was sometimes not successful, or else took time – a scare resource in the project.
- In the process of compiling details of projects, various factors affected the ease of finding the relevant research. One was the degree to which (at least some) information about such research is centralised. For instance, in Greece one site provided such a

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[6] For example, the EU Kids Online study included research on parents competence, their regulation of children's internet use, their awareness of risks - amongst other things.

[7] One issue that emerged in group discussion was that, for example, the number of years spent studying for a Masters degree varied by country, with implications for the amount of depth in research.

[8] The aim is to continue collecting data about research project throughout the 3-years of *EU Kids Online*, and update our reflections on these patterns at the end of the project.

[9] This is an example of a choice that was even more complex. In some studies identical research is carried out in several countries, in other studies, the national teams add on extra national research questions. To do justice to this, we coded multinational studies once, but them coded them in addition under the country heading if national researchers conducted extra research or added extra analysis at the same time as conducting the agreed international research and levels of analysis.

useful starting point for charting national research. In UK, the national research council had provided over 10 years of funding for research on ICTs in general, but in other countries there had been no such funding. In addition to searching online, national teams also sought the information by word of mouth, but the success of this was partly influenced by the degree to which there were larger or smaller research communities in the countries concerned[10].

We can now turn briefly to some examples of patterns observed within the studies collected so far. Sometimes it was already clear why certain patterns existed as we inspected the studies collected. Most studies were single country studies, even if there some EC funded multinational studies in the field. There was quire a large imbalance of Internet research across countries in general, as well as considerable variation in research on particular topics of interest to us such as risks to children and Internet safety.

A number of the studies, especially quantitative ones, were of ICTs in general, more often the Internet in general and occasionally children in general. But each included some data relating specifically to children and Internet. The inclusion of these types of study boosted the coverage of our basic knowledge of children's access and usage since there were the more commonly asked questions in these surveys. Methodologically quantitative studies clearly dominated, followed by ones combining qualitative and quantitative methods. Qualitative studies were more likely to be found in certain areas of research (e.g. interpreting data online, creating content, children's frustrations and concerns, strategies for finding material online, online learning, identity play and social networking).

Topical issues changed over time (e.g. chatrooms are now receiving less attention, partly because children use them less). Overall, there was less research on younger children, despite the fact that the age of Internet access is falling. Partly, there was more data on older teenagers because they are included in surveys of the general population (e.g. surveys starting at age 14 or 15). The proportion of commercial studies varied by country. In some there was very little commercial research in the public domain, whereas in some more of these studies were published.

The social shaping of research

A second strand to this project involved an analysis of the social shaping of research: why do different amounts of research exist in different countries and why are some research questions followed up in some countries more than others? This part of the project aims to explore the differences and similarities in national histories of interest in and concerns about children and the Internet. Obviously one key interest of European policy makers in this field concerns how much research is common across countries versus. how much is country specific. But this question of social shaping is also of academic interest given that this issue is very rarely addressed, at least in any sustained manner. Since this will be the last of the reports from the project we have at this stage only made a start in considering the factors involved.

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[10] For example, in Denmark and Poland many of the relevant researchers were in the team or known to them. In the Czech Republic one of the key researchers in the field was in one of participating universities, but tracing other research was more problematic as an unsuccessful approach to the Ministry of Informatics revealed. The Czech national team described the field as 'chaotic' in this respect. In Belgium, the research is divided by language groups, but we were fortunate in this respect in terms of having both Flemish- and French-speaking participants in EU Kids Online who could cover their respective research communities.

The project team initially identified some of the influences that we might consider investigating. The goal was then to develop systematically a range of questions one would need to ask about these research histories for each country and then explore what people or sources could contribute to answering such questions. Once again, the challenge is working out how to investigate this topic, trying out strategies to see both what is more fruitful but also evaluating how much effort was involved given that this, like any, project has limited time resources.

Starting with some of the processes within the researcher community, what is researched clearly reflects the particular interests of researchers. But looking more broadly it is influenced by a wider research context, including the histories of (social science and related) research in general, the methodologies favoured in different institutions or even countries, the nature and wider interests of the disciplines involved in research and questions of available funding.

Since the research community does not operate in isolation, we would have to consider the national histories of interest in and concern about the Internet in general as well as about children and the Internet in particular. This in turn would lead us to ask whether specific events, national lobbying by certain groups, the nature of coverage in the national media, national policy decisions, educational activities, etc., had had some bearing on the research that took place. To a certain extent, once you start this activity of identifying possible factors at work and discussing the experiences in different countries, the task then became one of prioritising what to cover in more depth.

As in the charting exercise, the project members are discovering how to act as 'detectives', piecing together the relevant information, including the task of identifying relevant sources and channels.

- For example, one of the relatively more straightforward tasks is gathering data on diffusion of the Internet in different countries. But then we decided that we also needed to investigate legal issues (e.g. the legal age of children for specific purposes, the legal boundaries of what can be researched[11]) or how the educational system is organised. While this type of information can be tracked down there is still the task of organising this into typologies in order to make more systematic comparisons.

- If we consider the funding issue, it became clear that it can be difficult to find out how decisions are made. Who is in a position to comment on this process as an informed observer? How transparent are the processes in national research councils? How does one investigate commercial processes which may be even less visible? Not only is there the problem of finding out about these processes but there is the question of what type of account we actually write, with what credibility?

- As a third example of the considerations we face, we were interested in media coverage of children and the Internet. Some countries, such as the UK, have national databases of at least press coverage (i.e. Nexis-Lexis) or else the research teams in *EU Kids* Online had already constructed their own databases. In such countries the first

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[11] For example, the Polish team pointed out that there are laws specifying what types of research one cannot do with children

step of searching for material was at least relatively more straightforward, but in other countries were no such databases existed there was not the same starting point.

Since we are still in the beginning phase of this part of the project, the following observations are just some 'tasters' of the material that we may decided to develop.

In terms of academic disciplines, a summary of Belgian research noted that media and communications tended to deal with access to the Internet, use, skills and consequences; sociological studies were more interested in social inequality, stratification, social pressures relating to the internet; and pedagogy dealt mainly with risks and strategies to cope with this. However, at this stage it is not clear that the same disciplines have identical foci in the different countries. Hence, this is an interesting starting point but it needs to be explored further. Still using the Belgian example, French speaking Wallonia has a tradition of being critical to the media, looking at the social impacts of media, looking how we are influenced by the media – but often within a theoretical discussion. In contrast, the Flemish equivalent media departments have worked with the private sector, look at such matters as uses and gratifications, digital divides, cultivation analysis and in the course of this have generated far more empirical data as regards Flanders.

Turning to funding, while a majority of studies are, as in the other countries, publicly funded (e.g. national research councils, the Government, the regulator etc) it is clear that in UK one of the factors contributing to the relative wealth of research on children and the Internet is also commercial research and research by NGOs, especially on risk issues. But the very active NGOs, such as charities, have not only funded some projects themselves but have managed to win the support of some commercial companies to fund some studies. One question when we write the report in this area is how to handle examples of processes which may turn out to apply to one or only a few countries.

As regards Internet adoption itself, the teams in countries such as Bulgaria and the Czech Republic noted that the lack of research was probably in part related to the relatively slower diffusion of the Internet compared to other parts of Europe. This was also reflected in the fact that media coverage of the Internet was more limited. Moreover, in these and some other participating countries the specific question of Internet risks to children was only just starting to be discussed and hence there was very little research on this topic.

Clearly this part of the project is at the point of developing its ideas further, including through group discussions and reflecting on observations raised by its members. The next stage involves specifying the contents of national reports that we would like each team to write. Once everyone can see what is described in other countries we will be in a better position to enhance these early reflections on the processes shaping research.

Comparative analysis

The third strand of the project entails making sense of the different patterns of findings within the different countries. Where, and to what extent, are there European commonalities or differences regarding children's online experiences, risks and opportunities? What common European responses and patterns have been identified and what explains these? In contrast, where is there variation and how is this to be explained? To put this in terms of Kohn's framework (1989) we are looking at both countries as units of analysis, trying to explain similarities and differences, and countries as case studies to evaluate more general hypotheses

To put this part of the project into context, existing cross-national studies, especially surveys, present statistics comparing national patterns but they often do not attempt to explain why these patterns exist. In studies which do try to explain patterns, this is often done by referring to some other data from the same datasets (Haddon, 1998). But in this project we wanted to go a step further to consider influences which may not be captured in other parts of the same database, including looking for ways to seek and manage 'softer' data, including background information about countries concerned. In this respect, there is some overlap with the approach taken in the analysis of the social shaping of research part of the project, as outlined above.

For practical purposes, this part of the project started with a three-country analysis covering Poland, Portugal and the UK. Following the experience of a previous comparative study (Livingstone and Bovill, 2001) it was felt to be easier to establish procedures and principles of analysis with a limited number of countries before rolling these out to all 18 countries. Of course, one has to think through the implications of picking particular countries as the starting point. For example, some of the data we use may be available in these countries but not necessarily in others. Some themes may be less likely to emerge because they were not prevalent in these particular countries, but might be in others.

One of the key reasons for choosing the above three countries, apart from the fact that they conveniently represented central, southern and western Europe, is that the two multi-country surveys that had examined children and the Internet - *Eurobarometer* (2006) and *Mediappro* (2006) – had both covered these countries. Therefore, we had two datasets with comparable questions[12]. As a validation exercise, the national teams then reflected on the plausibility of the results from these two sources, especially by comparing the findings against any existing national research that had asked related questions.

If we take a particular example currently being considered, it is clear from a variety of statistics with the *Eurobarometer* survey that parents have different perceptions of Internet risks across these countries, and hence we are considering a variety of potential contributory factors, and different ways of trying to measure them. Some of these are outlined below in order to demonstrate the variety of strategies that we are using.

- In some cases, we can to an extent draw upon other statistic sources. Examples would be measures of Internet diffusion in the different countries 9noted also in the previous section), information about more general values and attitudes from the Social Values survey, and some data on comparative risk perceptions asked within other Internet surveys.

- To elaborate a little, in relation to the last point, there is the question of whether people in some countries more than others more concerned about potential risks to children, or risks associated with ICTs (e.g. TV), so their awareness of Internet risks may in part be an extension of this wider concern. In this instance, and in relation to a number of other factors we look at, we may well not simply rely on one set of statistics, but rather draw on a range of evidence to mount an argument.

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[12] However, there were some problems with these studies. The *Mediappro* data had not always been collected in the same way in the different countries. The *Eurobarometer* study may have been interested in parents roles in relation to children and the Internet and parents as informants on children's behaviour. But what it actually covered was 'carers', which included older siblings as well as parents.

- Taking another example, we want to examine parents' views on children and parenthood. In different countries, how far do parents think that monitoring their children's socialising on the Internet is their responsibility versus the responsibility of other agencies? Here we would, as in the case of social values, look to the research outside the field of ICTs, in this case the literature on comparative parenting.

- Other potential influences include that of NGOs (as lobbying and awareness raising bodies) and the policies of ISPs in the different countries (e.g. in terms of how much their literature and the organisation of their access draws attention to Internet risks). Some of this can be gleaned from looking at the ISP's literature or the campaigns of NGOs (which comes out in the press coverage). But the national teams have also attempted to set up national advisory panels of relevant stakeholders (including NGOs and ISPs) and so some of the relevant information for writing national reports can be found through talking with these bodies.

Turning to some evidence that we already considered, from surveying the press databases it is already clear that media coverage of Internet risks is very different between the different countries. There is much more material on this the UK and correspondingly much greater parental awareness of risks, as shown in the *Eurobarometer* survey. This in part reflects the greater visibility and activity of NGOs in the UK combined with the organisational framework provided by the Home Office Task Force on this topic – a body unique in Europe.

If we look at legislation and policing, in the UK case there are a range of laws (and ambiguities in those laws) relating to paedophiles, for example. An official list of convicted paedophiles is maintained which employers have to check when recruiting staff to work with children. Special police units exist to monitor the Internet for images of children used in pornography and they have named police operations when the make an effort to find paedophile rings. Hence there is a good deal of regulation and implementation of that regulation in this field, much more so than in the other two countries.

At this moment in time we are still assembling the relevant information and we have yet to write the report that brings this all together – so far we have only written elements of this. But there is enough to show the direction in which this part of the project is going, and the type of analyses that will come out of it.

Implications for COST296

One of the aims of reporting the *EU Kids Online* research at this point in time is to provide some indication of the types of considerations and choices one has to face when attempting to break new ground in international comparative analysis and provide some initial and broad indications the type of material it can generate. As an example of how these might inform other research, but how different choices may have to be made, this last section considers the workgroup within COST298 looking at *The Multiple Cultures of the European Information Society*[13].

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[13] In the previous action COST269, this group had considered the potential cultural factors shaping national variation in people's experience of information and communication technologies (see Thomas 2005, and more generally Haddon, 2005).

In fact, this latter project shared some of the same goals as *EU Kids Online*, reflecting the fact that the author was in both. As part of the initial process for acquiring COST funding the proposed Memorandum of Understanding indicated that part of the COST298 project would consider charting the field of broadband research, offering some explanations for the patterns of research and exploring some of the patterns found in the data. In other words, it promised to consider the three elements outlined in this paper. However, the thinking behind this was elaborated far further into a full-blown project with the collaboration of Sonia Livingstone[14] when *EU Kids Online* was subsequently formulated.

But if they share some similar goals, the differences between COST298 and *EU Kids Online* inevitably lead to some different decisions (and the same would probably be true of any other study attempting the equivalent comparative analysis). First the resources are different. All of the parts of *EU Kids Online* project address the cross-national analysis in one way or another, whereas it is dealt with by only one subgroup with COST298. That subgroup also has other goals, such as considering issues about digital divides in relation to broadband, and charting national discourses about the Internet. And the COST298 work is entirely voluntary, whereas at least the coordinating institution is (partly) funded in *EU Kids Online*. This makes a vast amount of difference to the amount of work - collection and analysis - that can be undertaken. Lastly, the focus of the COST298 subgroup is not specifically research on children but rather 'broadband' more generally, which potentially covers a far greater body of research.

Like *EU Kids Online*, COST298 has set up and started to fill a database of research (which will be a public resource for the research community). This will provide at least some empirical basis for charting the material that exists, and it has been partly based on the insights learnt from developing the *EU Kids Online* database. But it is also clear that the fewer resources and the wider field covered mean that it will be far less comprehensive than the more focused *EU Kids Online* repository. Hence in COST298 we to take different decisions and open up access to our database at an early stage to allow people to make their own entries directly. It also became important to use opportunities, like this conference, to gather data about studies when an audience informed about these is actually present.

Even adopting these strategies, the analysis of the database collected will have to be a little more tentative, probably asking where we might expect or where we might see evidence of processes similar to or dissimilar from to those identified in the *EU Kids Online* reports. This is an illustration of how one practical way forward has been to build on the experiences and insights from *EU kids Online*, to search for synergies and develop complementary forms of analysis.

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[14] For a previous appraisal of the literature on cross-national studies, see Livingstone, 2003.

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Politics on line: Comparative perspectives, Theories & Methodological Innovations: An alternative to State constrictions: cultural identity "Pays basque numérique" in the French Basque Country

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Abstract

The French Basque country bears two main paradoxes: the first is that its "historical and cultural" territory has no specific administrative existence in France; the second one is that a dual political culture mixes spontaneous democratic mobilisations and old-fashioned representatives' delegation. That's why traditional local acceptance of the elective political system is very strong whereas alternative and participative democratic movements persistently spread out (Biltzar des maires, "Pays basque 2010"…) to implement "decentralized" dynamics which are, most of the time, absorbed by a State control process. Nowadays, e-technology and innovative management appear as an additional opportunity. It allows all the supporters of glocal processes over multidimensional limits to defend some collective projects involved in this cultural area.

In such a specific political and social context, the aNTIC Pays Basque (Agence Pays basque des NTIC), close to an institutional administration (CABAB: Communauté d'agglomération Bayonne-Anglet-Biarritz) but independent in its management and direction, supports new form of localized governance thanks to NICT. Indeed, this associative structure contributes to glocal dynamics if we regard global and local specificities dual by nature but common in their modality. It's a way to put the emphasis on the fact that local forces don't only manage to attenuate the impact of global processes through technical instruments: it can help to promote alternative managements to State edifice; it can allow the identification of an unrecognized territory beside historical nation-state circumscriptions (in this case historically and culturally well identified). For example, in 2007, aNTIC Pays Basque drives Pays basque numérique Label, through an effective e-democratic participation involving Basque citizens, local French representatives and officials in the "policy" process (including, potentially, persons from outside of the French Basque territory). This way, it shows that public actions can be conducted by a local mobilization involving members of the civil society and the administration through governance processes and participative efforts, thanks to NICT support, inside and outside of the nation-state borders.
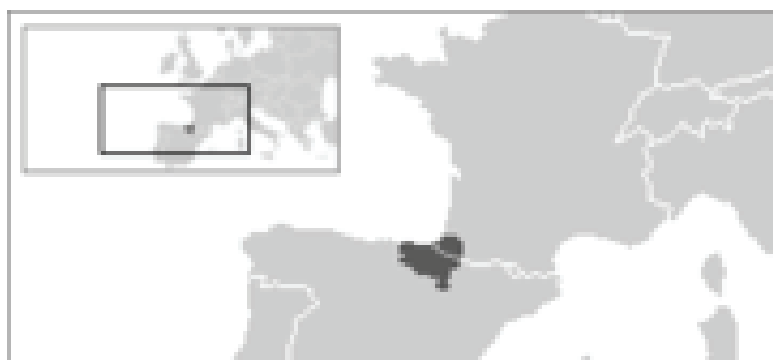
Location of the Basque Country

Introduction

The Basque Country spans both sides of the French-Spanish border. Guipuzcoa, Vizcaya y Alava provinces and Navarre make up the "Spanish Basque Country", also called "Hegoalde" (the Southern side) which shares character and cultural heritage with the French Basque Country also called "Iparralde" (The Northern side).

In Spain, since 1979, after the Franco Dictatorship, the Basque Country has a Statute of Autonomy that facilitates it to have a Basque Government, a Basque Parliament and indeed a clear identification. In France, there is no political and institutional representative cadre which correspond to Basque territorial reality. The three Basque Provinces belong to the *département des Pyrénées Atlantiques*, which they share with a Bearnaise part. At the regional level in Aquitaine, they don't have any institutional or geographical particularities. That way, they are French and they don't have any particular status if we compare with others French territories.

However, the Globalization and the Europeanization processes invite to consider the territories in new terms, sometimes in glocal ones. In multileveled systems, the local aspects supported for example by a tough identity and culture, offer abilities to build territorial solidarities alternatively with the State limits. The e-mobilization in a specific territory as French Basque Country allows cultural and political collective action alternatively to administrative boundaries. It produces a kind of bottom-up mobilization animated by all kind of local actors: representatives, firms, association. It seems possible to manage decentralized democratic policies alternative to top-down democratic institutional shapes.

That's this idea that I will defend: even with the State-locks, Basque collective action is still resisting under the Nation-State building process. Today, through Globalization and Europeanization processes, glocal dynamics may find a way to express themselves. In the French Basque Country, the NICT allow new forms of political participation. The example of Basque numerical Label ("Pays basque numérique") show us new forms of promoting Basque particularities alternatively/additionally with the French characteristics. Consequently, it makes us question about identity and territory within the Nation-State order, within a more globalized world, within NICT endogenous paradigms.

Part 1: How to decide in the French Basque Country?

The strength of the French State edifice until 20 years is that bottom-up dynamics were most of the time, controlled by Top-down dynamics. The regulation was not only institutional and systemic, it was also cultural through the concept of unicity of the Nation. Nevertheless, French Basque country has kept some autochthonous costumes that are now indirectly encouraged by the European Union integration and the Globalization[1]. In other words, the Basque identity could express itself in a Globalized world within Nation-State authority..

A. Local political culture background: a resistance under institutional containment

The political and administrative contexts contrast over both side of the Pyrenees: Unlike the Spanish Basque territories, the "historical" French-Basque provinces suffer a low institutional visibility and the natural corollary, they are unable to carry out autonomous government policies according to the rest of the French Country. In others words, there is no effective political decentralization locally, fundamentally because there is no identifiable Basque institution. The Basque department Project could answer this institutional failure. But, despite of the positive opinion of the civilian society and the local deputes, this task seems to be postpone until later. As Pierre Létamendia said *"The French-Basque country doesn't present any specificity on juridical plan. Its particularity leads with folkloric and tourist aspects [...]"*[2]. Like other ethno-regionalist movements in France, the first point is that there is a lack of political and juridical cadre, which could allow the development of an own political and democratic Basque scene[3]. There is no "sub-culture territorialized", which could make sense for the "French Basque people"[4]. So, in the French Basque country, the Basque territories have been integrated, institutionally and culturally, by the Centralist dynamics of the French Nation-State building.

1. Basque democratic and alternative mobilization tradition

The Spanish Basque historical territories have known a large government capacity; their traditional and feudal rights ("fueros") have been reintegrated… By contrast, in France, Basque country population has assimilated most of the French State paradigma, the French political culture has spread over all the French territories… Even so, as in Brittany, Corsica etc. their marginality in the map of France let their local specificities resist. Basque language (euskara) which has no specific status in the French Constitution survived thanks to citizens mobilizations since the 1960-70' (Seaska). Basque culture (Dances, songs, sports…) go on being teach in popular associations, and Basque sport federations support this trans-national representation (Country Basque football federation, Basque surf Federation EHSF, Basque pelote, Basque rural sports…). These cultural resistances and revivals are possible because of the works of Basque militants allowed it but not only.

In the French Basque Country, as in the Spanish Basque country, a culture of local collective practices (Maskarada, Carnaval, Charivari…) and democracy still coexist with the State

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[1] Canet (Raphël) Duchastel (Jules), *Crise de l'Etat, revanche des sociétés*, Québec, Athéna, 2006.

[2] Létamendia (Pierre), « Un nationalisme éclaté : le cas du Pays Basque », in Bidegaray (Christian), *Europe occidentale, le mirage séparatiste*, Paris, Economica, 1997, p. 293.

[3] Izquierdo (Jean-Marie) & Pasquier (Romain), « Les formations ethno-régionalistes en France : une exception européenne », *Pouvoirs locaux*, décembre 2004, n°63.

[4] Ritaine (Evelyne), « Territoire et politique en Europe du Sud », RFSP, vol 44, n°1, Février 1994, pp. 81-85.

authorities. In the everyday-day life, since the feudal times the local representatives use to congregate the Basque citizens to discuss local questions in popular or Citizens assemblies (called "Biltzar", "Batzar" according to the different historical Provinces…). If we consider other forms of solidarities in social economy, as the Cooperatives movement (SCOP movement [5]), French and Spanish Basque country use to create a greatest number of cooperatives than everywhere in Europe… So, specific solidarities, probably dues to the geographical isolation with the States centres explain these kinds of cultural resistance.

Despite of the French Nation-State building they're still alive and coexist and numerous everyday pan-lives: these solidarities deals with local democracy, economy, advertisement as sport, cultural practive… It's part of the local cultural background which is common with part of the Spanish Basque country. It maintains the identity alive regardless of the acculturation process lead by the Nation-State building in the late 20th Century.

2. State answers to Basque mobilization: institutionalization, disinterest or illegitimacy

About Basque language (euskara) or autochthonous questions as agriculture, French State holds different policies. Empirically, in long-time processes, Basque militancy can be integrated in governance management and their militant organizations institutionalized. In the one hand, their claims are not directly taken into account but marginally they are supported because the local demand is strong. In the other hand, about short-term policies or institutional structure questions, institutional locks block the recognition of alternative actors.

About Basque language, since the 1960'-1970' Basque language is in crisis. It has not been transmitted by the Baby boom Generation. Nevertheless, Basque militants support association schools, called Seaska ("cradle") enlarging the model from the Spanish Basque Country. More than 20 years later, they have been authorized to give class in Basque: in 1989 a first level in basque is conceded. In December 1989, Seaska firms an agreement with the *Ministère de l'Education nationale* (Education Ministry) to give Basque classes in Public schools (61 teachers). In the 1990', mixed scholar system is most widely allowed, so French public schools (école publique) can teach Basque language as well as French (Ikas bi: "Learn both")…[6] In October 2005, an *Office Public de la langue basque* is created by State delegates, Regional and departmental representatives, also the *Conseil des élus* from the French Basque country[7]. The linguistic policies are now decided by local governance under the control of State authority and Spanish Basque delegates are also invited. Basque language policies are now institutionalized in the French political system.

About participative uses, the French Basque militants ask for a specific Basque *département*, since the 1960': they are quite loyalist because they don't claim for a new institutional structure but a republican institution within the French State edifice (even if at first in the 1960-70' for some of them it's a way to allege a future independence for the Basque country, via autonomy).

Their long claims have been largely taken into account by the French political challengers as the Socialists (Parti socialiste) in the 1980'. During the Presidential campagne in 1981, Mitterand Candidate promises the creation of a Basque departement to manage better this

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[5] SCOT :Société coopérative ouvrière de production, Worker Production Cooperatives Society.
[6] Urteaga (Eguzki), *La politique linguistique en Pays basque*, Paris, L'Harmattan, 2004.
[7] http://www.flarep.com/Actualites/OfficePublicJanvier2005.pdf

territory, not yet in term of *décentralisation* (Loi defferre on *décentralisation* will come later, in 1982-1983) but in term of legitimacy (Rocard Declaration in 1973). Once President, Mitterand breaks its promise. Local representatives react creating an own association to promote the Basque *department* via legal and democratic system: the *Association des élus pour un département Pays basque* (AEDPB) in 1981. But, the French administration still denies its legitimacy[8].

In the 1990', the local representatives are still loyalists with the State institutions : in 1996, the Majors met together in Biltzar (traditional assembly) to defend the creation of a specific *Département Pays basque*: they vote and 63% of them agree with this idea. In octobrer 1999, more than 12 000 citizens demonstrate in the streets of Bayonne to support the creation of a republican institution. At the same time, a public opinion poll from the Institut-CSA demonstrates that 66% of the interviewees agree with the idea and with their representatives… There is no conflict with the very local representatives (Majors) but yes with the National authorities (Deputes and Government). The bottom-up expression is clearly defined but it's blocked by institutional locks which don't want to hear about it, because of the national unity.

Today, the defenders of a Basque institution ask for a referendum based on local initiative which is new in the French law (since March 28th 2003, *Réforme constitutionnelle*): a new platform called Batera (Together) is created in December 2002 to promote the idea: more than 110 associations, representatives of all political parties and citizens from the economical and cultural sectors participate in the movement. In October 2005, once more, the Majors claims for the creation of a *département Pays basque* for more than 64%. Since 2006, Batera tries to get the signing of 10% of the *département* electorate to ask for a local referendum, accordingly with the French constitution.

Despite of the civilian mobilization, the department question is not taken into account more than by the local and national challengers (during the President campaign: Socialist Royal says that a new institution was not interesting and Left Alternative Bové says that it's necessary for the Basque people). Most of the politicians are not interested in this question essentially because of Top-down logics are the real determinants of the politics/policies making in the mainland.

January the 15th, 2005, a French Basque syndicate ELB, which have the majority in the French Basque Country since 1995. ELB creates an alternative Chamber of Agriculture, Euskal Herriko Laborantxa Ganbara[9] as a substitute to the *Pyrénées Atlantiques* National Chamber of Agriculture, to protest against the lack of consideration about the local particularities of their territories in term of agriculture[10]. First, the *Préfecture des Pyrénées Atlantiques* tried to forbid its association because the name was written in basque. Second, in October 2005, the *Tribunal administratif* (Administrative Court) takes a proceeding against the Basque Chamber of Agriculture because they considered that it was illegal to obtain funding from the Majors. In February 2007, 26 Majors, supported by representatives of the Region Aquitaine, go in for answering the Administrative Court… One more time, alternative ways to approach policies question (agriculture) are still determined by Top down policies, in

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[8] Chaussier (Jean-Daniel), Quel territoire pour le Pays Basque ? Les cartes de l'identité, Paris, L'Harmattan, 1996.
[9] ELB is Euskal herriko Laborarien Batasuna: "Unity of the Farmers of Basque country", and Laborantxa Ganbara is "Chamber of Agriculture of the Basque Country" in Basque language.
[10] http://www.herrikoa.com/actualite/ehlg.htm

this case lead by oligopolistic Trade Union (FNSEA) [11]. The alternative Chamber of Agriculture is considered too much unconventional to be legal, even if it appears as a non-public/private structure.

In the French State structure institutional locks are used to control the local demands: about Agriculture, Basque language or institutional claiming, the bottom-up demands are managed by State or put under control of top-down determinants. Even so, local democracy demand is stronger and stronger. It makes the State react and organize the bottom-up demands through original governance kit.

B. French Top-down representation *versus* Basque local participative democracy

In France, participative democracy is a new concept in the political sphere. The traditional representative system used to defend the citizens interests in the National parliament (*Assemblée nationale*). Europeanization development, globalization process… marginally change the understanding of the political culture and the role of a top-down political system. Local representations spread over territories and others boundaries (cultural, social, economic…). In the French Basque Country, these changes make governance appear in the 1990' with no specific results in term of policies (i.e. Language...). Today, the process is institutionalized and the Basque militancy as pro-active actors is looking for more concrete projects.

1. French participative democracy: a new model

Today, through the European construction, the encouragement of a Public debate, close to public choices and opinions is largely promoted. Nevertheless, in a Country like France, used to be directed by Top-down policies through omniscient representatives, the notion of Public debate is a new concept that all the citizens don't really appreciate because they are educated to delegate their democratic voice to representatives.

This integration of public debate question has been firstly a reaction to a series of conflicts generated by unilateral Top-down policies, mostly about transport and equipment infrastructure design, in the 1970' and 1980'. Later, the Europeanization process in the 1990' incites the French legislation to follow the rest of the international community. After a widest participation of the Citizens ("Public"), overall in term of information about the ecologic impact[12], about the access to the administrative documents…[13], the Europeanization of the French law develops new form of Citizens participation. French citizens are now able to get informed in their territory about the Infrastructural policies[14]. In the 1990', the French juridical system follows the International and European recommendations and begins to promote participative principles on environmental questions. In 1995, in its 2nd article, the "Loi Barnier", allows to organize Public debate in the phase of elaboration of the infrastructural project[15]. The *Commission nationale du débat public* (National Commission of the Public Debate) is created in 1996: its secretary is directed by the Ministry in charge of the environmental questions[16]. So, the citizens participation policy is still top-down oriented

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[11] Fédération nationale des syndicats d'exploitants agricoles, Nationl Federation Agricol Workers Union.
[12] Loi n°76-629 du 10 juillet 1976.
[13] Loi du 17 juillet 1978.
[14] Directive 85/337/CEE de juin 1985.
[15] Loi du 2 février 1995 relative à la protection de l'environnement.
[16] http://www.debatpublic.fr/

within the French State. It's organized by the State administration thanks to an independent Commission close to the Ministry in charge of the environmental questions. Things are regulated by State dynamics, under its control.

2. The institutionalization of the participative movement

In term of alternative democracy within the whole French system, the big event has been *Pays basque 2010*[17]. It begins in 1992, thanks to an open-minded delegate of the State, the sous-préfet Christain Sapède who wanted to try a local governance and participative democracy in the Basque Country. This initiative was sustained by the President of the department *Pyrénées atlantiques*, François Bayrou. Meetings have been organized to identify the advantages and disadvantages of the Basque territory. Selected people were invited to participate in this territorial check-up: representatives, entrepreneurs, labour Unions, education, state delegates… They make together their own diagnostic during 2 years. Implicitly, it was a kind of recognition of a particularity among internal state limitations. This initiative is institutionalized later: In July 1994, a Development Board (*Conseil de développement du Pays Basque*) is created. In February 1995, a Representatives Board (*Conseil des élus du Pays Basque*) is also created to supervise this democratic flux. In 1997, the Basque territory is recognized as an additional administrative territory, "Pays" with no particular bottom-up competences[18]. After the first enthusiasm, most of the participants of the dynamics are disappointed and quit the representative board[19]. They consider that all the initiatives are falling under a State control process. The institutionalization of the Basque territory alternative is no more attractive.

Since Winter 2005, a new session called *Pays Basque 2020*, also designated to think about the new challenges of the Basque Country is organized: we can see that much more citizens are present[20]. Different kinds of workshops are organized: on infrastructure, education, economy, public health… But most of the people criticize the organization because they don't see what it does mean: "Is it really to make something?" was a question which was often wonder in plenary sessions [21]. Nowadays, the results of the debates are organized by the technique staff to be submitted to different administrations (Region, State…) to get finance. Today, the technique staff is bargaining with the State administration ("Etat-Région" Agreement), in a multileveled relation, its ability to develop territorial strategies.

In the one hand, even is there a citizens' demands of participation in local policies, institutional State locks control the bottom-up offer process. In the other hand, even if the Basque people uses traditional participative method to make the Basque culture resist, the French political culture assign its representatives and State delegates the capacity to translate the local democratic demands. Even so, whereas the Centre of France regards its provinces as an uniform mainland, sometimes its territories are able to keep and develop own political cultures. While in the 1990', the French Nation-State edifice begins to move to more citizens' participation, under the pressure of international juridical normalization, French Basque

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[17] http://www.lurraldea.net/

[18] Ségas (Sébastien), *La grammaire du territoire : action publique et développement et lutte politique dans les « pays »*, Thèse en science politique, Bordeaux, Université Montesquieu, Bordeaux 4, 2004.

[19] Ahedo Igor)., Urteaga (Eguzki),. *La nouvelle gouvernance en Pays Basque*, Paris, L'Harmattan, 2004.

[20] http://www.lurraldea.net/default.php?page=paysbasque2020.php

[21] This opinion was also told to be very often in *aparte* (participant observation technique).

country, as the Spanish Basque country at this time, involves population in their today-life preoccupation. And as we have seen, little by little things are changing, because of the financial weakness of the French State, because of the Europeanization of the political procedure and also because of the consequences, for Citizens, of the Globalization process.

Part 2: NICT as a potential alternative to State constrictions

In a geographical area like Basque country with a wide democratic culture but where conservative local powers are still very strong, as we saw with Pays basque 2020 participative and democratic initiatives traditionally take place within the State institutions even if associative dynamics still coexist. In this specific political context, aNTIC Pays Basque emerges as a new actor, as a local contributor to effective citizen participation. It's a local promoter of e-democracy. Since the early 2000, aNTIC Pays Basque is trying, very empirically, to draw own mobilizations through NICT. In 2004-2007, its reflection is about a "Basque Label" that the Local Powers didn't manage to organize maybe because they impose top-down policies locally, without negotiating with the involved actors… Its own, with *Pays basque numérique*, aNTIC Pays Basque supports an effective e-democratic participation involving Basque citizens in the public action process.

A. aNTIC Pays Basque: a territorial provider within the French political system

Today, in 2007, the action of aNTIC Pays Basque deals with a wide-open-citizen and territorialized mobilization thanks to e-technologies[22]. The *Agence Pays basque des Nouvelles technologies de l'information et de la Communication* promotes own democratic "e-dynamics", empirically, thanks *to* citizens participation from the French Basque Country and *for* actors and citizens of the area[23]. In less than 10 years, this NICT Basque Country Agency passed to be a local promoter of NICT to a territorialized provider of e-initiatives, as the empirical example of "Pays Basque numérique" Label.

1. NICT questions the French State administration

The aNTIC Pays Basque emergence deals with an internal removing within the French policy making due to external determinants. The Europeanization process provokes new form a public action management for the local collectivities (Local administrations). The consequences of this revival is that the public action can be integrated in a global or transregional area and customized to suit national laws and local culture.

As an original para-administration, closer to liberal State than to the French one, and due to the necessity to earn money to defend collective projects, aNTIC Pays Basque is a soft and weak organization: it's a platform which works thanks to public subventions co-financed by the European Union Programs. In the French administrative culture, and its civil servants ("fonctionnaires") used to be paid largely by the State, it supposes new forms of public

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[22] http://www.antic-paysbasque.com

[23] As in the internet culture, the conflictive Basque identity is not exclusive. Basque identity is considered in a large acceptance. The principal matter is to want to participate in the Basque Country dynamics. These points are negotiated internally: i.e. The place of the Basque Diaspora? The place of the Basque language… That's why I call it e-geographical solidarities integrated in the representation of e-world (cf. website for Basque Diaspora www.euskosare.org).

management which are quite alternative and provocative because this fragility express the financial weakness of the State[24]. Indeed, the decision making cannot be more oriented in a "Top-down" dynamic lead by ideological considerations. That is to say, the State doesn't deal the money, through subventions administrated or negotiated by the French *notables*, to keep its territory quiet in the mainland.

The aNTIC Pays Basque articulates this managerial change[25]. The State supports innovative initiatives accordingly to the Europeanization process and the European directives changing its manners to administrate its territories[26]. One of the determinants is the European subventions, defined by the Göteborg and the Lisbon Agendas even if in France, the European financial supports are dealt by the State delegates and the decision cannot be taken without the agreement of the Administration[27]. However, the European integration supposes the promotion of "bottom-up" initiatives, coming from the basis of the territory, thanks to governance technique to understand better the civilian demands. The aNTIC Pays Basque is the expression of such a reality: its existence is not undefined; its existence is linked with a collective project supported by institutions in a gouvernance procedure.

2. aNTIC as a glocal provider

In such a context, aNTIC Pays Basque appears to promote the NICT uses in French Basque territory in 1998. It appears very soon because the NICT development in the French public administration will come later than elsewhere in the World[28]. Directed by an innovative and pragmatic director, M De Lara, and an Administration Board composed by around 30 persons coming from the Civil society, aNTIC Pays Basque appears to facilitate the Net culture in the French Basque territory (1999-2002), and since 2002 gets involved in the promotion of Net-economy[29]. Doing so, it also promotes new collective action process like local governance in an empirical procedure.

In the tangible traditional and centralized institutional organization, the local administrative powers hardly implement e-policies because their internal structures are mostly passive. Even so, a localized structure as aNTIC Pays Basque has been able to draw public actions thanks to NICT. It has shown that e-democracy is not only a top-down or a bottom-up movement oriented with/without the State administration.

In French Basque country, the "culture of local democracy" which have been frustrated by the State controls, after a period of enthusiasm during the "Pays basque 2010" and "Pays basque 2020" initiatives, can be expressed in very original terms. Thanks to the associative structure, legitimated by the support of a decentralised administration, people manage to mobilize

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[24] Attali (Jacques), « La géopolitique du net », *Revue des deux mondes*, Nouvelles technologies et civilisations, Paris, Février 2001, pp.80-84.
[25] Eisner Gillet (Sharon), Kapor (Mitchell), « The self governing internet-coordinating by design », in Kahin (Brian) & Keller (James) (eds), Coordinanting the Internet, Cambridge, London, 1997.
[26] For example see the Work of The Queen's Papers on Europeanisation, Queen's university Belfast. In French, Palier (Bruno) & Surel (Yves), L'Europe en action, L'Européanisation dans une perspective comparée, Paris, L'Harmattan, 2007.
[27] Grewlich (Klaus) « De la gouvernance à la constitutionnalisation », *Piloter la société de l'information*, Paris, Fondation Idate Hermes, 1999, pp.120-127.
[28] Bourgeois (Nicolas) & Georgeault, "Les collectivités territoriales se mettent aux nouvelles technologies », *Les Cahiers du Groupe Bernard Bruhnes*, Février 2002, n°8.
[29] Vettraino-Soulard (Marie-Claire), *Les enjeux culturels d'internet*, Paris, Hachette, 1998.

without expecting the French State authorities to implement "decentralized dynamics". Nevertheless, aNTIC Pays Basque is not an substitute structure, as could appear The Basque Chamber of agriculture Laborantxa Ganbara[30]. In a multileveled governance situation, aNTIC Pays Basque still bargains with some administrations which promote NICT abilities to develop their performance (Region, French Ministries, European Union…) as an open Basque entity despite of any administrative existence, despite of the local administrative locks and thanks to NICT technique and paradigma[31].

In this context, even if we consider the structural and institutional weaknesses of the Basque Country, the NICT seem to appear not only as an instrument to make disappear some State limitations but also as an opportunity to make change traditional public actions management. In other terms, aNTIC Pays Basque enters in a glocal dynamics, if we regard global and local specificities dual by nature but common in their territorial definition[32]. This probably surpasses the structure itself but, nontheless it defends local mobilization and European interests within Globalized process[33]. Participating in this changing process, aNTIC Pays basque is also conscious of the necessity to structure local public actions in the Internet World[34]. That's why aNTIC Pays Basque investigates new ways, in the crossing of local governance, Net-economy, e-participation and cultural background thanks to Pays basque numérique Label[35].

B. aNTIC Pays Basque leads local e-governance in the French Basque Country

Firstly, in the late 90', aNTIC Pays Basque began promoting internet utilisations. Today, its activities deal with little and medium firms activities (Information, Economic Intelligence: Abila.net…), about specialized activities (SILOgrafic around creative & media creation…) and e-democracy with the reflexion (2006) and now the implementation (2007) of a Basque Label called "*Pays basque numérique*"… In fact, aNTIC is a little and open-minded structure which surfs over "e-opportunities". aNTIC supervises innovative decentralized managements (cluster policies) in a centralized State as France.

1. A Basque Label to defend Basque Numerical property

"*Pays basque numérique*" supported by aNTIC Pays Basque, which is linked with a Public administration (CABAB: Communauté d'agglomération Bayonne-Anglet-Biarritz) tries to defend e-geographical solidarities, through governance processes[36]. The proposition has been presented for the first time in October 2005, called "Build together a Numerical Basque

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[30] In its internal managment and function, aNTIC may be closer to Promoting agence like Antur Teifi in Wales than a more traditional French administration. See http://www.anturteifi.org.uk/index.html

[31] About psychological paradigma, see Beau (Frank), « Géopolitique de l'imaginaire », Les Carnets du CAP, n°3, Technologies, autumn 2006, pp. 73-85

[32] Robertson (Roland), « Globalisation or Glocalisation? », *Journal of International Communication*, 1994, pp.33-52

[33] Soete (Luc) « L'Europe et la société de l'information émergente ; la nécessité d'une innovation politique », *Piloter la société de l'information*, Paris, Fondation Idate Hermes, 1999, pp.75-100.

[34] Sassen (Saskia), "Politiques locales et réseaux mondiaux », *Revues des deux mondes*, Nouvelles technologies et civilisations, Février 2001, pp.32-39. See also *Cities and their Cross Border Networks*, London, Routeldge, 2001.

[35] Kleck (Véronique), « Numérique & Compagnie, Sociétés en réseaux et gouvernance », Paris, ECLM, 2007.

[36] Arlandis (Jacques), « Internet, les enjeux de la gouvernance », *Piloter la société de l'information*, Paris, Fondation Idate Hermes, 1999, pp.34-73

Country"[37]. In February 2006, the project is presented to the Civil society. The objectives are presented: the will is to define wide territorial strategic perspectives, thanks to a new action-models (*modèle d'action*), as a collective and governance-inspired models and through a collective object the "Numerical Basque Country" Label.

Some physical meetings are organized but a website holds information about NICT, about the project, about its evolution[38]. This first step was the time of observation, when everyone can make its opinions (1, January-September 2004). The second one was the time of exchanges (*concertation*) with the experts and workshops (2, June 2005-April 2005). The third time was the period of propositions and of sharing opinions (3, April-September 2005). The fourth one was the time of the definition: the Values of the mark (a), the communication support (b), the Chart of utilisation (c) (4, October 2005-April 2006). The fifth was the self-management of the Mark (Autonomous agreement comitee… June 2006-December 2006), the official presentation of the mark has been made in January 2007.

The initiative is open to all the individuals or societies who want to defend the project. Delegated ambassadors are chosen to study the candidatures. Candidates are allowed from the associative world, the public administration (collectivités territoriales, Institutions…), firms… All the choices are deliberated. For example, the logo of the mark has been deliberated by e-vote, during the voting process comments were welcome (February-June 2006). During this period, The Basque Chamber of Commerce of Bayonne presented its own and more classical mark "Made in Pays basque"[39]. So round-tables are organized and information is also given to the participants. Concretely it's a mix of effective and physical participation and virtual exchanges.

One aspect seems particularly interesting. In February 2006, every participant was invited to defend its conception of "Basque being". Everyone, anonymously express itself through the Net-platform exchange. Some terms were recurrent and needed to be more clearly defined. The aNTIC incited all the partners to work on this. This question which is particularly political and conflictive in the French Basque Country, the question of Basque identity has been very pacifically negotiated. It has allowed an open Basque definitions which is exactly the misunderstanding among Basque people: with persons with restrictive definition, other with wide-open conceptions of the Basque identity. If we extend this thinking, even someone from San Francisco not directly linked with Basque country was able to participate in the initiative[40]. The delegate ambassadors are in charge to regulate these questions accordingly with the collective agreements on the Basque Label.

2. A Basque Label to promote Basque e-territory over the e-World

Thanks to the aNTIC Pays Basque, NICT allow Basque *entrepreneurs* to keep on defending an e-territory over French State limitations. It allows to manage an own collective action,

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[37] « Construire ensemble un Pays basque numérique; élaboration de la marque de territoire "Pays Basque numérique », Document de travail, décembre 2005.
[38] http://www.paysbasquenumerique.net
[39] The Basque Chamber of Commerce of Bayonne knows a lot of difficulty to implement its territorial-mark that they studied for more than 3 years, fundamentally because they use top-down method, without negotiating with the economical actors their needs.
[40] The question has been answered, thinking clearly about the Basque from the Diaspora. But this questions provokes some opinions who defended the idea of Basque-Chinese or, even Chinese, if they defend the collective project was allowed to be member of the Label.

culturally close to the governance procedures defended by the European Union and marginally suported by the French administration. In this context, most of them, with intuition, think that the identity is a ressource in a competitive territorial market as it is for the merchant market[41].

The apparent complementarily between the High-tech design of the Spanish Basque Country makes think about a dragging process for the Low-tech economical design of the French territory. The 2007-2013 Operational programs of the European Union, promote transborder solidarities, in term of economical, civilian... exchanges from both side of the frontier[42]. The public action must be backed by governance procedures. So the role of transborder/transnational structures established with actors from the Spanish Basque Country could appear as a very attractive opportunity for the French Basque actors who participate in *Pays basque numérique* Label. Nevertheless, until today, even if there some contacts with Spanish Basque actors, it's quite limited. An in term of NICT uses, the Spanish Basque Country seems to be more developped, because they knew a real Industrial Revolution, because they are much more structured and strategically oriented thanks to their local governmental institutions. For example, the Town Halls, local institutions and Development structures are unified thanks to NICT in specific platform as Garapen ("Development") or sometimes another Development agency as the SPRI[43]. It's not only the fact of a local governance but overall the fact of a regional policy.

aNTIC Pays Basque shows that localized specific mobilizations about public action around Basque identity (Economic intelligence exchange, territorialized dynamics, Basque language…) is able to structure a territory that the State doesn't want to identify. In a multilevel system, these dynamics are not only alternative to contemporary State policies (French State, local & regional scales, or Spanish and European levels…) in an international context, they also illustrate unusual management in unconventional actions, beyond the traditional states authorities within the Globalization[44]. The e-mobilization in a specific territory as French Basque Country that the economic actors have totally integrated, thanks to economical identity market, allows cultural and political mobilizations alternatively to administrative boundaries[45]. It produces a kind of bottom-up mobilization (local actors: firms, association…), supported marginally by local agglomeration administration. So, they are able to manage decentralized democratic public actions/policies alternative to top-down democratic institutional shapes.

Conclusion

In the French Basque Country, the NICT make the local actors, but not political representatives, produce democratic e-policies around their own interests (economic development, language defence…) evading the administrative locking. In a so centralized State like France, others territories with a strong identity culture (French Flanders, Corsica…) get inspired in this alternative way of local management. (Cf "Corse numérique" Label…) and try to promote some decentralized governance their way… To expand this problematic,

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[41] « Que nous réserve le numérique ? », *Esprit*, mai 2006.
[42] Harguindeguy (Jean-Baptiste), *Europe Through the Borders? The implementation of INTERREG III-A France-Spain*, EUI, Florence, 2005.
[43] http://www.garapen.net; http://www.spri.es (Sociedad para la Promoción y Reconversión Industrial, Association for the Promotion of Industry)
[44] Izquierdo (Jean-Marie », « L'expansion transnationale de la question basque », in Canet (Raphël) Duchastel (Jules), *Crise de l'Etat, revanche des sociétés*, Québec, Athéna, 2006, pp.159-176.
[45] « Economie locale et identité culturelle », *Hemen Elkartea*, novembre 2005.

we can wonder if there is a link between the structure of the State (centralized, decentralized, federal) and specific uses of NICT? Do cultural aspects take other e-mobilizations appearances elsewhere than in the French Basque Country?

Methodology

Following social anthropological methodology, the findings for this contribution are the fruit of long-term fieldwork carried out using the method of participant observation and open-ended interviewed. I participate in the various participative democracy and governance projects in Basque country (included the Spanish Basque country): I was member of four Workshops in Pays basque 2020 (« Job and economy », « Infrastructures », « Education and research » and « Youth[46] »). I am of course member of « Pays basque numérique » oranized by aNTIC Pays Basque, I collaborate on Intelligence, Basque Label, and Small enterprises Group[47] and others innovative projects. More specifically, over the course of 2005 and early 2007, I spent significant time participating in meetings, interviewing actors (representatives, technique staff, directors of the projects, participants, citizens…). This work has made asking people their personal interpretations, experiences and feelings of the work to explain how and why they get involved in those projects. In theses contexts, I was able to observe participant behaviour and their interaction with each other as well as with non-members (essentially on this question about Pays basque 2020). General and specific fieldwork research was also backed with academic literature basically in political science, and with local newspapers.

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[46] « Emploi, économie, formation », « Infrastructures, déplacements », « Enseignement supérieur, recherche », « Chantier jeune », www.lurraldea.com.
[47] « Intelligence économique », « labellisation », « structuration de l'offre aux PME », http://www.paysbasquenumerique.net

The Presence Of Greek MPs in Cyberspace. Genre Features And The Normalization Hypothesis

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Abstract

In this paper we survey the websphere to discern the on-line presence of politicians in Greece using as a sample the 300 Members of Parliament (MPs). The research is primarily exploratory in nature and aims to present descriptive statistics on the politician's use of the internet and of blogging and develop some hypothesis for further research.

Among the themes examined are variables such as age, gender, party affiliation, electoral district, incumbency etc. and their influence in the use of the internet. Our aim is to identify genre features and examine whether factors endogenous to the political system are useful in explaining web practice. Our research shows that in most cases the sites developed by Greek MPs are characterized by a brochure-ware mentality while participation enabling features are used sparingly.

Introduction

Digitalization and the advent of a network society imply a shift towards interactive forms of media that allow two-way forms of communication. As a vast forum that encourages many-to-many interaction, the net makes it possible for citizens around the world to participate in public dialogue.

In the realm of political action, the internet can potentially offer a number of advantages: greater volume of available information; faster gathering, retrieving, and transmitting of information; reduced transaction costs; greater ability of senders to target their messages to specific audiences; and, greater interactive capacity.

As the internet became a basic infrastructure of the emerging Information Society the rules of politics and political campaigning have changed significantly. In recent years the role of the internet as a source of information and a medium of communication has been growing in election campaigns and political marketing in general.

According to the Pew Internet & American Life Project (2007), 15% of all American adults reported that the internet was the primary source for campaign news during the 2006 elections

compared to 7% in the mid-term election of 2002 and 3% in the presidential election of 1996. In all, 31% of American adults used the internet during the 2006 campaign to gather political information and exchange views via e-mail.

In many cases internet users relied not on web sites created by traditional news organizations but on blogs, comedy sites, candidate sites or alternative news sites to get political material. Within this framework an interesting phenomenon is the advent of YouTube, the citizen-based video sharing site, visited by many in order to see videos of candidates making mistakes. YouTube played an important role especially in the case of Senator George Allen who addressed a young man of Indian descent working for his opponent as "Macaca", a term widely perceived as derogatory and racist. Allen lost his race for a small margin.

Clearly the old media continue to dominate political communication but there is a growing number of citizens who used the internet both to access political material and to perform online political activities. During the 2006 mid-term elections in the USA, 11% of internet users or 7% of the entire US population created and shared political content by writing political commentaries to newsgroups, websites or blogs, creating political audio or video recordings and forwarding someone else's political comment or podcasting (Pew Internet & American Life Project, 2007).

Political blogs became important in many cases and some bloggers forged closed relationship with various campaigns during the elections. In Connecticut, for instance, liberal bloggers were given credit for helping the anti-war candidate Ned Lamont upset the incumbent Senator Joe Lieberman, in the Democratic primary.

In general, the internet makes it easier for political audiences to take citizen action both in response to prompts from campaigns and on their own initiative. This can be seen as a factor favouring direct democracy and as an instrument against political apathy. In theory, the horizontal decentralized structure of the internet helps individuals to bypass gatekeepers and middlemen. At the same time, interactivity makes it possible for citizens to request information, voice their opinion and ask for a personalize answer from their representatives.

The reduced transaction costs associated with the internet offer clear advantages for actors seeking to mobilize domestic and international support. Political groups seeking to alter the political status quo may see the internet as a potentially potent tool capable of shifting the balance of power between states and dissidents in favour of the latter. Indeed new social movements manifest themselves on and by the internet (from Zapatistas in mid-1990s to the protest in Seattle in December 1999 and the anti-globalization movement today).

Also, citizen networks, a new form of public sphere combining local institutions, grassroots organizations and computer networks in the development of cultural expression and civic participation became important in the 1990s (Bennett, 2003 and 2004; Jones, 1998; McCaughey & Ayers, 2003; Slevin, 2000).

These developments led some scholars to argue that the internet had the potential to dramatically alter the nature and shape of political discourse and produce fundamentally different patterns of political campaigning than found offline (Abramson et al, 1988; Sclove, 1995; Glass, 1996; Hill & Hughes, 1998; Mickunas & Pilotta, 1998; Norris, 2001). Schneider and Foot (2002) analyzed presidential campaign sites in the 2000 US elections. They concluded that the online structure facilitated a variety of both online and offline political

actions, including information gathering and persuasion, political talk, voter mobilization and campaign participation,

On the other hand a number of studies have documented the rapid increase of internet use, both by the parliament and in the relationship with the electorate, but have also showed, a great deal of continuity with traditional political practices.

These findings led to a "normalization hypothesis" i.e, to the prediction that as the internet is emerging as an important component of many social, economic and political sectors its impact on politics and democratic practice will be less revolutionary than originally hoped for and predicted. Traditional factors affecting the distribution of political resources will affect the way that political actors use the web and political practice on the internet will closely resemble politics offline (Margolis & Resnick, 2000). Bimber and Davis (2003) and Benoit et al (2003) examined the campaign sites produced by major party candidates in US elections and concluded that the internet is changing politics far less than many expected.

Political parties, candidates and members of Parliament have established a strong presence in cyberspace basically in order to disseminate information to the public about their position and records and to a much lesser extent to receive feedback from the public and promote participation and interactivity. An international study of the use of the internet in the parliaments of OECD countries documented the rapid increase of internet use, both by the parliament and in the relationship with the electorate, but it also showed, a great deal of continuity with traditional political practices (Coleman et al, 1999).

Furthermore, according to an informal survey by the Institute of Economic Affairs in the UK of the websites of 97 MPs, in November 2000, their design and maintenance were extremely poor and indicated considerable neglect (Castells, 2001).

Many studies have focused on features available to net users in US elections between 1996-2004 (Selnow, 1998; Davis, 1999; Kamarck & Nye, 1999; Klinenberg & Perrin, 2000; Hundt, 2000; Foot et al., 2003). According to Kamarck and Nye, the mid-term elections in 1998 was the first election cycle in which the internet played a major campaign role. However, they concluded that most candidates used their sites as a big electronic brochure, or in other words, like pamphlets transformed into on-line form, providing candidate histories and issue positions.

The analysis by Foot et al. (2003) of online campaign practices in the 2002 US selections reinforced the normalization hypothesis. They identified the emergence of a genre of campaign web sites[1]. In particular they identified five features that appear in at least 80% of campaign sites. They are: candidate biography, issues section, telephone or street address for the campaign, an e-mail address for the campaign, and information about making campaign donations. All five of the genre markers manifest web adaptations of traditional campaign practices. The only "near genre" characteristics that exploits the unique features of the internet is linking to other websites, which was observed on 76% of sites.

Boudourides et al (2006) analyzed the candidates' web sites in the 2004 Greek national elections. Three genre markers have been identified: candidate biography, issues section, and

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[1] According to Orlikowski and Yates (1994, p. 543) a genre can be defined as "a distinctive type of communicative action, characterized by a socially recognized communicative purpose and common aspects of form".

links to other sites. The concept of genre markers provides an operational definition of the standard characteristics of a campaign web site, establishing a baseline against which newly emerging sites can be measured. The unique features of the internet have not been used extensively in the online campaigning during the 2004 Greek national elections. A brochure-ware mentality has prevailed and this is consistent with findings in other European countries and the USA. Factors endogenous to the political structure (party affiliation, electoral district, incumbency) were useful in explaining web practices.

Method

The authors gathered data from the Greek Parliament site (www.parliament.gr, the site is also translated in English) and performed statistical tests on the data gathered. The sample of the study and its characteristics can be found below:

Table 1. Survey sample and its characteristics

SAMPLE		
	Total	300
GENDER		
	Male	256
	Female	44
PARTY*		
	ND	167
	PASOK	115
	KKE	12
	SYN	6
INCUMBENCY		
	New MPs	96
	Old MPs**	204
CONSTITUENCY		
	Central	97
	Rural	203
AGE***		
	≤44	39
	45≤x<54	103
	55≤x<65	99
	65+	37
During the period 2004-2007 some MPs became independent. For the sake of clarity we include independent MPs in their original affiliations ** *Old MPs have served the Parliament for at least one other tenure, excluding the current* *** *The younger MP is 32. The oldest MP is 80 years old. Age information is not available for 22 MPs*		

The first level of analysis included all 300 MPs and tried to explore their on-line presence and how it was influenced by their own and their party's characteristics. This was accomplished by first finding out who was active online, i.e. had a site and/or blog. The mere presence of an email address was ignored as the vast majority of MPs had at least one address.

As mentioned before, the official site of the Greek Parliament, http://www.parliament.gr, was used because this is the official place where all MPs are listed. The MPs' names link to a page that includes a small biographical note and contact details. In the latter, the possible email addresses and/or websites are found. The authors used this as an authoritative source of information and took for granted that the list was exhaustive and there were no other MPs' sites other than those listed. The sites were accessed between the 15th of January and 19th of February 2007. Some of them were not working, and the browser returned a ''Server not

found'' message. We grouped those MPs with those that didn't have a site even if that condition was temporary (at the time of writing these lines some of those sites were up and running).

From the parliament site, the researchers gathered information about the personal variables: gender, age, constituency, incumbency and political affiliation i.e. party. There were some problems though:

- Age information was the most difficult to assess since many MPs hide that information from their bio.
- MPs that, for various reasons, became independent were included in the party they were elected with.
- Constituency was distinguished as Attica (which includes Athens, Piraeus and the rest of Attica prefecture) and Rural (which includes all other prefectures in Greece)

For the second level of analysis the researchers separated those MPs that had websites and tried to discern the characteristics of the websites. For this purpose they created categories of degrees of interactivity of the various sites' design.

Three categories were created and named BROCHURE-WARE, RECEPTIVE NEW MEDIA, and PARTICIPATION ENABLING. These describe the characteristics of the sites in terms of a continuum that represents the user's experience. This continuum ranges from the totally passive (Brochure-ware) to the heavy user involvement (participation-enabling). The categories and their content are shown below in Table 2. Information was gathered by the actual sites and analysed.

Table 2. User's experience continuum with site design categories and their characteristics

BROCHURE-WARE	RECEPTIVE NEW MEDIA	PARTICIPATION ENABLING
• Biography • issues section • offline communication • e-mail • news section • geographic information • volunteers • photographs • mailing lists • endorsements • voter information • speeches & public addresses • advertisements • visitors' information • visitor's email submission	• links • software downloads • el. Paraphernalia • other language • multimedia content • search engine • pop up windows • online events • ability to individualize site content • 'send to a friend" feature • persons' with disabilities access	• visitors' online contributions/comments • e-polls • interactive political calendar • blog

Results

The majority of Greek MPs do not have a website, let alone more interactive on-line presence such as blogs. Of the 300 MPs ,116 MPs have some kind of site, 151 communicate (if ever) only via email and there are 33 MPs that prefer the traditional ways of communicating (i.e they don't even have an email address). It should be noted that those MPs that maintain a site, always have at least one email address, while the opposite might not hold true.

Meanwhile blogging does not seem to be very popular amongst the MPs. Only 4 of them have their own blog. The following figure summarises those results.

Fig 1. Percentage of MPs active (or inactive) online
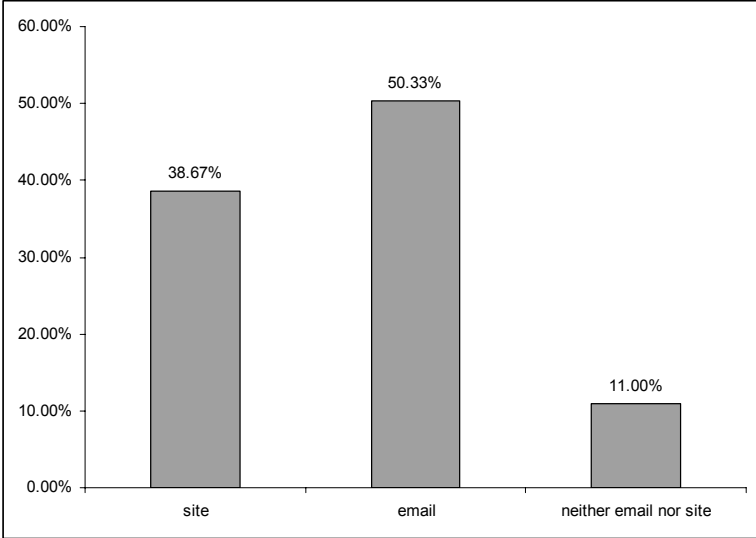
Furthering the exploration, the authors constructed cross tabulation tables and performed chi-square tests to asses the relationship between the presence or not of a site and the characteristics described in Table 1 (i.e. age, incumbency etc.) in order to assess the impact of the latter on the MP having a site or not. Tables 3 and 4 summarise the results.

It is notable to see that according to the chi-square tests, details of which are given in Table 5, only one variable, that of constituency, can make a difference between a MP having a site or not. This hypothesis is clearly enhanced by observing that rural site-have MPs account for a little over 1/3 of the total and their Attica counterparts for a little less than ½ of the total. To further enhance the result of Table 5 (where sig=0.016 which indicates a strong relationship between site and constituency) we use Cramer's V statistic for the 2X2 table (see Table 6). We find that the value 0.139, out of the possible value of 1, represents a low association between the constituency of the MP and whether or not she or he has a site. The value, though, is significant at p=0.016 (p<0.05) so it is evident that the relationship is not by chance. We can calculate the odds ratio which is 1.62 i.e. if an MP's constituency is rural, he or she is 1.62 times less likely than a city colleague to have a site. This might be because the rural constituency is less likely to access the internet than the city dwellers.

Table. 3 Crosstabs: site*gender, site* constituency, site* incumbency

site			gender		Constituency		incumbency		Total
			male	female	rural	Attica	newMP	oldMP	
site	No	Count	156.00	28.00	134.00	50.00	56.00	128.00	184.00
		% within variable	60.94	63.64	66.01	51.55	58.33	62.75	61.33
	yes	Count	100.00	16.00	69.00	47.00	40.00	76.00	116.00
		% within variable	39.06	36.36	33.99	48.45	41.67	37.25	38.67
Total		Count	256.00	44.00	203.00	97.00	96.00	204.00	300.00
		% of Total	85.33	14.67	67.67	32.33	32.00	68.00	100.00

Table. 4 Crosstabs: site*party, site* age

Site			party					Age brackets				Total
			ND	PASOK	KKE	SYN	N/A*	<=44	45 - 54	55 - 64	65 +	
Site	no	Count	104	62	12	6	14.00	21.00	60.00	62.00	27.00	184
		% within variable	62.28	53.91	100	100	63.64	53.85	58.25	62.63	72.97	61.33
	yes	Count	63	53	0	0	8.00	18.00	43.00	37.00	10.00	116
		% within variable	37.72	46.09	0	0	36.36	46.15	41.75	37.37	27.03	38.67
Total		Count	167	115	12	6	22.00	39.00	103.00	99.00	37.00	300
		% of Total	55.67	38.33	4	2	7.33	13.00	34.33	33.00	12.33	100

* N/A = Not Available (some MPs preferred to hide their age on the web)

Table 5. Chi-Square tests of variables

	site*gender[1]	site*Constituency[1]	site*incumbency[1]	site*party[2]	site*2parties[1]	site*age[1]
Pearson Chi-Square	0.115	5.79	0.536	14.08	1.967	3.567
N of Valid Cases	300	300	300	300	282	276
df	1	1	1	3	1	4
Asymp. Sig. (2-sided)	0.734	0.016	0.464	0.003	0.161	0.468
Verdict	Sig.>0.05. Men	Sig.<0.05.	Sig.>0.05.	Sig.<0.05. All	Sig.>0.05. Both	Sig.>0.05. All ages

and women are equally likely to have a site	Constituency makes a difference with rural site-haves accounting for a little over 1/3 of the total and Attica ones a little less than ½ of the total.	Incumbents and new MPs are equally likely to have a site	parties are not likely to have a site. KKE and SYN MPs haven't got a single site between them.	main Parties (ND and PASOK)are equally likely to have a site	are equally likely to have a site

1 0 cells (0%) have expected count less than 5.

2 3 cells (37.5%) have expected count less than 5. The minimum expected count is 2.32.

Table 6. Symmetric measures for site*constituency

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Nominal by Nominal	Phi	.139			.016
	Cramer's V	.139			.016
	Contingency Coefficient	.138			.016
Interval by Interval	Pearson's R	.139	.058	2.422	.016[c]
Ordinal by Ordinal	Spearman Correlation	.139	.058	2.422	.016[c]
N of Valid Cases		300			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

For the second level of analysis, the researchers use the sites of those MPs that have one to find the presence or not of Table 2's variables. The results as can be discerned from Figure 2 are far from encouraging since brochure-ware features dominate.

Fig 2. Percentage of site design categories and their characteristics in the User's experience continuum.
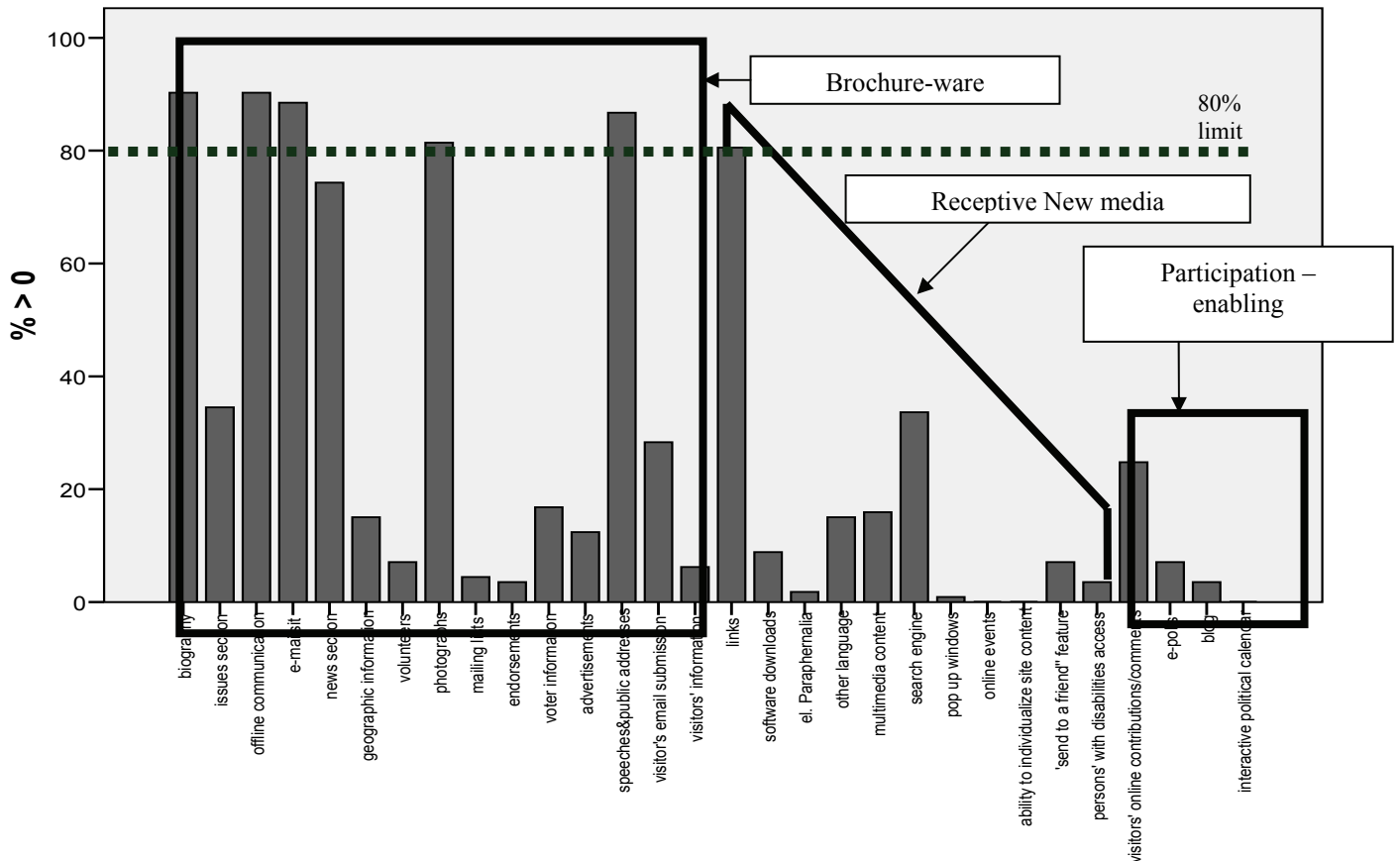
Six features are identified as genre markers (they appear in more than 80% of sites). They are:

- biography
- offline communication
- electronic mail
- photographs
- speeches & public addresses
- links

Five of them are classified into the *Brochure-ware* category, while only one (i.e. links) is classified into the *Receptive New Media* category. The highest percentage of any one of the *Participation Enabling* features (i.e visitors' online contributions/comments) is to be found in less than 25% of the cases.

Conclusion

The presence of Greek MPs in cyberspace can be characterized as inadequate and weak given that only a minority has developed a site (38.7%). According to the data collected through the Greek Parliament, the majority of MPs (50.3%) has got only email and there is a sizeable section (11%) that has neither email nor site. This state of affairs is probably linked to low internet penetration in Greece. Internet users represented 24.6% of the population in 2006 (VPRC, 2007).

The likelihood of an MP having a presence online is not influenced by variables such as age, gender or incumbency. The only influencing variable is constituency. The latter is probably due to the fact that according to VPRC's latest research (2007), internet penetration in urban areas is considerably higher (30.1%) than that in rural areas (15.9%). It is probable that MPs in rural areas do not use online means of communicating with the electorate, since their online target group is not sizable.

The Parties' profile shows a considerable differentiation regarding online presence, but this is probably due to the policy of the two left-wing parties (i.e. KKE and SYN) to maximize collective political campaigning rather than individual presence in cyberspace. The two major parties when tested against each other do not exhibit a significant difference in the use of sites for political communication.

We identified the genre as dominated by the brochure-ware features. Furthermore, participation-enabling features are used sparingly and therefore do not characterize the genre Blogs in particular are used by only four MPs (all from PASOK) which probably shows -in conjunction with the fact that participation enabling futures are sparsely used- that MPs are not keen on allowing interactivity with the electorate.

These results offer support to the view that political communication on the internet by established political parties closely resembles practices offline since most of the online communication is of a brochure-ware nature. The participation-enabling features of the new media seems to lend itself more to grassroots movements and citizens who challenge the "top-down" nature of political campaigning that dominated in the era of mass media.

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Online Political Discussion: Experiencing a New Political Order in Urban Area

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Abstract

This paper starts with analyzing some characteristics of the social-economic status and demographic characteristics of netizens in China. Based on profiling netizens, this paper analyzes the emergence and popularity of online political discussion in the historical context of economic reform and urban residence reform. It indicates that online political discussion should be understood from a threefold perspective--first, as a successor to Neo-Enlightenment thought; second, as a replacement of former political discussion in everyday life; and third, as political participation being transformed from ritual to articulation of interests. This paper illustrates that the emergence of online political discussion changes people's political participation in two ways: first, it offers a new way to articulate personal political ideas more freely and bargain with the government more efficiently; and second, the experience itself in the online community cultivates new ideas and dispositions toward political participation. Thus, it indicates that people in urban areas are experiencing a new political order. Furthermore, this paper indicates that online political discussion maps out a new pattern of state-society relationship.

Online Political Discussion: Experiencing a New Political Order in Urban Areas[1]

Introduction

Online political discussion is becoming more and more popular. In China, there are more than 690,000 websites, and many of them permit netizens to make comments on the content of those websites or issue their own ideas. Some well-known websites, such as *Tianya, People's Daily's Strong Country Forum* (*qiangguo luntan*), are well known among netizens. At the same time, online discussion has become an important resource for public opinion and thus is changing the way in which public opinion is formed (Wang and Ding, 2004).

Many researchers who pay attention to online political discussion think about the question from the perspective of the public sphere. There are many articles which discuss how Internet

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functions, such as chat rooms, news groups, or blogs, have promoted the emergence of the public sphere (Peter Day and Douglas Schuler, 2004; Wu, 2006), where "public sphere" is used in the meaning of Habermas' idea, that people freely communicate with each other. However, can the Internet account for the emergence of the public sphere completely? And are there more implications behind online political discussion?

This paper emphasizes the need for a profound understanding of online political discussion by analyzing online political discussion in a historical context. It suggests that online political discussion can be understood from a threefold perspective. By analyzing several cases in which online political discussion continued to exert an influence on real events, thus instigating a continuous interaction between online discussion and responses from all kinds of social forces, these findings indicate that people are experiencing a new political order. Furthermore, by analyzing how the government's attitude to online political discussion changes according to the topics being presented, this paper indicates a selective government interest which maps out the changing state-society relationship.

Who is Making Online Discussion in China?

Statistics of Online Behavior

Online political discussion in China emerged when the Internet became more and more widely used, beginning in the middle of the 1990s. According to CNNIC, in July 1999, the number of netizens was 4 million; by Jan 2002, it was 33.7 million; and in the middle of 2006, this number jumped to 123 million. At the same time, the number of websites increased rapidly. In the middle of 2006, there were almost 694,000 websites in China, compared with 1,500 in October 1998. As many of the websites provided chat room service or forum for the netizens, online discussion became popular. The statistics in Figure 1 indicate that online discussion has become more and more popular for Chinese netizens since 2000. In the board lists for most of these online forums, discussion of current issues or policies is an important part and attracts many netizens. Figure 1 shows that the frequency of E-governance behavior has increased from 1.4 percent to 5.4 percent.

Figure 1: Statistics of Chinese Netizens' Behavior on the Internet[2]

	1999	2000	2002	2004	2005	2006
Population of Netizen (Million)	4.0	16.9	45.8	87.0	103.0	123.0
Forum/BBS (%)	28.0	21.2	18.9	21.3	40.6	43.2
News Group (%)	21.4	25.4	20.4	——		
IM (%)	——	20.7	45.5*	40.2*	44.9	42.7
Chat Room (%)	29.2	38.8			20.7	19.9
Blog (%)	——	——	——	——	10.5	14.2
E-governance*(%)	——	——	1.4	1.9	——	5.4

Data source: CNNIC report, Jul 1999, Jul 2000, Jul 2002, Jul 2004, Jul 2005, and Jul 2006
*: Including online appealing, online examining and approving, and online surveillance

Three Important Characteristics of Netizens

In order to understand online political discussion, it is necessary to ask who are involved in online discussion in China because the character of the participants is crucial to explain the online discussion phenomenon. Although we cannot get accurate data about online political

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[2] The questions used in surveys were not always the same. Some statistics were achieved by computing.

discussion, the characteristics of people involved in online discussion can be roughly profiled, according to Figure 2[3].

Figure 2: Some Characteristics of Netizens in China

	1999	2000	2002	2004	2005	2006
Population of Netizens (Millions)	4.0	16.9	45.8	87.0	103.0	123.0
Percent "Under 40 Years" (%)	94.0	93.2	89.2	89.3	88.6	89.8
Percent Male (%)	85.0	74.7	60.9	59.3	59.6	58.8
Percent Married (%)	37.0	33.4	41.1	39.9	41	44.9
Percent with Access to Net at Home	44.0	47.0	62.1	67.0	68.5	72.2
Percent Non-Student (%)	80.7	——	73.8	69.1	66.8	63.8
Percent with a College or Higher Education Level (%)	86.0	84.6	58.0	56.8	54.5	50.6
Percent with "Income between 500 and 4000 RMB" (%)	72.0 *	84.4 **	58.7	56.1	59.6 ***	58.8 ***

Data source: CNNIC report, Jul 1999, Jul 2000, Jul 2002, Jul 2004, July 2005, and Jul 2006
*: Students were included.
**: In 2000, the index referred average income of family member, students included.
***: Students were not included when calculating the index.

The statistics in Figure 2 reveal at least three important facts. First, most of the netizens were born after 1960. In 2006, about 90 percent were born after 1966, the year in which the Great Cultural Revolution was initiated. In other words, most of the netizens grew up in the reform era and spent their adolescence after 1978. This fact implies that these people's ideas were influenced greatly by the process of Reform and Opening. Second, the percent of those with access to the net at home has increased from 44 percent to 72.2 percent. This figure indicates that more and more people are using computers at home on an everyday basis. Third and finally, although the percent of "non-students" has decreased gradually, on the absolute scale this group is more than 75 million. This figure shows that the majority of netizens are employees in all establishments and that, when they go on the Internet for discussion, they pay attention to issues related to their interests. These three trends suggest a basis on which we can understand online political discussion.

A Threefold Understanding of Online Political Discussion

Succeeding the Neo-Enlightenment Tradition

We cannot imagine what the consequence would have been if in China there had been an Internet at the time of the 1989 Tiananmen Square Student Demonstration. However, we also cannot imagine what online political discussion would be like today, if there had not been the Neo-Enlightenment[4]. Although the Neo-Enlightenment dissipated in 1989, its influence on people's minds, especially the ideas of individualism and liberalism, has survived.

The Neo-Enlightenment started with reflection on the Great Cultural Revolution (*wenhua da geming*) and a series of movements occurring after 1949, such as Academic Adjustment (*yuanxi tiaozheng*), Big Jump (*da yuejin*), and Object the Right (*fan you*). The most important motive for the Neo-Enlightenment was to object to totalitarianism and, through various social

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[3] There is another investigation conducted by www.cpcw.com and COMSENZ (a business establishment). In their report, there is more detailed description about the character of online discussion groups, and the description is consistent with that of the CNNIC report. As this report is not accepted widely, I choose the CNNIC report.

[4] Usually, researchers considered the 1980s as the Neo-Enlightenment, a period when many Western ideas were introduced into China. It started from the resumption of entrance tests for higher education in 1977 and ended on June 4th, 1989. Some scholars in art research usually mark the beginning of this era with the publishing of *The Teacher in Charge of the Class*, at People's Literature, 1977, vol.11. See Fan Xing, 1999.

movements, to accuse the establishment of demolishing basic human rights. At its beginning, the Neo-Enlightenment originated at and was supported by the highest leadership level—Deng

Xiaoping. During the first several years, some academic disciplines, such as sociology, were resumed [5], which provided an important communication platform for Western ideas. Discussions of liberty and democracy could be found everywhere in academic publishing and mass media[6]. The telefilm *He Sang* in 1988 marked the climax of the Neo-Enlightenment. Some culture-criticizing also emerged at that time[7]. In reality, there was the Liberalizing Movement in 1986, which led to the resignation of Hu Yaobang, the former general secretary. The anti-corruption movement emerged after Hu passed away in March 1989, followed by the Tiananmen Square Student Demonstration.

Although popular enthusiasm for political participation vanished after the Tiananmen Square Student Demonstration, ideas about democracy, liberty and other beliefs contradicting the orthodox doctrines advocated by the CCP were widespread among most young people, especially among college students, most of whom later became the elite in many fields. Some of these liberal ideas have become reality. For example, the Law of Administration Litigation passed in 1989, under which indicting the government received institutional validation for the first time. After Den Xiaoping indicated in 1992 that the political route would be to avoid the Left while warning the Right (Deng, 1992: 375), control of political discussion became flexible to some degree. Once again, discussion related to democracy and liberty occurred in media and increased on the Internet, though the participants were more careful than they had been before 1989.

As Informal Political Participation: Replacing Former Political Discussion in Everyday Life

In fact, political discussion was and continues to be normal activity for most Chinese people. Even during the Great Cultural Revolution, there was political discussion among people[8]. Most of the discussion happened among family members, friends, colleagues, and neighbors in everyday life. But, economic reform in urban areas and other social transformations changed the way in which people organized, thus undermining the basis for everyday political discussion as well as other aspects of everyday life.

DANWEI, which once was the basic unit for organizing people to engage in producing and distributing activity, has been weakened since reform began. One of the most profound consequences is that many people, even though they work together, live in different communities. Such a consequence came into being in two ways. On the one hand, many people disengaged from the state-owned enterprises and became employed in establishments in which residence was no longer provided as part of the welfare package. On the other hand, with the push of residence reform implemented in the beginning of the 1990s and lasting till now, most people, even though they work in a government or state-owned enterprise, no longer acquire residency from *DANWEI*, instead having to buy commercial residency from a land agency. Thus, many people now do not know each other, though they live in the same building or even next door. Such a condition is quite different from that before reform. Usually, in the past, people who lived nearby either had known each other since they were children, for example, the people who lived in *hu tong* or who worked together in the same

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[5] Sociology was resumed first in Peking University in 1980.

[6] Typical examples are *Studies on Marxism* and *World Economy Report*. The latter was sealed up in April 1989.

[7] Cui Jian, who is called the godfather of Rock in China, performed the song "I have nothing", which witnessed the birth of rock in China.

[8] Some people were persecuted because some of their friends reported their discussions to the leader.

DANWEI, the government or state-owned enterprise. But now, even some civil servants who work in the same ministry live in different communities. So the former naturally occurring political discussion in everyday life needed to find another outlet or express itself in other forms. It seems that the Internet is the best replacement, since the three other kinds of media, for instance, the newspaper, radio and TV have been under strict control. Although average people, if they not a famous figures or experts, have no chance to deliver their ideas about political issues in other media, they can make comments in all kinds of forums, as long as they can access the Internet and operate a computer.

As Formal Political Participation: From Ritual to Interest Articulation

If we think of everyday political discussion as a kind of informal political participation, we can analyze more formal political participation. We will analyze online political discussion in the framework of a state-society relationship, in order to illuminate that current online political discussion, as contrasted to former political participation, plays a completely new function of interest articulation. It signifies that popular online political participation is evolving from ritual to interest articulation and also maps out the post-reform state-society relationship

Political Participation as Ritual

After the PRC was founded, the state usually kept strong control of society. Before urban reform was implemented, the planned economy was dominant. In urban areas, most residents were organized in the form of *DANWEI*, and the rest were under the surveillance of Resident Committees *(juweihui),* which usually were considered the" leg of government" *(Lei, 2001).* Chart 1 illustrates the general pattern between the state and society.

Chart 1 the State-Society Pattern before Reform in Urban Area
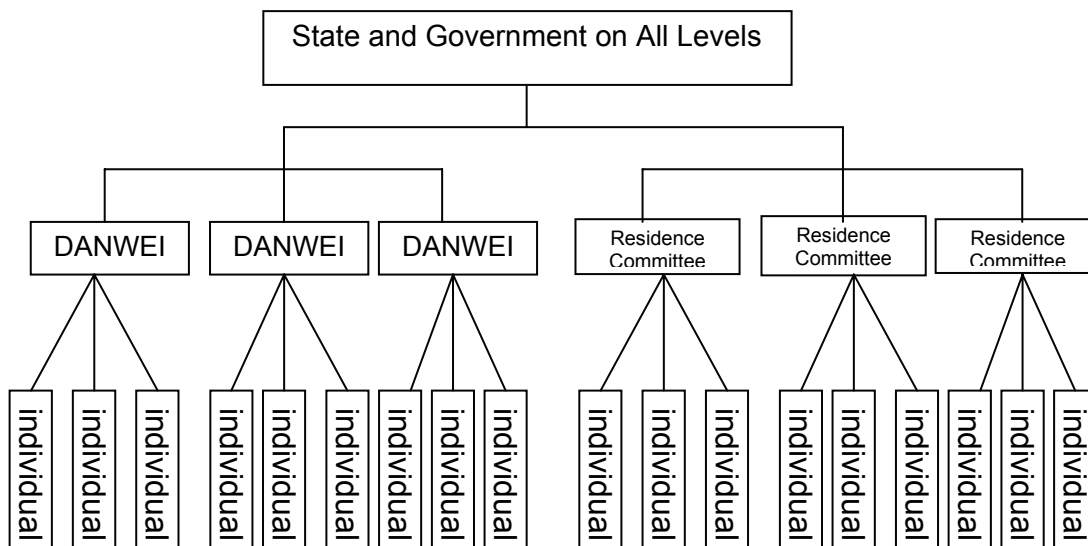
Chart 1 shows that before reform, individuals were organized in *DANWEI* or Residence Committees. Formal political participation, such as elections or public-opinion polls, was organized based on such a system. Any articulation first happened between the individual and the *DANWEI* to which he/she belonged. Because most members in urban areas got what they needed through the *DANWEI* and because political attitude was therefore crucial to one's

future, it is hard to imagine that anyone would publicly criticize policies, no matter how dissatisfied he/she really felt.

Also, as the media was controlled by the government, it was difficult for public opinion to develop based on the ideas of individuals. Thus people had no chance to interact with the state. Even after the implementation of the market economy, because there was no legislation on Press and speech and because all the rules relating to public opinion were made by SARFT (State Administration of Radio Film and Television), GAPP (General Administration of Publication of People's Republic of China), or the Ministry of Culture, under the direction of the Propaganda Department of the CCP, it is incomprehensible that private citizens could or would distribute any idea on paper, radio, or TV that was thought improper by the authorities. Although there is more flexibility today on what kinds of ideas can be issued on paper, radio, and TV, there still are strict controls on the media. For instance, according to the *Outline of Broadcast Film and TV in 2006*[9] *(2006 nian guanbo yingshi gongzuo yaodian)* issued by SRFT, news programs cannot be outsourced to any business establishment but can be made only by the TV station, which illustrates the resolution of the government to control the media and retain dominance in the domain of propaganda. Therefore, for most of the time and for most people, political participation is acted out as a sort of ritual. Opinions which are not in sync with the tone desired by the government are usually suppressed by censorship.

Two Exceptions: 1957 and the Great Cultural Revolution

There are two exceptions in the history of political discussion after 1949. One occurred in 1957, and the other emerged in the Great Cultural Revolution. In 1957, Mao Zedong called for criticism of the CCP, and many intellectuals made comments on government policies. However, the CCP immediately organized the Anti-Right Movement (*fanyou*) in 1957, and many famous intellectuals, some members of the CCP, were censured or persecuted. After that, little criticism emerged until the Great Cultural Revolution began. In 1966, Mao Zedong issued *Shell the Command----My First Dazibao (baoda silingbu----wo de di yi zhang dazibao)* and called for people to protest authority. As a result, there were all kinds of *dazibao* nationwide which fiercely and publicly criticized leaders on all levels, and also physical persecution on those leaders.

However, we should reflect on the mechanisms of the two exceptions. Both were initiated by the government. In other words, the two movements were mobilized by the authorities rather than emerging as grass root movements. This is very different from the voices on the Internet today. Such a fact implies that both of these movements emerged within the institutional framework of a typical Strong State vs. Weak Society pattern, in which the basis for the activity in 1957 and *dazibao* in the Great Cultural Revolution was the capacity of the CCP or government to mobilize people, but not the will of the people on a grass-roots level.

From Ritual to Interest Articulation

The emergence of the Internet seems to have changed the situation. The Internet permits people to issue ideas freely, at least at its beginnings. Although censorship penetrated the Internet immediately, as soon as the authorities became aware of the consequences of Internet use (Eric et al, 2006), early netizens experienced the power of the Internet, especially when there was no strict control on it. For instance, at first people could issue any news freely in net cafés without fear of being arrested, since there was no need to record an identity number with the net café administrator. Now, many netizens go to BBS, forums, and other online

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[9] See http://www.gov.cn/gzdt/2006-01/27/content_173965.htm

communities to issue their own ideas about current affairs and discuss political affairs with strangers. Although some of these comments are deleted by the moderators of BBS or forums, many of them survive both censorship and self-censorship. Netizens with a keyboard do not follow the ideas of any authorities but instead articulate their own ideas. They can make comments on social problems or mismanagement of policy and even make comments on high-level leaders. Such a consequence is rooted in two facts: first, it is hard for censorship organizations to trace the numerous online messages issued by netizens; and second, it has become less serious in a market economy when netizens attract the eyes of censorship, as long as they do not impugn the validity of the CCP and government.

Such a condition of public opinion has emerged in the context of the changed state-society pattern, as described in Chart 2.

Chart 2: The State-Society Pattern after Reform in Urban Areas
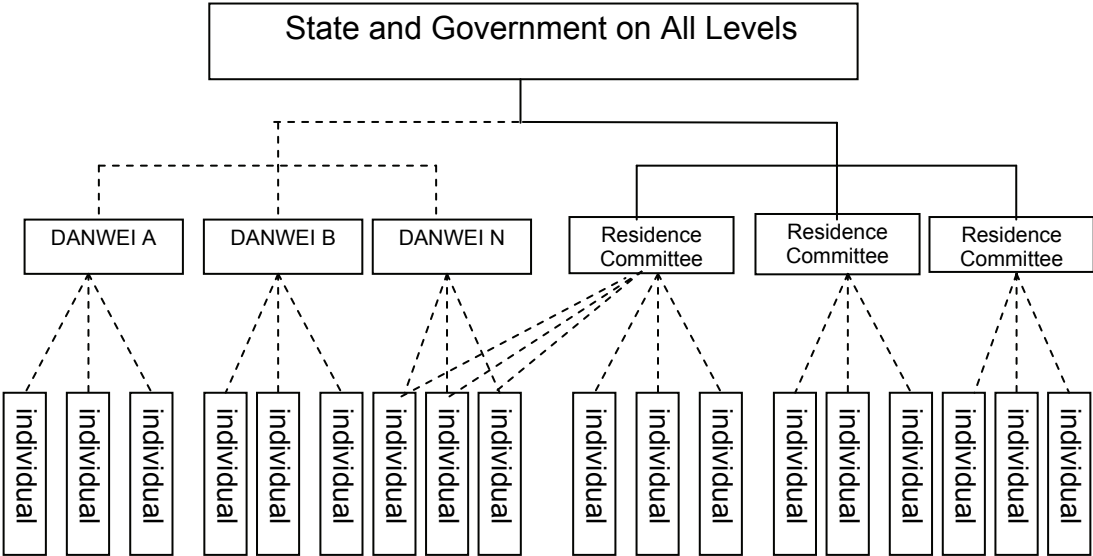
Contrasting Chart 2 with Chart 1, we find that the state does not maintain direct control on individuals through *DANWEI* or Residence Committees. Because the government has put more emphasis on economic development and also because resources are dispersed in all sorts of social establishments in the market economy, the state has had to retreat from many fields step by step, while still insisting on strict control on the regime and ideology. With the weakening of those functions of *DANWEI*, the capacity of the state to control society has been impaired. In other words, the original totalitarianism has been substantially weakened. Also, the relationship between the society and the state has changed (Sun 1994; Deng, 1997). In such a context the Internet can act as a platform for netizens to issue ideas more freely and to protest against the government more efficiently than before. To understand this more profoundly, maybe we can ask that could people, in the totalitarianism phase of China's history, be bold to issue ideas as they do now even if there had been an Internet.

Experiencing a New Political Order in Urban Areas

Several Cases

Case 1: YTHT

www.ytht.net was once one of the most famous BBS's in China. It was established on September 17, 1999, by a student in Peking University and was run by non-governmental figures before it was shut down by the government. The webmaster of YTHT and all the moderators were chosen by online vote.

The literal meaning of YTHT is "A Complete Mess," and in Chinese pronunciation it also says that there is a tower (*ta*), a lake (*hu*) and a library (*tushu guan*) on the campus of Peking University. Before it was shut down, there were more than 700 boards, and the largest count of online members once exceeded 20,000. Political affairs and current issues were discussed ardently in some boards, for example, *Triangle (san jiao di), Civil Life (gongmin shenghuo) and Anti-Rumor (fan yaoyan zhongxin)*. And some boards which considered sensitive topics, such as homosexuality, also attracted many users.

Because there was much discussion of political affairs, also because some issues sparked discussion on a large scale thus forced the government changing some policies[10], YTHT was urged to self-censor and clean itself up several times. Finally, BCA (Beijing Communication Administration) decided to shut it down on September 13, 2004. After that, it was hard for people to find any information about YTHT on the Internet in China because any words related to YTHT had been filtered by most search engines. However, on Jan 15, 2007[11], YTHT got online once again, but there was only one board named *Nothing (luan qi ba zao)*, and people could not access it using the service provided by domestic ISP[12].

Case 2: Linyi Family Planning Affair

Family planning is an important policy in China. It has been implemented since the 1980s and has had a great influence on the control of population. However, it was relatively difficult to implement such a policy in the country, especially in the poor districts. Linyi is a county in Shangdong province in the north of China. In 2004 and 2005, the local government decided to adopt some strong measures to ensure the implementation of the Family Planning Policy. In the following months, some women were forced to undergo tubal ligation, and some of their relatives were arrested because they protested such treatment. In May 2005, Chen Guangchen, a blind local, and his wife Yuan Weijing began to investigate the issue. Later, Li Jiang, the webmaster of www.gmwq.org[13], interviewed the Chen couple and issued a report on the website. Subsequently, some lawyers and scholars began to investigate this affair. At the same time, the netizens began to discuss the Linyi Family Planning Affair on the Internet. In September, the officer of the NPFPC (National Population and Family Planning Committee) declared that they would make an investigation in Linyi. Several days later, the NPFPC and

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[10] There were many cases, for instance, the Sun Zhigang Affair. Sun Zhigang was a young man who worked in Guangzhou. In March 2004, he wandered on the street without having any certificate of identity. Some police took him away. In the following days, he was hit by eight policemen and died of serious injuries on March 20, 2003. His death caused much discussion on the Internet. The government at last was forced to abolish some rules on the floating population in June. See http://www.people.com.cn/GB/shehui/44/20030609/1012813.html

[11] The first article on the new YTHT was issued on Jan 15, 2007.

[12] Most of the reports about YTHT now can be seen only on some websites hosted on abroad servers. See http://www.ytht.net/, http://www.flypig.org/001169.html, and http://zh.wikipedia.org/wiki/%E4%B8%80%E5%A1%8C%E7%B3%8A%E6%B6%82BBS

[13] www.gmwq.org was shut down by BCA. See http://tech.tom.com/1121/1794/200426-80109.html

PFPC of Shangdong Province sent out two teams to investigate. When the teams came back, the officer of NPFPC confessed publicly that there was some violence in the process of enforcing the Family Planning Policy in Linyi and revealed that some local officers had been deposed and also that some had been arrested, pending further investigation[14].

Case 3: Ha'erbin BMW Crash Affair

Ha'erbin is the capital of Heilongjiang Province in northeast China. On October 16, 2003, a woman named Su Xiuwen crashed her BMW into a quadricycle ridden by a country woman after the quadricycle had sideswiped the BMW. The consequence was that the country woman died on the spot and another 12 persons were hurt to different degrees. On Nov 20, 2003, the local court ruled that Su had committed the crime of causing traffic trouble and deserved a two-years' prison sentence with a probation of three years. Subsequently, there was online discussion about the Ha'erbin BMW crash. Most of the netizens thought the sentence was not just and suspected that Su was the daughter-in-law of a high-level leader in Heilongjian Province, although some officers of Heilongjiang Province declared that nobody in the leadership had anything to do with Su. In Dec 2003 and Jan 2004, other media, especially newspapers reported this affair. Under the pressure of public opinion, the highest leader of Heilongjiang province declared in Jan 2004 that they would conduct a deeper probe into this affair. Several months later, the president of the Political Consultative Conference of Heilongjiang Province, who was under suspicion-being the mother-in-law of Su—was deposed and on December 2005 was sentenced to a stay-of-execution with the crime of bribery[15].

Case 4: Anti-Japanese Demonstration

Incidence of anti-Japanese demonstrations is another case to illustrate how social movements can be initiated by online political discussion. In March and April 2005, there was a remarkable topic in online political discussion mostly objecting to Japanese publishers having tampered with the content of a history textbook about the Japanese invasion of China. In more than twenty cities, including Shanghai and Beijing, there were large-scale demonstrations which were spontaneously organized by netizens. Netizens appealed to people to protest such behavior and boycott Japanese commodities. In some cities, demonstrators vandalized Japanese restaurants and offices, and two Japanese in Shanghai were assaulted[16].
The Chinese government appealed to people to keep calm and forbade them to vandalize Japanese establishments. In some cities, especially after Labor Day, demonstrations were forbidden by the local government. Some people were arrested, and some people who destroyed public establishments were sentenced to prison.

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[14] See http://www.chinapop.gov.cn/zwgk/wjgb/t20050907_49538.htm,
http://news.boxun.com/hot/linxijisheng.shtml, and http://www.gmwq.org/web/news_view.asp?newsid=174
[15] See http://www.people.com.cn/GB/shehui/1063/2289840.html,
http://news.sina.com.cn/c/2004-03-28/07423070067.shtml,
http://news.bbc.co.uk/chinese/simp/low/newsid_3400000/newsid_3409000/3409025.stm, and
http://news.rednet.com.cn/template/TopicTemplate2.asp?TopicID=2316.
[16] See http://news.sina.com.cn/c/2005-04-12/23186366346.shtml,
http://www.gazx.gov.cn/text_view.asp?newsID=8352, and
http://news.xinhuanet.com/comments/2005-06/17/content_3094067.htm.

Case 5: Protesting Markup of Tickets

In 2002, MOT (Ministry of Train) held a hearing to discuss the markup of train tickets. Later, MOP decided that a markup of 20 percent would be a reasonable price for tickets during the Spring Festival travel frenzy. The policy continued in the following years. In Jan 2007, discussion about the topic became hot on the Internet. Merely on sohu.com, there were almost 1000 articles of discussion, and more than 6000 netizens voted on the issue of the markup. Most of the articles thought that a markup during the travel fever of Spring Festival was not reasonable, since the majority of passengers were low-income. More than 90 percent voted against the markup[17]. Furthermore, netizens criticized MOP for not giving ear to the appeal of the masses and oppugned MOP's having approved a markup every year with only one hearing of witnesses. Finally, the officers of MOP decided to withdraw the markup for the 2007 Spring Festival[18].

Selective Interest of Government

Ever since the government has experienced the power of the Internet, it has tried to control the Internet. However, if we pay attention to the level of government interference with online political discussion, we find there is selective interest in controlling discussion. This is seen in both government management of websites and in government feedback to discussion, as is illustrated in Figure 3.

Figure 3: Categories of Online Political Discussion

	CASE NUMBER	PAGE CAN BE SEARCHED OUT	PAGE CAN BE BROWSED
Oppugn the Validation of Government	1	N*	N
Criticize the Mismanagement of Policy	2	Y**	N
Interest Articulation	3,4,5	Y	Y

*: *In current time, the pages can be searched out.*
**: *Only part of them can be searched out if using the service of domestic ISP.*

In Case 1, discussions on YTHT oppugned the validation of the government or the validity of some policies, e.g., the management of news and press. It is clear that the government would not tolerate such discussion, and finally the website was shut down by the BCA.
In Case 2, although the central government knew that it was difficult for local officials to strictly enforce the Family Planning Policy, however, as the ideas of human rights had a great influence in society, especially among the educated, officers of NPFPC had to declare that local officials violated the policy and should be punished. Yet at the same time, the Linyi Family Planning Affair was qualified as a parochial affair caused by misplaying the policy, so the censorship did not treat it as strictly as it did Case 1. But some pages of this discussion still cannot be viewed with a domestic ISP because there are some negative comments about the result.
In Case 3, because corruption was criticized by grass roots groups, especially in the background that the gap between the poor and the rich was enlarging, and also because the government itself had been proclaiming a crackdown on corruption, the related report on the Internet can be searched out and browsed. Perhaps a stronger reason that these pages can be browsed is that the central government had decided to punish the president of the PCC of

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[17] http://news.sohu.com/s2007/07chunyunpiaojia/
[18] See http://news.sohu.com/s2007/07chunyunpiaojia/,
http://news.sina.com.cn/c/2005-01-26/11085673469.shtml, and
http://news.xinhuanet.com/video/2007-02-02/content_5685814.htm.

Heilongjiang Province before sentencing, thus guaranteeing good news for both the central government and grass roots.

In Case 4, although the demonstration caused the government to hire many police to maintain order, it was helpful for the government to adopt a more flexible attitude to deal with the foreign relations with Japan. Also the online discussion had nothing to do with the validity of any authority, so people can search or browse almost any page on this topic.

In Case 5, the markup of tickets in the Spring Festival travel frenzy involved more than 300 million people in China, as many Chinese usually go back to their hometowns or visit tourist sites at that time. To all appearances, it was a problem of price or industrial management. However, it can be viewed as political discussion if we observe it from the perspective of how validation of policy is set up. People or netizens articulated their interest online and finally they got a satisfying result.

If we compare the five cases, it is clear that the government has taken a strategy of selective interest. It puts strict controls on those affairs challenging the validation of its power but loosens controls on those affairs less related to the validation of the regime. The five cases above illustrate a series of policies issued by the government for controlling the Internet. Such strategies, to some degree, map out a transformed state-society relationship and provide people in urban areas the chance to experience a new political order.

Experiencing a New Political Order in Urban Areas

A New Way to Articulate Personal Political Ideas More Freely and Bargain with Government More Efficiently

In contrast to the time before online political discussion emerged, people today articulate personal political ideas more freely and bargain with the government more efficiently. As we have observed in the cases discussed, despite there being censorship, many articles are issued and subsequently known by thousands of people almost simultaneously. It is difficult for censorship to disrupt all the information in one second. Once information is issued on the Internet, it proliferates at an unbelievable rate. Even when the government urges search service providers to filter some key words, netizens can still use search engines hosted on an overseas server. Besides, new technology, such as P2P, provides people more ways to share information while successfully evading censorship. This is why an Anti-Japanese movement can be organized in one night without any visible organizer. In Case 5, netizens discussed the markup of tickets and urged the government to abolish such a decision. Continuous discussion and the result of voting on the Internet exerted tremendous pressure on the decision-making of MOP in the context of the CCP's call for constructing a harmonious society. Finally, netizens won. Some earlier cases, such as the Sun Zhigang Affair and the Liu Yong Sentence Affair[19], experienced similar results.

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[19] Liu Yong was the head of gangsterdom in Shengyang, Liaoning Province. In April, 2002, he was sentenced to death by a local court. After appealing to high court of Liaoning province, he was sentence to death with probation of two years in Aug, 2003. Such a sentence caused discussion on Internet. In Dec 2003, the Supreme Court arraigned Liu Yong in Jinzhou, Liaoning province. It was the first time since 1949 that the SC arraigned a penal case. After arraigning, the SC rejected the sentence made by high court of Liaoning province, and sentenced Liu Yong to death. See http://news.sina.com.cn/z/liuyongsy/index.shtml
and http://news.xinhuanet.com/legal/2003-12/17/content_1236071.htm

Cultivating a New Idea and Disposition

In addition to influencing real-life events, online political discussion plays another important role in cultivating new ideas and mindsets in netizens. As I have indicated previously, online political discussion has almost replaced actual face-to-face discussion in everyday life. In other words, online discussion has become an everyday "virtual" practice which subtly shapes people's ideas and mindsets. In Case 1, both the webmaster and moderators were elected by the users of YTHT. Each user had the right to vote and make comment on any issue about the management of YTHT. Certainly, there were some restrictions and prescriptions on the behavior of users, but all rules and decisions of YTHT were public and validated by voting. Especially, when users were forced out for their speech or other reasons, they had the right to appeal and ask for arbitration according to the prescriptions. Such an experience is quite different from that in other media. In other words, the ideas and attitudes in YTHT are closer to the democratic mechanisms which were popularized in the Neo-Enlightenment. In fact, in many online communities, there is voting as well as online political discussion. Some activities related to managing the website—for example, assessing the degree of acceptance of articles issued by some netizens—also embodied the principles of democracy. In Cases 2, 3 and 5, online discussion generated by netizens eventually pressured the government to change its decision or urged the government to rectify its mismanagement of policy. Both the practice and the consequence brought forward by online discussion made people more active in insisting on their rights, thus opening the opportunity for experiencing a new political order in urban areas.

Conclusion

Online political discussion in China emerged as a direct application of Internet technology. If we take into account the character of netizens and the context in which online political discussion emerged, we can understand the phenomenon from a threefold perspective. The ideas underlying the Neo-Enlightenment founded the ideological basis for online political discussion, and the consequence of economic reform and residence reform spurred the development of online political discussion. When online discussion opened a new way to express ideas, political activity was transformed from ritual to interest articulation. Such a change charts the new State-Society relationship.

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Social And Political Consequences Of Blogosphere

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Abstract

Blogosphere offers a unique but at the moment politically and socially challenging and changing channel for publishing and communicating. The blogging phenomenon is perhaps a grassroots movement that may sow the seeds for new forms of journalism, public discourse, interactivity and online community. Yet such notions as "traditional" community and "public debate" should be taken less for granted. One should think again about notion that more people communicating more often is good for democracy, without rigorously questioning the forms of communication and the quality of communication. Blogosphere provides the basis for a public sphere, but it must be organized in a way which would guarantee rational discourse based on trutful information and reasoned opinions. Electronic discursive democracy seems to be only a tool for reinforcing current media discourse in a liberal democracy, it cannot replace it. The readers will be soon overloaded with blogs and thus they will rely on some server or paper that would select information for them. In order to keep quality and fairness of discourse, registrations of all discussants will be necessary. Certainly, this is most likely future of blogosphere. In some way, this is already happening.

Introduction

This paper deals with possible political and social consequences of a new phenomenon of public social and political publication and communication via Internet, presented by online diarists, or "bloggers". The all-encompassing term to describe the universe of weblogs is the "blogosphere". A blog (short for "weblogs") is a small web site, usually maintained by one person and quite often hosted by an institution (most often it is a "standard" mass medium) that is updated on a regular basis and has a relatively high concentration of repeat visitors.

Blogs often are highly focused around a singular subject, an underlying theme or unifying concept. Blogs can be categorized into periodically updated personal diaries, expert or political analyses, opinions/commentaries, references/news information and advice columns. A blog sometimes consists of a running commentary with pointers to other sites. There are also specialised photoblogs. There are also fake-blogs. There is well-know story about fake blog created by Microsoft (Javorský 2007).

Blogs provide online personal publishing with minimal or no external editing. They are usually presented as a set of "posts," individual entries of news or commentary, in reverse chronological order. The posts often include hyperlinks to other sites, enabling commentators to draw upon the content of the entire World Wide Web

Blogs are different from traditional personal diaries (still present at the Internet) with possibility of on-line discussion about the content of what has been written. Personal diaries are more intimate looks at the thoughts of an individual person, written from the perspective of that person, updated regularly, usually without possibility to of a publicly browsable web page.

The first weblogs weblog became less distinct as link lists evolved into internet news sites (Brook 2002). The first blog has generally been ascribed to Dave Winer in 1997 (Lasica

2002b). Blogs began taking off in 1999 with the launch of sites like [Blogger](), [Weblogger]() and [LiveJournal](), which made self-publishing painless for the masses.

Blogosphere And Internet Mediated Communication

There were more than 57 million blogs on the web in early 2007. The number of blogs has grown at an astronomical rate in the last years. While in 1999, the total number of blogs was estimated to be around 50; in 2004 the estimates ranged from 2.4 million to 4.1 million (Drezner a Farrel 2004).

About 55% of all blogs are active, which means that they have been updated at least once in the last 3 months. As of October 2006, about 100,000 new weblogs were created each day. While the doubling of the blogosphere has slowed (from 150 to 235 days), interest in blogging remains considerable. Also considerable is still high integration of blogs and traditional media sites on the web. There is a clear correlation between posting volume, aging and Technorati authority ranking of blogs.

Institution Technorati has established a blog's authority (or influence) by tracking the number of distinct blogs that link to it over the past 6 months.

English and Japanese remain the two most popular languages in the blogosphere, followed by Chinese (Sifry 2006).

Blogs are read by 23 % of Europeans. In Slovakia, blogs are read at least sometimes by almost two thirds of people who use the Internet. In the USA, this number is relatively lower - only between one quarter and one third of those who use Internet read occasionally blogs too.

Yet it seems that among those who read blogs are increasingly influential people. For example, in Poland are blogs read by 16 % of population but by almost 43 opinion leaders.

In Slovakia, former minister of interior is well-known for his trust - or at least interest - in blogosphere. For example he used discussion in one blog-community affiliated with a major paper for quasi-sociological summary of opinions on a certain isssue. He published his summary in conservative hard-copy monthly (see Palko 2007).

While about 18 % of those who are above age 15 of those who use Internet have their own blogs in Slovakia, in the USA there are only 8 % of those who are older than 18 years and use Internet who have their own blog (Demko 2007, Javorský 2007).

For technological optimists Internet - and especially blogosphere - is the most liberating and enfranchising technology we have ever seen. Blogosphere is sometimes compared to the utopian vision of electronic agora.

For technological pessimists Internet is a dire formula for isolation and alienation. Internet is thus seen as a miraculous tool for communication, information collection and publication, a site for dialogue and debate, venue for lobbying and fundraising, but also as excellent tool for terrorists, nationalists, xenophobes and criminals of all types and nations.

There are following real or potential benefits of Internet and blogosphere as communication tool. The technological advances being made through computers, Internet and digitisation open areas that were previously restricted, if not closed, to public discourse of silent minorities. Internet fundamentally shakes the traditional controls enjoyed by elites and the institutions over information/opinion and its dissemination.

Internet enables dissemination of information that traditional outlets deem too sensitive, or to bypass restrictions in areas where there is political upheaval and censorship. Among the most famous cases of this type one can find some political scandals revealed in the writings published on the Internet, like former USA president Clinton´s scandal with Monica Lewinsky. First rumours of this scandal appeared on the net, and indeed in blogosphere.

In another case, television CBS acknowledged that it could not authenticate documents it had used in a story about President George W. Bush's National Guard service that bloggers had identified as forgeries.

Social Consequences Of Blogosphere

Deborah Branscum (in Lasica 2002a) summarized wider social attraction of blogging phenomenon in the following key characteristicts: creative freedom, instantaneity, interactivity and lack of marketing constraints. Weblogs are also taken more seriously than a static Web page.
What seems to resonate with bloggers is not the publication of a first-person journal but the chain of interaction it often ignites (Lasica 2002a).

In general terms, the potential of the blogosphere is to create a more equal and free arena that goes some way to the ideal of the public sphere as defined by Jűrgen Habermas.

Certainly, information technologies have increased the options available for us to access, store, analyse and publish the great range of opinion and information that is now available in the public domain. Citizens can thus get information and opinion from official and unofficial sources as well as reference and archive sources at the world wide web.

One of the strengths of cyberactivism and cyberpublication and cybercommunication predominantly in three above mentioned languages, is the variety of perspectives offered. In this way, new internationalism and cross-issues alliances can be easily established. However, although the net facilitates mobilization of various movements, it usually does not cause it, because the cellular networked character or contemporary movements has its owns history.

Then there are the following real or potential negative features of Internet and blogosphere as a communication tool.

The first negative side of the blogosphere is that it can be used to keep track of bloggers. In totalitarian regimes therefore, the technology can be used to stifle rather than liberate information and opinion making.

There can be easily spread disinformation and libel by not checking the source and reliability of information.There are newly raised issues of taste, decency and perhaps also of continuing cultural "imperialism".

Then there are some paradoxes, or both strengths and weaknesses, which hinder potential benefits of Internet mediated communication. Blogosphere can be used or abused as a relatively safe, fast and cheap communication/PR/propaganda tool for terrorists, nationalists, xenophobes and criminals of all types and nations.

Vast tracts of the world still have no connection to a telephone, let alone a computer and modem and majority of Internet sites are located in industrially developed rich nations.

As more and more information sources and opinions are brought to our attention via the Internet and blogosphere, learning to handle containment rather than access seems to be the challenge.

Internet use does not bring radical changes to the structure and characteristics of social relationship. However, it seems that in early stages of adopting the Internet , deprived groups are the greatest beneficiaries of Internet usage (Hlebec, Manfreda and Vehova 2006).

Instead of socially deficient and lonely, those who communicate via Internet often have rich, stressful and complex home and work lives. Internet-mediated communication allows to customize social contacts from fragmented communities and to plan, organize and make efficient our social contacts. Virtual places of blogosphere can offer functionally similar forms of localized contacts (Soukup 2006). It is not sure whether this will be the case in the future too. According to Lasica (2002b), blogs take us away from communicating and socializing in real-time which is much more effective and interesting. Blogs take communication back to an 'announcement' mode of communication, where comments are the only feedback given, if any, and the original speaker doesn't even know who their audience is until after feedback returns. Blogosphere decentralizes small group communication and decreases its efficiency, which is ironic, considering that the vast majority of weblogs are only read by a few people.

Blogosphere As The Ideal Habermasian Public Sphere?

Jürgen Habermas described and analysed the evolution from *opinion* to *public opinion* and the socio–structural transformation of the latter in his book *Strukturwandel der Öffentlichkeit*.

Habermas means by the 'public sphere' first of all the realm of social life in which public opinion can be formed. Citizens behave as a public body when they confer in an unrestricted frashion. The public sphere is seen by Habermas as falling between the private sphere and the sphere of the public authorities. It is a supposedly neutral sphere in which matters of 'the public interest' are debated. The key characteristic of Habermas´s concept is guaranteed access, together with guarantee of freedom of assembly and association and the freedom to express and publish opinions about matters of general interest.

Yet it is the principle of making a rational decision which is central to Habermas's theories.

Already the emergence of the electronic mass media in the public sphere made according to Habermas possibility of public discourse even worse.

On the one hand, the electronic mass media have an impact more penetrating than the print media, yet their format effectively prevents interaction and deprives the public of the opportunity of free expression and public dissent. At the same time, a new class of participants in the public debate emerges: The practitioners of public relations. They invade the process of public opinion by systematically creating or exploiting news events that attract attention. They create a staged "public opinion".

For all these reasons Habermas came to the conclusion that "The world fashioned by the mass media is a public sphere in appearance only"(in Boeder 2005).

Does the Internet and blogosphere provide the basis for a public sphere that approximates to Habermas' vision? One should be aware of the fact that communication media are necessary but not sufficient for self–governance and healthy societies.

 Blogosphere offers a unique channel for publishing and communicatin. Yet Bardoel (1996, in Boeder 2005) points out that because of the increasing individualization and segmentation in communication such notions as "community" and "public debate" should be taken less for granted. John Hartley (1992, in Boeder 2005) makes the bold argument that the media *are* the public sphere

According to Golding (1990, in Boeder 2005), new communications technologies are being used in ways that extend democratic communication practices. As networks become

structurally decentralised, ever wider publics gain access to them in ways that lead to an increase in the rate and density of public exchange. Certainly, from the macro point of view, there is no social hierarchy and almost any subject of importance or interest can be discussed in the Internet. This kind of public sphere is autonomous because it is largely free from either political or economic control, and it embodies a democratic ideal through the provision and exchange of knowledge and information.

The blogosphere seems to be the ideal Habermasian public sphere. The blogosphere has no central organization, and its participants have little ideological consensus. This feeling of achieving the eternal dream of all Utopian humanists can be strengthened by the fact that increasingly journalists take their cues about "what matters" from weblogs.

It is clear that Habermas strongly emphasized communication equality as a social value. However, some blogs are already marked with V.I.P. signs, which means that the authors have privilege that their articles appear on website of a host daily newspaper.

Also, the issue of guaranteed access is controversial. Not everybody has access to Internet. Even phenomenom of blogging is not know to all who use the Internet. In Slovakia, 16 % of those who use Internet do not know what are blogs and further more that one fifth Internet users does not read them (Demko 2007).

Mark Poster (1995) provides some trenchant criticisms of optimistic version of the Internet as public sphere. Firstly, referring especially to Usenet newsgroups, whilst it is certainly true that people can address one another as equals, the groups can hardly be seen as a forum for rational debate and the achievement of consensus is generally seen as impossible.

With respect to blogs tend to be impressionistic, telegraphic, raw, honest, individualistic, highly opinionated and passionate, often striking an emotional chord (Lasica 2002b).

There is further problem with communication that on the Net nobody knows somebody's identity which can be further constantly changed on daily of even hourly basis. Such unstable and shifting identity is, in Poster's view, not consonant with forming any kind of stable political community and, far from leading to a consensual view, dissent on the Internet merely leads to a proliferation of views as there are no conditions present which might encourage compromise.

Claims about potential for democratization and liberalization of public sphere have been made about most new media in the modern period.

As put by Maddox (1994, 31), at the time of inception of many important communication technologies and for many years afterward, no one understood the implications of their invention and use. Sociologists Colin Cherry wrote (in Maddox 1994, 31), that the new invention can first be seen by society only in terms of the liberties of actions it currently possesses. The invention alters the society, and eventually is used in ways that were first quite unthinkable. For example, possibly no one imagined that the automobile would become such a common killer of adolescents as well as adults, or that the telephone a powerful instrument for the gratification of a distinctive brand of aural sexual pleasures that did not exist as such before its invention.

It is well-known that the Internet itself has been created by the military to keep defense-related computers connected even in the aftermath of a nuclear war.

When radio stations began broadcasting in the 1920s in the United States, they sprang up almost at random and did pretty much what they wanted. Radio was an interactive medium during its early days. It was cherished by people much like ourselves. But later it lost the interactivity. The blogosphere is in a condition much like that of radio broadcast in the USA

in its early years.

Poster (1995) therefore argues that there is a striking parallelism between the intentions and hopes of the early trailblazers in radio and today's Internet techno-utopians. Not unlike the Internet, much of the radio infrastructure was put together by enthusiastic 'hackers' using what was provided by the state and private enterprise to experiment with, develop their own extensions to the technology and extend the infrastructure in their own way without paying too much attention to the 'official' intentions for radio. Not unlike today's techno-utopians, they developed their own equivalent of bulletin boards and chat forums and, strikingly like today's Netizens, they envisaged the new technology enhancing participation in politics and the quality of education. Many of the early radio enthusiasts imagined that by having politicians on radio they would be able to develop a more genuinely participatory democracy, in which politicians would be more open to scrutiny and would be more directly answerable to the populace by being requiring to answer the questions put to them by the newly empowered citizenry.

In the case of Internet mediated publication and communication, increased message reach and speed of circulation, the cross-referring, archival qualities of the Web and the high production values that can be achieved with little investment are seen as favouring activist mobilization endeavours, both in terms of organization and publicity. So far, the technology depends on users' interactive connexion to the network in a way which radio did not.

Yet many models of the Internet as a public sphere have been naïve and simplistic. They have assumed that more people communicating more often is good for democracy, without rigorously questioning the forms of democratic communication, the quality of communication and their relationship to the Internet.

Online media enables us to be both consumers and suppliers of electronic media content. This agains brings us closer to ideal speech situation.

Yet one should be aware of the fact that the Internet provides the *basis* for a public sphere, not that it has or will actually create one. Habermas presupposes that reasoned communication, i.e. critical and discussion debate, can weaken prejudices, increase the scope and power of the public sphere and strengthen democracy. It is often ignored that the quality of public discourse is important for proper political decisions to be made, not the quantity of voices. Critics are worried whether inundation of texts and voices will lead to anarchic rather than democratic forms of communication. Of course, the normative democratic imperative demands and expects "the more participation the better results can be achieved". This model is good as far as there is sufficient space for rational discussion. However, this model does not assume, and should not be confused with, the irrational model of democratic discursive sphere. In this irrational model of discursive sphere the plethora of voices creates normative chaos, similar to the story of Babylonian tower. There are fears that this is precisely the major characteristic of blogosphere at the moment. In this sense, eventually electronic discursive democracy seems to be only a tool for reinforcing current liberal democracy, it cannot replace it.

Indeed, the major arguments of critics of Internet and blogosphere are that electronic public sphere is exclusive, elitist and far from ideal, mainly as a result of "digital divide". The equipment is tremendously expensive for many people, the language is English which not everybody speaks, and there are needed technical skills for Internet mediated communication.

Yet for readers worldwide, blogs can act as the "man on the street," supplying unfiltered eyewitness accounts about foreign countries.

The blogging phenomenon is perhaps a grassroots movement that may sow the seeds for new forms of journalism, public discourse, interactivity and online community.

For salient topics in global affairs, the blogosphere functions as a rare combination of distributed expertise, real-time collective response to breaking news, and public-opinion barometer.

A few elite blogs have emerged as aggregates of information and analysis, enabling media commentators to extract meaningful analysis and rely on blogs to help them interpret and predict political developments (Drezner a Farrel 2004).

Increasingly, even business people use blogs for communication and publication. In Slovakia, general director one of a major bank has its own blog with readership about 3,000 each (Javorský 2007).

The more blogs discuss a particular issue, the more likely that the blogosphere will set the agenda for future news coverage. The media only need to look at elite blogs to obtain a summary of the distribution of opinions on a given political issue. The mainstream political media can therefore act as a conduit between the blogosphere and politically powerful actors.

The comparative advantage of blogs in political discourse, as compared to traditional media, is their low cost of real-time publication. Speed also helps bloggers overcome their own inaccuracies. When confronted with a factual error, they can quickly correct or update their post (Drezner and Farrel 2004).

Bloggs can have some significant impact in civic and political life. When key blogs focus on a new or neglected issue—blogs can act as a focal point for the mainstream media and exert formidable agenda-setting power.

While in the past there was fear that state surveilance through modern technologies will undermine civic freedoms, new communication technologies enable to control public authorities in their public and sometimes even private failures (Garaj 2007a).

There remain formidable obstacles to the influence of blogs. All bloggers, even those at the top of the hierarchy, have limited resources at their disposal. For the moment, they are largely dependent upon traditional media for sources of information.

Furthermore, bloggers have become victims of their own success: As more mainstream media outlets hire bloggers to provide content, they become more integrated into politics as usual. Inevitably, blogs will lose some of their novelty and immediacy as they start being co-opted by the very institutions they purport to critique.

Bloggers, even those in free societies, must confront the same issues of censorship that plague traditional media (Drezner and Farrel 2004). Yet there is fundamental difference between bloggers and the media. While bloggers usually so far face no direct legal or moral consequences for their writings, "standard" media have enourmous moral and legal responsibility which can also be reflected in their business success or failure.

The virtual world or worlds of blogosphere can seduce us because they offer the promise of being completely shaped to our wishes, while the real world remains refractory.

Marvin Minsky, generally considered, along with John McCarthy, one of the founding fathers of the field of artificial intelligence, said in the early 1990s that he preferred virtual sunsets to real ones because the virtual sunset could be constructed so as to be perfectly enjoyable (in Maddox 1994, 31). This can have psychological, and sometimes psychiatric dimensions, both positive and negative ones. It can heal but it can also destroy individual psyche. Virtual worlds allow us to get to know the people first and then choose to meet them

later. This is in contrast to traditional way of getting to know, when we are accustomed to meeting people, then getting to know them

There is also positive side of this virtual world. The Internet in general and blogosphere in particular can make us more aware of conditions around us, or around the world. This may have bring us closer to the lives and problems of various minorities, as well as to international issues of famine, mass murder and torture.

Political Issues Of Blogosphere

Blogosphere brings new challenges to politics at local, national and international level. For example, a famous US blogger Matt Drudge put at his blog translation of sceptic c speech on global warming given by the Czech President Václav Klaus. Čermák (2007) argues that it is most likely that American conservativs learned about this speech from other US blogs which cited this translation.

In China, the government has decided to introduce new rules governing publicaiton of blogs and webcasts in 2007. There were over 20 million bloggers in China at the end of 2006, out of this number three million regularly published. Videoportal have been visited by 76 million Chinese in 2007. It is well-know that internet search engines Google and Yahoo had to accept rules which filter "sensitive" issues such as independence of Taiwan or Falung Gong. The Chinese government temporarily of permanently blocks hundreds of websites. Not all motivation of the Chinese government is motivated purely by politics. A Chinese female-blogger has published at her blog names and personal data of all her former lovers. One of softer methods of regulation suggested by the Chinese government is to secure true identity of bloggers (Vozárová 2007).

The Egyptian court sentenced to four year term in prison blogger who criticised Islam and the President in 2007. Egyptian bloggers, who count around 6,000, try to avoid political and social restrictions put on traditional media.

Tunis, United Arab Emirates, Saudi Arabia and Bahrajn have blocked access to the secular portal Rezgar.com.

There ae some recent examples of changing political and legal situation in blogosphere. The German Constitutional Court has decided in late March 2007 that internet providers are oblidged to remove some comments which offend concrete person. This should be done regardles of whether the author is known or unknown.

In April 2007, YouTube made offer to the Government of Thailand to block video which were seeen as offending Thai King. ponúkla thajskej vláde možnosť zablokovať videá, ktoré urážajú thajského kráľa Bhumibol.

In most recent widely discussed case Tim O´Reilly (2007) with some of his colleagues outlined („a work in progress") "Blogger's Code of Conduct" . This was published on March 31, 2007, in response to the firestorm that has arisen as a result of his friend who was targeted by a series of increasingly violent and disturbing anonymous comments on her blog. Significantly, the first rule of this code of conduct urges to „take responsibility not just for your own words, but for the comments you allow on your blog." In commentary, O´Reilly wrote that we now have one more clear object-lesson on what we get when we start a site that not only tolerates but encourages mean comments: there's a quick race to the bottom. O´Reilly believes that there's a big difference between censorship and encouraging and tolerating abuse." This is indeed becoming a widespread issue. A former frequent Slovak blogger (Čuláková 2006) summarised her negative experiences with blogging in Slovakia. Firstly, in

her opinion, there were problems with giving preference to some contributions (so called „karma" system, based on feelings of readers, then based on readership frequency and „selection" of articles based on editorial decision) and later giving automatic preference to some bloggers (so called „VIP" system). Logic of this system leads to scandalous writing, especially of headlines. Sometimes it can be abused for promotion of own vested interests, including business interests. Secondly, and paradoxically, the author did not wish to appear her writings in printed form on the pages of a newspaper. However, this sometimes happened and caused some conflicts with her colleagues – local politicians. Thirdly, Čuláková did not like follow-up discussions. These were, in her opinion, very little efficient and mostly highly emotionally laden. Interestingly, she compared Czech and Slovak blogosphere and suggested that discussions there are much less emotional. Fourthly, she did not like that, for some time at least, pedophiles were given voice in this blogosphere, but not a Jehova Witnesses. Finally, she did not like that her writings and suggestion were commercially used by the daily Sme. Brook (2002) put together additional arguments against blogs and bloggers from different cultural perspective.

There is indeed problem with anonymity. The majority of bloggers and participants in blogging protects their identity. The result is that discussion fora are often overloaded with personal offences and communication garbage (Garaj 2007c). Especially in Slovakia, some online portal "are unable to remove sufficiently quickly racists or religious remarks. In contrast, articles which raise socially and politically important issues of the day do not cause such lengthy discussions (Nicholsonová 2006).

Violence in words is not, potentially, without consequences. There is now strong evidence to suggest that "mirror neurons" activate in the same way when we are *watching* someone else do something as they do when we are doing it ourself. We learn from *imitating* (mirroring) others. The potential problem, though, is that these neurons go happily about their business of imitating others *without* our conscious intention. The behavior of others we're around is nearly irresistible. Neurologist Richard Restak even argues that negative emotions exert a more powerful effect in social situations than positive ones, thanks to the phenomena of emotional contagion. (Angry/negative..., 2007). Marsden (1998) argues that scientific research has largely confirmed the thesis that affect, attitudes, beliefs and behaviour can indeed spread through populations as if they were somehow infectious. Simple exposure sometimes appears to be a sufficient condition for social transmission to occur.

Wisdom Or Stupidity Of The Blogosphere?

Internet is a great place to get suggestions for a reading list on almost any subject. But it is impractical substitute for any other form of learning, and is likely to stay that way, argued Tenner (1994, 25) before the era of blogosphere. Is this claim still valid in this new age of public sphere?

Using any resource demands what social scientists call "tacit knowledge": skills and ideas that may not be recorded in written form but that arise from person-to-person experience. The Internet lets people with a high degree of tacit knowledge share it wit others at similar level of tacit knowledge. This has been shown by the anthopologist and computer writer Bryan Pfaffenberger in his Democratizing information published in 1989 (in Tenner 1994, 26).

There are three important tools for overcoming this problem. The first one are internet encyclopaedia, the second the vast number of information available online and third one possibly blogosphere - if it attracts experts in various fields.
Cohen and Rosenzweig (2005) research has confirmed that, indeed, somewhat

counterintuitively, although "the Web contains a lot of dust and bagel crumbs, while at the same time it is wrong to claim the Web's unreliability". Cohen and Rosenzweig (2005) argue that while the Web includes many poorly written passages, often uploaded by unreliable or fringe characters, *taken as a whole* the medium actually does quite a good job encoding accurate, meaningful data.As the Web grows, conclude Cohen and Rosenzweig, it will become (again, taken as a whole) an increasingly accurate transcription of human knowledge. If once pays attention to the quality of the public discourse in blogosphere, it is obvious that majority of articles, photos and videos present low quality. Further, if an author wants to attract attentions of readers"vieewes, he/she is compeled to compete with quantity of other presentations through the use of highly attractive, sometimes shocking and thus inevitably "popular" or tabloid headlines. So far, most sites of bloggers lack the best and most active minds in the field. If this changes, blogosphere can possibly eliminate another obstacle of progress in many areas of social and political life. Blogosphere can eliminate fundamental problem of quality of institutions. The economist Albert O. Hirschman has pointed out that when the most quality-conscious users are free to leave a troubled system, the system suffers further by losing its most vocal critics (in Tenner 1994, 18). Blogosphere can solve this issues. Blogosphere is precisely tool for dissenters and critics in general.

Brook (2002) suggested "acceptable" uses of blogs. These inclued 'Expert in a Field' Model, 'Celebrity Figure Information' Model, 'Opinion Of Worth' Model, the Chronicle Model and the Author Model. Maybe these models applied in practice will bring some needed systematic changes in chaotic world of blogosphere.

Conclusions

Has computer–mediated communication taken the place of coffee house discourse? The answer is rather no than yes.

Perhaps the major differences in contrast to recent past is that the bloggers have easier way how to update and/or change their blogs. The bloggers are fully supported by editorial service of major daily newspapers.

Perhaps more importantly, the bloggers get much wider and concentrated audience at once. This audience crosses on-line borders when some articles get published in print media.

In addition, some people who would never dare to write something for free for the public, get impetus to express themselves publicly online. In this sense, the phenomenon of blogging has expanded the quality of the public space (Antoš 2004).

The future of blogs seems to be unclear. Yet it is unlikely that it will fulfill Habermas´ dream. As put by French poet Paul Valéry in 1944: "unpredictability in every field is the result of the conquest of the whole of present world by scientific power" (in Tenner 1994, 18).

Antoš (2004) argues that the readers will be soon overloaded with blogs and thus they will rely on some server or paper that would select information for them.

In order to keep quality and fairness of discourse, registrations of all discussants will be necessary.

Certainly, this is most likely future of blogosphere. In some way, this is already happening.

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A Virtual Community: Towards a European Public Sphere

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Abstract

In this paper the nature of the internet as a medium for cross-national communication in Europe and the extent to which relationships and communities are built between the 'people of Europe' through the internet are examined. The methodology used is the idea of 'virtual ethnography'; virtual referring to non-physical communities, ethnography meaning the *in situ* monitoring of the participants *while they act*. These two terms combined involve the direct online observation of communication and interaction in cyberspace. The idea of virtual ethnography is quite innovative, especially in the context of European Studies research. In the paper, we will argue that in order to explore the development of a European public sphere combined with the cultural aspect of European integration, innovative approaches like virtual ethnography are definitely needed.
In the paper eight exploratory virtual ethnographies are described. The summary of the research methodology used of four of these ethnographies can be found below in table 1.

Table 1: Virtual ethnographic methods used in ethnographies of 2004(*similar table for 2005 is under development*)

	Presence of European institutions	Youth	Turkey	Constitution
Data collection activities	- web surfing - use of search engines - lurking - sending emails	- web surfing - use of search engines - intensive lurking - posting messages, on the national fieldsites, just lurking on the European fieldsites	- web surfing - use of search engines - intensive lurking - posting messages - attempts to interviewing	- web surfing - use of search engines - intensive lurking - posting messages (on purpose provocative to invoke activity) - interviewing - creating discussion forum
Positioning	covert	covert and overt	covert and overt	covert
Level of engagement	passive	Interactive / passive	interactive	interactive and pro-active

The research designs differed in each case, which illustrates the scope for variety within virtual ethnography as a research method. The findings presented in this article are not conclusive and primarily meant to indicate the type of insights that can be gained through this kind of research. Our observations, for example, suggest that the internet as a means for creating a European public sphere is not (yet) used to its full potential. Popular resistance to EU integration as expressed on the internet is addressed by our research, in relation to the European Constitution, as well as to Turkish accession. *Political* online communication is researched in comparison to other forms of communication online, that evolve around more everyday, popular matters. A question posed is for instance whether political issues (such as the above mentioned Constitution and Turkish accession to the EU) are as lively debated online as they are offline. Or perhaps the other way around. So in our paper the online and the offline are compared, but also one type of online community with the other: 'dry' political topics might be more interesting to debate online, than a 'hot' item such as soccer during the

world cup. The actual content of the online debate often does not appear to reflect the offline state of affairs. Because of these inconsistencies, we consider it highly important to have a 'broad' perspective, and address many different themes with various approaches when one tries to determine if there is a virtual Europe.

1. Introduction

It is often argued that the internet can, or even does, facilitate European integration in various ways (Zurawski 1998)(Euro Internet; DG Information Society).The internet[1] supposedly acts as a mind-broadening, power-levelling and cultural-binding medium. It is usually assumed that internet provides the potential to cross established formal and geographical boundaries because distance and location seem to be inconsequential. Because of these attributed strengths, internet is considered to support cross-national community building by allowing debate, dialogue and relationship building among various territorially divided individuals (Appadurai 1996). Slevin (Slevin 2000) and others have argued that internet has transformed ways of communication. Internet is increasingly sketched as a public sphere, a social space and a milieu, made up of, and made possible by communication (Jones 1999), which have lead to the notion "cyberspace". But does this attributed function of the internet, i.e. its ability to support cross-national community building, manifest itself in Europe? Are new or different dialogues and debates on Europe taking place in cyberspace? Are people in Europe connected through the use of internet where they would not have been without it, and if so, how and to what extent? Does internet bridge the assumed gap between "Brussels" and the broad public?

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[1] Throughout the paper, "internet" is purposefully written without a capital, see (Woolgar 2002).

One way to address this set of questions would be to apply the idea of 'virtual ethnography'[2], a notion coined by Hine (Hine 2000). 'Virtual' is used here in the sense of non-physical communities (Schaap 2002). To explore the potential of virtual ethnography as an approach for analysing Europe, we performed several virtual ethnographic studies pertaining to Europe in one way or the other. Throughout the paper we use the short-hand 'virtual Europe' as a reference to our subject of study, i.e. dialogues and debates on European topics in cyberspace and relationships between Europeans and/or groups and organisations situated in different parts of Europe, built and sustained through the internet. We first discuss the idea of 'virtual ethnography', and some methodological issues pertaining to virtual ethnography as a research approach. We then discuss how we performed our virtual ethnographic studies. We will share observations that be gained from our virtual ethnographies in order to illustrate the kind of insights that can be gained from virtual ethnographic research. Finally, we will draw some conclusions on the prospects of virtual ethnography as a research approach for analysing Europe.

2. Virtual Ethnography

2.1. Ethnography

Ethnography has become a popular approach to social science research (Atkinson et al. 2001; Hammersley and Atkinson 1995; Marcus 1998). Although rooted in anthropology, it is currently practiced in disciplines ranging from political science and media studies to medical sociology, sociology of science and, of course, still in anthropology. Whereas ethnography is a rather classical approach in social science, it is rather uncommon in the field of European studies. Exceptions involve Ross (Ross 1995), who did ethnographic research with the Delors cabinet, McDonald (McDonald 1998) and Marc Abeles[3], who did ethnographic study on the European Commission, and Zabusky (Zabusky 2000) studied the European Space Agency in an ethnographic manner.

Ethnography involves direct observations of real time mechanisms in action (Knorr-Cetina 1995). It is a mode of research that is rooted in firsthand experience and can be characterised as *in situ* monitoring (Latour and Woolgar 1986). Despite its long history, as it has been introduced in the 19th century, ethnography has not developed into a standardized approach of doing research. The term 'ethnography' has widely diverging meanings across, and even within, disciplines (Hammersley and Atkinson 1995; Hess 2001). As a consequence the practices of fieldwork and ethnographic writing also vary dramatically. Notwithstanding this diversity, ethnographers are still geared towards observing people in action, and the use of the 'ethnographic' label for studies that do not involve so-called "participant observation" is explicitly criticized (see, for example, (Gillspie 1995)).

An ethnographer thus studies the participants while they act: s/he is not just an observer, but s/he participates in order to understand the culture of interest. Doing ethnographic research involves field work for an extended period of time in the form of "participant observation" in groups, organisations or (sub)cultures, while attending to the details of daily life. The aim of

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[2] Other notions that we came across involve "internet ethnography", "online ethnography", "ethnography of virtual communities", "ethnographic studies in virtual environments", "ethnographic research of cyberspace" and "ethnographic research of the Internet".

[3] Co-author of the French version of the report.

an ethnographer is to "inscribe"[4]. What does that mean? An ethnographer "writes it down. In so doing, he turns it from a passing event, which exists only in its own moment of occurrence, into an account, which exists in its inscriptions and can be reconsulted" (Geertz 1973 / 1999). So informed through participant observation, an ethnographer tries to construct informative stories about the (sub)culture of interest. Ethnography departs from the classical theory driven hypothesis testing style of research. Ethnography is research rooted in empirical observation. Insights from participant observation are used to reflect on theory.

2.2. Virtual ethnography

As ethnography is considered as research method for the study of cultures and communities, it is recently suggested that ethnography could also be applied to the study of 'virtual cultures', i.e. communities that exist because people are connected to each other by means of the internet. Such communities are maintained through participation in internet debates, dialogues and other internet exchanges (see, for example, Markham (Markham 1998), Hine (Hine 2000), Miller and Slater (Miller and Slater 2000) and Constable (Constable 2003)), also referred to as "technologically mediated interactions" (Hine 2005).

In the cultural approach, internet is understood in terms of social interconnectedness and processes engaging individuals, social groups and actors in different geographical places. Or as Hine (Hine 2000) phrases it "the social environment of the internet as consisting of more or less linked, more or less strictly bound social spaces, formed and sustained through social relations" (p. 152). Hine (Hine 2005) argues that social interconnectedness in cyberspace is worth studying " both as a topic in (..) [its] own right and as an important conduit for contemporary social life" (p. 1). The need to use on-line research approaches, i.e. to use internet technology as means to do research (Slevin 2000), seems obvious in the study of virtual culture. Virtual ethnography would involve direct observation of the communication and interactions through internet in cyberspace. This kind of ethnography is deemed to be possible as "all forms of interaction are ethnographically valid, not just face-to-face" (Hine 2000) (p. 65). Kollock and Smith (Kollock and Smith 1999) argue that "[i]n cyberspace (..) interaction, communication, and coordination are different than when people meet face to face". From this point of view, virtual ethnography is a completely new way of doing research, as it meets with communities which are very different from the kind of social life studied in traditional ethnography.

The pioneers[5] in virtual ethnography have engaged in web surfing, used online search engines, they located and studied websites, and traced complex connections and links between sites. Furthermore, they joined email lists, discussion forums, newsgroups, and dating sites, they have lurked on web pages and performed electronic interviews as well as played online games. Through these research activities they studied virtual communities diverse as the Trinidadians (Miller and Slater 2000), Asian-American marriages (Constable 2003) as well as game communities (Markham 1998) and virtual networks around a hot topic, i.e. the Louise Woodward case (Hine 2000). Informed by their cases, these scholars explore, for example, how a national culture exists in cyberspace (Miller and Slater 2000), how members of different national cultures join in cyberspace (Constable 2003) and how internet usage is a way of life (Hine 2000; Markham 1998).

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[4] Notion introduced to the ethnography literature by Geertz (Geertz 1973 / 1999)
[5] As far as we can trace, these pioneers involve at least Markham (Markham 1998), Hine (Hine 2000), Miller and Slater (Miller and Slater 2000) and Constable (Constable 2003).

Virtual ethnography is neither an established methodology nor a "finished project" (Hine 2000), but a research approach that is "only just beginning to be explored" (McLelland 2002). Hine (Hine 2005) argues that there is no other way to become skilled in virtual ethnography than through experience. The idea of virtual ethnography becomes "meaningful only when you start to try them [virtual methods] when you start to try them out for yourself" (Hine 2005). Building upon our literature review, we conclude that at the moment "virtual ethnography" primarily involves ideas and suggestions about a way of studying cultural dimensions of the internet. It is an approach in its infancy that we propose to transfer to a new field of study, in our case European studies, where it has, to our knowledge, not been employed. It could be argued that a new field of study also requires at least the exploration of new approaches. The investigation of new questions may be seriously handicapped by the restrictions of established social science methodology, thereby limiting the innovative potential of a new field. Relevant research questions about internet and Europe seem to lend themselves for virtual ethnographic inquiry, if not require it. We decided to explore the promise of virtual ethnography as research approach for analyzing intriguing scientific and societal questions pertaining to Europe.

2.3. Virtual ethnography as online fieldwork

The key question about virtual ethnography is in "what ways it is possible for the researcher to travel to the "place" occupied by a [virtual] community, to observe, to participate, [and] to use ethnographic methods?" (Jones 1999). Such and other methodological questions are still open, with the consequence that opinions on how to do virtual ethnography differ. Pioneers in virtual ethnography have extended their study on the internet to the physical places of use (Miller and Slater 2000) and/or to the persons involved in the virtual communities they studied (Constable 2003; Miller and Slater 2000). In the latter case, the researchers use internet to establish contacts and then try to arrange a meeting, preferably at a place where the contact feels at home (see, also McLelland (McLelland 2002) for a very radical version of this approach to virtual ethnography).

Hine (Hine 2000), however, did a full online ethnography, without any offline field work. Her motivation to do so remains, however, unclear. In one place, she argued that she did so for "practical reasons" (p. 76) and she claims that she want "to remain agnostic" (p. 60) about the off-line context. Elsewhere, however, she states that "[o]bserving online phenomena in isolation discounts social processes offline which contribute to an understanding of the use of the internet" (p. 27). Also her encouragement "to combine the two", instead of studying "either online or offline contexts" (p. 10) suggests that she is convinced that virtual ethnography ideally involves a combination of online and offline field work. Also in the edited volume "Virtual methods", (Hine 2005) expresses a preference for the connection of online and offline fieldwork in order to understand the sophisticated network of virtual culture. This preference is quite at odds with the fact that her interesting path-breaking virtual ethnography 'only' involved online fieldwork.

The context of European Studies does have methodological consequences for virtual ethnographic study. Although not advanced as one of her "principles of virtual ethnography", Hine (Hine 2000) brings the classic social scientific principle of symmetry to the fore. The principle of symmetry holds that the ethnographer learns through the same media and in a

similar manner as the people and (sub)cultures studied. In the context of European studies, we are especially interested in dialogue, interaction and relationships between people and organisations that do NOT meet face-to-face, but who nevertheless form and sustain virtual communities. Applying symmetry in this research context implies a motivated preference for online field work as virtual ethnographic research method. This does not necessarily imply a view on cyberspace as detached from 'real life'. If we want to understand virtual culture from an ethnographic perspective, 'real life' matters in the ways it is present in e-life.

3. Research Approach

Over the course of 2 months in 2004 as well as in 2005, we conducted eight exploratory virtual ethnographies in the field of European studies on:
- the presence of European institutions and actors, i.e. the European Commission, NGOs and lobby groups, in cyberspace (2004)
- whether and how Europe is discussed in youth chat forums (both in 2004 and 2005)
- online information and opinions concerning the issue of the accession of Turkey, a hot topic in the 'real' Europe at the time of the 2004 field work and still an issue of concern during the 2005 field work (both in 2004 and 2005)
- online opinions and discussion on the European constitution, which was at the time of the 2004 field work a topic only discussed by bureaucrats and scholars (2004).
- Christmas' virtual communities (2005)
- national and international virtual soccer communities (2005)

The virtual ethnographic field work has been carried out by 3rd year BA students European Studies at Maastricht University, the Netherlands. The student population involves a wide range of nationalities, which provided us with the opportunity to make use of the various language skills to enrich the observations.

The research designs of the online fieldwork differed. As in traditional ethnography, making a research design is not an issue which is settled before embarking on the field work; it remains an issue of concern while conducting the research. According to the text books on ethnography (see, for example, (Hammersley and Atkinson 1995)), ethnography involves rethinking, adapting and changing research strategies and activities throughout the research process. This openness is considered a strength, because it stimulates an open-minded interest in tracing what people actually do. We will illustrate with examples the kind of challenges we were confronted with in the early field work and associated decisions on research design, which have been taken over the course of the fieldwork.

Locating the place(s) occupied by the particular virtual community of interest turned out to be a demanding task. Even if it seems clear at face value where and how to find relevant field sites, in most cases the searching itself turned out to be an interesting ethnographic experience. It is not a matter of experience, as all ethnographers were capable of using internet in an appropriate manner and had sufficient prior experience with surfing the web. The common ethnographic idea of "going there" is by definition different in cyberspace, because it does not imply physical travelling. Our experiences yield that the whole notion of "there", i.e. the place where the culture of interest 'lives', is fundamentally challenged in cyberspace. The virtual ethnographies started with surfing, searching and locating relevant web spots. These web spots were the places where we hoped to find discussions about the topic of interest or interactions and exchanges within relevant groups. It became clear that the internet includes many deserted places, i.e. sites, chat rooms and forums that do exist, but are

not maintained or visited and do no longer serve as a meeting place because nobody posts any messages, and discussions are outdated (see, for example, Figure 1).

Figure 1: Discussion outdated for about half a year (visited November 2004; European Constitution study)
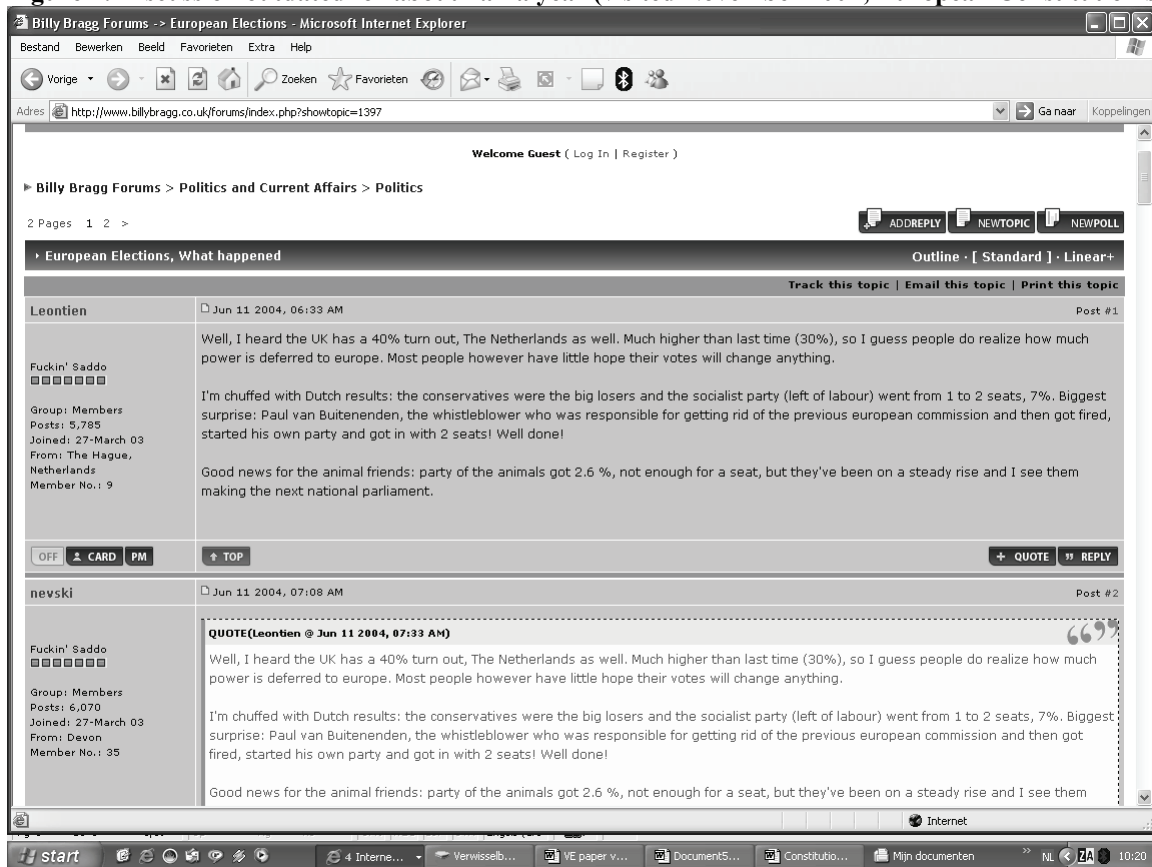
Additionally, while searching for international European youth forums, we experienced that many links and search strategies actually lead to the same website, i.e. the website of the European Union. In the virtual ethnographic study on the presence of European institutions, the observers also came across the official EU website: www.europe.eu.int. If one uses Google as a search engine for 'Europaïsche Institutionen' (action conducted by a native German observer), this is one of the first hits. However it is interesting what happened when she typed www.europa.de in the internet search beam. That action yielded a website of a German Insurance Company. Similar attempts revealed blank pages or non-European websites (November 28th 2004). This observation indicates that presence in cyberspace is more complicated than thought of at face value: website addresses that seem to refer to European institutions are claimed by commercial companies. Companies and other organisations present in cyberspace can use semblances in website addresses to gain an audience.

Such experiences (deserted places, confusing links or website names) forced us to rethink and adopt the research designs. For example, in the case of the virtual ethnographic study on the European Constitution, we decided to create a new forum as a response to the lack of established discussion spaces on this topic (Figure 2).

Figure 2: Forum created as part of the virtual ethnography. "Leonie" is one of the virtual ethnographers.
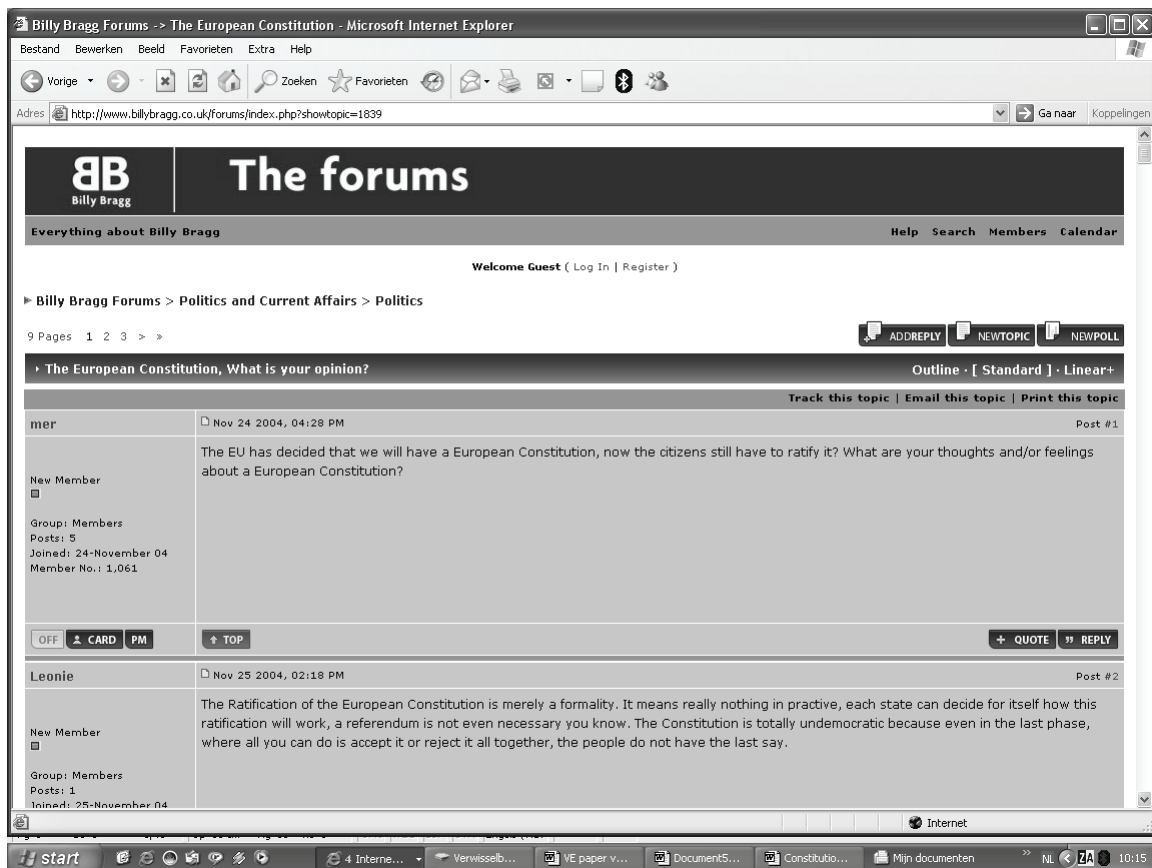
Usually, the field work started with "lurking" on discussions. Lurking means that people follow what is going on more or less regularly without speaking out (Hine 2000). In the course of time, the observers started to post messages. The observers had to decide whether they identified themselves as a researcher (*overt* approach) or not (*covert* approach). In the 2004 youth study, the following message was posted on www.jovd.nl (translated, original message was in Dutch):

> *Dear people on this forum,*
> *Concerning a research I have to do for my study, I would like to know from you whether you think there is enough information online about the European Union to form an opinion about it. And if you are concerned with Europe, which sites do you then visit? Opinions about de EU are off course also welcome. Thanks in advance for your replies!*
> **(December 9th 2004)**

Comparable posting were made in the same study in different languages and on different websites. Such postings can be described as "informal e-interviewing", i.e. asking questions that are intended to prompt responses that can be used to address the research questions, however, without organizing a formal interview setting. Also in the study on the European Constitution informal e-interviewing was employed, though covertly, as follows from the following message posted:

> *Maybe you could explain a bit more what you mean with this comment on withdrawing from treaties? What do you actually think about the constitution and more in general about what should happen to the European Union in the future?* (December 7th 2004)

Because also other participants were posing questions in this community, our participation was not unveiled as interviewing. However, asking questions may be experienced as too intrusive, as follows from field notes in the 2004 Turkey study. In this case, explicit attempts to research interviewing failed:

> *Anyway the reply was somewhat surprising. I am told the response is from a man. His username is `paintbucket` and he views himself as a conservative democrat. He does however seem quite annoyed at my attempted participation although does appreciate that I am pursuing a research project. He believes that posting such a message disrupts the debate. Nevertheless he does answer my questions.* (December 14th 2004)

In the virtual ethnographic study on the European Constitution, we decided to explore a covert approach: we wanted to apply the classical idea in ethnography that trying to become a member (a 'native') of the group of interest yields interesting inside observations into the conventions, norms and ideal-typical behaviour. Through a covert approach, the virtual ethnographers aimed at being treated as 'natives'. However, in fact we were literally regarded as 'naïves', because of expressed confidence in European politicians. Through this 'naïve' experience, we did learn that the members of this particular virtual community shared the belief that "the public is fooled by the politicians, and that the public is just a minor inconvenience they need to get around". The experience of trying to covertly participate thus yielded interesting insights into the codes of conduct in this virtual community.

Another research strategy developed over the course of the virtual ethnographic studies involved interventions in the form of provocative postings on forums with relatively little discussion going on. This approach is illustrated by the following screen shot (Figure 3) and field notes:

Figure 4: Provocative posting (arguing that Europe's youth should become more active) by observer on webforum-jugend.de
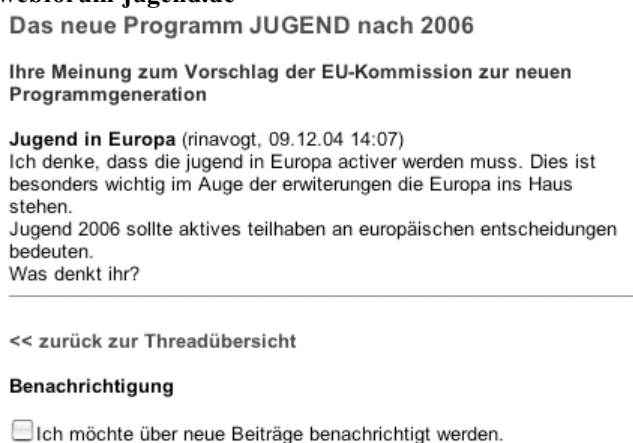
> *I made a provocative statement by arguing that the European Constitution needs to be ratified, and that we as the public do not have any control in this, and that our votes count for nothing and that we need to change the democratic whole of the Union. (..) I did not want to make others believe my statement, as I do not believe it myself, but I thought I would get some more reactions if people disagree'* (December 7th 2004)

In the initial stages, many of the observers favoured a passive approach, i.e. lurking on discussions and websites, but over the course of time most of them became more actively involved in the discussion in different ways, in order to gain more understanding of the cultures of interest. In the end, the virtual ethnographic studies on virtual Europe differed in terms of research design with regard to 1) the kind of data collection activities practiced, 2) the way they positioned themselves (overtly or covertly as researcher) and 3) the level of active engagement (from lurking to creating forums) (see Table 1). This diversity illustrates the kind of choices a virtual ethnographer has to make as well as alternative strategies that can be employed.

Table 1a: Virtual ethnographic methods employed in 2004

	Presence of European Institutions	**Youth**	**Turkish Accession**	**Constitution**
Data collection activities	- web surfing - use of search engines - lurking - sending emails	- web surfing - use of search engines - intensive lurking - posting messages, on the national field sites, just lurking on the European field sites	- web surfing - use of search engines - intensive lurking - posting messages - attempts to interviewing	- web surfing - use of search engines - intensive lurking - posting messages (on purpose provocative to invoke activity) - interviewing - creating discussion forum
Positioning	Covert	covert and overt	covert and overt	partly covert[6]
Level of engagement	Passive	Interactive / passive	interactive	interactive and pro-active

Table 1b: Virtual ethnographic methods employed in 2005

	Christmas and European Identity	**Youth**	**Turkish Accession**	**Virtual Soccer Communities**
Data collection activities	- web surfing - use of search engines - intensive lurking - posting messages (also negative) to provoke discussions and make them more vital - posting questions -attempt to interview	- web surfing - use of search engines - lurking - posting messages	- web surfing - use of search engines - intensive lurking - posting messages - also observation of negative opinions	- web surfing - use of search engines - intensive lurking - posting messages - interviewing - participation in national and international soccer forums
Positioning	Covert	Covert	Covert	Covert
Level of engagement	Interactive/Passive	Interactive/Passive	Interactive/Passive	Interactive/Passive

4. Virtual Europe?

Through our virtual ethnographic studies we tried to gain insights into 'virtual Europe'. Is there a social space, made up of and made possible by internet communication, where Europeans meet? Are interactions taking place and are relationships being built between Europeans and/or European citizens and institutions? Are new or different dialogues and debates on Europe going on in cyberspace? Informed by our observations, we will, for example, argue that elite ivory towers seem to exist in cyberspace and that virtual Europe

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[6] Revealing that they were students European Studies, but without revealing that they were researching the site as virtual ethnographers.

seems to be a patchwork of niches instead of a classic mass medium. We will touch upon the issues of access and participants. We will investigate some dialogues and debates. We will also illustrate that national borders exist in cyberspace, and how they are re-erected and transcended. We do not intend to arrive at definite conclusions on any of these topics. Our virtual ethnographic studies are exploratory and only illustrative for the kind of observations and insights that can be gained from virtual ethnographic research. In order to be able to evaluate the potential of virtual ethnography as a research approach for analyzing Europe, we share some of our observations.

4.1. Elite ivory towers in cyberspace: Access issues

In cyberspace, access is not (any longer) just simply a matter of having a computer with internet access. Our observations indicate that access is a more complex issue: it pertains to being able to find the sites where one wants to be. Even for experienced surfers, this turns out to be difficult. Major reasons involve the overload of websites available, and contrasts between expectations and search outcomes. Furthermore, several sites required registration, which implies that the idea of internet as a new public sphere needs to be put in perspective. Some sites were monitored by providers and/or webmasters. The result was that on some websites the discussion could not flow freely anymore, contributions that were provocative or had the potential to initiate sensitive discussions were banned beforehand. We even experienced that after inquiry about the site itself, its sponsoring and background, the site (www.pejfrance.org) went out the air. When the observers tried to visit the site again, they got the message "this page cannot be displayed, the webpage you are looking for is currently unavailable". The following field notes report the observer's attempt to figure out what had happened:

> *While entering the forum, the access was forbidden. An announcement was made to tell me that I have been "banished" from the forum and that now if I would like to participate to the discussions, I should contact the person in charge of the forum to ask her the authorization to participate. I was very surprised especially because I have sent no message (and so could not have done wrong to somebody) and merely observed the forum; I did not understand the reason of this exclusion. I decided to go and use Google in order to understand better what was the real reason of all this. I found a mail by a young man who explained that the problem was something about subsidies of the forum. Apparently, some people asked insidious questions about how the forum was subsidized. And these kind of questions were not welcomed by the managers of the forum who decided to close the forum.* (December 4th 2004)

Behaving as ordinary citizens, we visited the official EU website (www.europe.eu.int) (November – December 2004) (Figure 5). The observers pretended to be citizens with an interest in the European parliament. However, we experienced that the site is overwhelming. When clicking on the European Parliament, one is redirected to a website of that specific institution, where one has to start again with searching for the required information one was initially looking for.

Figure 5: Opening site of the European Parliament (in German) (visited November-December 2004)
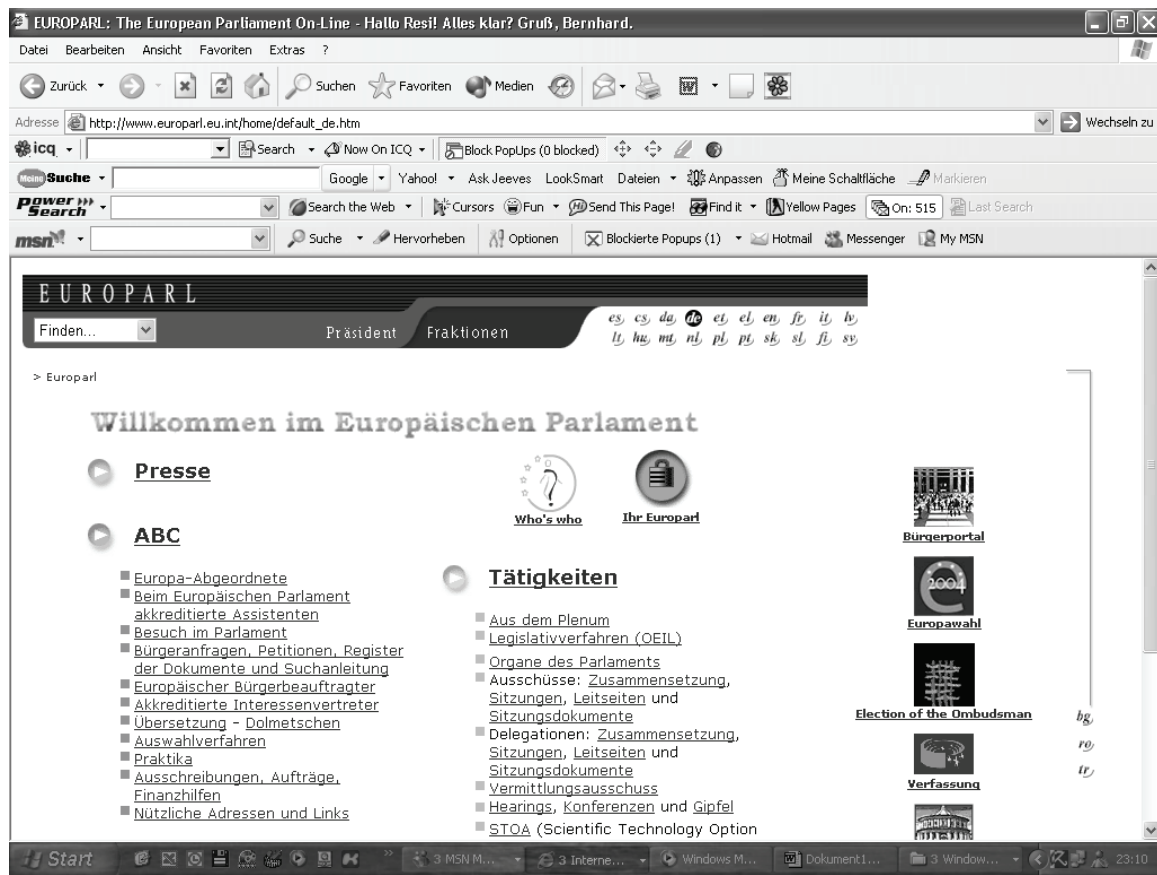
Furthermore, the search for documents proves even more complicated: one has to know in advance the type of document, the policy field and the legal status of the document. It is our impression that use of the main European Union site requires a level of background knowledge about the EU and its institutional structure that average citizens do not possess. A second problem is that not all information is up to date, as follows from the following screen shot (Figure 6) and accompanying field notes:

Figure 6: Screen shot of a European Parliament website (in German) (visited November-December 2004)
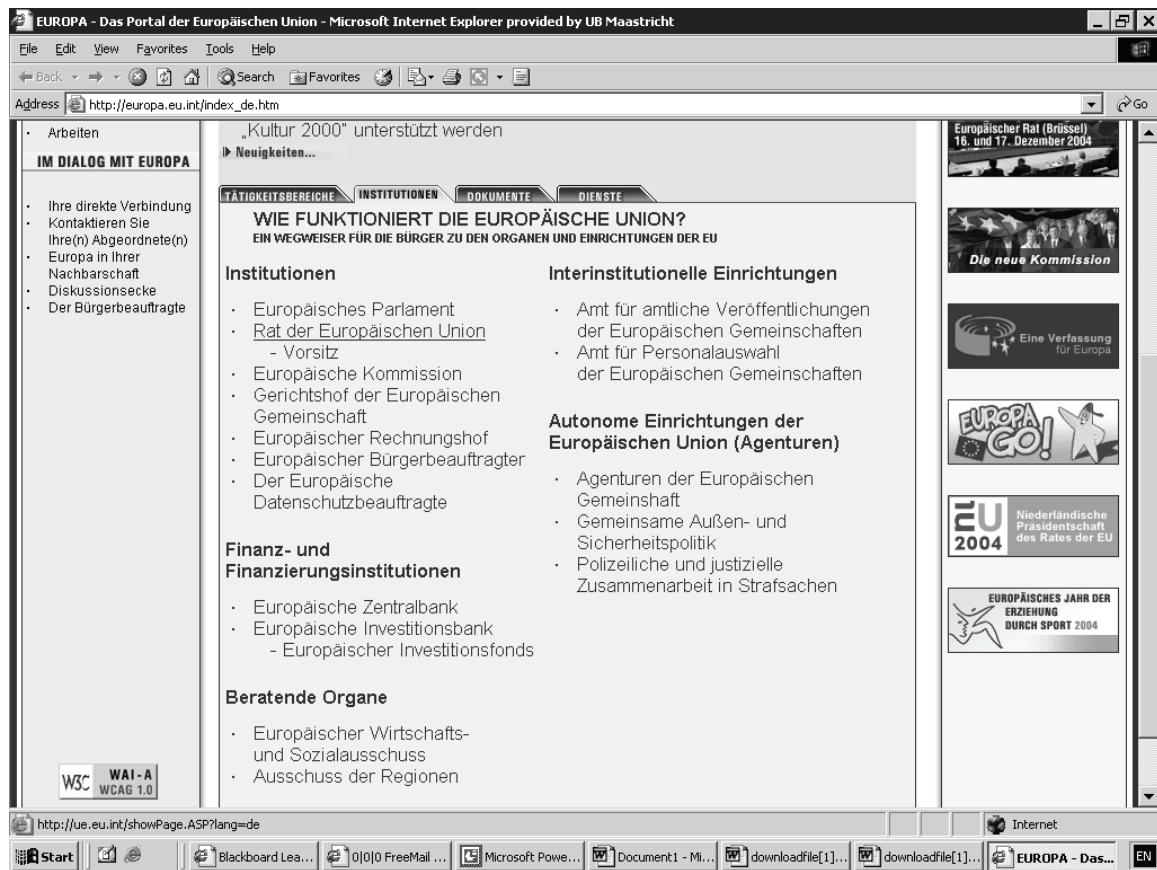
After noting that the site portrayed the European elections as upcoming (Figure 6), the observer concluded:

> *This site is too old it is of the European election in June 10- 13 2004, I am not satisfied with that so I close the site (14h33)* (November 24th 2004)

Interesting the observer found another site that she found more and up-to-date information about the European Parliament (Figure 7). Interestingly, as the following field notes and screen shot convey, this site was found in a rather unexpected corner of cyberspace:

> *A search for the European Parliament through the Google search engine (using English search terms) resulted in finding (..) the website of the Irish National Youth Council (*http://www.eurog.ie/europeandyou/euinst.html). *The interesting thing is that while one might not at first sight expect the latter website to provide useful information about the European Parliament, this nonetheless turned out to be the case. Because the site is aimed at a younger public, the information provided about the European Parliament is clear, structured and understandable for European citizens of all ages.* (December 2nd, 2004)

Figure 7: The Irish National Youth Council provides useful information about the European Parliament (December 2nd 2004)
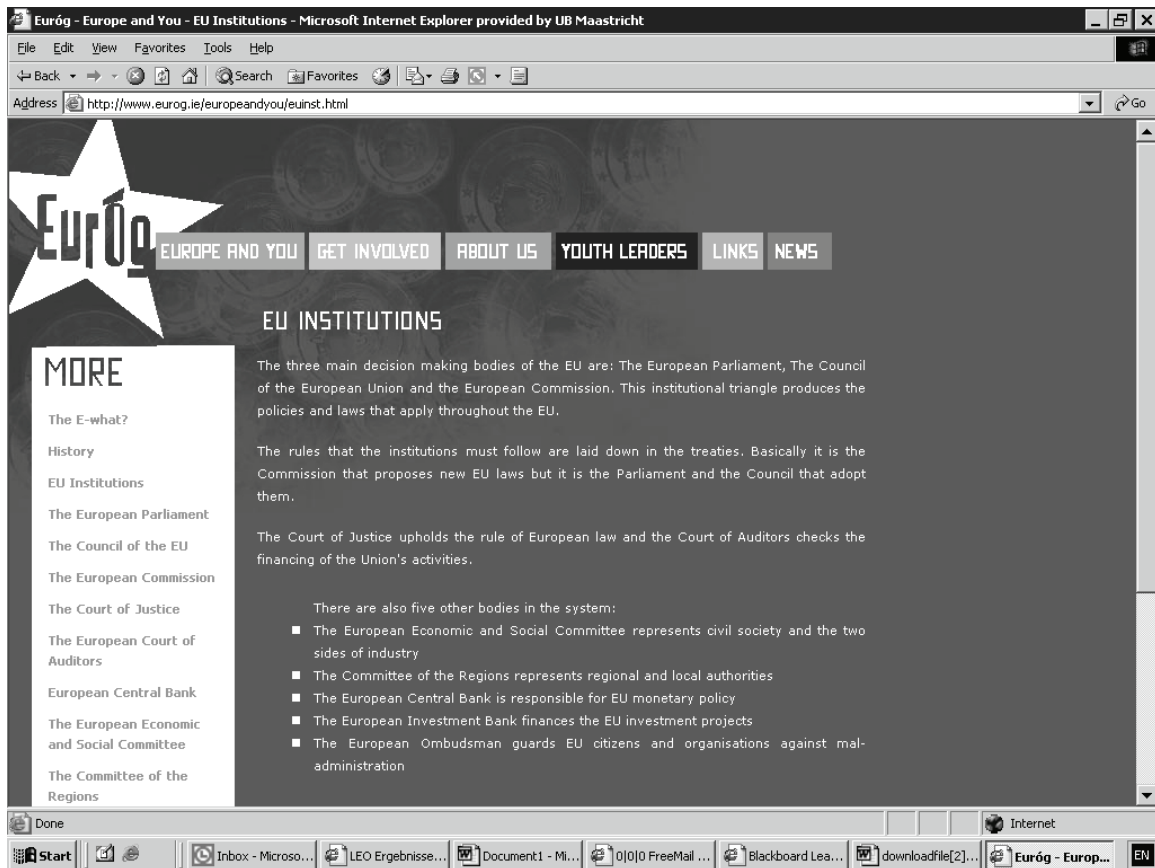
In the virtual ethnographic study on European institutions, we tried to gain an understanding of the presence of the European Union in cyberspace in order to explore whether and how relationships between Europeans and European institutions are facilitated. To that end, we looked for ways to contact the European Union. The following field notes reports the attempts:

> *The first site (..) was (..) http://www.europa.eu.int. There are so called chat forums on this website concerning different topics related to the EU, and for different sorts of public. On the English version of the website[7], the forums are in English and are active (up to 11 new messages posted a day), the French version of the site does not seem to have this same activity. The possibility of direct contact (..) seems to be arranged well. The link to contact the institution is visible, and an e-mail was easily sent. However, an answer was not received within three weeks. Other problems encountered were that a mail sent in English was replied to in Dutch, and that the information provided did not correspond with the information requested.* (December 11th 2004)

This virtual ethnographic observation suggests that the European Union is satisfied with presence alone. Interestingly enough, the website doesn't have a counter indicating the number of visitors. A number of institutions like the 'Centre Virtual de la Connaissance sur l'Europe' and the Statistical Office of the European Communities (Eurostat) were contacted

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[7] With flags signifying languages, one can chose a particular version of the site. In cyberspace, this is a rather common way of providing access according to language.

to figure out whether numbers of visitors as well as numbers of people contacting the European Union via internet are kept at all. The responses indicate that those figures are not reported. As Stone (Stone 1997) convincingly argues, counting and measuring symbolizes the interest policy makers have in a particular phenomenon. This non-counting of visitors seems to provide further evidence for the impression that the EU institutions, or at least those responsible for its e-presence, perceive the internet as an opportunity to present itself, and not as a means for increasing two-way communication with the broad public.

In 2004, the levelling capacity of the internet was hardly used by the European Union itself. But other organisations provide easy-to-access and easy-to-understand information about the European Union. It is even more interesting, that this service is not provided by organisations with European terms of reference, but by a body for voluntary youth organisations in member state. This further illustrates the complexity of 'going there' in virtual ethnography (see also Section 3): not only does internet involve deserted places, confusing links and misleading website names, the information one is interested in might not or hardly be traceable at the official sites, but can be found in spots never thought of.

The observations suggest that also in cyberspace it is possible to build elite ivory towers, notwithstanding the levelling capacity ascribed to the internet. From our observations, it is clear that internet is not by definition or by its nature a medium that smoothens hierarchical and class differences. Those distances have to be made inconsequential by the way a website is designed and two-way communication is organised. It is easy to refer to the internet as the medium that facilitates relationships of European institutions with the broad public, but our exploratory virtual ethnographic study suggest that it is not an adequate description of the practical affairs in European cyberspace.

4.2. Virtual Europe as a patchwork of niches: About participants

It is impossible to say something sensible about the number of people participating in virtual Europe. If we just limit ourselves to the inhabitants of European Community countries, there are potentially 480 million individuals active in cyberspace, especially if we take the high access rate into account. In 2000, about one third of all Europeans had already access to the internet (as stated by the DG Information Society in 2001, with reference to Flash Eurobarometer 112, "Internet and Public at large"; Realised by EOS Gallup Europe upon request of the European Commission (Directorate General Information Society), November 2001), while this number is only increasing (http://www.exploit-lib.org/issue4/smith/). In 2002 a survey was conducted which indicated in absolute numbers that more than 190 million people in Europe are users of the internet (http://www.nua.com/surveys), with Scandinavian countries on top of the list.

We have tried to measure the level of activity in three of the 2004 virtual ethnographic studies (see Table 2). What can be counted by virtual ethnographers?:
-   1) number of people registered and 2) number of guests, if made available by the web host (for an example, see Figure 8)
-   3) number of people visibly participating while the virtual ethnographer is online
-   4) number of messages posted on one topic
-   5) number of messages posted while the virtual ethnographer is online or 6) between two instances of online field work

Different approaches to estimate the level of activity have been adopted in our exploratory virtual ethnographic field work. Because of the differences in the approaches and associated problems, the numbers in Table 2 have to be treated as guesstimates.

Table 2: Guesstimates of levels of activity on the field sites of 2004

Virtual ethnographic study	Youth	Turkey	European Constitution
Minimum # of participants	0 participants, December 2nd 2004	0 participants, November 23rd 2004	0 participants, November 28th 2004
About average	8 participants	40 participants	2 participants
Maximum # of participants	22 participants, October 17th 2004	78 participants (opinion poll) November 25th 2004	5 participants, December 4th 2004

Also periods of inactivity have been reported, as becomes clear from the following field notes:

> *At this site [www.brugesgroup.com/forum/cgi-bin/discuss.cgi], nobody posted any messages for a few days, while in the weekend 4 comments were made by different people.* (December 3rd 2004)

> *Although I actually lost hope that there will be new reactions on this site [www.politics.ie], since nothing happened in the weekend, it seems that still some contributions have been made, today.* (December 13th 2004)

Furthermore, the number of active participants is not necessarily representative for the size of the community. People can be lurking. In cyberspace, activity is clearly not the same as membership, as the following field notes make clear:

> *As I enter, I am shown that throughout all the political forums there are 40 users online (19 registered myself inclusive, 3 hidden, 8 guests, 1 administrator and 1 moderator). I ask myself about (..) those that are hidden and those that are just guests. Perhaps they do not want to enter (..) or perhaps they don't want to unveil much of their identity. They must however believe in some form of virtuality, otherwise they would not choose to (..) view the forums.* (December 10th 2004).

> *I am pleased with my choice [of discussion forum] and amazed by its popularity. With over 250 thousand articles and under 4 thousand registered users it deals with a diverse range of issues.* (November 25th 2004)

People often have to register and log on in order to be able to enter a forum. In some of these cases, these numbers are revealed ("hidden users online"), which provides some indication about the circle of lurkers (see Figure 8).

Figure 8: Number of users online in a youth forum on December 3rd 2004 (Source: http://www.jovd.nl/forum/index.php)

There are 3 Registered users and 0 Hidden users online		
henk bres	Fri Dec 03, 2004 4:34 pm	Forum index
Joseph Kletjschneck	Fri Dec 03, 2004 4:33 pm	Forum index
RoderikR	Fri Dec 03, 2004 4:32 pm	Politieke Partijen
There are 5 Guest users online		
Guest	Fri Dec 03, 2004 4:35 pm	Forum index
Guest	Fri Dec 03, 2004 4:31 pm	Searching forums
Guest	Fri Dec 03, 2004 4:31 pm	Het rokerig achterkamertje
Guest	Fri Dec 03, 2004 4:35 pm	Viewing who is online
Guest	Fri Dec 03, 2004 4:32 pm	Forum index

However, in other cases, it is much more difficult to determine whether there are lurkers, and if so, whether their amount outnumbers the number of people active in dialogue and debate. Our virtual ethnographies do not yield how many people across Europe do build and sustain internet relationships with fellow Europeans. Notwithstanding these disclaimers, the guesstimates of people online in the virtual field sites and the observations about periods of inactivity suggest that virtual communities tend to involve just a few to tens of people at maximum, although the community may extend to thousands members registered, which are either lurking or inactive. But if we put our observations in the perspective of 190 million Europeans making use of internet, it is easy to argue that virtual Europe is a marginal business.

Field notes on the Turkey discussions reported a quiet day and a low level of activity when a dozen messages were posted. On the other hand, the observers of the debate on the European Constitution expressed themselves very enthusiastically with more than one participant active at the same time. Not the absolute numbers but the relative difference between the Turkey and the Constitution cases is interesting, because the difference seem to mimic the difference in the intensity of the state of the debate offline. The 'hotter' a topic offline, the more it is debated on internet as well, while topics which are 'cold' offline attract less participants to online discussions about the same topic. This is in line with Hine's Louise Woodward case (Hine 2000) in which the intensity offline was also reflected in more online activity and engagement.

What kinds of people are involved in online dialogues? Our observations suggest that in cyberspace hot European topics are debated by ordinary people of the public. In the Turkey case, a participant stated that he has heard from his or her brother that Turkey will become a member of the European Union and he posted a message in which he doubts whether that is true (December 9th 2004). In the case of the cold topic, i.e. the European constitution at the time of our observations, it is probably even more striking that it is anyway discussed online, even by someone who does discuss the issue while denying the value of such discussion at the same time:

My local tennis club has a constitution - does that make it an independent state? Or even a political entity? No! There's nothing wrong with having a constitution, there's no major changes in this constitution-so why the fuss? Vote Yes! (December 17th 2004)

We had the impression that the participants in this online discussion on the European constitution were scholars in the field of European studies. However, one of them identified himself as an ordinary man of the street, as illustrated by the following posting and associated field notes:

Ken Adams, posted on Tuesday, December 14, 2004 – 12:33 pm:
I am just an ordinary member of the public. I am not a member of any political party or grouping, my thoughts are my own, informed by my own observations of the EU project over the years. I was around during the early 1970s, so I know that Heath and Wilson lied to the British public about the Union because they lied to me. I started to ask myself why the people we elected would do such a thing, I still not have a definite answer to that question, but I have learned enough to understand that nothing coming out of the EU Construct should be taken at face value. (..) I have been catering all my life and now own and run a small restaurant. If you would like to visit [website address] and email me, I will send you the website of my restaurant.

I expected him [Ken Adams] to be a student, or a politician, at least someone in the field [of European affairs]. That is why it was quite surprising to me to hear that he was in catering all of this life, and that he was a restaurant owner. He called himself nothing more than an ordinary man of the public. (December 16th 2004)

Ken Adams self-portrayal may be a fake identity: it is rather easy for someone to adopt an online identity that does not correspond to ones off line identity. Donath (1998), for example, discussed this issue of identity and deception in cyberspace (see, also Schaap (Schaap 2002)). But that is not the relevant point to be made here. The above claim of being an ordinary member reveals that the virtual community involves and invites ordinary European citizens, even if this particular person is not so ordinary. The mere fact that it has a value to present him or herself in this European virtual community as "restaurant owner" and "ordinary member of the public" indicates something about membership ideas in this community.

It is almost an open door to argue that internet is the medium of the youth. Young people are supposed to constitute the most important group of users, as is substantiated with references to surveys held by AOL subsidiary Digital Market Services[8] and the European Social Survey[9]. The question is whether in terms of virtual Europe this is also a practical matter of fact. The virtual ethnographic studies on youth culture online may shed some further light on the issue.

The ethnographic study on youth and Europe indicates that relatively few online discussions between young people pertain to Europe. This might be explained by the fact that there is no obvious place for them to discuss Europe online: the web surfing did not yield any national

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[8] CyberAtlas.com, "Internet Key to Communication Among Youth," January 25, 2002; see also http://www.davidgroup.com/toolsnetgains.cfm?netGainsVolumeID=17 and http://news.com.com/Teen+market+clicks+past+e-tailers/2100-1017_3-941731.html as examples of the kind of popular market-oriented articles that cite this AOL subsidiary Digital Market Services survey.
[9] http://www.europeansocialsurvey.org/

discussion forum on solely Europe for, or by, young Europeans. On an international scale (with website address extensions .org or .com), the quest for useful websites only yielded few websites featuring forums on Europe, with the largest being the official European Union website. However, these forums were not specifically targeted towards young people. The virtual ethnographers therefore decided to participate in these 'national' general youth forums, which were either national by extension (such as .nl, .fr, .de) or in terms of language used. In these youth forums, 'Europe' can only be found as an item included in other discussion topics. The observers posted messages about Europe to see what kind of responses they prompted.

Our virtual ethnographic research suggests that there are three kinds of exchanges and attitudes amongst young people that concern Europe. The first type involves young people that have a genuine interest in the European Union and who like to share their strong and motivated opinions with each other. Examples are discussions about the Christian values of the European Union and about its level of democracy. What is apparent in this kind of discussion is that they mostly involve the same participants, as is illustrated in the following field notes on the discussion on Christian values and the European Union:

> *16.00 Hrs What is interesting to observe is that in the different discussions that I have been monitoring for the past days, there were always one or two people that appear in each discussion, such as Luca Pietrobon.* (December 2nd 2004)

> *Luca Pietrobon from Italy gives his view on religion and European values: 'Believe me, Christianity has got little to do with Europe. Our values go beyond religions and that's what makes Europe a continent of values!'* (December 9 2004)

In this context, it is also interesting to share the following field notes from the European Constitution study:

> *Mark14 also visited this forum[10] again, but in spite of the advice of Domino, he seems not to understand much of the issue. He is still wondering what the implications of the referendum will be, what the consequences for Europe and the European Union are. Another user, Graham, tried to give him an answer, but Mark14 seems not to be responding anymore since then. I assume that he is a quite young guy, when taking his comments into account and the fact that his username is Mark14 as the numbers behind usernames often indicate the age of the user.* (December 2nd 2004)

This observation suggests that a particular youngster even took the effort to participate in a forum on the European Constitution at a time when this was a rather cold issue. Mark14 not only lurked but asked questions and reacted on the responses, although he did not respond after a second round of explanation. The latter may have to do with the tone and level of explanation (such as presuming a particular level of knowledge). Young people's presumed indifference for 'serious' European issues, or silence in second instance, might also prompted by the kind of responses they get.

A second category of exchanges involves young people who express a high level of disinterest in Europe. The following extract from a posting which responded to a question of one of the virtual ethnographers is a clear illustration of this category of attitudes:

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[10] www.billybragg.co.uk/forums/index.php?showtopic=1839

> *'Now that I come back drunk from a party and am making snacks, I cannot be bothered with the EU...'* (translated, original in Dutch)
> (December 9th 2004)

A third category of exchanges involves young people discussing topics that touch upon Europe, but in a different way than might be expected. The item 'Who are the best European lovers' on one of the forums on the European Union website (www.generation-europe.eu.com, 15-12-2004, section General News Issues), got a relatively astonishing high numbers of 40 contributions, which response exceeds all more serious discussions on Europe in the same, and the other forums on the website of the European Union. It is easy to ridicule this exchange, as it sounds so mundane or even vulgar to those 'seriously' involved in Europe. However, at the same time it indicates that something as private and important as sex life does have a European dimension among young people. That suggests that 'Europe' is actually quite important in the life of young people, but in a different way than thought of when people claim that young people are indifferent about Europe. The above observation suggests that in the good tradition of ethnography, also detailed virtual ethnographic attention to the mundane can be (made) informative and shed a different light on both popular and scholarly claims on social phenomena, in this case youth's indifference about Europe.

Our very preliminary observations on participants indicate that virtual Europe, if it exists at all, is not a matter of a million-to-million community, but rather a patchwork of different relatively small virtual communities. This observation is relevant in view of the high expectations of the role internet can play in contacting the public at large. Internet is not a mass medium in a classical sense, but it does involve and invite ordinary and young members of the European public to discuss Europe in different ways.

4.3. National borders in cyberspace

Internet is supposed to be a global platform in which geographical boundaries are irrelevant. However, our observations suggest that nationality does matter in cyberspace. In different virtual ethnographies, we witnessed international discussions in which people demonstrated a strong inclination to holding on to, and defending their nationality. Even in international discussion forums[11], several discussions were conducted in national or even regional languages, such as Catalan, as follows from the following field notes:

> *Topic on forum: 'Los Valores en Europa'*
> - *Created by Ana Gaytan de Ayala Cuesta from Spain (in Catalan).*
> - *Remark of observer: "Unfortunately I do not speak this language so I cannot grasp what the messages in this topic are about".*
> (November 4th 2004)

On the other hand, even some discussions in English tended to be national. In the virtual ethnography on the European Constitution, we experienced that the discussion focussed on consequences for the UK and that participants presupposed understanding of the English political culture, as illustrated by the following field notes:

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[11] Such as
http://europa.eu.int/comm/coreservices/forum/index.cfm?forum=Futurum&fuseaction=contribution.home&Debate_ID=62&Done=0 which served as field site in the following field notes.

The discussion is very nationally oriented; the people who are taking part seem to be against the ratification and mainly because they are only used to consider issues through a national point of view. An example from the discussion: "this referendum is going to cost the tax payers a minimum of £20 million", illustrates this well. (December 7, 2004)

At first, it was not clear to me what they meant, but then I found out via a search-engine that UKIP stands for the United Kingdom Independence Party, which is advocating UK's resignation from the European Union. They are saying that especially the European Constitution is making clear that the EU's agenda is directed towards complete political union, which they oppose. They would rather see only economic co-operation, like it was during the European Community. (December 10, 2004)

We did observe efforts to convert a local language discussion back to English:

Topic on forum : 'Los Derechos en la Union ampliada'
- *Was posted by Rosa Luz from Spain (in Catalan) on 04-11-2004.*
- *The last reply was made by Fer from Spain (in English) and states how laws can restrict rights:*
  "Look at the Spanish Constitution (www.constitucion.es in Spanish, English & French), and you will see how laws can restrict rights."
(November 4th 2004)

From the content of Fer's remark it is clear that he is bilingual: he understands both Catalan and English. Similar observations were made in the soccer study, as the field notes pertaining to footballforums.net illustrate:

It was interesting to see that the Dutch fans kept on discussing in English. At one point, someone was adding Dutch comments, but the others told him that this wasn't allowed. (December 10th 2005)

Our observations pertaining to language use on forums that aim to facilitate cross-national exchange illustrate that national boundaries are re-erected through the language used and the specific national features invoked. Such language boundaries are also actively dismantled by bilinguals switching to English.

Nationalistic feelings also occurred in the observations of the virtual ethnographic study on soccer communities. Especially on the international forums, participants strongly defend their national soccer teams. Discussions even became personal battles between participants of different nationalities: soccer teams became associated with the countries' past and current state of affaires, and people from that country participating in the forum are blamed for that. The following field notes pertaining to www.sportnerwork.net illustrate such an exchange in which national boundaries are re-erected through attributing nationality and responsibility for that nation to participants:

Amazed by the different nationalities that seem to be present on the forum of sportnetwork.net, I decided to look at another football related topic. It concerns the troubles during the game of Turkey and Switzerland. The discussion about soccer

takes a turn when Maledictus XIV (Switzerland) and Anatolia (Turkey) jump from soccer to history:

Maledictues XIV says on 29-11-2005:
> *'we have 5 neighbouring countries... and they like us all....*
> *not like turkey, which is hated by everybody around*
> *The greeks hate you (..) the Bulgarians want to get rid of their 6% Turks...*
> *for the persians you are a forpost of the usa, aNATOlia*
> *The syrians would like to liberate their occupied arab brothers from Alexandrette (Iskenderun) (..) The armenians(..). well you murdered half their people and the kurds in northern Iraq i don`t have t explain*
> *Georgia? fbh i dont know but they will hate you also'*

Maledictus adds several smilies [;-)] to his message, trying to give it a funny appearance.

Anatolia replies:
> *'You are right. We need to normalize our relations with our neighbors. But, as you all know Turkey is sitting upon a strategic crossroads connecting the Balkans, the Mid-East, and the Newly Independent States (Turkey is the only NATO member with which the 3 countries of the Caucasus -Azerbaijan, Armenia, Georgia- share a border). Turkey plays an important role in each of these regions. That's why it is hard for us to keep good relationships with all neighbors having different perspectives.'*

30-11-05 a few days later. Maledictus XIV responds to another message posted by Anatolia:
> *'The Turks lost 1/5 of their population and 4/5 of their land oh yes (..) and the germans LOST a mayor part of their jewish population during WW2 (..) you are a typical hypocritical turkish nazi incredible comment'*

Anatolia responds:
> *'And SWITZERLAND sat on the gold of the poor Jews who were gassed in the camps. Switzerland = Nazi's #1 collaborator'*

The discussion takes a hostile tone. The interesting thing is that there are peaceful discussions on football, but [national] history seems a more sensitive subject. (December 7th 2005)

In the virtual ethnographic study on Christmas 2005, the researchers observed a strongly national (both in terms of the website address extension and in the languages used) Christmas communities. These virtual communities seem be actively rooted in national traditions and presuppose that participants are able to relate to these traditions (apart from the ability to read and write the national language used). Interestingly enough, these European national virtual communities are at the same time remarkably similar, both in terms of the appearance of the sites with red and green as key colours (see Figure 9a and b), the topics discussed and the meanings and values attributed to Christmas. Doing virtual ethnography enables us to compare these national websites from a European perspective. This comparison suggests more unity in diversity than expected when confronted with communities which are explicitly national.

Figure 9a: Examples of Christmas websites rooted in different national communities to illustrate unity in diversity

Notwithstanding the popular portrayal of internet as a medium in which geographical boundaries are crossed, our exploratory observations suggest that national borders are also re-erected in cyberspace through use of national and regional languages, by invoking specific national contexts and by attributing nationality to participants. Language boundaries are also dismantled by some bilinguals, who enforce English as communication language. At the same time, our comparison of national websites also suggest that there is more unity in diversity than the image of internet as fragmented in national communities would suggest. Our virtual ethnographic research indicates that the role of nationality in cyberspace deserves further investigation.

4.4. Virtual Europe

Throughout the paper we used 'virtual Europe' as a short hand for exchanges in cyberspace about European topics and/or communities built and sustained through internet mediated communication between participants living in different parts of Europe. Is there a social sphere in cyberspace where Europeans 'meet'? Are relationships being built between European fellows and/or European institutions and citizens? Are new or different dialogues and debates on Europe taking place in cyberspace? Which generally held ideas on Europe can be put in another perspective informed by our exploratory virtual ethnographies? We do not intend at any definite or comprehensive conclusions on these issues. Here, we only summarize some of the insights we think that can be gained from our virtual ethnographic detour in cyberspace.

Although Europe is geographically speaking a more or less delineated space, going to virtual Europe turned out to be rather complicated, due to lack of visible public spheres, deserted or disappearing spaces, confusing links, misleading website addresses and unexpected spots. Access is not just a matter of internet availability, but also an issue of traceability and

interactivity. Notwithstanding the levelling potential attributed to the internet, our virtual ethnographies suggested that cyberspace actually comprise elite ivory towers, e.g. European institutions seem satisfied with mere internet presence. Internet does not by definition, or by its nature, act as a power-levelling and cultural-binding medium. Both hierarchies and national borders continue to exist in cyberspace. In popular views, also found in policy and academic circles, internet is considered as sphere in which geographical delineations are irrelevant. It is explicitly or implicitly considered as an egalitarian realm, where people from different nationalities unite. Our virtual ethnographic study on virtual Europe suggests that national borders are re-erected in cyberspace, by means of language, through invocation of nation-specific background knowledge and by attributing and stereotyping nationality. These erected borders, which may also mask unity in diversity, are also transcended by particular bilinguals.

Although virtual ethnography does not enable us to measure how many of the millions of Europeans participate in virtual Europe, our preliminary observations indicate that internet is not a mass medium in the classic sense. Our ethnographic field work suggests that a patchwork of niche communities is a more adequate depiction of the character of the internet. It is furthermore experienced as a medium in which it has value to present oneself as ordinary member of the public. In addition, our analysis of discussions among youngsters suggests that virtual communities are spaces in which attitudes as well as 'serious' and mundane topics pertaining to Europe are explored, shared and discussed.   In that sense, virtual Europe can be considered a sphere of the public.

Interestingly enough, we observed how people participating in virtual communities extended their social interconnectedness in cyberspace to offline connections. In doing so, they blur the boundary between 'virtual' and 'real'. The following field notes suggest such a broadening of interconnectedness:

> *Aha – very interesting: there is an opportunity to do 'Wichteln'. This is a way of exchanging gifts amongst each other. Thereby, the sender of a present remains unknown. The proposal in the forum is to send the home address (not email-address!) to one of the members of the forum. Five members are taking part in this activity and have given out their addresses (not publicly though). Thus, there is a link to the 'real world'. There is also a request for sending cards to each other (among the forum members).* (November 27 2005; www.weihnachten-forum.de)

Similar situations were observed in virtual soccer communities. Different exchanges suggested that people participating in the forums do interact in real life as well. Our observations suggest that, notwithstanding hierarchies and reified borders, internet does act as a broadening and binding medium in some communities. In order to be able to understand which social features and cultural conditions facilitate the enacting of internet as a social and cultural mediator, further virtual ethnographic research is required.

Notwithstanding the preliminary nature of our insights, they are thought-provoking in view of the high expectations on the internet in creating Europe. Our observations challenge common assumptions which are uncritically reiterated, both in scholarly and public policy realms. Our findings, although preliminary, suggest that such assumptions about internet require serious rethinking, which could be nourished by further virtual ethnographic research in virtual Europe.

5. Conclusion

With our exploratory virtual ethnographies, we aimed to explore the usefulness of virtual ethnography as a research approach in general and for analyzing Europe in particular. Building upon our exploratory research, we could even argue that suggests that virtual ethnography is actually needed in order to understand whether, how and to which extent internet can facilitate European integration. Without understanding of actual social interconnectedness in cyberspace, questions about the role of internet in bridging of gaps, such as between "Brussels" and the broad public, or in facilitating European integration remain unanswerable.

Our research indicates that ethnography, when employed in the virtual world, might encounter obstacles that are unfamiliar to traditional ways of ethnography. 'Going there' has a different meaning in cyberspace as website addresses are ambiguous and web spaces may become obsolete, inactive or disappear over time. Becoming a member of a community is complicated by the fact that the ethnographer is deprived from non-verbal interactions and informative contexts. However, like in traditional ethnography, attempting to be accepted as member in a community is a valuable source of insights into the conventions, norms and accepted behaviours in a particular community. We have experimented with pure online field work, which methodological choice was primarily motivated with reference to the classic principle symmetry, i.e. the ethnographer learns through the same media and in similar manners as the people and cultures being studied. Pioneers in virtual ethnography have expressed a preference for combined online and offline field work. However, building upon our experiences and preliminary insights, we would like to argue that pure online field work is not merely a pragmatic way out. We are willing to defend that pure online field work is a promising alternative approach in its own right, which deserve serious attention, further experimentation and genuine reflection by scholars interested in virtual ethnography.

Our research suggests that virtual ethnography may yield observations that shed a different light on issues that are of a broad interest to European Studies. For example, virtual ethnography may be a way to understand the European dimension in youth culture. Our preliminary observations suggest that Europe may be quite important to young people, however, in different ways than thought of when people claim that youngsters are indifferent about Europe. Virtual ethnography may also shed additional light on other relevant social phenomena, such as cultural unity and diversity across Europe. Large scale comparative studies are in general quite time-consuming and labour-intensive (and thus expensive). Virtual ethnography may provide an alternative approach to comparing various European cultures. The ways in which cultures manifest themselves in cyberspace is just one representation of culture, but as our observations suggest, such manifestations may be quite informative.

It is a common claim that internet is a medium that provides opportunities to ordinary members of the public to state their opinions and to participate in dialogue and debate. Our observations suggest that although internet is not the many-to-many public sphere, cyberspace as a patchwork of niches does include social spaces that involve and invite debate and dialogue among ordinary European citizens. As such it is a valuable resource for European Studies scholars. Our exploratory research shows that virtual ethnography provides an interesting means to harvest that resource.

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Geolocation And Video Ethnography: Seizing A Mobile Internet User In Context

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Abstract

Faced the developments in ubiquitous communication, we need to set up new methods of observation capable of analysing the specific services and the places where they are used. How can we follow a mobile phone user in a dense urban and technical network environment? How to access real usage in natural settings? In this paper, we propose a new hybrid method for the global observation of a mobile user applied to mobile internet (WAP) usage analysis. Our mixed research technique comprises two distinct but complementary tracks. The first one consists of a participant observation, where the user is accompanied, observed and filmed *in situ* while using the service. We can therefore capture the user's subjective view of his activity, via a *subcam* (a camera integrated in a pair of spectacle frames worn by the user himself). This method allows the researcher a delayed access to the mobile phone user's screen content, as well as his visual, interactional and environmental components. The second axis complements the first one by periodically (every 15 minutes) giving information about the interviewee's physical location (*via* phone cell identification) - using a commercial geo-location server of a French telecommunication operator. A participatory video-supported observation captures both the interpersonal interactions between the researcher and the interviewee and the interaction between the user and the mobile internet terminal. We can therefore study how the sequential phenomena which are present in the talk-in-interaction between participants, combined with the user's movements (both in the suburban railway network and surfing on screen), indicate where and when the usability of a WAP device becomes difficult. The interviewee is then confronted with his personal data. The combination of several types of investigation (ethnographic, self-evaluation and automatic traces) allows a more precise understanding of the reasons and the nature of problematic WAP usage. The data collected during this type of study therefore provides a precise source of knowledge, which can eventually be reused in technical studies, when it comes to designing a telecommunication operator's network. In this article, we will present our mixed methodology and some results of the analysis, in two successive steps: we will first describe the participatory observation, supported by specific video equipment, and then explain the methodology of geo-location.

1. Introduction

The mobile phone has a tendency to increase experimentation and practices: the user has a multi-functional object in his hands enriched with a wide variety of applications (SMS[1], Wap[2], games, etc.) (Relieu, 2002: 21). In a few years, cell phones have made a spectacular entry into our daily lives. However, apart from the extensive diffusion and widespread use described by macrosociological analyses, it is also appropriate to obtain an accurate view of the personal characteristics required to use these tools, brought into play in every usage and

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[1] Short Message Service
[2] Wireless Application Protocol.

interaction context. What spaciotemporal mobility and flexibility are brought in by the society trend that consists of accessing digital content within the public environment via the wireless network?

The starting point for our approach is based on sociological reviews of mobile Internet services. This work has shown the disadvantages, due for the most part to the slow speed and lack of reliability of the service (Arminen, 2002). Based on this research, we are endeavouring here to understand the nature of the shortcomings of Wap. We have designed and set up a mechanism for the *global observation* of a Wap user. The research orientation consists of two separate avenues: (1) The first consists of video ethnography, where the mobile Internet user is accompanied, observed and filmed, during a specific period of time in a situated manner, during a session using this service. This ethnographic participant observation of the user is backed by a video recording. The recording mechanism captures both the interpersonal interaction between the researcher and the user, as well as the user's interaction with the mobile Internet terminal via the screen content by means of camera glasses [camera glasses] worn by the subject[3]. (2) The second is more "technical" and consists of continuously monitoring the personal movement of the interviewee *via* the geolocation of his phone terminal. The identification system indicates and records the user's location cell according to a defined frequency (15 minutes in this instance). The second form of "observation", i.e. the analysis of location data, is generated by the mobile user's movements which are made available for the analyst[4].

Two forms of local observation are therefore combined here. It then becomes possible to study how the sequential phenomena present in the talk-in interaction between the two participants, combined with localised identification in the user's path (journey in the public transports and screen navigation), indicate where and when the Wap system presents usability problems (Nielsen, 1994). We are examining in fine detail the disruption in talk-in-interaction between the two participants, user and researcher, where the user is engaged in a navigation activity within the Wap mobile Internet service. For example, on arrival at Juvisy station in the Paris suburbs, after a long wait for reactivity from the mobile service, the *data* is finally available to the user on the screen. It is only at this moment that it verbally delivers the information appearing on the screen to its contact. We are analysing the interactional disruption in order to determine the manner in which the mobile Internet service is the source of this type of disruption.

This *mixed* approach, combining observation of the participant *in situ* usage of the Wap and geographic data concerning his movements, enables us to understand the reasons for and the nature of Wap inadequacies with a greater degree of accuracy. The objective was to be able to obtain accurate data on the shortcomings of Wap in a real-use situation and in a situated manner during utilisation. At the present time, the results of a user-focussed approach are still absent from the parameters of telephone network models but the awareness of network engineers is nonetheless on the increase. In light of the development of ambient communication, sociologists have undertaken to respond to the need to develop new methods of observation. The aim of studies of this kind are to help design systems that would be capable of distributing network resources according to the places and services used. As a result, the data collected when conducting this type of study procures an accurate source of knowledge of the dimensioning of the cellular network that can be re-injected into technical

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[3] The use of camera spectacles in research was initiated by ergonomists – see the article by S. Lahlou on this subject (2006: 209).

[4] A similar methodology was used in a study of urban mobility and communication practices by Diminescu, Licoppe, Smoreda, and Ziemlicki (forthcoming)

studies. In this article, we are presenting our combined methodology and analysis results, firstly oriented towards describing participant observation backed by video equipment and, secondly, towards an accurate explanation of the contributions of geolocation identification methodology in a study of usage.

2. Participant observation of a Wap user

Our participant approach is defined as the observation of a mobile Internet user on a familiar journey. The article is focussed on individual Wap service utilisation activity via the analysis of interpersonal relations between the observer and the Wap user. To do this, we had to select someone and, with his authorisation, set up the individual geolocation mechanism. We chose *Pierre* as our subject – an intensive user of mobile telephony services. The subject met the criteria for using "text and voice" on his mobile: he uses his phone to send text messages and photos, browse on the Internet and make phone calls. Extensive use of his mobile was noted during the period before the ethnographic participant observation[5]. The subject explained his high consumption over a six-month period by the geographic separation from his girl friend. In his case, the telephone was used to keep in contact from a distance (Fischer, 1992). The user is still a lay user for whom communication technology reduces distances and helps to restore close contact threatened by geographic separation (Mercier et al., 2002).

First of all, we will draw up a quick "portrait" of the subject, *Pierre* in terms of the characteristics of his mobile usage. *Pierre* is 24 and is a transport worker at the French National Railway Company. He lives in a rented apartment in a building in the Paris suburbs. He is single. As an ICT consumer, *Pierre* has a mobile phone with a postpaid plan and a desktop computer at home. He has used the Internet since 2001 and has had a broadband connection since 2004. *Pierre* has set up a single directory on his mobile of friends and family combined. They are his main call contacts. He sends a lot of text messages to communicate (in his opinion), says "I like texting, it's much quicker" before adding during an interview, "The advantage of texting is that it's quick and very discreet, under a table, whether you're at work or anywhere, you can stay in touch."

Pierre has also adopted instant messaging (MSN) in his personal relationships but does not use this service on his cell phone because his handset is not compatible. On the other hand, he has tried the SMS (text) chat service but gave it up: "I have already tried it, really to test it but I prefer chats on the Internet." As a lay user of Wap, his use of ICT is not therefore limited to his mobile phone. At home, in addition to MSN, *Pierre* also uses email. To the question, "What type of messages do you send?" he answered, "Idiotic things, chain messages that circulate that I send out all over the place" [6].

The data from the quantitative study in which *Pierre* is one of the participants enables us to target the user and have an understanding of his representation of his usage. Obviously, the questionnaire cannot reveal the more detailed usage that *Pierre* will describe to us himself during the interview. However, all this information is not sufficient. Hence our ethnographic observation methodology in three successive stages, which sometimes merge, i.e. (i) interviews with questions/answers (ii) a combination of participant observation and the context of what users actually do with these objects and technical devices and (iii)

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[5] He was selected from the participants in a quantitative, longitudinal research effort conducted by the France Telecom Research & Development Sociology Laboratory where his cell phone uses was observed for several months.

[6] Since our objective was not to obtain data on how he used ICTs, information on this subject was kept brief.

audiovisual recordings.

First of all, the interviews with *Pierre* enabled us to obtain information concerning his mobile usage in order to know and understand his communication activities. Next, in addition, participant observation enabled us to define the Wap usage elements (Conein & Jacopin, 1993; Thévenot, 1993). Finally, the video recordings foster reflexive analysis of the handling of mobile Internet *in situ* (Lomax & Casey, 1998). We are now going to cover the analyses constructed from the audio and audiovisual approach to the interaction between the ethnographer, user and his mobile phone.

2.1. Meeting local contingencies

Our first line of reasoning covers a comparison of two situated activities where the subject and ethnographer are engaged in interactive discussion, i.e., from two distinct spatialities limited to the train context. The interacting parties move along the station platform and into the carriage to find a seat. As a result, the study subject poses the problem issue of filming mobility in external movement conditions. This mobility is produced by local movement of the two interacting parties who walk together until there is a free seat. In addition, the changes of place and activity occur in a public area. Therefore, recourse to video to access the action progress means that the recording device needs to be adapted (Relieu, 1999: 72) to the movement conditions. In fact, the video camera records the component accomplishment of the activity, in an ethnomethodological description objective. To explain our approach regarding the choice of mobile video recording device, it seemed important to differentiate between the various visual accesses to the elements in the environment, occasionally mobilised in the specific organisation of talk-in-interaction. We will firstly consider a situation where the interacting parties are side-by-side walking together towards the carriage of the train that has arrived at Massy station.

Fig.1: *Pierre* moves along the corridor of the RER wearing his camera glasses.

Extract 1
1   *Pierre   in general (.) there are fewer # people downstairs than? Upstairs*
       #Fig.1.
2   *Jean   oh? really.*

In Extract 1, the two people are conversing on the subject of the number of people using the suburban train depending on the peak periods. The cooperative situation during movement and conversation brings into play mutual alignment that is a constituent part of the local practice of the interacting parties, as they are involved in the activity of finding a free seat for their journey to *Pierre*'s workplace They make minute adjustments in their respective speeds according to their immediate environment (Lee & Watson, 1993: 103). The visual elements

of the environment are simultaneously available to the two parties. The video sequence enables us to understand that the references to the visual space, indicated by spatial deixis, are immediately assimilated to management of the interaction. As is the case, for example, for certain adverbs of place, the adverbial expression "downstairs' (Line 1) is a referential agent in the same way as pronouns. The manner in which the spatial description takes place within specific social activities is actively accomplished by the participants in interaction (Mondada, 2005: 75). The extract makes the meaning and importance of the near spatial environment observable and analysable for the intelligibility and coordination of action (Salembier & Zouinar, 2004: 79). The adjacency of the two turns at talk underlines the fact that no interactional problem related to the simultaneous access to the visual resource emerges from their conversation. Pierre's position, as indicated in his comment "in general" (Line 1), makes it apparent that he is familiar with the place. *Pierre*'s comment (Line 1) reflects his understanding of the normal occurrences in the public space acquired by previous experience – background knowledge concerning the crowds in the train as a member of the "traveller" category on this specific line, at this particular time of day. Visual identification of the train and his knowledge of this station are indications for the user, Pierre, for pertinent, appropriate configuration of his use of Wap in the presence of the researcher. He is aware of the organisation of routine behaviour in carriages and uses this practical knowledge to direct his contact to the lower level compartment. Pierre is familiar with the problems and events that are likely to occur. The "traveller" category therefore emerges when *Pierre* speaks (Sacks, 1992) – this is the first part of the "assessment" / "assessment" pair. In the second part of the conversation, the ethnographer-speaker, *Jean,* shows his understanding of the underlined membership category of his partner and aligns himself with it. The adjacency of the two comments makes explicit and analysable the alignment of the two participants on *Pierre*'s membership category as well as *Jean*'s alignment with the activity of choosing a seat in the carriage[7]. From a procedural consequentiality standpoint, the next turn at talk (line 2) indicates recognition on the part of the speaker. The *change-of-state-token* (Heritage, 1984) with rising intonation "oh?" reflects the fact that the interacting party, *Jean*, has taken in information about the current situation and is demonstrating that he has learned something. The speaker, *Jean*, makes an *in situ* visual assessment of the density of passengers in the lower part of the carriage and starts to move towards the entrance to this compartment. The principle of the adjacency of the two comments, the alignment of the relational pair of category identities "well-informed" / "lay", as well as alignment by the speaker, *Jean*, on the topic of the immediate context uttered by *Pierre*, show the orientation of the two participants: they are in the same space and have access to a common visual context at the same time. For *Pierre*, their alignment implies the link-up of routines and, in *Jean's* case, is limited to the observation, noting the presence of only a few passengers in the compartment. As opposed to this simultaneous shared vision of the environment, in other situations we will be analysing, when only one of the participants is browsing on the Wap, the failure to pool the visual resource in the activity may be the source of interactional problems. We will subsequently examine how face-to-face interaction incorporates distortion in the structure of the utterance of comments relative to Wap navigation activity. Mobile Internet navigation problems can therefore be analysed by examining the structural distortion to be observed in talk-in-interaction.

However, the research field presented in this article is specifically focussed on the exploration of mobile usage made by the subject being observed during his normal journey.

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[7] Even if the definition of the situation (Thomas, 1923; Goffman, 1959: 13) and beliefs and representations that the players consider real, presents an asymmetrical relation between two interacting parties, one of whom knows the customary patterns of the place.

Our data includes a video sequence (Extract 2) recording an interaction context where two parties are sitting face-to-face, each of them on opposite seats in a Paris suburb public transport compartment. As a result, we have noted that mobile Internet used by only one of the participants, when the two interacting parties are facing one another in the train, calls for recording the dynamic navigation on the screen. From this standpoint, the content displayed on the screen, available *in situ* to the sale user of the cell phone, *subsequently* becomes a pertinent resource for the analyst via a video device (Calvet et al., 2005: 284). Access to visual elements constitutes a practical problem, which is managed, on an interactional level, by the participants, and on a conceptual level, by the recording device. As a result, local use of mobile Internet in the carriage is recorded by a pair of camera glasses worn by the subject himself. Capturing video material and documenting action in mobile situation, as well as the use of small displays like a handheld mobile phone constitutes a challenge for ethnography (Crabtree and al., 2006: 62). Although visual focussing is not accurately reproduced (Zouinar et al., 2004: 7 ; Morel, 2006: 106), this ego-centred (Relieu and al., 2007) recording device appears to be the most suitable as it adapts to the situation. The advantage of camera glasses is not only justified for a detailed analysis of the interaction in tune with navigation activity on Wap services but also tailored to mobile conditions (Lahlou, op.cit.; Calvet et al., op.cit.; Morel & Relieu, 2004: 177). The data on the screen can therefore be accessed for the analyst by the recording carried out by the camera glasses, even if it is available in an asynchronous manner when viewing the data and not in an interaction situation at the same time as the user[8].

The main reason for making video recordings is to be able to access the conversation data later (ten Have, 2002) but this is taken further. The recording of a specific event in sequence mode preserves the participation format and mutual access to participants. This sort of approach preserves the action's organisation. In our field study, the use of the mobile phone is specifically characterised by the fact that the content is only available to the user, due to the size of the screen and the user's body and visual orientation. Unlike an activity around a computer which enables several participants (user and ethnographer) to access the information content on the screen at the same time (Heath & Hindmarsh, 1997), in our study case, access to the content of the mobile phone screen is deferred for the analyst from a time standpoint. Several examples of our video recording of "Wap navigation" provided the opportunity to show that i) the lack of visual access is a problem for the researcher, *Jean,* ii) the user, *Pierre,* will establish a preferential type of organisation for the talk-in-interaction in the absence of or delayed viewing of the visual content on the screen. The next sequence is a particularly clear example: during a mobile Internet session, face-to-face conversation raises some problematic practical issues for the researcher.

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[8] Recording of a contextual view via a camera held by the ethnographer has been ruled out here. In fact, shots taken by the researcher provide a broader view of the environmental context (Zouinar et al, 2004): this is not appropriate for our study in relation to the multimedia content received by the user's mobile.

Fig. 2: Consulting news while in a face-to-face interaction

The speaker, *Pierre*, is holding his mobile in his hand and the other person, *Jean*, is facing him. *Pierre* is viewing the titles and reading the general news items, the disappearance of a little boy, for example.

Extract 2

1		*(3.0) # (5.0)*
		#Fig. 2
2	*Jean*	*what are you doing?*
3	*Pierre*	*I'm reading the news? (.) about little mathias who was*
4		*found dead uh::*
5	*Jean*	*who*
6	*Pierre*	*(.) the little boy found dead and sexually abused*

The conversational data not only reveals the researcher/subject relational pair of categories but also reflexively marks access to local activities. In fact, two main convergent activities emerge from the interaction is dynamics: "doing being the subject of an observation study" while Wap browsing. In the video extract, these two activities overlap in the interaction in an embodied way. However, the ecological setup of the activities should not make us forget that *Jean* and *Pierre's* conversations are directed towards, and perceptible and analysable within, the practical execution of the interview/observations. This type of interaction-driven activity is orchestrated by the ethnographer-interviewer *Jean's* turn at talk in Line 1 (Extract 2), is a question about the activity on the screen. Since the resource constituted by the digital content of the screen is not immediately available to *Jean*. This shortcoming is handled on an interactional basis. In the same way, when *Jean* speaks in Line 4, it brings out the same observation on the asymmetry of the subject of conversation, the person's identity – "little mathias who was found dead." The lack of access to the visual resources available on the mobile screen is therefore treated as a topic of conversation by the participants themselves. Moreover, the fact that *Pierre* immediately answers the question by explaining his previous comment shows that the two participants are aligned on this asymmetrical access to visual and informational resources.

The recording device therefore makes the elements of the situation action available to the analyst as the interaction progresses. In other words, the video facilitates access to details that are relevant for the participants although they are hard to identify by the analyst (Relieu, 1999: 70). Indeed, the repeated viewing of the data makes it possible to explore the undergoing activity. The aim is to finely describe the organisation of the situation, which, otherwise, would have gone unnoticed (Relieu, 1999: 69). In the above example, the video recording saves the details for later analysis of this double interaction and, thus, brings out the ethnographer's status as an interacting party. We believe that the presence of the researcher is not a disturbing one, but is interactionally managed by the subjects being

filmed[9] (Goodwin, 1994; Lomax & Casey, 1998; Relieu, 1999).

Moreover, due to the existence of standardised relational categories, members and practices are mutually defined. Similarly, a member can be observed (Garfinkel & Sacks, 1970) within a determined social organisation and within an arrangement of action recorded within the activity dynamics (Suchman, 1987).

Therefore, the subcam proves out to be well adapted and integrated in the ongoing interaction. Moreover, like the personal, communication artefact (Cardon & Licoppe, 2000; Millerand, 2002), the cell phone being observed needs a recording device that must also be mobile. *"The device consisting of a pair of camera glasses with a video sensor enables the user to be monitored wherever he is located, (...) it proves reactive in real time to events on and off the screen and, finally, records the speech or discussion related to the subject"* (Relieu, 2005: 43).

Finally, the reason why we opted for recording video data via a pair of camera glasses is that, apart from the fact that it is essential for individual reading on the screen, the video recording device also enables details of daily life to be obtained from an ego-centred view (Relieu and al., op. cit.) of the player. As regard to the data produced and the phenomena these recordings made available for analysis, camera glasses empirically proved out to be the most appropriate for our participant field observation. Another advantage is that the microphone incorporated into the frames of the glasses captures the conversation between *Jean* and *Pierre* as well. With a single recording device, we were able to save the different resources – visual and verbal – relevant for the participants in action. The production of video data during the study provides an opportunity to examine the specific sequence of action in which the interacting parties develop and accomplish their talk-in-interaction. In our methodology, it is through the analysis of the talk-in-interaction that we can closely observe (turn by turn) the micro phenomena of disruption in relation to the mobile Internet service.

2.2. Organising travel time

The user is, therefore, observed in his usual context. Although the researcher meets the interviewee, *Pierre*, during his habitual morning for the first time (*Pierre* normally travels alone), the usage configuration itself is routine: *Pierre* frequently uses Wap on this journey. We learned through that *Pierre's* discussions, using mobile Internet is justified by the duration of his everyday journey that he must fill in or use efficiently, to keep himself informed, for example. Another simple fact has arisen from the more general observations we have made: personal mobile equipment is making an appearance in train carriages (viewing services via Wap) and cars (nomad navigation units such as GPS). As a result, the progress made by many forms of nomad technology "calls into question the traditional distinction made between "technical" research (or development) and "behavioural" (or organisational) research (Lyytinen & Yoo, 2002 : 387). In this perspective, a study centred on interpersonal interaction authorises an appropriate comprehension of mobile images (Koskinen & Kurvinen, 2002: 110). Hence our choice of adopting a mixed type of methodology for this article.

Henceforth in this article, the analysis of interaction which enables *in situ* usage to be brought out, is twofold. Firstly, we will examine the user's interaction with his mobile and, secondly, the interaction between the user and the ethnographer but without operating any discontinuity. The study raises the problematic issue of a conversation between two speakers,

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[9] "Our approach is informed by the perspective that the researcher is inevitably part of the social world that is being studied. (…) The facility of video to record, albeit partially, a version of the research process is unique in that it enables an analysis of the contribution of that process to the production of the data. Thus, here we demonstrate and explore the possibilities of a reflexive video-based methodology." (Lomax & Casey, 1998: 7).

only one of whom has a Wap connection. From the foreground of the interaction, a conversational phenomenon emerges that consists of settling the practical problem of access to the visual digital content. This interactional phenomenon can only be envisaged in relation to the natural use of the communicational artefact and in the situation. It is therefore possible to tackle the manner in which the incidence of the face-to-face position of the bodies is reflected on a conversational level by an inserted sequence relative to the slow speed of access to digital content. "Hang on" (Line 8) results from the fact that *Jean* is asking for information that is not yet available to *Pierre* who is commenting on the information as it is received. By the recurrent use of the occurrence of "hang on" (Extracts 3 to 5), the speaker introduces a preferential conversation strategy in several sequences.

The conversational organisation of the sequences is based on the occurrence of the verb "hang on" in the second person singular of the present imperative[10].

In this first sequence marked by "hang on", the user, *Pierre*, is looking at the weather forecast. Once again, the screen is not a resource common to both speakers when the weather forecast is being viewed.

Fig. 3 **Fig. 4** **Fig. 5 Consulting the local weather forecast**

Extract 3

1	*Pierre*	*>what about a look at the weather?,<*
2		*(6.0)*
3	*Jean*	*what's the forecast? for the weekend.*
4	*Pierre*	*I'm loo?king for our zone >already?<*
5		*(4.0) # (6.0) #Fig. 3*
6	*Pierre*	*we'll look at tomorrow is forecast?,*
7	*Jean*	*what's the forecast?*
8 →	*Pierre*	*# hang on? I'm going to. (.) I tell you as soon as it loads?*
		#fig.4
9		*(8.0) # (1.0)*
		#Fig. 5
10	*Pierre*	*>for tomorrow< the thirteenth? uh a storm in paris?*
11		*(2.0) cloudy and stormy:: (.) as for the temperature?::*
12		*>I'm going to tell you<*
13		*(7.0)*
14	*Pierre*	*what do you want- uh for Paris?*
15	*Jean*	*yep for paris,*
16	*Pierre*	*twenty one degrees?*

The sequence distortion marked by relatively long pauses by *Pierre* between his turns at talk

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[10] The speaker uses the imperative to speak to a person on whom he wishes to have an effect (Riegel et al., 2001: 332).

(Lines 4 and 9) are also due to the fact that he is waiting for information to become available on the mobile screen. The speaker using the Wap connection organises his talk-in-interaction in relation to the display of information on his phone screen. The transcription shows that the time taken to download information is relatively long, compared with the pauses normally occurring in a face-to-face conversation.

In fact, these silences can be considered more as "gaps" (Sacks et al., 1974) than pauses. These gaps are potentially interactional disruptions. The utterance "hang on" anticipates a possible disruption that a non-answer would be or even a pause after a question; it is inserted between the question and answer to justify the silence - Line 9. The answer put on standby will be given once the information is available (Line 10).

This sequence of "question/standby/answer" clearly points to the situation of disruption concerning access to information. Since the screen is only available to the main user in this face-to-face configuration, discussion is organised in such a way as to overcome this imbalance. It is precisely in this talk-in-interaction, which aims at sharing information, that it is possible to analyse the moment at which information is not available to the user himself. The silences, therefore, are relatively precise indications concerning the visible standby times: "hang on" and "I'm going to tell you". As a result, given that interactional disruption may occur and that it results from breaks in loading flows, it is possible to consider these standby times as disruptions in Wap use's. As well during interaction, it is possible to "fill in" this dead time when, for example, after a silence of seven seconds, *Jean* confirms the activity (Line 14). This question-answer sequence is inserted between two parts of *Pierre's* talk. But what happens when the user is travelling by himself and there are "gaps" during his main activity?

During interaction, the activity of the two participants *Jean* and *Pierre* is co-constructed. The speaker, *Pierre*, is obviously carrying out a conversation with the other speaker but, at the same time, he is browsing the Wap services on his mobile phone. Moreover, the content of the information obtained via the Internet on his phone screen constitutes the topic (Maynard, 1980) of the conversation that takes place here.

Fig. 6: Problematic WAP connection

Extract 4

1	*Jean*	*and # there, you're changing service?,*
		#Fig. 6
2	*Pierre*	*yep, (3.0) I'm going to take a look at my horoscope*
3	*Jean*	*what does your horoscope say?=*
4 →	*Pierre*	*=hang on? it's still loading?,*
5	*Jean*	*is it? is it quick to load?,*
6	*Pierre*	*no, it's fairly long.*
7		*(8.0)*
8	*Jean*	*it's a real pain?=*
9	*Pierre*	*=what is?*
10	*Jean*	*it's a real pain >when it's [too long<*
11	*Pierre*	* [long? (.) yep,*

12		*(3.5) but it is >normally< quicker?*
13		*when (.) I'm in GPS?,*
14	*Jean*	*oh yeah you do-*
15	*Pierre*	*in GPS oh >I mean?< not with this phone,*
16		*(9.0) °let's see° what they have to say about cancer? (11.0)*

Here we take a sequential interest in how the utterances are organised. The formal, procedural analysis approach consists of treating utterances as endogenous productions managed by the participants (Watson, 1994: 158). The number and length of the pauses have an interactional scope. In this interaction between *Jean* and *Pierre*, the talk-in-interaction is based on and conducted in relation to the properties of the mobile artefact itself.

When it is his turn at talk (Line 4), the interacting party, *Pierre,* does not answer the question (first part of the question/answer pair). The second part of the pair, the answer, only appears in Line 16, "(9.0) let's see what they have to say about cancer? (11.0)", where the conversation is, once again, focussed on the topic of the horoscope. In the sequence inserted into the question/answer pair (Lines 4-15), the participant uses the technical device in the unfolding of his conversation with the other speaker, bringing up the topic of the difficulties of use. The mobile Internet page load time is not only a determining factor in the structuring of the utterances (pauses) but also constitutes the topic. The research focus slides away from the topic of the digital informative content, given that the question has been delayed, towards utilisation disadvantages. The time taken to transfer information via Wap fosters the temporary suspension of the co-orientation of the speakers towards a given conversation (Watson, 1994 : 167).

So, usually, the user takes advantage of the journey to his workplace to obtain information via the mobile device and personal identification. In fact, when on the train, *Pierre* uses his mobile phone to log on to the local Wap service. In the extract below, the two interacting parties are engaged in a doubly spatialised and situated activity. They are getting ready to leave their seats in the carriage because the train is arriving at the station and, at the same time, they are waiting for information on local rail traffic.

Fig. 7: Consulting local traffic density information

Extract 5

1	*Pierre*	*geolocation's good. (.)*
2		*see, they're telling us=*
3	*Jean*	*=what?*
4	*Pierre*	*>I've done the geolocation< we are arriving at juvisy?*
5	*Jean*	*yep,*
6	*Pierre*	*and here it gives us access to the network for*
7		*line seven? which is next to? on*
8		*gravelle::, and other things?*
9		*(-)*
10	*Jean*	*>what then?,<*
11	*Pierre*	*and of course gravelle is close by*
12		*on line seven? er it's flowing,*

13	Jean	*is that traffic information?*
14	Pierre	*yep.*
15		*(4.0)*
16 →	Pierre	*>hang on, let's have a< quick look?*
17		*before the train? stops? >for paris*
18		*île de france< (5.0) # (6.0) the traffic, is*

<div align="center">*#Fig. 7*</div>

| 19 | | *fairly green? (3.0) so its moving er in* |
| 20 | | *>île de france< as well.* |

In this extract, the speaker, *Pierre*, first has access to information on the screen before he addresses on the topic of the density of traffic near their location. *Pierre* looks at his screen, accesses information available via the location service and then tells his interlocutor about it. As the sequence takes place, the occurrence of "hang on" (Line 16) is an element that is configuring *Pierre's* "pre-repair" to announce the wait, which will follow his manipulation. After the preliminary sequence, the speaker, *Jean*, then comments on the content of the information transmitted to him. The imbrication of the uttering with the handling of the artefacts makes the specific contingencies of the contextualisation[11] of the language activity apparent. The fact is that, the context for the two interacting parties is that they are in a mobility and urban travel situation, that they are using Wap to obtain information on their journey and its use constitutes the topic of their conversation. They appeal to the various manifestations of the message production-interpretation via talk-in-interaction and this allows a direct observation of the practical conditions of the interpersonal contextualisation process. Our praxeological interest in mobility provides particularly abundant material to approach activities by studying what is said in a situated manner. The situated organisation of activities may be enlightened by, and take into account, the spatial arrangement of the artefacts, which are indications for the action and talk-in-interaction. The material conditions of the production of speech - contextualisation - are then taken into account. They are pertinent for the comprehension of the participants themselves, as well as for analysing the activity. Analysing activity was, thus, the focus of our first methodology based on ethnographic participant observation supported by video recordings. Our second methodology usefully complements the phenomena brought out by the first one as regards understanding Wap deficiencies.

3. Geolocalised observation: a sociotechnical method

In this part of our study, our aim is to examine the observation resources for a study of the activities of individuals who are manipulating communication tools as they move around. In the first part, we described the orientation of the action being accomplished. In other words, we examined the relationship between the mobility of a user of a Wap mobile service and the GSM network resources accessed. In fact, since the early Eighties, the interdisciplinary field of digital technology has helped to construct a line of reasoning, based on the role of the social factor, to make progress with understanding the needs of human beings and its skills (Bannon, 2000: 231). It therefore consists of observing these changes in detail and individuals in a socialisation and technological innovation environment, which leads to new practices, to be able to determine a number of pertinent phenomena. What is the impact and scope offered by the integration of digital technology into everyday life? Therefore, the aim of fieldwork is to help assess the potential and organisation of technological choices by certified observation and an empirically detailed description of activities (Plowman et al., 1995). In fact, we are initially examining our scientific research methodology. The order in

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[11] The fact that the comments are distributed in their context.

which the observable is presented and delivered defines a preliminary orientation for analysis. The field examined first of all seems to speak for itself (Thibaud, 2002: 21).

In a complementary direction of research, there is the need for fundamental dialectic maintained by actual use of the mobile Internet service and the availability of the service offered by the radio access network. Improvement in the mobile Internet service mainly involves observation of practices (with the disruptions and nuisance for the user, as in the above extracts), coupled with the study of the technologised environment (sending and receiving of data on mobiles) The methodological work is therefore provided with technical data, with the setup of observation activities from an IT platform, while fieldwork retains the presupposed elements of the classic form of standardised surveys by gradually being extended to a more qualitative participant observation approach.

Our approach is intentionally situated, also because professionals and the general public have the benefit of the miniaturisation of electronic components, thus leading to changes and developments that must be integrated into the analysis. As a result, individuals are gradually deserting what we would categorise as "conventional IT" (desktop computers) in favour of mobile IT (laptops), PDAs and mobile phones. In this instance, the study device concerning geolocation is specific to this dimension where the mobile is perceived as an enriched, multi-functional object (Relieu 2002: 21). Therefore, we have made a table (Fig. 8) indicating the IT data of the user's communications from 6.23 to 9.42. Collected by the platform, the data is supplied from electronic mail connection logs, the "traces" of which are left on any telephone network. We are able to note that he uses his mobile for several functions. Each line of the table corresponds to a type of activity with the mobile. *Pierre* used his mobile for six activities during this period of time: a Wap session lasting 2 and a half minutes, a phone call made for 1 minute 30 secs, receipt of a text message, a second Wap session lasting 21 minutes, a 50-second outgoing call and a 30-second incoming call.

Fig. 8: *Pierre's* **cellular telephone data from 06h23 to 09h42, May 12th 2006**

Subject number	Correspondent number	Day - time	Duration (sec.)	Cell identification	Type	Description
336820XXXXX	336745XXXXX	12/05/2006 06:23:31	151	29160	DATA	WAP session
336820XXXXX	33220	12/05/2006 06:26:34	78	29160	TELS	out call
336820XXXXX	20914	12/05/2006 06:27:01	158	29160	SMSE2	in SMS
336820XXXXX	336745XXXXX	12/05/2006 07:31:01	1263	21425	DATA	WAP session
336820XXXXX	331693XXXXX	12/05/2006 09:30:49	52	51894	TELS	out call
336820XXXXX	33662XXXXXX	12/05/2006 09:42:38	30	51894	TELE	in call

We thus obtain the places where the user, Pierre, set up calls (via the cell details). In Figure 9, the ☽ icons represent the locations of the 6 activities recorded. Several questions are therefore posed for the analysis. What can this artefact enriched with functions adding to its primary purpose (matching phone calls) be used for? What does the user do with his mobile when travelling and between text communications and voice calls? This is how the current state of use that can be made of mobile Internet is examined via this sociological study of practices interleaved in their execution context.

To answer the question, the mobile phone was chosen as the device to obtain information on user movement. This innovative device enables empirical data on mobility to be established without interruption due to the traceability inherent in digitised exchanges.

Fig. 9 Actual call practice determined via location of the mobile phone user
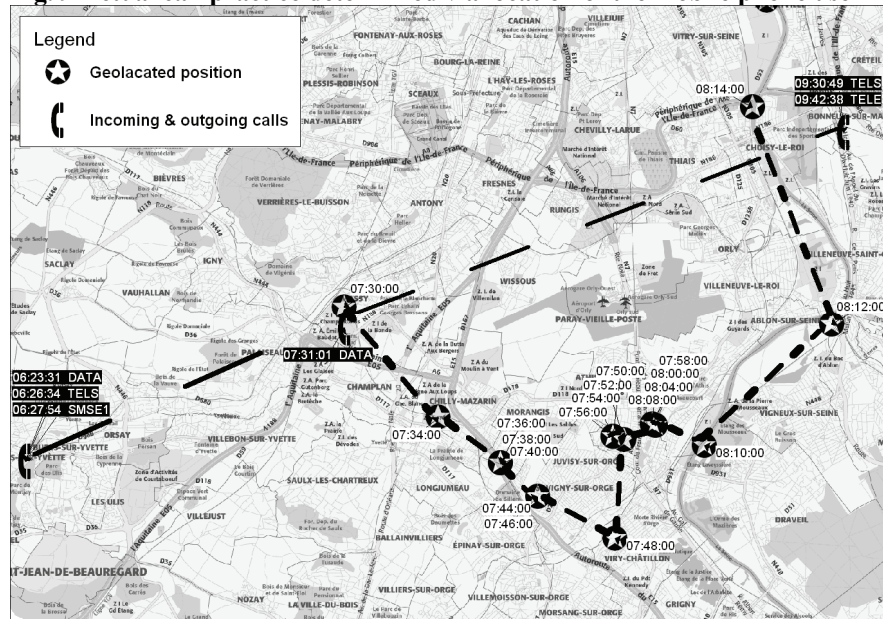
The user's actual journey is drawn on the map (Figure 9) using the ✪ iconic symbols. Here we are trying to clarify the interlinks between interpersonal sociability and mobile communication technology. In the usage study centred on the user, we are undertaking an observation of the actual use of mobile Internet interleaved within the implementation and deployment of the geolocation of people in public and private environments. The telephone was therefore geolocated for seven days. This method of tracking, which is non-intrusive for the user, enables us to obtain precise mapping of both the user's journey and the places where he sets up communications. As a result, we obtain the actual movement of the user (Fig. 9) (trapezium) as opposed to the path obtained with traffic data (idem - straight line). Traffic data fosters studies centred on communications to the detriment of the actual activities available on the geographic path. In an innovative approach, we are focussing on usage and the data collected can help to distribute the resources of the places visited and services used in those locations.

The mobile phone, used as an interpersonal communication tool, is also considered to be an Internet receiver. What are the technical resources mobilised in travel situations? How are they tailored to contextual contingencies as well as communication terminal possibilities (and limits)? Geolocation provides additional information on activities related to the location of players. The mobile Internet user uses the "personal geolocalisation device" to directly obtain information on the traffic on other train lines and road traffic. The mobile phone operator uses *opt-in*, that is to say, the user must register for this paid service (voluntary act) and give his agreement to each geolocation. It is a commercial location based service. It should be noted that the parameters for location of the mobile by the sales department (the local Wap service to which the user subscribes in order to facilitate his travel) are independent of location for the purposes of the study which is carried out automatically every 15 minutes and is transparent for the user. The "natural" quality of the interaction and use of the *opt-in* service is therefore still retained. The mechanism endeavours to fulfil the objective of enabling the links between activities, naturally taking place (Extract 6) and the geographical position to be analysed. Key to [the achievement of ethnographic data production and analysis] is the distinction between *system time* and *interaction time* and the need support the latter (Crabtree, 2006: 68).

1   Pierre >here you are? I'm going to get< the local news, (.) and they're-
2   they're going to proceed with the geolocation
3   Jean   oh yes,
4   (12.0)
5   Pierre I put? that, I agree? to be located:
6   (13.0)
7   Jean   does it take long?
8   Pierre >no< no here we go

In this conversation, we find pauses between turns at talk that are relatively long. The user encounters some send/receive problems that correspond to microcuts at telecommunications network level. Use of mobile Internet during face-to-face interpersonal interaction in a carriage is mainly focussed on a small number of pertinent organisational problems during which the user is aware of the limited, biased nature of his access to digital content via the telephone network. The ethnographer will himself point the fact (Line 6) that the waiting time is posing an interactional problem.

A correlation of the video data recording use sessions with the geolocation data enables to improve the knowledge of mobile technology. This interaction takes place at 7.51 a.m. and *Pierre* has started his Wap session at 7.31 a.m. When he starts to be geolocated he is at the antenna one of Massy station. Real-time study of production and user behaviour interpretation conditions and alternation modes between several interpersonal spheres coordinates the activity with the mobile and the user's geographic location. Via the methodology adopted in this study, we can observe how users use the Wap, what they look at and even how they organise their time and personal journey. Firstly, we analysed that, in the multimodality of the activity, the Wap network establishes usage constraints for users. Distortions in the sequencing of turns at talk first of all shows that the speakers sitting face-to-face lack common references (Jean cannot see the screen) and, above all, that the data load time obliges the user to use pre-sequences to cope with this hindrance. Secondly, in our study, the geolocation device gives access to the relay antennae actually used during the user's journey. The reintroduction of analyses in the setup of relay antennae could help with the geographic optimisation of the transmission network (data packet distribution network). We know that the user uses the GSM standard for his Wap sessions. We have analysed a use session in a mobile situation. When in the train, his connections to antennae change rapidly when the phone is moving quickly away from the area covered by one cell and entering the area covered by another cell. This often leads to cuts that are particularly annoying for Wap sessions.

4. Conclusion

Our approach to the analysis of Wap practices is intentionally situated, taking into account details of the practices of the user, *Pierre*, for several reasons. The first reason is because users are manipulating an actual technological but transient device: designers continually find themselves within an innovation process where, by informing themselves about actual usage practices by users and by determining the specific needs and expectations of users, they take action to make the device as transparent as possible. Thus, an applied study is supposed to provide information on the detailed comprehension of user habits. In order to improve technological development, the nature of the activities that are supposed to be supported, transformed or replaced must be understood (Luff et al., 2000).

The study consists in observing cultural methods of situated action converted into a social activity: being in the processing of using Wap in interpersonal interaction. The analysis of

speech during interaction enables a close observation (at each speaker's turn) of the micro phenomena of disruption in relation to the use of the mobile Internet service. The advantage of camera glasses is justified for detailed analysis of the interaction in tune with the activity of browsing on Wap services (Zouinar et al., 2004). In fact, the video recording delivers the content of the screen, which is available only to the mobile user during the observation. Finally, objectivization of video data enables an analysis of the practices in a real situation in a familiar use context (the home-to-work journey). The speaker who uses the Wap connection on his mobile organises his talk-in-interaction in relation to the information on the screen. It shows that the time taken to download information onto his mobile is relatively long, compared with the usual pauses in a face-to-face conversation.

An interrelation of the video data with the location device improves the knowledge of mobile technology. In our study, the geolocation device gives access to the relay antennae actually used during the user's journey. The reintroduction of analyses in the setup of relay antennae enables geographic optimisation of the transmission network (data packet distribution network). Improvement in the mobile Internet service mainly involves observation of practices (here with the disruptions and nuisance for the user), coupled with study of the technologised environment (sending and receiving of data on mobiles).

The study viewpoint is centred on actual use of the communication artefacts and their interleaving into ordinary activities. Our descriptive approach opens up a methodology for study, which is based on a crossing between the content visited by the user (based on participant observation) and user-focussed traffic data (Ziemlicki, 2005). The adoption of ICT by individuals involves and develops new and extremely diversified technological contexts. Fieldwork in an urban setting requires its viewpoint to be constantly renewed in the *hic and nunc* of the interaction. We support and highlight the contribution made by the ethnographic description backed by video to the development of new technology. The approach implemented is organised to match it with a methodological level appropriate for fieldwork. Active data in digital form is available for participants when interacting parties handle artefacts and access the actual content of Wap navigation. We have shown the need to formally document observations in order to gather this type of digital mobile Internet and nomad IT data.

In relation to the observations made by Goffman *"instruments such as the telephone are installed in a fairly remote place so that people can use them in "private"* (1959: 110), we note that the user of a "third generation" mobile phone has taken the telephone out of the wings and put it front-stage in his public activity. Mobile phones are displayed and are becoming an artefact of connectivity with a number of services. Studies have shown the "restraint on Wap popularity" (Arminen, 2002: 102) inherent in the technical design and ergonomics of standard mobiles. Multifunctionality differs according to the specialisations expected from the mobile. On the one hand, although there is constructive criticism for the development and design of the product: *"The interface of miniaturised instruments may reduce their chance of becoming multifunction terminals"* (Arminen, 2002: 104). On the other hand, we question the interleaving between interactional (discursive) production and socio-technological innovation in varied social activities with mobile Internet usage. We thus note that, for *Pierre*, his mobile fulfils reasonably well its "timekiller" activity or availability function during the journey from home to work, fostering continuity between his immediate environment and multimedia services. From an ecology standpoint, the two interacting parties, *Jean* and *Pierre*, are sitting in a train. The spatial configuration of the carriage and length of the journey guide *Pierre* in using his mobile Internet. The timespace devoted to the journey to work offers *Pierre* the right conditions needed to browse Wap services. In comparison, *Pierre* prefers to spend the time waiting for the train walking up and down on the platform and smoking a cigarette. However, the requirements dictated by propriety in the

carriage are different. Respect for other people means he may not smoke a cigarette. The regions where *Pierre* is located seem to maintain an orientation in his choice of activities. Individual usage is still the most appropriate in the train or then fosters opportunist usage (Relieu, 2005: 44) link to the context in which the subject finds himself. Here, far from carrying out a function to fill an empty space, the Wap service maintained the conversation between the two interacting parties. The mobile in a public area goes beyond the often-attributed framework of a manipulatory object to form a link between the information diffused online and the social relation.

5. Transcript symbol

Data were transcribed according to conventions developed mainly by Gail Jefferson and commonly used in conversation analysis.

[	overlapping talk
=	latching
(.)	micro pause
(3.0)	pauses in seconds
:	extension of the sound or the syllable it follows
.	stopping fall in tone
,	continuing intonation
?	rising inflection
#fig. 6	it locates exactly the site of the image drawn from the video compared to the transcribed word
°uh°	quieter fragment than its surrounding talk
fais-	clipping
><	quicker than surrounding talk

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Measuring Political Debate Online: Approaches on the Chinese Internet

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ABSTRACT

This paper concerns methodological issues of how to quantify and measure seemingly chaotic, crude and impulsive online interactions in Chinese Internet forums, which have played an increasingly important role in shaping the country's political spectrum, indicating the emergence of a new realm of public spaces as the Chinese online population reached 137 million in January 2007. It introduces a series of approaches, both quantitative and qualitative ones which I applied in my four-year project on the Chinese Internet forums, the first of its kind on the Chinese Internet. This project scrutinizes the interactive content of 14 major Internet forums of politics and current affairs in China and overseas over a one-year period (which stands for over 450,000 postings).

Keywords: Methodology, Online Politics, Chinese Internet, Digital Participation

Introduction

The Chinese Internet forum (*lutan* in Chinese, also known as the Chinese bulletin board system or BBS) features one of the most distinguished types of political activism in the global Chinese language Internet with about one quarter of the online population of 137 million in China engaged in various kinds of Internet forum discussions. Different from Newsgroups and message boards popular on the English Internet, the Chinese discussion boards have evolved into a unique public medium for information dissemination and public debate in global Chinese communities.

The Chinese Internet forum has been the subject of a large number of studies about politics and the Internet in Chinese society and diaspora. There have been many assertions about the potential of online discussion in the transformation of political and media systems in China. However, much of research tends to use a qualitative approach; or if some empirical methods are employed, they often focus on a particular Internet forum and in a short period of time (Li et al 2001; Qiu 2001; Tang et al 2001; Chen et al 2002; Guo 2002). These studies have drawn attention to the emergent phenomenon of active political communication in the Chinese Internet. However, there has been a lack of quantitative studies to provide an adequate description of the general demographics and nature of mass political talk in the Chinese BBS. Many essential issues concerning the E-publics—political Internet forums--demand quantitatively sound approaches to analyze if we believe that online political talk functions as part of weak publics which contribute to the formation of public opinions in society. For

example, what is the general volume of political communication over the Chinese Internet forum? How large is the participating population? Is the participation equally distributed? What is the size and interests of silent participants (lurkers)? What are the general characteristics of the digital discussion in the global Internet and what are the specific attributes of online talk in China? To what extent, are Chinese BBSs globally interconnected? What are the patterns of connectivity among E-publics? All these questions are central to the comprehensive understanding of effects of BBS interaction and the evolving culture of digital publics.

The lack of large-scale quantitative studies in the field of Chinese online discussion is due to several reasons: a) the huge quantity of information generated by Chinese forums; b) a great number of Internet forums, each with its own interactive culture; c) the swiftly updating speed of information; and, d) the ephemeral nature of online discussion. All these would make a large-scale quantitative project extremely time-consuming and labour-intensive if not assisted by computer analysis.

Another reason is a lack of recognized units of analysis for quantitative investigations. As the Chinese BBS represents a unique and evolving form of digital political activism in Chinese societies, there has been limited literature and established approaches in the West that can be readily adopted in an empirical project of the Chinese BBS. The design of my project, which originated from a preliminary small-scale study of eight Internet forums conducted by the author (Wu 2004), draws on several quantitative inquiries of Newsgroup political discussion (Schneider 1997; Bentivegna 1998; Smith et al 1999; Jankowski 2000; Nonnecke et 2003; Sack 2003; Smith 2003; Whittaker et al 2003). In addition, it also develops several new empirical approaches, such as how to measure the size and interests of peripheral participation (lurkers) in relation to the active participation, how to calculate the flow pattern and global interconnectivity of discussion forums, and so on. In fact online discussion is easily amenable to computer-assisted statistical analysis. Although incapable perhaps of conveying a full texture of the interaction, a computer analysis is able to sort out a large amount of data, compare various data sets and highlight significant attributes of online discussion from information that is visible online.

My paper will focus on outlining a number of methods I have developed in analyzing the Chinese forums which is conceptualized as E-publics--discursive public spaces mediated by new conversational media online. They include quantitative approaches to capture a general dynamics of the Chinese forum, mixed approaches to delineate the patterns of global connectivity among E-publics and qualitative approaches to examine the spectrum of discourse and pattern of deliberation. In essence, my study is aimed at establishing a series of approaches to study the publicly accessed interactive content (postings in *a threaded discussion format*) of online political talk in the global network of the Chinese Internet. My study conceives each Internet forum as a micro E-public of discussion, and tens of thousands of individual forums a networked sphere of E-publics.

Approaches

Basic elements for analysis include all those that are openly exhibited by the forums: postings (thread postings and replies), net names, hits, bytes and so on.

Selection of Internet forums and sample dates

There is a multitude of political Internet forums in the global Chinese Internet. However, the traffic and participation among Internet forums vary tremendously. Many studies have pointed to the power law distribution of Internet activities in the spheres of Newsgroups and blogs. The Chinese Internet forums are no exception. A very active Internet forum can have over 300 posts per hour whereas a less active one can have only a few posts. For my project, 14 Internet forums of politics and current affairs were selected with considerations of popularity, geographic location, ownership and affiliation, political inclination and influence in the development of political Chinese BBS culture, rather than a random sampling.[1]

To reduce a huge workload of processing a massive number of postings, a sampling date selection was conducted. Totaling 42 days between September 22, 2003 and September 4, 2004 were selected to represent a one-year content of the Internet discussion. All postings (about 450,000) in these days were the "primary data" for the quantitatively computer-assisted analysis without human raters to review the contents of postings. In addition, 67 thread postings in each forum in each sample date were statistically selected as the "secondary data" to represent a daily provision of information and discussion topics for more qualitative content analysis with human raters to look at the contents of individual messages.[2]

Computer-assisted analysis

This examines the discussion activity from the following set of dimensions:
a) traffic; b) population; c) reciprocity; d) active participation; e) periphery participation; f) global connectivity. The approaches to analyze the traffic, population, reciprocity and active participation, with some adjustments to the Chinese context, mainly draw on several quantitative inquiries of Newsgroup political discussion (Schneider 1997; Bentivegna 1998; Smith et al 1999; Jankowski 2000; Nonnecke et 2003; Sack 2003; Smith 2003; Whittaker et al 2003).

The traffic (measured by the total number of postings), the refreshing speed of a post, and the mean length of a post, indicate essentially the quantity of information exchanged over an online forum.

The population, measured by the number of net names, represents to some extent the size of each public forum in terms of visible participants, although the number of net names does not equal that of real participants since a user may have multiple handles.

The reciprocity is defined as the interactive relationship in the Internet discursive environment. It is examined by two sets of measuring categories: the first, message reciprocity, is measured by the analysis of postings, which analyses how conversational topics are initiated, replied to, and discussed by calculating the percentages of the lead postings (the initiated thread) and replies in relation to the total number of postings and the ratio of lead postings and replies (the thread depth). The second, author reciprocity, is measured by the analysis of the posting track

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[1] Originally 18 Internet forums were selected. However, some of the selected Internet forums like Fazhan Forum (Xinhuanet), Zaobao Forum, Dajia Forum (Chinesenewsnet.com) were not included due to technical problems in downloading their web content.
[2] For the detailed sampling date and posting design and selection, please refer to the essay "The Sampling Design for Chinese Internet Forum Studies" (Ke et al 2004).

of authors (net names). It probes how authors respond to and are followed by other authors in discussions.

For the investigation of participation in the digital public, this author contends that participation in the online forum public consists of two modes. One is visible and active participation, which involves the posters who contribute to the content (postings) of the Internet public. However, the online public is different from the online community by having a large number of lurkers who act as the audience of the Internet public. The phenomenon of lurkers in the Chinese Internet forum can be considered as periphery participation of the digital public.[3] The active participation analysis provides a further examination of the nature of digital political talk, and of what degree the online discussion is considered equal and participatory. It uses the Gini coefficient of postings/posters to indicate the pattern of active participation.

The analysis of the periphery participation looks closely at the ratio of hits and replies of postings and the relationship between relies per post and hits per post.

Analysis of periphery participation

One of the concerns in this project is how to evaluate the size and interest of periphery participants (lurkers) in the Chinese digital public. As demonstrated in the findings mentioned above, the number of active participants (measured by net names) in any of the Internet forums is relatively small, ranging from 579 (Qiangguo) to 9 (SMTH) in a day. However, the Chinese Internet forum is more than an online discussion group; it is a public media accessible to readers both nationally and globally. The actual participation of the Internet public goes far beyond the size of posters due to the fact that there are a large number of invisible participants—lurkers. This study initiates an effort to assess the audience of the digital public in a content-based computer analysis by measuring relations between hits and replies. First, it attempts to define the scale of lurking practice by measuring the relationship of hits and replies (Lurking Rate) in thread postings. In addition, it explores the interest of lurkers in relation to that of active participants in the respective Internet forums also using the Gini coefficient.

Figure (1)(VII) shows the lurking rate of six Internet forums which provide hit information. The values indicate the average lurking behavior in relation to the number of hits and the number of replies for all the thread postings in the six forums. They demonstrate that for each thread post, if it has 100 hits, about 86-99 hits are lurking; or in other words, every 100 hits of a thread message generate 1-3 replies on average (except for Qiangguo which has about 14 replies for 100 hits). These figures provide some idea about the lurking activity in a forum. It is a normal behavior of online participation.

These figures may also offer some estimate about the number of peripheral participants in relation to the number of repliers. The number of lurkers in any given digital public is no more than the 100 times of the number of reply messages if it is assumed that one hit equals

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[3] Although lurkers are said to make up over 90% of online communities (Katz 1998; Mason 1999), their role in the online public is difficult to define. Some researchers describe lurkers as "free-riders," a sort of non-contributing, resource-taking people (Kollock et al 1996). Others consider them "silent participants," whose viewing act is a valid form of participation (Nonnecke et al 2003). I argue that lurkers, to a large extent, perform the similar role as readers/viewers to the traditional print and TV media. The size of the lurkers compared to an online discussion group defines the degree of publicness of the digital community.

one reader. As most readers make more than one hit, the actual number of lurkers is much smaller.

The periphery participation is also evaluated by what I call the lurking interest index. It analyses whether the interest of peripheral participants correlates with the interest of active participants by calculating whether the posts with a higher number of hits also generate a higher number of replies. Figure 2(VIII) describes the distribution of all the replies among hits (the relation between the accumulative percentage of replies and the total lead postings ranked by the number of hits). This figure is reflected by the Gini coefficient (the closer the Gini coefficient is toward 1, the more it indicates a positive correlation). If the interest distribution is even (meaning the number of replies is related more negatively with the number of hits), the value of the Gini coefficient is 0. If the interest distribution is highly skewed, which means that the number of replies correlates more positively to the number of hits, the value would go toward 1.

Figure 2(VIII) shows that Qiangguo has the least positive interest index (0.14) among the reply and hit values while SJSL has the most positive interest index of 0.79. The correlative values in the specific forums are demonstrated by Chart I. It seems that in most forums, the interest of lurkers corresponds positively to the interest of repliers, meaning there is a sort of common interest among the active and peripheral participants. However, a closer examination of the data reveals that the difference in this chart may be more to do with the display format of a forum than a disparity of interest among posters and lurkers. There are commonly two formats to display the updating of threads on Chinese Internet forums; one (the thread topping format) is set to display the newest posted thread message on the top of the page, the other (the reply topping) is to top the thread message which may be posted much earlier but has the latest reply. In the six forums examined, only Qiangguo uses the thread topping format while the rest are in the reply topping arrangement. The lurking interest index illustrates that the latter format seems to be more functional in setting the discussion agenda for forum participation.

Analysis of global connectivity

One of important features of the Chinese BBS sphere is that there is a wide and constant connectivity among Chinese forums. On the one hand, there is a relatively small circle of participants and reciprocal contacts in individual discussion groups at the micro-level; on the other hand, there is a multiplicity of digital micro-publics which are frequently and globally intertwined, and which form an unprecedented transnational network of E-publics. Through crosspostings of individual netters, there emerges an information flow pattern that has never been seen before—a wildfire-like spread of news over the global networks of BBSs. How postings travel over the BBS world? How fast and in what scale do they travel? To what extent are Chinese BBSs interconnected? This study sets to explore these issues by tracking and calculating the recurrence or multi-occurrence of postings in various forums.

Figure 3(11) illustrates the network connections of these forums based on computer-assisted subject line search (equal and contain the same subject line) among all the thread postings. Altogether, there are 14,034 crossposting connections among all the forums. The distribution of these connections exhibits a sort of power law structure[4] with Qiangguo having 27.5% of

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[4] Power laws are found in many subject areas, including physics, biology, sociology, economics and so on, which describe an extremely inequality in scale variance found in many natural phenomena. The power law distributions are also observed in the Internet world such as website pageviews and blogging views. A very small

all crossposting connections (Figure 4). This indicates that Qiangguo serves as an information centre of the BBS sphere. A large number of postings are either originated from here or crossposted to here to get attention of a larger public. Four other forums (SMTH, Netease, WM and Cat) serve as the next group with crossposting connections of 1000-2300. The rest of the forums are least connected with other BBSs with less than 800 crosspostings.

Figure 5 demonstrates a posting flow pattern between domestic and overseas forums. Axis X indicates the crossposting percentage with the domestic forums, while Axis Y indicates the crossposting percentage with overseas forums. The chart shows that domestic forums have similar crossposting pattern between the domestic and overseas posting flow. However, for overseas forums, they are connecting mostly with either domestic forums or with overseas forums.

Combined content analysis on information re-distribution

This analysis is entirely based on the "secondary data"—67 postings in each forum in 42 days. The inquiry concentrates on how forums are functional as an alternative channel of information in relation to the state media system in China. The following parameters for analysis are introduced: a) the forum-generated information; b) the forum-disseminated information; c) the mainstream media information in the forum sphere; and d) the topic and interest agenda of the BBS sphere. Key units of analysis include: original postings, crosspostings, most-hit postings (MHPs) and most-replied postings (MRPs). Human coders were employed to categorize postings based on the content.

The original posting is text messaging produced by users of the forum. The coding criteria are: a) clear indications of the original posting made by the forum or posters themselves; b) the known net names; c) interactive content. Some netters tend to make known the originality of their posts as it may boost their reputation in the forum. Some forums also encourage original posts by setting up a forum particularly for such posts (the Qiangguo for example) or identifying original posts in their layout. Each net forum usually has a number of core participants who are known by their net names.

The crossposting is the one that originally appears elsewhere and is re-posted to the forum. Crosspostings come from two sources: the traditional media such as news agencies, press and TV networks (including their websites), and the Internet-only media such as portal websites, news websites as well as Internet forums. Coding indicators are: a) clear indications by posters; and b) indications in the content itself which include journalist bylines, names of media organizations, websites or Internet forums.

This study also analyzes the function of original postings and crosspostings by examining the postings with most hits (MHPs) and those with most replies (MRPs) of each forum in each sampling date. The results are very illuminating. In both categories, original postings account for a large percentage. Among the total number of MRPs studied, nearly 2/3 of them are original postings. For MHPs, crosspostings account for 40%, indicating that crosspostings

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number of websites receive a disproportionate amount of traffic while a majority of homepages just get a very limited number of visits. The rule seems to be that "diversity plus freedom of choice creates inequality, and the greater the diversity, the more extreme the inequality" (Shirky 2003).

tend to provide information for reading, whilst original postings are more stimulating to prompt a discussion.

Sources of crosspostings

Crosspostings reflect the information dissemination function of the BBS. It is voluntary redistribution of news from other sources, mostly mainstream media, by BBS participants. This study, intended to assess the traditional media's influence on online political talk, analyzes the source of crosspostings by two categories: a) the media types—traditional media (news agencies, newspapers, TV networks including their online services), Internet-only media (such as portal sites and online only news services), and BBSs; and b) the geographic areas where these media organizations and operations are located.

Combined content analysis on ideological spectrum

My project is also concerned with the issue whether the Internet forums serve as a venue for political dissent by mapping out an ideological spectrum of political debate in the Chinese BBS sphere. Drawing on reference of the political compass of four quadrants of Left and Right discourses (http://www.politicalcompass.org/index), this study conceptualizes the Chinese ideology-scape as a site of constant process of discursive construction, re-construction and negotiation within a pool of ideological resources from Maoism to liberalism, commercialism, nationalism, globalism to Confucianism. The official ideology is defined as commonly recognized paradigmatic sets of ideas and viewpoints consistently propagated by the mainstream media of mass communication in China of the respective time period. It is difficult to identify the precise "fixing" of meanings and semiotic systems connected with the official discourse as it, on one hand, is subjected to the successive transformation of social relations and historical developments in Chinese society. On the other hand, it is ascribed to a milieu where ideological struggles between ideas and discourses are constantly forged and social resources of making senses are formed, contested, institutionalized and re-mobilized. A set of five scales – Political, Economic, Social, Cultural and International Relation - is used to illustrate the dimensional change of discursive formation in China from Mao's era (1949-1976), to Deng's era (1978-1997) and the post-Deng era (1997-present), and the discursive contestation and reconciliation in the BBS sphere.

Combined content analysis on pattern of discourse deliberation

I'm still working on establishing a set of coding criteria to analyze online political debate in the Internet forums, with a particular concern about whether the threaded pattern of interaction in an instantaneous and global environment would introduce anything new into the pattern of political debate and deliberation. A detailed report is expected to come out this summer.

E-Publics and the State Media: Political Debate in Chinese Internet Forums

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Abstract

Vigorous debate over the Chinese Internet has tremendously impacted on China's political spectrum, which has until recently been dominated by the state media system. This paper, based on the reconstructed framework of the public sphere and computer-mediated informal publics, demarcates the dynamics and characteristics of political participation in Chinese Internet forums drawing on a series of computer-assisted empirical studies and qualitative analyses conducted by this author in the past three years. This project covers the interactive content of 14 major Internet forums of politics and current affairs in China and overseas over a one-year period (which stands for over 450,000 postings). This paper first outlines some of my theoretical constructs in framing the Chinese digital discussion as a new sub-layer of the public discourse created by the new media of online conversation and in relation to the country's official media system. The second part summarizes some major findings in my extensive research on the Chinese Internet forums, which include:

- The general profile of the Chinese Internet publics, namely the size of conversational publics, the extent of interactivity, and the pattern of participation;
- The source and flow pattern of formation in the Chinese forums; and
- The forming of alternative discourses in online debate

Keywords: Public sphere, Chinese Internet, Political debate, E-publics, Online discussion

Introduction

Vigorous debate over the Chinese Internet has tremendously impacted on China's political spectrum, which has until recently been dominated by the state media system. A considerable momentum of political activism has been organized over the Chinese Internet and have played an increasingly important role in shaping the country's political and media spheres, as the Chinese online population reached 137 million this January. . This paper, based on the reconstructed framework of the public sphere and computer-mediated informal publics, demarcates the dynamics of political participation in Chinese Internet forums drawing on a series of computer-assisted empirical studies conducted by this author in the past three years. It first outlines some of my theoretical constructs in framing the Chinese digital discussion as a new sub-layer of the public discourse which is created by the new media of online conversation. The second part summarizes some major findings in my research in connection to the general profile of the Chinese Internet publics, namely the size of conversational publics, the extent of interactivity, the pattern of participation, the level of diversity in

information and discussion topics, and the global interconnectivity of the micro-public network.

E-publics: Computer-mediated informal sphere

The concept of public sphere, commonly associated with Habermas, denotes a variety of discursive spaces between civil society and the state where all members of society, either in small groups or as representatives of larger social congregations, debate issues of public concern. The debates, in an ideal world, are unconstrained by the state and economic power, eventually transform into public opinion and shape governmental conduct. According to Habermas, the public sphere in its true sense existed in the 18th century Europe as British coffee houses and French salons. However access to the public sphere has increasingly been restricted in modern capitalistic economy as the political control of public information becomes inevitable in the interests of market.

Many scholars adopt the notion of public sphere in their conceptualization of political discussions and conversations on the Internet in a variety of social, political and economic contexts (Benson 1996; Golding 1997; Schneider 1997; Bentivegna 1998; Cox 1999; Noveck 1999; Putnam 2000; Ranerup 2000; Hacker et al 2000; Dahlberg 2001; Poster 2001; Gimmler 2001; Barber 2002; Graham 2002; Papacharissi 2002; Stromer-Galley 2002; Anderson 2003; Jensen 2003; Salazar 2003; Papacharissi 2004; Wimmer 2005). Some have applied this concept in their investigation of online discourse in Chinese societies (Huang 1998; Fung et al 2000; Tang et al 2000; Peng 2001; Yang 2003; Min 2004; So et al 2004; Wu 2004). They argue that the Internet-mediated political discussion has become one of the most innovating and vigorous forms of dissident communication in China. It embodies some characteristics of the public sphere (Tang et al 2001), or even constitutes the "public sphere with Chinese characteristics" (Min 2004).

The academic endeavours to theorize this Chinese cyberactivism within the popular framework of the public sphere face several challenges. First, to what extent does the computer-mediated technology of conversation bring about change to the terrain of public sphere which used to be mediated through face to face discussion and mainstream media of broadcasting and press systems? Second, how do the technological effects transform the communicative structure of the public sphere? Third, in what aspect, do these bearings influence the discursive culture of the public debate? Finally, how applicable is the concept of public sphere, which derives from and depicts mostly the western bourgeois society, in theorizing digital activism in China's political/media arena which has evolved in a completely different context? It is explicitly evident that the Chinese Internet forums, particularly political ones, are strictly regulated by the state that implements certain censorship rules. It has never been a virtual "public space" in the idealistic Habermasian sense that it is independent of the state authorities and market system.

Given that the Chinese online debate presents the "Chinese characterized" public sphere as presupposed by some Chinese scholars, what are the "Chinese characteristics" of the public sphere on the Chinese Internet? How do the new Chinese digital publics differ from the public sphere or "the counter public sphere" commonly understood in the West? In what effects do these discursive forums impact on the controlled system of political communication in China? In light of Habermas's most recent elaboration of the public sphere and a series of studies on alternative publics (there are several terms indicating the similar subaltern layer of discursive spaces such as counter publics, weak publics, informal publics etc), this author connects the

concept of public sphere with Chinese cyberactivism by conceptualizing Chinese Internet forums as "e-publics," a network of computer-mediated informal zones in the sphere of public debate and discourse, which functions as an subaltern venue for opinion formation in relation to the state controlled and orchestrated media system.

Informal zone of publics

The idea that online debate constitutes a component in the informal zone of the public sphere was first raised by Steve Schneider in his study of a Newsgroup discussion about abortion in 1997. It is interesting to note that despite the much touted ideal about the potentiality of the Internet to enhance the public space for political participation, studies on online discussion often provide mixed results in regard to the core claims of the public sphere:

1) The autonomy from the state and market powers: it provides opportunities for an incipient public place to contest the state power and corporate interests (in Chile, Salazar 1997), or to circumvent existing forms of the state regulation and expand the limited public sphere (as in Singapore, Barber 2003), or to potentially play a supervisory role in Chinese politics (Yang 2003). But at the same time, such initiatives are increasingly marginalized by commercial sites and virtual communities of common interests (Dalberg 2001a), and the Internet could become more subtle and omnipotent forms of social control through surveillance.

2) Equality in participation: despite its easy access and global reach, empirical studies of Usenet contribution reflect a lack of equality in participation. A small number of participants always dominate, quantitatively and qualitatively, virtual discourse (Schneider 1997; Jankowski & van Selm 2000). Other factors, like Internet access inequalities, digital illiteracy, and low income may also impair the representativeness of the virtual public in general. Jensen (2003) even claims that online political debate is still an activity reserved mainly for the well educated and politically active: "…[T]he chosen few have got yet another opportunity to discuss and influence the political process" (Jensen, 349).

3) Sincerity in interactive relationships: Howard Rheingold's well-known definition of online communicative acts in the "virtual community" indicates some degree of mutual trust, respect and authenticity in connecting the participants. There is a multitude of literature on the identity cultivation and community reconstruction in cyberspace. Online interactions reveal a high level of voluntary self-disclosure (Rafaeli & Sudweeks 1997). On the other hand, falsified information, misrepresentation of identity, and the common practice of net names and anonymity are also pervasive in virtual conversations. Usenet discussions are particularly abundant with conspiracies, propaganda, rumour, and scandal (Dahlberg, 2001b).

4) Diversity in topics and viewpoints: The Internet presents an unprecedented free space for topics and viewpoints. It increases the efficiency and ease in accessing and exchanging information, providing prompt feedbacks, and facilitating the formation of interest groups and the formulation of new meanings and ideas by netizens (Tsagarousianou, Tambini & Bryan 1998). In addition, the Internet is displacing the journalistic role of providing information and interpretation for the public (Tumber 2001). The traditional "middle men"—journalists, political parties and politicians—may become less influential in disseminating information, formulating issues, and setting agenda for public discussion. One the other hand, the anarchy of information and perspectives on the Internet has made some people think the diversity is in excess (Dyson 1998).

5) Quality in rational-critical discussion: Deliberative discourse is characterized as the ideal form of political debate, which consists of several key attributes: rational-critical argument, deliberation, reflection, role taking, civility, etc. Some studies find a high degree of formal regularity in online debate, with participants closely attentive to opposing arguments and performing with virtuosity in argument and language (Benson 1996), and civilly disagreeing (Papacharissi 2004), while other studies display a lack in debate quality (Schneider 1997), a deficit of reflexivity, and a deficiency of respectful listening to others (Dahlberg). Debates are commonly characterized by aggressiveness, angry assertion, insult, foul language, ideological abstraction, and even extremist ideas and cyberhate.

It is evident that the anarchy of globally networked discursive communities on the Internet poses a number of questions to the conceptualization of online political talk within the liberal democratic framework of the public sphere. First, how does one understand the function of the spontaneous, non-deliberative, self-indulgent, and often emotionally intensive and radicalism-oriented political talk which is pervasive on the Internet, in relation to the deliberative norm of the public sphere? To what extent and in what circumstances could such virtual discussions carried on in a multiplicity of micro-public spheres transcend to a public discourse? How would the ideal of deliberative democracy, which accentuates legitimacy and consensus, be achieved through the fragmented and layered spaces of public communication, which some scholars worry may lead to "isolated cultures" of extremes completely outside the reach of mainstream influences (Zickmund 2000, 251).

Schneider is the first scholar to define the online political discussion as a component in the informal zone of the public sphere. He suggests that the virtual conversations like those in Newsgroups, even with less clearly identifiable practices than the formal public sphere, contribute to the opinion- and will-formation exercise that is the function of the public sphere in a democratic society. In revisiting Habermas' theory of the public sphere and in reference to other associated ideas such as the "weak publics" (Fraser 1992), "third places" (Oldenburg 1989), "free spaces (Evans & Boyte 1986) and "micromobilization contexts" (McAdam 1988), he brings to attention the notion of the formal zone and information zone of the public sphere.[1]

It is inside these spontaneously-developed and formal structureless informal places, Habermas suggests, that public opinion first comes into being. "Here new problem situations can be perceived more sensitively, discourses aimed at achieving self-understanding can be conducted more widely and expressively, collective identities and need interpretations can be articulated with fewer compulsions than is the case in procedurally regulated public sphere" (Habermas 1996, 307-308). The informal space connects to the formal space by providing an unrestricted and non-coercive environment for citizens to engage in political discourse, to form opinion and to expand the horizons for possible solutions to problems (Schneider, 42).

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[1] This idea of the public sphere and the multilevel political system was elaborated by Habermas in his most recent article in 2006. He defines the public sphere as an "intermediary system of communication between formally organized and informal face-to-face deliberations in arenas at both the top and the bottom of the political systems" (Habermas 2006, 415). For Habermas, a western democratic society is structured in a multilevel system of political communication with face-to-face everyday talk of politics at the bottom, mediated communication and public discourse in the intermediary publics, and institutionalized discourses on the top of the political system (415)

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The reconstruct of e-publics as an informal layer of political communication accentuates several facets. First, the advance of the new media of public conversation has brought new elements into the discursive space of political communication which is categorized by Habermas as 1) everyday face-to-face political talk; 2) mediated public discourse through various mass media—newspapers and broadcasting; and 3) formal political deliberation at the centre of the system. It is important to note that[2] the publicly accessible conversational media, namely the Internet and its associated applications such as Telnet, bulletin board systems (BBS), Usenet, e-mail, chat rooms and WWW, have brought some structural change to the political communication system per se. They not only facilitate communicative acts in the less formal sense layer of political society (Salter 2000, 118), but also brought to public attention, in a globally and instantaneously accessible manner, the crude and impulsive content of political talk in micro-public locales. Before the public conversational media were in place, the political communication is basically carried out in three communicative fashions: first, face to face communication; second, mediated communication through one-to-one communicative media, such as telephone and letters in which the content of communication is not normally accessible to a public; finally, mediated communication through mass media which targets mass audience. The new media of online discussion have instituted a new type of terrain in political communication – the mediated political talk in small groups which at the same time can be synchronously accessible by a general public. Simply put, the Internet has contributed to the creation of a new medium and a locale in political communication: the medium of micro-publics and a computer-mediated informal zone of public debate.

Second, the Internet redefines and reconsolidates an informal space of political life in several ways: a) it makes possible instantaneous political conversation among people in a nationally and globally dispersed environment; b) it simultaneously brings the crude content of such talk to a larger public far beyond the circles of communicative groups; c) therefore, it evades the rule of deliberate public discourse in a formal layer of politics. The very nature of conversational talk — spontaneous, impulsive, self-indulgent, non-deliberative, anti-establishment, etc, which has often been frowned upon as "un-public-sphere behavior," should be considered an essential component in opinion formation in the democratic function of the informal public zone; and d) consequently it sets alternative locales for political debate in defiance of the mainstream media which have long claimed to be representative of the public space.

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[2] It is interesting to note that Habermas finally commented on the Internet. He said, "Use of the Internet has both broadened and fragmented the contexts of communication. This is why the Internet can have a subversive effect on intellectual life in authoritarian regimes. But at the same time, the less formal, horizontal cross-linking of communication channels weakens the achievements of traditional media." (Habermas's Kreisky prize lecture printed in Der Standard March 10-11, translated in part in signandsight.com)

Informal publics within the Chinese system

My next argument is that Chinese Internet forums constitute a particular phenomenon in China's mediascape—the informal space for public discourse. The Chinese media system, despite its reputation for the authoritarian style of operation with limited dissident articulation, is never a tightly sealed system. It permits some informal public spheres for political dispute, although the extent, scale and style of such sub/informal channels of opposition and criticism vary in different reigns and according to various political climates. These informal channels of communication include: Xinhua's Reference News, organization/community-based media, and periphery publications. However, much of the informal spaces for political debate are open only to the political and intellectual elite. Throughout the history of the People's Republic, there have only been two forms of media which provide an informal venue of political articulation to ordinary participants: *dazibao* in the 1960s-1970s and the Internet discussion forums of the present. These micro-publics, operating within a permissible space of the state hegemony, are a nascent sub-public space for forming alternative opinions and taking on alternative social activism.

Drawing on the aforementioned framework of e-publics, I have engaged in a series of quantitative and qualitative studies of the interactive content of 14 major Internet forums of politics and current affairs in China and overseas over a one-year period (which stands for over 450,000 postings).[3] This paper recapitulates major findings in my research in regard to the profile and dynamics of the Chinese Internet publics, namely the size of conversational publics, the extent of interactivity, the pattern of participation, the level of diversity in information and discussion topics, and the global interconnectivity of the micro-public network.[4]

Chinese Internet forums

The Chinese Internet forum (*lutan* in Chinese, also known as the Chinese bulletin board system or BBS) constitutes one of the most distinguished features in the development of the Internet and World Wide Web in Chinese society. A CNNIC survey in January 2005 indicated that about 20.8% of Chinese netizens use BBSs and other discussion forums (CINNIC 2005), which stands for about 19.6 million people. All major Chinese portal sites and web sites host

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[3] This three-year project, funded by the Research Council of University of Macau, is the first large-scale project to explore global Chinese Internet forums using both quantitative and qualitative methods. The project has pioneered a series of computer-assisted measuring systems to quantify the online discussion. The project's overall objective is to identify the nature of the Chinese informal public by analyzing the following elements: a) the dynamics of discursive interactions in Internet forums; d) the information redistribution over the Internet forums; c) the process of opinion-formation in micro-publics; d) the discursive culture of virtual debate; and e) the potential of the Internet forum as a platform for offline social activism. It consists of two phases of analysis: Phase I: computer-assisted quantitative data analysis on the dynamics of BBS interaction; and Phase II provides a content analysis and qualitative investigation of the online political discourse.

[4] For detailed theoretical construct of the computer-mediated informal publics, please refer to my paper, Computer-Mediated Informal Public Sphere: Political BBSs in China, presented in the Media and Society in China Today Conference (the University of Westminster, London. June 17-18, 2005). For detailed methodology and a number of quantitative measuring systems established in my research, please refer to my paper "Informal Public Sphere: Theorizing and Measuring the Dynamics of Political BBSs in China," presented at 2005 AMIC Conference (Beijing, July 18-21, 2005), and "Alternative Channel of Information: Discussion Forums on the Chinese Internet," presented to the 8th International GOR Conference (Ravensberger Park, Bielefeld, Germany, March 21-22, 2006).

multiple Internet forums with topics ranging from politics, finance, the military, sports, computers, health, books, travel, lifestyles, relations, hobbies, animals, etc. Globally, it is estimated that there are over 50,000 Chinese BBSs set up on servers located in China, Hong Kong, Taiwan, Singapore, Canada, the United States, Australia and other countries. About 200 of them are very active and popular according to the Singapore-based Topforum website, which monitors the Chinese BBSs and provides an index service to articles and messages posted in Internet forums. This study concentrates on Internet forums discussing politics and current affairs.

The Chinese Internet forum is a moderated discussion board. It usually features a threaded discussion format (similar to Newsgroups), but the IP addresses of posters are concealed from public exposure. The posters are known by their net names. The forum is monitored and managed by the *Banzhu* (forum host) who sets rules, monitors etiquette, cleans spam, uploads or deletes posts, communicates with posters and sometimes exerts authority by blocking the IP addresses of unruly posters.

A number of scholars have set their inquiry of the Chinese digital dynamic within the framework of the public space and civic participation (Huang 1998; Fung et al 2000; Tang et al 2000; Peng 2001; Yang 2003; Min 2004; So et al 2004; Wu 2004). They argue that the Internet-mediated political discussion has become one of the most innovating and vigorous forms of dissident communication in China. It embodies some characteristics of the public sphere (Tang et al 2001), or even constitutes the "public sphere with Chinese characteristics" (Min 2004). However, there are also views which contend that Internet forums have become a carrier of nationalist vehemence, defying the liberal conviction that the Internet would advance democracy (Qiu 2001), and that the Chinese government has institutionalized the Internet into a control apparatus by successfully implementing legal regulations (Tsui 2002) and by configuring nation-wide systems effectively filtering a large number of overseas web sites (Zittrain et al 2003).

My position is that the Chinese BBS constitutes a computer-mediated public space of control and contestation. Though it is highly regulated by the state and never a locale free of the state authorities and capital forces, it is still the most accessible and diversified venue in China for public dissent and advocacy. The vibrant dynamic of the Internet forum clearly exhibits the fact that a new form of mass participatory sphere has emerged in China. Instead of searching in vain for the idealized form of the "public sphere" that was formulated from the Western experience of the 17-18th centuries, this paper looks at the digital political talk from the perspective of the "computer-mediated informal publics." It presumes that even within the state media system, some public discursive spaces are still permitted, although they remain at the periphery of the dominant institution of discourse. The Internet related conversational media amplify the role and function of informal discussion groups by making them visible to a large public, and attracting instantaneous participation beyond geographic boundaries. The following criteria are therefore theorized to characterize the digital informal public sphere in the Chinese context:

- Publicness: The informal publics are accessible to a large population. The publicness is ensured by the low cost to enter the public space, and to form such a space.
- Instantaneous interactivity: Geographically dispersed participants are able to discursive interaction instantly.
- Globally connectivity: On the one hand, there is a relatively small circle of participants and reciprocal contacts in individual discussion groups at the micro-level;

on the other hand, there is a multiplicity of digital micro-publics which are frequently and globally intertwined, and which form an unprecedented transnational network of publics.

- Commoner-oriented: The participation is characterized by anonymity and amateurism. People who participate in the political discussion do not present themselves as specialists in particular fields. It is a basically an amateurish practice of political commentary.

- Non-utilitarian participation: Members interact and participate out of interest, and not for remunerative gains.

- Diversity: There are two aspects of diversity: First, it is an alternative information channel. The informal public sphere functions as a substantial channel for information collection and dissemination, parallel to the official media of information. Second, it is an alternative opinion forming site. It becomes an alternative milieu where ordinary participants seek, form, and consolidate opinions through communicative actions among themselves. In many cases, these informal public spheres are fertile ground for cultivating disenfranchised identities and interpretations.

- Platform for organized action: Political discussion seldom ends without an attempt to effect social or cultural change in society. Very often, informal discussion groups are a threshold from which to take organized political action.

Profile of Chinese digital publics

The Chinese computer-mediated informal public is a network of hundreds of thousands of Internet forums, each representing a micro discussion public.

The size of Internet forum publics

The magnitude of the digital micro-public is reflected by the number of participants and the volume of communicative content exchanged. The descriptive data exhibits that overall a domestic public forum has 227 contributors (net names) per day who post 1,165 messages. The default overseas public consists of 76 participants with 400 messages. Lead postings, which are often longer and signify more serious efforts to initiate discussion or provide information, account for one third of the messages in both domestic and overseas forums. The average length of a thread posting is about 894 characters for the domestic forum and 1,745 for the diasporic forum. Just calculating lead postings alone, the quantity of information communicated over one single Chinese forum can amount to over 300,000 words a day.

The population size of Chinese Internet forums is comparable to what was discovered in studies of English newsgroups. In Smith's 1997 study, he discovered that while one quarter of all newsgroups had between 50 and 500 participants, most other groups attracted fewer than 50 people (Smith 1999). He compared these numbers with previous research (Orbell and Dawes 1981; Messick and Brewer 1983) of face-to-face groups in which it is indicated that a group could fare well in a cooperative relation when group sizes are below 150 people. He then stated that the new group communication media can allow interactive groups to expand to 500-600 active members (Smith 1999, 204). My study reiterates this finding in the Chinese context that a computer-mediated discussion group can sustain active participation of about 600 people as maximum, as is the case with Qiangguo, the most active forum in the Chinese Internet.

Moreover, the online public is characterized as composing two modes of participation: active involvement (posting contribution), which is visible to members engaged in debate; and peripheral participation (lurking), which represents an invisible readership. The significance of the digital public is that the communicative content is not confined to active participants alone; it is accessible to the general public. Silent readers of the Internet forum are an indispensable component of the online public. My research has contributed to the originality of studying the BBS by evaluating the extent of lurking using measurements of hit and reply ratios in regard to thread messages. The finding suggests a correlative relation between the two variables. On average, a message with 100 hits prompts 1-3 replies. This gives some rough idea about the size of peripheral participation, particularly for Internet forums which do not provide post click information. In any given forum, the total number of participants (both posters and lurkers) could not be more than 100 times the number of replies. By this calculation, the maximum possible sizes of readership in the BBSs studied could be estimated to be in the range of 3,700 to 277,000 for the domestic forums and 2,100 to 133,000 for the diasporic sites, assuming that one click indicates one user.

The extent of interactivity

The digital interactivity is measured by the message reciprocity and author reciprocity. The message reciprocity shows moderate interactivity. Of all the messages, about 30% are postings which initiate thread topics. However, over 50% of these thread attempts generate no replies. The no-reply rate ranges from 30% to nearly 70%.[5] These empirical findings, to some extent, substantiate the concern of Habermas that the Internet is the "decentralized access" and defocuses the public debate.

The author reciprocity has uncovered another dimension of interactivity: although on average each author posts 2 thread messages and 3.4 replies, there are different orientations towards online interactivity among authors. Some authors are reciprocal, some are not. A large portion (from 33% to 70%) of the posters never initiates an attempt to start a thread; they are interested only in following others' thread topics. Meanwhile 36.4% of them contribute only threads but never reply to others. About 20% of posters have no reciprocated relations with members of the forums at all. Only 15% of the authors contribute both threads and replies. The activity of an Internet forum, as evidenced by the finding results, is closely related to the number of reciprocated authors. The higher the percentage of reciprocated authors a forum has, the more active it is.

These findings have confirmed what has been known to many webmasters of Internet forums—that netizens participate in different fashion. Some are writers (*xieshou*) who aspire to post their own material but have little interest in communicating with others. Others are boosters (*pengshou*) who are keen on following others' messages rather than initiating their own topics. The dynamic of an Internet forum lies significantly in the fact that it has a larger portion of people who are active in posting both thread and reply messages.

The pattern of participation

Although the Internet and digital discussion forums have been touted as an egalitarian venue for participation, quantitative studies repeatedly demonstrate that mass interaction is a misnomer. Participation is highly skewed in newsgroups and web forums, which are

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[5] Studies of English newsgroups show that overall thread postings account for 40% of all messages and no-reply rate is about 40%.

dominated by a small number of very articulate authors (Schneider 1997; Whittaker et al 2003). The empirical data of my research indicate that this propensity of online participation is also true for the Chinese Internet. Over half of the authors contribute only one message a day. The authorship distribution is very uneven among participants with the Gini Coefficient ranging from 0.27 to 0.7. The mean value is 0.4, which is comparable to the value of 0.44 in Schneider's study of the English newsgroup talk.abortion. This finding implies that the inequality in participation is a common norm in digital forums, regardless of language and cultural variations.

In addition to the visible participation (posting), this study is also concerned with the invisible participation in the discussion public—lurking—as it is also an essential part of the digital public. In an online forum, posters are active participants; lurkers remain silent in the background. This non-public involvement is considered to be peripheral in the sense that they read postings, monitor discussions, and may step into foreground involvement by contributing a post if he/she spots a topic of interest and feels an urge to speak out. Hence their role in the public discourse is not insignificant. It is viewed as constructive in corporate and interpersonal communications (Kraut 1992, 1997) and in community building (Nonnecke et al 2003). The analysis of lurking interest looks at whether public participants and non-public participants may share some common interests in the web discussion. The results show that overall there is a medium correlation between the interest of posters and that of lurkers. In other words, silent readers and vocal participants have a range and level of interests that are more or less parallel to each other.

Level of diversity in information and topic

My research is explicit in that a quasi-medium of information exchange is emerging over the Chinese BBS with a multitude of interconnections over the transnational networks of Chinese forums.

It is evidenced that net participants generate a large quantity of information by themselves, which constitute a major portion of messaging posted and crossposted over online forums. On average, information originated from traditional mass media accounts for less than 30 percent of the content. It is clear that the digital forum is not merely a disseminating channel for big media organizations. Its addictive attraction lies in the fact that it forms an accessible venue for ordinary citizens to exchange information, express opinions, socialize with like-minded people and engage in political activism. In the present-day Chinese context, the BBS is one of the few public media that individuals are able make their points of view known to a larger public.

Forum participants are also able, to a certain degree, to set their discussion topics independent of those of mainstream media. The study of most hit postings (MHPs) and most replied postings (MRPs) in China indicates that messaging generated by netters could generate the largest number of replies. A majority of most-replied postings are produced by individual netters. Over the BBS sphere, about 10 percent of crosspostings are also generated by netters, which implies that the BBS-produced content could also flow over the Internet, thus leading to a possibility that such content could be read, discussed, and re-disseminated over cyberspace, eventually set the discussion agenda for the entire BBS sphere. There are quite a number of examples of BBS-initiated events for national discussion in China.

Inter-dependence with big media

This study shows empirically that there is an interesting inter-independence between the BBS sphere and mainstream media. On the one hand, netters rely considerably on mainstream media for news information, which account for about 77% of the total crossposting, 11.9% of MHPs and 5.6% of MRPs. On the other hand, the agenda of the BBS (which is indicated by the list of MHPs and MRPs) does not correspond to the headline news of the state media. Except for only a couple of stories, all the MHPs and MRPs were not the headline news of big media in that period, and definitely were not concerned with national leaders and their meetings. The topic classifications of MHPs and MRPs demonstrate that netters have their own interest in online political talk. International issues, social issues, national politics and celebrity news are among the most interesting topics for them (Figure 14, Figure 15). It is worth noting that although domestic politics is high on the topic list, netters are most interested in articulating their own points of views (33.3% in MHPs and 60.2% in MRPs) and criticizing wrong doings of government officials (21.1% in MHPs and 14.2% in MRPs). They also pay specific attention to social issues. It is obvious that netters have their own topics of interest, some of them coming from mainstream media sources, but are not treated as significant news. By being crossposted into the BBS, some of these not-so-important stories are re-read, re-interpreted and assigned a new importance of news value. In this sense, the BBS becomes a milieu for collective reading and critique of news information of the mainstream media.

Global networks of information

One of important features of the Chinese BBS sphere is that there is a wide and constant connectivity among Chinese forums. On the one hand, there is a relatively small circle of participants and reciprocal contacts in individual discussion groups at the micro-level; on the other hand, there is a multiplicity of digital micro-publics which are frequently and globally intertwined, and which form an unprecedented transnational network of publics. Through crossposting of individual netters, there emerges an information flow pattern that has never been seen before—a wildfire-like spread of news over the global networks of BBSs.

The empirical analysis confirms the assumption that the BBS has emerged to be a global network of micro-digital publics although it is subject considerably to the national borders, common language and information filtering of the Chinese government. There is a constant flow of messaging among forums within China and between domestic and disaporic sites. It is explicit that the BBS sphere also exhibits a center-peripheral structure with a very small number of forums being the posting center and a large number of others in the periphery.

Another phenomenon invites attention. Netters are particularly engaged in topics of international relations and concerns. The analysis of MHPs and MRPs shows that international issues are on the top of the discussion agenda. Close to one quarter of the most read postings are internationally related in content. This popular interest in international news manifests one of the distinctive attributes of the Internet discussion-- discussants are globally dispersed. They are thus alert to information not bound in a local terrain, and in a position to argue about their individual views from various international experiences.

This study is also concerned about the issue of government control in affecting the public discussion on the Internet. Comparative examinations have been conducted between domestic and diasporic forums throughout the study with the belief that overseas digital publics would

serve as a comparative model of the e-public operating beyond the state filtering system. However, no significant variations have been found in the online patterns of posting, participation and interaction between the domestic and overseas forums. The differences are mainly at the content level. The overseas forums are more diversified in information sources, particularly in using overseas news sources. Diasporic netters demonstrate greater diversify in political opinions and enthusiasm in expressing their own viewpoints on China's politics. About 21.1% of the MRPs in overseas forums are about political issues in China, among which 83% represent personal opinions. On the other hand, overseas netters pay limited attention to other issues of public concerns in China, such as social issues and legal concerns. As for the international topics, overseas netters pay excessive attention to the topics of the United States (Figure 16-17). These forums also tend to contain more postings with flaming, cursing and profane language (5.4% in MHPs and 4.8% in MRPs). However, a more detailed discourse analysis is required to provide a comprehensive account of the quality of online debate.

Technical effects and the digital public

Some findings in my research call attention to the technical limitations of computer-mediated publics. The CMC environment both facilitates and limits the extent and degree that mass interaction can proceed in online discussions. The utopian view of the Internet forum as a public platform with an immense potential to foster the idealized public sphere has to be tempered with the technical reality that the digital publics are technologically constrained as well. One of the noticeable constraints is the discussion format presented on the computer screen. The sheer size of the computer screen makes it impossible to sustain massive interaction by a large number of contributors in a short period of time. The normal screen of the computer can only display a limited number of postings (about 20 threads) in a one-screen page. The more active a forum is, the more quickly thread postings sink to the bottom of the page, or disappear from the default front page. This speed of posting traffic alone could make it difficult not only for deliberate discussion on important topics, but also for non-frequent participants to follow discussion topics and provide quality dialogue. To some degree, the computer-mediated interactivity of the Internet forum dampens equality in participation. As a small number of verbose and active members tend to interact with each other, their messages always dominate the threads of postings. This would likely create an online environment which discourages other people to take part.

Conclusion

Setting the Chinese Internet forum within the conceptual framework of computer-mediated informal publics (e-publics), this paper has delineated the profile and dynamics of digital discussion boards in the Chinese Internet. It uncovers that a new sub-public space has emerged in online forums, which sustains a daily exchange of information in great quantity and attracts the interactive participation of many people. Each Internet forum represents a micro discursive public engaging both active and marginal participants, whose concerns and interests are relatively parallel to each other. Although Internet and conversational applications help expand the size of functional communicative groups and offer unlimited potential for contribution, the digital participation is highly uneven among members. The idea of equal participation in cyberspace is not only a misnomer, but also negatively correlated with the level of interactivity. The micro digital public is always dominated by a small group of verbose people. The more interactively they communicate, the less equally participatory the forum becomes. The study also reveals that people have different orientations in digital

activism on the Internet forum. The visualization of cyberspace as a place where everyone interacts with each other is misleading. Not all participants are reciprocated authors. Some are discussion topic initiators with little interest in mutually interacting with others; others are followers only interested in replying to others' messages.

Although individual micro-publics are limited in size and participation, the power of the Chinese BBS sphere lies in the fact that it is a globally interconnected web of digital forums. It is this dispersed network that has formed a subaltern channel of information parallel to the state media system. To a certain degree, the digital forum is able to facilitate the distribution of information generated by ordinary netters, the topic setting for discussion beyond the agenda of the state media, and the re-dissemination and re-reading of information from "official" or overseas sources. However, the BBS sphere also exhibits a center-peripheral structure with a very small number of forums being the posting center and a large number of others in the periphery.

I'm currently working on the last part of the three-year project to acquire more in-depth understanding how online discussants in a globally dispersed environment produce, reproduce and negotiate meanings in relation to the dominant discourses in the Chinese political arena. I'll share further findings in the near future.

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Accessibility for all to services and terminals

Accessibility Evaluation of Mobile Phones: From Theory Into Practice

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Abstract

ICT and mobile phone usage inparticular is dramatically rising each year. However inclusion of ICT products by disabled and elderly people is limited even though they could benefit greatly from the solutions.

COST 219ter set up a program of work to write and validate a toolkit which would identify the key accessibility features needed in a mobile phone. The toolkit was developed for use by design teams, so that they could use these guidelines to improve the accessibility of their products before they hit the market. This toolkit was validated and the next stages of it are discussed as well as the implications of using this in a real world setting.

Introduction

Last year one billion mobile phones were sold globally which is a rise of approximately 25% from 2005[1]. The mobile phone has become an important part of most people's lives, however access to mobile phones by disabled people has been largely ignored by the mobile phone industry. As the mobile phone can be an essential asset to any individual's life in terms of freedom and independence, it is of paramount importance that vulnerable people, such as disabled and elderly people have access to enabling equipment such as mobile phones.

Current status of inclusion

The mobile phone is an important factor and a primary tool for everyday life (Ryu and Smith-Jackson, 2006 and Castells *et al* 2007) and has been identified as an important tool for people with disabilities (Abrascal and Civit, 2000 and Chandler *et al*, 2006a). Yet it has been suggested that owing to factors such as miniaturisation (Zwick *et al*, 2005), the needs of disabled people have not been fully considered when designing mobile phones which means they will not be able to use these devices to their full potential (Chandler *et al*, 2006a). It has been acknowledged that although there has been a shift in attitude and awareness towards including people with disabilities and older people in all aspects of society over the last twenty years, some factors, such as the design for all principle, have not yet been resolved (Roe 2007).

Clarkson *et al* (2003) states that many products are not accessible to large sections of the population because designers are either unaware of needs of users with varying capabilities or do not know how to accommodate their needs into the design cycle. This in itself is worrying especially as there is evidence, in the shape of demographics and legislation, to show that

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[1]Strategy Analytics: http://www.strategyanalytics.net/

designers should be including people with varying capabilities rather than excluding them (Clarkson *et al*, 2003). In addition to this, research has shown that whilst companies rate themselves fairly highly as "being interested in making their products or services more inclusive", they rated themselves as low for providing inclusive products currently and low for the current level of effort utilised to make them inclusive (Goodman, *et al*, 2006). This information makes the current situation look very bleak in terms of inclusion rather than exclusion.

The basis for making evaluations of ICT's: Why evaluating for accessibility and usability is important

Even though the current effort, provision and awareness for inclusive products appears to be low (Goodman *et al*, 2006), it is well known that evaluation is an important factor to improve the overall user experience of a product or system and can mean more people can use the product or system in question (Dix *et al* 2005, Benyon *et al* 2005 and Clarkson *et al* 2003). Evaluation has been recognised as a tool which can determine whether or not users can carry out the intended activities of a product or system and to ensure it meets user needs (Chandler *et al*, 2006b)

Following research into inclusive design projects, the conclusions were that input from Ergonomics specialists and end users alike during the design stage was a critical factor in the success of the case studies researched (Dong *et al* 2006). From the research it was concluded that the business case for inclusive design is as follows (Dong *et al* 2006):

- It increases long term profits
- It improves companies' competitive edge
- It produces better products for all end users.

This focus on the business case for inclusive design is an area that is not extensively researched and it could be suggested that this lack of focus on the business case is one of the reasons inclusive design has not had a bigger impact on the market. However what is clear is that the use of Ergonomics specialists and end users alike to "evaluate" products has positive effects on both the product itself (in terms of accessibility and usability) and its consumer base (in terms of sales because of the number of people who can use it easily).

Evaluation has been clearly shown as a valuable tool in making products and systems more usable and accessible by removing poorly designed features. However, even with this evidence, new products that have not been evaluated are still being released by manufacturers.

COST 219ter Mobile Phone Toolkit: from development to consultation

COST 219ter, being aware of the benefits of evaluation to both industry and users, set up a program of work to identify and produce an evaluation tool which could be used by industry to improve the accessibility of mobile phone handsets. The emphasis was to provide a toolkit that would pinpoint the critical factors which cause inaccessibility as well as being simple to complete. The toolkit could be used by designers to improve the accessibility and usability of products at an early stage in the design process, however it can be used by organisations to evaluate mobile phones after they have been released to market.

Initial research into current trends of accessibility evaluation of next generation network services and terminals across Europe revealed that it is only being conducted to a limited degree (Chandler *et al*, 2007). Following work done by several organisations[2] led by the Royal National Institute of the Blind a tool kit was developed using a set of heuristics or "rules of thumb" to identify the key accessibility features of the hardware, software and services for disabled people (Chandler *et al*, 2007). When designing the toolkit a set of criteria or questions were set to determine the scope of the work which are as follows (Chandler *et al*, 2007):

- What would be the main focus of the toolkit?
- What is the common core functionality found across different mobile phones?
- How would a toolkit be designed to be future proof (what are the key functions that are likely to persist in the future). Would there be an increase of multimodal access to mobile phones?
- Could the toolkit cover all user needs yet remain usable?

Once the first toolkit framework was created it was validated against end user opinion via an end user evaluation process. This was done to determine whether the toolkit accurately evaluated the accessibility of a mobile phone and involved comparing the results of the heuristic evaluation against end user requirements (Chandler *et al*, 2007).

The end user evaluation was conducted in three European countries; UK (RNIB and RNID), Portugal (Special Education and Rehabilitation Department of the Faculty of Human Kinetics (FMH), Lisbon) and Cyprus (Intercollege, Nicosia) and involved four user groups (Chandler *et al*, 2007):

- Blind and partially sighted people
- Deaf and hard of hearing people
- People with limited dexterity
- People with learning difficulties

The cross referenced results[3] showed that whilst some mis-matches (between end user results vs. expert results) were reported, generally the results of the evaluation of the toolkit matched the results of the end user evaluation (Chandler *et al* 2006b and Chandler *et al* 2007). The end user evaluation also produced some interesting results in itself (Chandler *et al*, 2006b and Chandler *et al* 2007) which included:

- Most UK-based blind and partially sighted participants and Portuguese-based participants with learning difficulties had previously avoided predictive text as they found it impossible to use, but they actually found it easy to use in this evaluation.
- Most UK-based blind and partially sighted participants could dismantle and reassemble the phone but had not done it before relying on or favouring a family member or shop attendant because of the perceived complexity of the task.
- All users liked to be able to customise the menu
- There was a 50/50 split between preferring the menu in a grid format and a list format.

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[2] Royal National Institute for Deaf people, Swedish handicap Institute and the Special Education and Rehabilitation Department of the Faculty of Human Kinetics (FMH), Lisbon
[3] The full results can be seen in Chandler *et al*, 2006 available from www.cost219.org

- Users like to customise their phone according to their circumstances and their environment.

The outcome of the validation study was that although some review work was needed regarding any mis-matches found, the toolkit did indeed identify critical accessibility issues with mobile phones (Chandler *et al* 2006b and Chandler *et al* 2007). Following the review, the toolkit has been opened up for consultation for interested parties (such as mobile phone manufacturers) before being finalised. The consultation opened in January 2007 with a number of comments from around the world being received. Interested parties can participate in the consultation by going to www.cost219.org/toolkit and following the link to the online participation at the bottom of the page. Once the consultation is completed, by the end of summer 2007, COST 219ter intends to publish the toolkit for general use.

Implications for the future design of ICT's

The advances in battery technologies, central processing unit technologies as well as the miniaturisation trend (Zwick *et al* 2005) suggests that ICT products will become faster, smarter and be more mobile (owing to the longer battery life) and versatile. Wireless (mobile) communication has diffused faster than any other communication technology in history and from research, is set to grow even more in the future (Castells *et al*, 2007). Together with this, society is already seeing a convergence of technologies because of these advances as well as a growing demand for technology. The blackberry service, produced by Research in Motion, is a prime example of the growth in mobile ICT products. Prior to blackberry "smart devices" were relatively niche products for early adopters which never made a huge impact on the market. However, blackberry has seven million users worldwide[4] spanning different levels of expertise. The success of this product has shown how a product combining two successful concepts (email and mobile telephony) can have a major impact on people's lives. Therefore it can be suggested that the growth and penetration of ICT products is only going to increase with convergence being one of the major drivers.

With the advancement of ICT's and convergence of technology there is a great potential for disabled people and elderly people to benefit from them but there is also a great risk of them being left behind and further excluded from participating in the Information Society. User needs must be fully considered during the design phase and included into the end product so that as many people as possible can benefit from these solutions. If implemented successfully, the COST 219ter mobile phone toolkit has been designed to identify features which would make a mobile phone inaccessible. It has been designed as a rapid, cheap evaluation tool which will allow the design team to quickly establish any flaws in their design before it becomes expensive and/or impossible to rectify.

Summary and future research

This paper has revealed the work that COST 219ter has done to produce a toolkit which can be easily followed to evaluate the accessibility of a mobile phone. Currently the toolkit is under consultation to allow interested parties to provide feedback and input into the toolkit. This consultation period will last until summer 2007, after which the comments will be reviewed and a final paper with the toolkit in will be published. However, the toolkit is meant to be a practical tool and so far it has not been used in an actual manufacturing/design

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[4] Source: http://www.blackberrytoday.com/

process. As such, the authors and COST 219ter are seeking a trial with a mobile phone manufacturer to test the toolkit to determine if it is robust enough to withstand a corporate manufacturing/design process.

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Ambient Intelligence And Implications For People With Disabilities

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Abstract

Ambient Intelligence (AmI) is considered one of the possible instantiations of the emerging *Information Society* and a debate is going on about its possible impact on the socio-economic integration of all citizens and, in particular, of older citizens and citizens with disabilities.

People are supposed to be surrounded by fixed and mobile intelligent objects interconnected through fixed and mobile networks, which will allow access to information, interpersonal communication and environmental control. The interaction with the intelligent environment will have to be redefined in order to guarantee some characteristics, considered necessary for the environment not only to be acceptable but also usable and useful: i.e. to be unobtrusive (that is, it impinges on people's consciousness only when needed), personalisable, adaptive to user needs, and anticipatory (that is, it tries to anticipate user needs).

The paper reports on an activity carried out in Cost 219 as a contribution toward the identification of new opportunities and challenges of the emerging environment for the socio economic integration of older people and people with disabilities. Starting from European development scenarios (ISTAG scenarios), it aims at anticipating to what degree and how people with different disabilities will be able to cope with the foreseen activities.

1. Introduction

It is commonly accepted that the contemporary society is undergoing a transition, from the present industrial society towards an information society. Among the possible embodiments of the emerging information society, an interesting and widely discussed potential instantiation is the Ambient Intelligence (AmI) paradigm. The information society is not seen as being characterised by an increased diffusion and use of present-day computers and telecommunication terminals, but as the emergence of an environment in which "people are surrounded by intelligent intuitive interfaces that are embedded in all kinds of objects and an environment that is capable of recognising and responding to the presence of different individuals in a seamless, unobtrusive and often invisible way" [Ducatel et al., 2001, p.8]. This concept provides a vision of the information society in which emphasis is put on greater user-friendliness, more efficient support of services, user-empowerment, and support for human interaction. Interaction is intended as taking place through "natural" interfaces in an environment which is unobtrusive (i.e., it impinges on people's consciousness only when needed), personalisable, adaptive to different user needs, and anticipatory (i.e., it tries to anticipate user needs).

In order to produce a structured way for obtaining an impression on how an information society could emerge, a scenario planning exercise was conducted in Europe in 2000, leading to the publication of the report "Scenarios for Ambient Intelligence in 2010" [Ducatel, 2001]. In this document, the vision of an information society is based on AmI as defined in the previous paragraph. The presented scenarios offer a view of a potential future, based on anticipated developments in technologies, society, the economy and networks. They are not technology forecasts, but descriptions of potential activities to be carried out in future AmI environments.

The purpose of the present paper is to analyse, through the ISTAG (IST Advisory Group) scenarios, the potential impact and consequences of AmI for people with activity limitations. This implies analysing how the scenarios would be affected in the case that their characters would not have all the abilities that are usually taken for granted for a "typical" user (for example if they cannot see, hear, move independently, and manipulate objects or they do not have the required cognitive abilities). The analysis is based on the following assumptions. First of all the scenarios are considered as "true", that is, it is taken for granted that the technology and services are available with the foreseen characteristics. Therefore, feasibility of technological developments is not considered in the analysis, and technology is considered at the functional level. The functions are considered as available irrespective of the real implementation. Second, the AmI environment is considered as available everywhere, not taking into account that economic factors could impede a general deployment of the corresponding technology. Third, the AmI environment is considered as continuously available (without faults). An analysis of what could happen in case the last two assumptions do not hold has been presented in the SWAMI dark scenarios [SWAMI 2006], and applies also to people with reduced abilities.

2. ISTAG scenarios and related technology

Four scenarios were produced by ISTAG [Ducatel et al., 2001]. A short summary of them, pointing out the main activities of the involved characters, is included in this section in order to support the subsequent discussions.

- *Scenario 1: Maria - the road warrior*

Maria is an employee of a big company who is travelling in a far-away country for business. She needs to navigate in an unknown environment (airport, city), to live and work in hotel rooms, to be supported in her business presentation, and to be in contact with her family and home environment. She is supported by a personal communicator, which is continuously in connection with the AmI environment, including the airport, the traffic guidance system in the city and the hotel room. The AmI system knows where she is located and is able to connect her not only with the surrounding environment, but also with any place in the world. The emphasis is on the seamless and intuitive support while moving around. Maria, thanks to AmI, can concentrate on the purpose of her trip without taking care of details, but still remaining always in control of the situation.

- *Scenario 2: Dimitrios - the digital me (D-Me)*

Dimitrios is an employee of a multinational company. His main problem is to be connected continuously with people, but without being disturbed if not really necessary. His communication agent, which learns from Dimitrios' way of dealing with different situations, is able to conduct most of his communications, taking decisions on his behalf and speaking with his voice. When contacted by his wife about their child's homework, in order to find

information about everyday life in another country (Egypt) a videoconference with a girl in Egypt, made possible by real-time translated conversation, is used to solve the problem. This scenario emphasises mainly the intelligence in the environment, which can capture, process and share information about human beings, and the expansion of human relationships. Interconnected D-Mes create networks, which allow people to be defended from outside interference and create new contacts and relationships.

- *Scenario 3: Carmen - traffic, sustainability and commerce*

Carmen lives in a city where many services are available for taking care of everyday problems. She lives in an intelligent house that is interconnected with the network, and has access to an e-commerce system facilitating the purchase of everyday life goods. A shared-car system is available for her to go to work. This is part of the city system, which takes care of following her during travel and gives advice regarding traffic. The city can also regulate the behaviour of the vehicle, when necessary. In the scenario, the main emphasis is on an efficient and user friendly urban environment, through the use of very large-scale systems and services.

- *Scenario 4: Annette and Solomon - environment for social learning*

Annette and Solomon are in an environment that is able to adapt itself to the needs of different learning groups and individuals with different ages, knowledge and interests about problems of environmental management. The environment can restructure itself also physically, offering, when necessary, interaction "islands" for different groups (the islands are virtual islands, where sound and visual spaces are confined) and very advanced presentation facilities (e.g., 3D holographic rendering). Contents, presentation speed, and complexity are controlled by AmI. The environment is aimed at the establishment of social relations in continuous interaction with the individuals. The scenario deals mainly with the empowerment of users in a learning environment and with the support of social processes, through the use of a communication network and a collective memory.

From a technological perspective, the following 'Key Enabling Technologies' covering a broad range of ICT and smart material technologies, are considered as a basis for the emergence of an intelligent environment: embedded intelligence, middleware and distributed system, IP mobile and wireless, multi-domain network management, converging core and access networks, micro and opto-electronics, trust and confidence enabling tools, cross-media content, multi-modal and adaptive interfaces, multi-lingual dialogue mode. From the perspective of this paper, it is particularly important that the following requirements are considered as crucial for the development of technology concurring to the implementation of the AmI environment:

- *Requirement 1: Very unobtrusive hardware*

Miniaturisation is assumed to produce the necessary enabling developments in micro and optical electronics, smart materials and nanotechnologies. Design emphasis is supposed to be on human factors, so that the widespread embedding of computers produces a coherent AmI landscape, rather than just a proliferation of electronic devices.

- *Requirement 2: Seamless mobile/fixed web-based communications infrastructure*

Complex heterogeneous networks need to function and to communicate in a seamless and interoperable way. This implies a complete integration of mobile and fixed networks. These networks will have to be seamless and dynamically reconfigurable. They will require more advanced techniques for dynamic network management (see Requirement 3).

- *Requirement 3: Dynamic and massively distributed device networks*

The AmI landscape is a world in which there are almost uncountable interoperating devices. Some will be wired, some wireless, many will be mobile, many more will be fixed. The requirement will be that the networks should be configurable on an ad hoc basis according to a specific, perhaps short-lived, task, with variable actors and components. Databases, whether centralised or distributed, should be accessible on demand from anywhere. Key to this aspect of AmI will be the development of middleware and agent technologies (Requirement 4).

- *Requirement 4: Natural human interfaces*

A central challenge of AmI is to create systems that are intuitive in use. This will need 'artificial intelligence' techniques, especially dialogue-based and goal orientated negotiation systems, as the basis for intelligent agents and real time middleware. These techniques will be equally important for developing intuitive machine to machine interactions, which are supposed to be multimodal (multi-user, multilingual, multichannel and multipurpose) using speech, gesture, and pattern recognition. They should also be adaptive to user requirements providing context sensitive interfaces, information filtering and presentation, and cross-media content. In the scenarios, voice, gesture and automatic identification and localisation are implicitly used to synchronise systems, so that services are available on tap when people require them.

- *Requirement 5: Dependability and security*

The AmI-world must be safe, dependable and secure, considering all physical and psychological threats that the technologies might imply and giving important emphasis on the requirement for robust and dependable software systems components.

Several approaches can be chosen to draw conclusions about the level of integration of people with different activity limitations. In the present analysis a mainstreaming approach was chosen, whereby characters with different activity limitations are introduced in the ISTAG scenarios, identifying how they can carry out necessary activities in such an environment. This is possible because one interesting characteristics of the ISTAG scenario exercise is that the user appears at the centre of interest, adopting a holistic, citizen-centred view [IST Advisory Group, 2003].

The approach is also in line with the one at the basis of the new WHO "International Classification of Functioning, Disability and Health (ICF)", where a balance is sought between a purely medical and a purely social approach to the identifications of problems and opportunities for people's social integration. When dealing with the problems of people who experience some degree of activity limitation or participation restrictions, "ICF uses the term disability to denote a multidimensional phenomenon resulting from the interaction between people and their physical and social environment" [WHO, 2001]. This is very important, because it allows grouping and analysis of limitations that are not only due to impairments. For example, people are not able to read because they are blind, or have fixation problems due to spastic cerebral palsy, or are in a place with insufficient illumination, or are driving. The current environment can increase the performance level over the capacity level (and therefore is considered a facilitator) or can reduce the performance below the capacity level (thus being considered as a barrier).

The purpose of the work presented in this paper is to analyse how people perform in the situations foreseen in the AmI environment to characterise it as a facilitator in the required activities, or as a barrier, hopefully also pointing out possible ways to overcome such a barrier. For this purpose, ISTAG scenarios are divided into activities, and some user groups having activity limitations are "virtually observed" while performing the corresponding necessary tasks.

Due the enormous variability of the possible individual impairments, activity limitations or participation restrictions and the number of possible activities, it is impossible to analyse all possible combinations corresponding to the ICF classification. Therefore, a set of examples are worked out, using some typical profiles concerning activity limitations in connection with the activities foreseen in the ISTAG scenarios. Five user groups were considered. The first two groups address people with sensorial limitations (also caused by contextual factors), and precisely people who cannot see at all and people who cannot hear at all. The third group addresses people with cognitive limitations, mainly made up of older people. Regardless of severity, cognitive impairments may result in diminution of social contact, leading to social exclusion, loneliness and depression. In the scenarios reference is mainly made to people who have mild or moderate memory, language, orientation and problem solving problems that normally do not impede their independent living, suitably supported. Then, people with manipulation problems (that is control of fine manipulation operations necessary in the use of a keyboard or a mouse), fixation problems and/or difficulties in expressing themselves using voice (e.g. caused by spastic cerebral palsy) are considered, assuming that they able to move around without using a wheelchair. Finally, people moving in a wheelchair are considered, dealing only with their problems of access to information and interpersonal communication.

3. New technology, systems and services

Traditionally, the problem of integration of people with activity limitations has been tackled through an adaptation approach, whereby systems and services are adapted after development to the needs of different user groups and/or the abilities of people are augmented with the use of assistive technologies. Before delving in the general analysis of the scenarios, it is useful to comment briefly on some of the technologies that are anticipated to emerge, and their integration in systems and services in relation to assistive technology. In looking back at the efforts to produce interfaces to computers and terminals adapted for people with disabilities, the technology necessary in order to support AmI seems to have much to offer. One of the main prerequisites of AmI is that interactions must be multimodal and alternative input-output systems must be available. This can be very important if the different modalities are used, redundantly, to address different interaction channels, both to reinforce a particular piece of information or to cater for the different abilities of users. Moreover, important technological improvements are foreseen. Voice synthesis and recognition can be considered as an example. For recognition, the set goal is the recognition of connected speech in noisy environments. This can obviously be very important in producing inputs for people who cannot use keyboards or object manipulation techniques. Correspondingly, voice synthesis is anticipated not only to achieve better quality, but also to incorporate personal characteristics (in the Dimitrios scenario, his network agent is able to speak with his voice). From the perspective of people who have problems in speaking, this should make possible the implementation of speech prostheses using a voice chosen by the user. Another design target is the development of automatic translation for real-time conversation between people speaking different languages. Even if, at least in an initial phase, this will be probably possible only in limited contexts, the related technology can eventually be extended to the translation between all languages (e.g., speech to Bliss symbols and vice versa).

Input prediction, which was initially developed in the disability area, will be extended, with obvious advantages for the group of people for whom it was initially developed.

Special vibrating materials for alerting people will increase the efficiency of many alarm systems that have previously been used by people who cannot receive messages using auditory signals. Materials capable of sensing touch or producing tactile presentations of information, which were initially developed for virtual reality systems, are progressively acquiring importance in many different environments, including not only touch screens, but also systems capable of transducing information into a tactile presentation. Moreover, materials capable of reproducing three-dimensional forms in real time are being sought. This might make the transitory Braille displays obsolete, because any output tactile screen could be capable of reproducing Braille. It could also be an answer to the need of people who cannot see to access graphical and pictorial information.

GPS and other localisation systems are likely to become standard in many pieces of equipment and services. This will solve the problem of tracing people who risk being lost in open spaces, and will help in navigation (e.g., for people who cannot see). GPS localisation should be integrated by the deployment of networks of sensors [Estrin, 2002; Lorincz, 2004], e.g. based on ultrasound beacons, floor sensors to determine the positions and movements of individuals, weight sensors, worn badges that emit IR pulses, and smart tags to identify objects.

Smart tags are another important technology necessary for the development of an intelligent environment and could have a number of very important applications for people with activity limitations. A person who cannot see, equipped with a simple radio transducer could be directly informed about the items on the shelves of a supermarket. At home, the same person could be able to locate all kinds of small objects, for example a box of pills or spectacles, and when necessary, have information about the medicament and the dosage. The tags on objects in the house could be used as a means to help elderly or people with memory problems by making available, when necessary, information concerning their presence and use.

Gesture recognition [Geer, 2004] is an additional important component of a new generation of systems for people with activity limitations. The traditional switches used by people with manipulation limitations could become virtual switches. The mouse could become a virtual mouse, whose movements can be controlled through movements in space of any predefined form. Other, more sophisticated interfaces can also be conceived, such as interfaces based on the recognition of lip movements and their "transduction" into text. Sign-language interfaces could be implemented with the use of gesture recognition. Correspondingly, animation technology can be used to produce good-quality avatars that are able to sign or to move lips for lip reading.

The importance of concepts and technologies related to intelligent agents and avatars also needs to be emphasised. At a lower level, these should be able to explore the network in order to extract information of interest. At a higher level, they will represent users in negotiations with people and other agents. This technology - with obvious problems of privacy and control for the user - is very promising in different situations. People who cannot see can be supported by agents able to access visual information for them and to "transduce" information produced by them into visual form for sighted people. The same is true for people who cannot hear regarding accessing and producing auditory information. An intelligent agent could also take care of helping people with cognitive difficulties due to disability or age in acquiring information from the environment, and could anticipate their needs for communication and environmental control.

4. The environment as a general facilitator

So far, as already mentioned, the integration of people with activity limitations has been based on some complementary approaches: adaptation of systems addressing the needs of individual user groups (e.g., human computer interfaces), adaptation of services of general use (e.g., alarm services), and creation of special services (e.g., relay services). Some interesting conclusions can be drawn from the scenarios, with reference to services available in the environment. First of all, environmental control systems, introduced for the independent living of persons with motor disabilities, become an integral part of the living environment. Probably, the environment will not be equipped by default with robot-type systems useful for taking care of certain needs of people with motor disabilities, for such as feeding them or moving them around. However, it will be able to integrate this additional technology if it is has been designed in such a way as to be extendable to incorporate additional facilities.

Another type of service (relay services) of interest for people who cannot hear/and or speak may be available by default in the Ambient Intelligence environment, where voice recognition and synthesis, automatic translation, gesture recognition (sign language and lip reading) and animation (synthetic sign language and lips movements) are in principle available, if the environment is developed with a design for all approach.

However, the real winning factor is the intelligence in the environment (intelligent agents). To plan her travel, Maria relies on an environment populated by agents, which can look for relevant information and negotiate on her behalf to get what she needs at the best possible price. Another agent helps her in localising her presentation according to local preferences (colour schemes, the use of language). The possibility of delegating to an agent the transactions needed for organising a trip can be crucial for an older person with minor cognitive limitations and for people who have some hearing or speech problems that can reduce interpersonal communication or sight and manipulation problems that can reduce efficiency in accessing complex information services. The same holds for the Carmen scenario, where agent-based support systems help her in organising the travel to the city using a car pooling system and in her e-shopping activities. This can be useful not only to help Carmen when she is really unable to perform required tasks, but also to reduce stress. In the negotiation for travel arrangements to the city, the agent knows the needs of Carmen (e.g., she is travelling in a wheelchair) and can fine tune the choice of a suitable car and driver. In e-shopping the agent can look for the information which is useful for the user and present it in the suitable form. If Carmen can see, the goods on the supermarket shelf can be shown on a screen. If Carmen cannot see, or has fixation problems, the agent can read information on the intelligent tags attached to each item. If Carmen has cognitive limitations, it may be that she needs guidance through the required actions. The level of support by AmI can be matched to the severity of Carmen's problems. In cases of mild cognitive problems, AmI can remind and provide suggestions, just like a friend in the house. In case of more severe problems, AmI can completely control the situation: preparing a balanced diet for Carmen based on past habits, checking the availability of food, ordering it, caring for its delivery at home, and suggesting the steps necessary for its preparation. This can be done autonomously or in cooperation with a relative or carer. The level of control can be set at any necessary level.

The Dimitrios scenario is completely about an agent (avatar), called D-Me, that takes care as far as possible of his communication with the outside world, and can manage services (e.g., choosing the best telecommunication means for Dimitrios' child). Before being overridden by

Dimitrios' wife, who is able to pass through the D-Me barrier, D-Me is able to deal with routine calls. If Dimitrios has cognitive problems, his D-Me can overcome some of his problems with interaction, memory and problem solving. Automatic learning can improve in the long term the agent's adaptation to Dimitrios' behaviour, and assist with the short term fluctuations of his capabilities. D-Me can also hide activity limitations (e.g., sensorial) of Dimitrios, who is apparently performing in a "normal" way. Only when Dimitrios is communicating with his wife or in other situations that need his personal intervention his limitations are exposed.

When arriving at her destination, Maria is connected with the environment that guides her through the customs and to the taxi, and then in her navigation through the city. Navigation systems and services are an integral part of the intelligent environment, and can be useful in many circumstances. If Maria is not able to see, the P-Com in communication with AmI guides her through the airport (e.g., by voice, or using haptic cues). This requires the knowledge of her position in the airport (granted by AmI) and the possibility of controlling the presence of unpredictable obstacles (people, baggage, etc.). If Maria has cognitive limitations, the navigation system may tune the level of support to the known abilities or to the perceived present difficulties (for example, Maria may be confused by the crowd in the airport). Dimitrios and Annette, if unable to see, need navigation help in the cafeteria and in the room where learning activities are taking place. Even if the two environments are reconfigurable, it is reasonable to think that AmI knows the position of all potential obstacles (e.g., by reading RFID on objects or through direct optical inspection by pattern recognition). When Carmen needs to leave the car and use an alternative transportation system, the system registers Carmen as a client who cannot see and suggests routes and paths that are not too busy. Alternatively, it registers Carmen as an older client. If she can travel alone, the P-com takes care of guiding her through the space and advising her about the tasks necessary for arriving to her destination. If Carmen is moving around on a wheelchair, AmI can suggest an accessible route.

The space where the Annette and Solomon scenario is located, as well as the organisation of the learning activities, are particularly interesting from the perspective of people with activity limitations. A first very important feature of the environment is its possibility of being tailored physically (organization of space and availability of multimedia support) and conceptually (type of learning material, speed of presentation) to individual users. Moreover, there is a mix of social exchanges (with other learners, the mentor and external experts) that can be of invaluable help for this user group. The mentor himself is not an expert in the topics to be learned, but a mediator between different interests and needs. Not only the efficiency of learning is addressed, but also the emotions of individuals and groups. A continuous support is granted by AmI that is able to adapt to the users and to their emotional states.

The entire AmI is a pervasive and very sophisticated alarm and support/control system. This may be very important for people with cognitive problems. AmI can continuously control Maria's behaviour in the various environments according to her known habits and intervene if necessary, for example reminding her of tasks and helping her perform them. When necessary, AmI can also contact the family or a carer for advice and help. If Maria cannot see AmI is able, if necessary, to describe itself, i.e. its layout and functionalities, as well as the functionalities of its devices (e.g., the remote control of the hotel room). In the Dimitrios scenario, D-Me can be part of a control system, in continuous contact with relatives or helpers. In the Carmen scenario, the P-com can transmit the news that Carmen is leaving home to a control centre or to a relative. A continuous connection can then be established,

and Carmen can be tracked and controlled during her trip. On the way home, the shared car system senses a bike on a dedicated lane approaching an intersection on their route. The driver is alerted and the system anyway gives preference to bikes. The same service could be very useful for a person who is on a wheelchair and for a person who cannot see.

The additional opportunities offered by AmI are related to the availability of broadband communication facilities. Maria' scenario offers a presentation of advanced telecommunication facilities, in the car, in the hotel room and in the presentation room. When Maria is driving, people know (if she wants) that she can be contacted, but if she is contacted in a difficult situation a D-Me type agent can deal with the calls. In the hotel room there is an audio/video system. The video scenes are described if she cannot see, and automatically captioned, if she cannot hear. The audio/video system can be used also for communication with her daughter, with whom she can also go through the news as they watch them at the same time from different environments. Conversation with her daughter takes place through AmI and the P-Com. The fact that Maria and her daughter are able to converse on an audio/video system and cooperatively access information, is very important. It introduces a remote socialisation component, which can be crucial to reduce stress, and through which Maria can be supported. Even if support by technology can be of invaluable value, support by other people can be more efficient and acceptable in some situations and activities. AmI, with its emphasis on cooperative activities, can increase the feasibility of the approach. When people are not able to perform some actions, they can ask a relative, a friend or a support organisation. Maria, for example, if she cannot see, can show the hotel room to her daughter and get from her a personalised description that a computer system would had probably given in a functional form. If Maria knows that she has left an object somewhere in the room, her daughter can localise it. If Maria has cognitive problems, her daughter can instruct her when performing difficult tasks.

5. The individual interacting with the environment

After having examined the possible impact of services of general use on people who have some activity limitation, it is necessary to focus on the individual user and consider their interaction with AmI in order to perform the necessary tasks.

It is clear that the main key to open the doors of the information society is the personal communicator and the related set of agents, which are able to grant connection to the environment itself and to all its facilities. Its characteristics and interface are not precisely defined, but it can in principle make available all the interaction technologies described in the previous sections in order to adapt the environment to the type of interaction suitable for the user and the context of use. It is very likely that the interface is not part of the communicator itself, but of the environment. The communicator is a disembodied functionality supported by the ambient intelligence with different interfaces. Maria wears it as a bracelet. In the case of Dimitrios, the communicator (D-Me) is embedded in his clothes but can be also implantable. It is adaptive, and learns from Dimitrios' interactions with the environment. It offers communication, processing and decision-making functions. Its functions may either be based on on-board intelligence or on distributed intelligence in the infrastructure. Both ways, it offers Dimitrios the necessary services. It deals with calls. When necessary, it becomes an avatar-like system and deals with most of his social communication, using his own voice. In the Carmen scenario, the communicator does not have a specific embodiment. It is only a function. There are some characteristics of the communicator important for all people: it is personal, lightweight, wearable, and continuously available. Finally, it is interesting to

observe that it must not necessarily be a highly sophisticated piece of equipment, the performances of which are limited by size, weight, and power. The interaction peripherals and the intelligence necessary to support the transduction of information necessary to address the different modalities and to support the user can be in the environment and in the network. In principle, the only limiting factor can be bandwidth.

Taking into account that all the characters in the scenarios have with them a personal communicator, it is interesting to discuss how they can interact with AmI. The simplest situation is at home or in other closed environments (e.g., the hotel room). Carmen interacts with her refrigerator. If she is not able to speak at all, she can use gesture recognition or text, and if she is not able to speak perfectly the voice recognition system can be trained to match the characteristics of the produced audio signal. Output can be given in any modality matching to the capabilities of the user. For example, when Carmen is connected to the shop, all the information stored in tags is translated in a properly encoded format for her to receive. Carmen may choose to see the goods of interest or hear or read (e.g., in Braille) brief descriptions of them, or to have a full presentation of a particular product or store shelf. Carmen's P-workstation enables her to explore and manipulate 3D models and artefacts by means of tactile interaction.

The situation is more complex in a private but not personal space (e.g., the hotel room). Even if the room is adapted to Maria's personality as she enters, i.e., the room temperature, default lighting and a range of video and music choices are displayed on the video wall according to her preferences, the interaction with the room can pose some problems. Maria may have problems with the room itself, if she cannot see or has some cognitive problems. In this case, a description of the room and its facilities may be provided by AmI. If cognitive problems are present, the number and complexity of facilities to be made available can be chosen according to Maria's profile. If necessary, the room can make all choices automatically. Otherwise, suggestions can be offered by relatives or carers. Similar problems can be experienced with the remote control of the room, if Maria cannot see, or she cannot manipulate it or understand its functioning. A first efficient solution to the problem is for Maria to use her P-Com, which obviously can be programmed to mimic any remote control. Alternatively, AmI can describe to Maria the layout and the functionalities of the remote control available in the room, and its functions can be simplified according to her characteristics and preferences

In the Maria's scenario, she gives a business presentation. If she cannot see, she needs to know who is in the room, when she can start her presentation, and how to control the pace of the presentation. The P-Coms communicate and exchange information on who is attending the meeting. She gets a multi-modal confirmation (voice through earphone plus vibrator) that the presentation is ready for display. There is a tactile display in the room or she can use her personal tactile display. In AmI, the wide availability of tactile displays is part of the built-in virtual reality interfaces. Otherwise, the presentation can be controlled using a gesture recognition system. If Maria is not able to hear, but is able to speak, she does not have problems for the presentation. Otherwise she can use a speech synthesizer (see Dimitrios scenario). During the discussion, a speech recognition system is used. She can type answers to be read or synthesised. Alternatively, she can use sign language, translated into voice in real time.

When Dimitrios needs to speak with his wife, he has to move to a displayphone. However, such a displayphone can use all the capabilities of AmI. If Dimitrios cannot see, the

displayphone is able to describe any drawing eventually present on the screen. On the other hand, if Dimitrios cannot hear, it can convert his wife's voice into text. It is obviously able to convert sign language to voice or can be used as a simple text telephone. Correspondingly, the output of a speech recogniser can be translated to lip movements and/or sign languages. If Dimitrios cannot speak and does not know sign language, he can use a (virtual) keyboard and a prediction system. If Dimitrios has cognitive problems, the displayphone can adapt itself to his preferences and mimic the functionalities and interface of a system he is normally using. The complexity of the displayphone (functions, tasks to be carried out to use it, etc.) can be matched to Dimitrios' capabilities. Support is automatically given if necessary.

Interactive simulation and projection facilities are enhanced not only regarding technical performance (for example 3D presentations), but also regarding their capability of adaptation to the needs of the users, both guiding them through the tasks needed for presentation and tailoring performance to the complexity of the required presentation. Nowadays, interactive simulation systems are inherently based on interaction paradigms using direct manipulation of objects and on complex (also three-dimensional) visual presentations. In the AmI environment, the system will have evolved to be multimedia and multimodal. For example, a possible solution for a person who cannot see could be the evolution toward a virtual reality system based on sound and tactile interactions (tactile exploration of virtual objects both for input and output of data).

When Maria arrives in the airport of a far away country, she is relieved of the fact that she can travel with hand baggage only, because everything she needs for interacting with the information and communication environment is the P-Com. She does not need any computer or terminal. Computing power is available everywhere, along with suitable peripherals for interacting with it. Even if not all the people going around need complex systems as the ones necessary to Maria, any simplification in the type and complexity of necessary devices can be particularly useful for many user groups (for example, people with spastic cerebral palsy and people moving in a wheelchair). However, some people may prefer a personal and personalised system. For example, if Maria cannot see, her P-com can be equipped with a specialised interface (e.g., a foldable tactile interface). Even if tactile presentations are in principle available for all users, she prefers to carry her own device so as to avoid potential problems during her trip. When necessary, the P-com can communicate with sophisticated peripherals (e.g., a tactile 3-D system) available in the environment. When navigating in the airport, if Maria cannot see or has fixation problems, information is conveyed using the speech channel of the P-Com, whereas, if she cannot hear, information is presented through text or maps (for example, on a visual display embedded in her spectacles). If Maria has cognitive problems, the single tasks to be performed can be conveyed though her preferred modality and explained in details. If necessary, she can be put under control of a relative or a service centre to follow her way through the airport and help and reassure her if she has difficulties.

6. Design for All in the context of AmI

It is commonly accepted [European Council, 2000; i2010] that the emerging information society will have to be universally accessible to all citizens. These include people who have functional, sensorial or cognitive limitations due to disabilities or age. Moreover, explicit reference is made to the need of developing the new society using a Design for All (DfA) approach. Within the context of Universal Access, Design for All refers to the design of interactive products, services and applications that are suitable for most of their potential

users without the need for any modification [Stephanidis, 1998], [Stephanidis, 1999], [Stephanidis, 2001].

This change of paradigm, as compared with the Assistive Technology approach, which is based on the adaptation of systems and services produced for the general market, is often criticized on the basis of various arguments. In particular, there is a line of argumentation raising the concern that "many ideas that are supposed to be good for everybody aren't good for anybody" [Lewis& Rieman, 1994 - Section 2.1, Paragraph 3]. However, Design for All in the context of Information Society Technologies is not to be conceived as an effort to advance a single solution for everybody, but as a user centred approach to providing products that can automatically address the possible range of human abilities, skills, requirements and preferences. Consequently, the outcome of the design process is not intended to be a "singular" design, but a design space populated with appropriate alternatives (intelligent adaptation and personalisation) [Emiliani & Stephanidis, 2005].

The point made in this paper is that the two approaches can be considered as complementary and converging towards the creation of a more accessible information society, with the overall objective of producing barrier-free technologies. Complementarity and convergence are intended both at a specific and at a general level. At a specific level, individual characteristics of users are so varied that it will be very difficult, if not impossible, to actually integrate the requirements of all individuals within the specifications of new products and services, and therefore Assistive Technologies are necessary for specific cases. At a general level the lessons learned in Assistive Technology will be fundamental in shaping the new environment.

The emerging situation can thus be addressed through an evolutionary approach. In the shorter term, the development of ambient intelligence can be supported by a technology which enhances the possibilities offered by Assistive Technology, merging in the medium term into systems and services and, in the long term, into an intelligent environment, which has the potential of being usable by most users if their needs are taken into account proactively during the design phase. Through such an evolutionary approach, Design for All emerges not as an abstract methodology, but as a necessary and efficient approach for maximising the potential advantages of introducing new technologies, and for minimising inherent risks of the increasing exclusion and segregation of specific groups of people.

7. Emerging challenges

In reading the previous sections, one could be led to conclude that the information society offers a panacea for the problems of people with disabilities. However, before arriving at such a conclusion, some challenges need to be addressed. The first challenge is related to the intelligence that is considered as an integral part of the emerging environment. Considering the current state of the art in Artificial Intelligence, it is clear that significant improvements are needed in order to realize the environment foreseen in the ISTAG scenarios. For example, even if speech recognition and speech synthesis are improving, the introduction of intonation in synthetic speech, the recognition of speech outside specialist domains, and the translation between different languages require fundamental improvements in the semantic interpretation of messages. The same is true for those aspects of the intelligent environment that are related to people's emotions or difficulties in executing tasks.

Second, it must be considered that, for example, having speech synthesis or transitory Braille displays as a standard feature of the environment does not automatically mean that all information will be available to people who cannot see, because this will depend on how the information is stored and structured. Since it is clearly impossible to adapt all the databases in the network, it will be necessary to use a DfA approach (e.g., the WAI guidelines) to represent information in a form that is amenable to a "transduction" using text (speech or Braille).

This applies to the development of all the technologies foreseen in the scenarios, which must have embedded all the characteristics necessary for the integration of all potential users. Gesture recognition is considered as a very important technology, but additional research efforts are necessary in order to be able to extract information from a spastic movement. Speech recognition can be very important for interfacing with the environment for people who cannot use a keyboard or a pointing device, but the training system must be robust enough to accept not only "standard" voices, but, for example, voices of people with cerebral palsy. Translation between different languages has the potential of eliminating the barrier among different countries, languages and cultures, but, obviously, the level of integration will depend on the languages that are considered. For example, different sign languages and symbolic languages (such as Bliss) will need to be part of the set of considered languages.

Many other aspects of the development of an intelligent environment must be discussed as to their impact on the population at large and on people with disabilities in particular. First of all, it is necessary to investigate how human functions will be engaged in the emerging forms of interaction and how this interaction will affect individual perceptive and cognitive spaces. The emerging environment will be very complex and stimulating, from both a sensorial and cognitive perspective. It is not clear whether people will be able to cope with the hyper-stimulation and the corresponding cognitive load. This is particularly true for people with reduced abilities, and principally for people with cognitive limitations. The environment must be developed in such a way that the capabilities of people are taken into account, for example, in order to balance the distribution of tasks between the user and the intelligent environment itself.

This introduces another very important aspect. The acceptance of the new environment by the citizens will also depend on their trust in it and, therefore, on their level of acceptance of delegation. This may be a particularly sensitive point for people with disabilities, who might need to delegate more than other users and have additional problems in conceptualising the situation. Therefore, the environment must both incorporate all the adaptation and personalisation facilities needed by all the groups of potential users, as well as provide to users the possibility to really understand the facilities available and the implications of delegating certain tasks to the intelligent environment.

Impact on emotion, vigilance, information processing and memory must be considered with particular attention when people with disabilities are involved. It is necessary to avoid forms of interaction that may lead to negative consequences such as confusion, cognitive overload, and frustration. This, for example, requires a distribution of input/output facilities in the environment that is continuous, in order not to create frustration or confusion, flexible, so as to adapt itself to the different contexts of use, and coherent throughout the environment. This is a particularly important characteristic, because the fact that the interaction maintains an internal coherence in every situation will obviously facilitate interaction and favour

acceptance. It is essential that the requirements of users with disabilities are taken into account, because the optimisation of information transfer is more critical for them.

Another challenge involves privacy. The possibility of adapting the environment to different types of users requires the availability of information about them. In the case of people with disabilities, this information may be very sensitive. It is therefore very important that users can trust the privacy guaranteed by the system.

Lastly, security is another very import aspect. The AmI environment, including also the support infrastructure, is a complex system. It has recently been demonstrated that complex systems are prone to collapse. This has particularly importance for people with disabilities, who will rely more heavily on the available facilities. Therefore, backup strategies, redundancy and error checking facilities will have to be available in the system and must be understandable by users.

8. Conclusions

From the preliminary analysis of the possible impact of the development of the Information Society as an Ambient Intelligence environments, it seems that if the new technology is developed and deployed taking on board the needs, requirements and preferences of all potential users, i.e., all the citizens of the emerging Information Society, and if ethical problems are taken into account, the emerging situation could be an opportunity for favouring socio-economic integration.

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Standardisation Of Assistive Devices And Design For All Solutions

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Abstract

Developments of assistive devices have been going on for a long time, an evolution driven by the availability of low cost hard- and software. Despite this, these *ad hoc* developments will never gain a large market share. This led many years ago to the concepts of Design for All or Universal design: mainstream products built so that they are usable for persons with impairments too, and this without adaptations. Because design for ALL understandably is hard to achieve, some prefer calling it Design for the most.
One of the major roadblocks to DfA concepts is the fact that the commercial impact of designing for all is not well understood within industry which created a lot of "wait and see" reactions.

More and more legislative actions are put in place requiring public bodies and companies to make sure that their products and services are accessible and usable not only by "standard" users but also by others such as elderly persons or people with a functional impairment.

For their technical part, these legislative texts do have to refer to international standards. We sketch briefly the formal, the *ad hoc*, the company driven and the informal activities in the standardisation field.

1   Standardisation: general overview

In very general terms, producing a "standard" (*fr*: norme, standard; *de*: Norme; *es*: norma) is a voluntary action set up, almost uniquely, by commercial partners who believe that the standardisation will permit easier exchanges of products and goods. This implied very often that acceptance of the standards is also voluntary and triggered by expected commercial benefits.
On the other hand, laws in many countries are referring more and more to the required acceptance of several standards (e.g. on safety or on ecological aspects). The net result of this need for standards is that nowadays many standardisation initiatives are stimulated (= subsidised) by public bodies or, in Europe, directly and indirectly by the European Commission. Also many guidelines have been created by stakeholder groups.

1.1   Formal standards

Probably the best known examples of standards are the ISO standards (ISO = International Organization for Standardization). These are very formal documents created by an accepted international body after consultation with many national standardisation organisations and a rigorously established voting procedure. The immediate consequence is that producing these standards (and even updating them) takes a very long time.

In Europe, standardisation work has been delegated since many years to the official standardisation groups (CEN, CENELEC and ETSI). Each of them has its own domain to cater for. Their international counterparts are respectively ISO, IEC and ITU-T.

Fig. 1: The ESOs, the European Standardisation Organisations

European Committee for Standardisation

European Committee for Electrotechnical Standardisation

European Telecommunication Standards Institute

A few of these have agreements with ISO and ITU-T (International Telecommunication Union- Telecommunication Standardization Sector) so that some of their work can be shared and so that some standards are just taken over from each other.

More national and international standardization bodies are mentioned in sections 2.2 and 2.3.

1.2   Standardisation related work ("informal standardisation work")

Over the last years several of these standardisation bodies have set up standardisation-related initiatives that are easier to manage and can produce outcomes much faster. They all have special designations so that they cannot be confused with the "real" standards. E.g. ISO has developed a new range of "deliverables", or different categories of specifications, allowing publication at an intermediate stage of development before full consensus.

Some of these standardisation related activities are given in the following table:

Name	Website	Names of related activities
ISO	http://www.iso.ch/	• Publicly Available Specification (PAS) • Technical Specification (TS) • Technical Report (TR) • International Workshop Agreement (IWA).
ITU-T	http://www.itu.int/ITU-T/	• Recommendations
CEN	http://www.cenorm.org/	• CEN Workshop Agreement (CWA)
ETSI	http://www.etsi.org/	• Specialist Task Forces (STF)
CENELEC	http://www.cenelec.org/	• CENELEC Workshop Agreement (CWA) • CENELEC Guides
CEN/CENELEC		• CEN/CENELEC Guides

Examples of this type of activities in relation to DfA and eAccessibility are given below.

1.3 Ad hoc and industry standards, conflicting standardisation procedures

Quite often some companies are able to put forward one of their developments as a standard to which others have to adhere in order to build, e.g., third party products. Well known are the technical specifications of Microsoft products and a few others.

Equally often industry groupings are working out guidelines or recommendations for standardisation of matters important to their community. Widely known examples are Open E-book, IETF, Daisy, ECMA, WAP, Bluetooth etc. Strictly spoken also the IEEE standards (e.g. on WiFi) fall in this category.

Sometimes groups interested in standardisation address formal standardisation bodies, sometimes they prefer passing through industry related bodies.

2 New developments in DfA related standardisation (formal standards)

As DfA standardisation was explicitly mentioned in the eEurope2002 plan, several new actions were established over the last years in the European context (Engelen, 2003). In my opinion four major recent changes can be distinguished: the set up of coordinating working groups and organisations; the democratisation of the standardisation processes themselves; the increasing impact of non-formal standardisation bodies and the establishment of standardisation related discussion fora open for non-specialists. Each of those aspects will be briefly explained in the remainder of this contribution.

2.1 European initiatives

2.1.1 Initial steps
In the middle of the nineties when ICT systems started booming, ETSI, one of the three European standardisation organisations organised, in collaboration with the Danish Centre for Technical Aids and the European Commission the 1996 "European Policy Workshop ICT Standardization and Disability in Europe". The three major outcomes (Brandt, 1996) retain their importance, even nowadays, although the third one (legislation) has since been taken on board in several EU countries:

- Industry is not sufficiently aware of the market potential for accessible products
- Standardisation processes should take into account the requirements of people with disabilities and these users should be more involved in standardisation work
- Need for legislation

2.1.2 Coordination initiatives
2.1.2.1 ICTSB

The ICT Standards Board (ICTSB)[1] is an initiative from the three recognised European standards organisations with the participation of specification providers as partners to co-ordinate standardisation activities in the field of Information and Communications Technologies (ICT).

The ICTSB listens to requirements for standards and specifications that are based on concrete market needs and expressed by any competent source. The Board then considers what standards or specifications need to be created, and how the task will be carried out (and by whom).

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[1] Link: http://www.ictsb.org/ and http://www.ict.etsi.org/

2.1.2.2 DATSCG

The "Design for All and Assistive Technology Standardisation Co-ordination group[2]" was created within ICTSB as a direct response to the eEurope2002 plan.

It has the following objectives:

- To ensure co-ordination of the ICT related standardisation work in the DfA and AT fields;
- To act as an overall focal point on design-for-all and assistive technology standardisation;
- To assist in organising promotional activities on design for all and assistive technologies standardisation requirements in ICT;
- To promote the knowledge and awareness of existing guidelines and tools by the market-players.

Although membership is on invitation, DATSCG tries to involve as many organisations as possible in their activities, including organisations of, or for, persons with a disability. Especially the contribution of the European Disability Forum (EDF)[3], as representative of the final users is very important. Another important player is ANEC representing the standardisation needs of all customers and users. Also the Association for the Advancement of Assistive Technology in Europe (AAATE)[4] has an observer status to the DATSCG.

DATSCG has proven to be an important channel for information exchange on standardisation issues as it groups the main players in this field.

2.1.2.3 eAccessibility expert group

Mainly as a consequence of the eEurope actions for the promotion of ICT use in Europe, the European Commission created several working groups to keep an eye on the actions promised by the different EU countries and by the Commission itself.

With respect to standardisation the ESDIS-eAccessibility group produced an overview document[5] by the end of 2002 (Engelen, 2003b).

2.1.2.4 COPRAS

COPRAS (Cooperation Platform for Research and Standards)[6] was a support action project in the EU's 6th Framework Programme, aiming to improve the interfacing, cooperation and exchange between IST (Information Society Technologies) research projects and ICT standardization. It was initiated by several European standards organisations in cooperation with the ICTSB, the coordinating forum for ICT standardization in Europe.

As one of its deliverables, COPRAS has developed a set of Generic Guidelines facilitating interfacing between research projects and ICT standards organisations[7]. Its ultimate goal was to bring IST research and standardisation closer together and to provide research projects as well as other stakeholders in government, industry, and society with a platform facilitating exchange between research and standardisation, and furthering Europe's leading position in ICT development.

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[2]   Link: http://www.ictsb.org/DATSCG_home.htm and http://www.ict.etsi.org/DATSCG_home.htm
[3]   Link: http://www.edf-feph.org/en/welcome.htm
[4]   Link: http://www.aaate.net or http://139.91.151.134/
[5]   Available at:
      http://europa.eu.int/information_society/policy/accessibility/dfa/standards/a_documents/eaccess2002_dfa_std_review_report.html
[6]   Link: http://www.w3.org/2004/copras/
[7]   Link: http://www.w3.org/2004/copras/docu/faq/Overview.html

2.1.3 Standardisation efforts through workshops and other collaborative schemes

As stated before (in 1.2) a democratisation process is taking place in the standardisation arena. Besides formally established committees for creating the "real" standards, all standardising bodies now have working groups and task forces where all interested people are welcome, minimally as observers but often as contributors too.

2.1.3.1 CEN Workshop agreements in the DfA field

Examples are the establishment of a CEN Workshop on "Design for all in ICT", CWA14661 "Guidelines to Standardisers of ICT products and services in the CEN ICT domain[8]" and, more recently, the creation of the CEN Workshops on website certification, in full "Specifications for a complete European certification scheme concerning the delivery of a Quality Mark for Web Content Accessibility - WS/WAC[9]" and the Workshop on "Document Processing for Accessibility" (CWA-DPA).

2.1.3.2 ETSI STF's

Specialist task forces are a typical working method for ETSI. An STF is a team of highly-skilled experts working together over a pre-defined period to draft an ETSI standard under the technical guidance of an ETSI Technical Body and with the support of the ETSI Secretariat[10].

Fig. 2: How STF's relate to ETSI's "normal standardisation" work
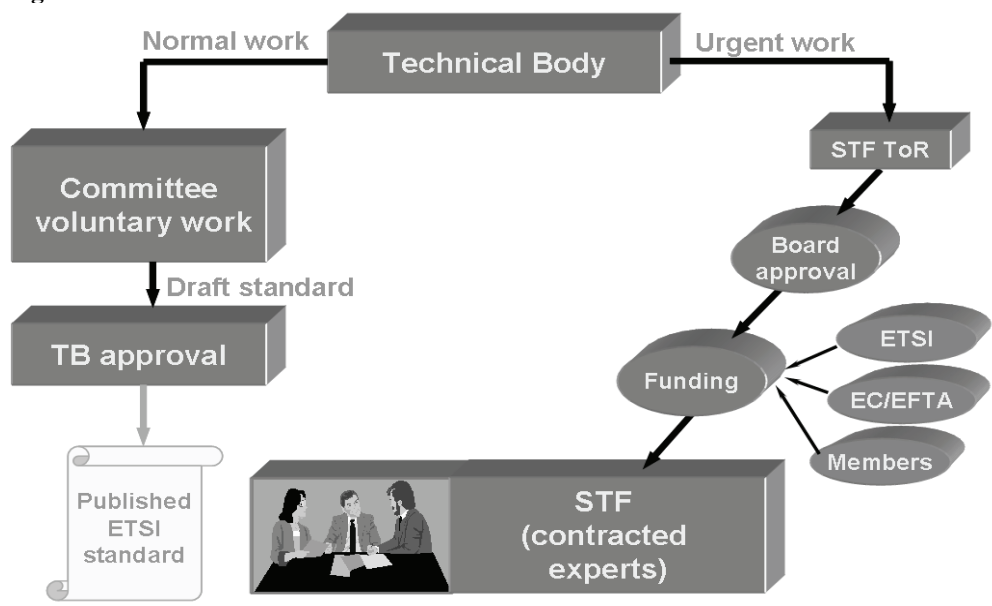
Some of the AT and DfA-related STF's have been focussing[11] on:
- Requirements of Assistive Technology Devices in ICT (STF 181)
- Study on the multimodality of icons, symbols and pictograms (STF 183)

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8   Link: http://www.tiresias.org/guidelines/cenisss/
9   Links: http://www.cenorm.be/cenorm/businessdomains/businessdomains/isss/activity/ws-wac.asp and
        http://www.support-eam.org
10   Link: http://portal.etsi.org/stfs/process/home.asp
11   More info about these STF's can be found by using following link:
        http://portal.etsi.org/stfs/STF_HomePages/STFxxx/STFxxx.asp after replacement of "xxx" by the
        appropriate number

- Design for All: Guidelines for ICT Products and Services (STF 184)
- Duplex Universal Speech and Text (DUST) communication [e-Inclusion] (STF 267)
- Human related technical guidelines for real-time person-to-person communication services (STF 284)
- Access symbols for use with video content and ICT devices (STF 286)
- User-oriented handling of multicultural issues in broadband and narrowband multimedia telecommunications (STF 287)
- Display of public transportation information for disabled people (planned)

2.1.3.3 COST219ter

The main objective of this collaborative European Action (but with members from the US, Australia and Japan) is to increase the accessibility of next generation telecommunication network services and equipments to elderly people and people with disabilities by design or, alternatively, by adaptation when required[12]. Several major actions towards standardisation have been undertaken over the past years.

COST219ter members have been collaborating with the ITU-T work on "Total Conversation; Increased usability of conversational services in mobile and fixed networks" (convener: Gunnar Hellstrom, cf. 2.3.2)[13].

On March 8, 2005, COST 219ter organised in Florence a specialised workshop on "eAccessibility Legislation and Policy: The role of standardisation". Specialists of W3C, ISO, ETSI, ITU-T, the D4ALL.net project, EDeAN and TEDICORE (Australia) have presented the ongoing work within their organisations or countries[14].

Within the COST219ter action a special working group was set up to harmonise testing for accessibility. Especially the usability and accessibility of mobile telephones was worked out thoroughly, was tested internationally and is available as a toolset (Chandler, 2007). In 2007 COST219ter and the European Disability Forum are planning to file this work to ETSI in order to make it a formal standard.

2.1.4 Public discussions

One of the unique and recent developments in the standardisation field, especially in relation to design for all, is the potentially large involvement of specialists, users and user representatives in the discussions.

2.1.4.1 EDeAN Standardisation SIG

The European Design for All Network (EDeAN) was established in 2002 as a response to the European eEurope programme for stimulation of IST use. One of the action lines was the "creation of a network of major expert centres in Design for All". Another was the "Publication of Design for All standards for accessibility of information technology products, in particular to improve the employability and social inclusion of people with special needs" (already mentioned in 2.1.2.3. Although initial discussions on the latter topic also took place in the eAccessibility working group a more open approach was established through the creation of a public discussion forum.

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[12]   Link: http://www.cost219.org
[13]   Link: http://www.tiresias.org/cost219ter/florence/hellstrom.htm
[14]   Link: http://www.tiresias.org/cost219ter/florence/index.htm

Members of the EDeAN network are exchanging information within so-called Special Interest groups. One of the discussion lines (to date there are 5 topic based ones and one for management use) is on ***Standardisation***.

The SIG Standardisation group has slightly over 100 members. Most of them come from Europe (but new EU member states are underrepresented), a few from the USA, Australia and Hong Kong. Also several observers of the European Commission are taking part in the discussions.

The Hermes platform has been shown to be a unique means of bringing information on ongoing standardisation activities directly to persons, interested by this subject but not member of formally established standardisation task forces or working groups.

2.1.4.2 USEM project

This is an EU framework 6 Specific Support Action set up to empower users from disability related organisations so that they can take part in standardisation work. Especially in DfA standardisation, the presence and involvement of users is very much welcomed but almost non-existent. Despite the fact that often special funding is made available for participation, users used to feel uncomfortable in this type of work. This is what USEM (started in the beginning of 2007) will try to change.The USEM project is coordinated by the Dutch iRv-organisation[15].

2.2 Some national initiatives

2.2.1 USA

In the USA, due to its large concentration of huge software enterprises, several official and de facto organisations are active. In a recent contribution[16], Gregg Vanderheiden, director of the Trace R&D Center at the University of Wisconsin-Madison, enumerated over 40 of these standardisation groups. Also the number of guidelines is rapidly growing (cf. below).

RERC work on Access Guidelines

- Guidelines for Consumer Products (1992)
- IBM Accessibility Guidelines (1993)
- Software Accessibility Guidelines for ITF (1994)
- First Web Guidelines (HTML) (1995)
- Microsoft Accessibility Guidelines (1999)
- TAAC work
  - □ complied over 1000 guidelines for TAAC Committee
- On-Line Design Tool - 255
- EITAAC work – and support
- Universal Design Principles
- Accessibility Essentials – Design tool 2
  - □ User Requirements
- WCAG (W3C Web Content Accessibility Guidelines)

In the US several legislative actions have been undertaken, and as could be expected, they often do not refer to official formal standards (as there are still very few) but to guidelines made to specify the details of the laws.

Two of them are very famous
- American with Disabilities Act (ADA)

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[15]   Link: http://www.irv.nl

[16]   Gregg Vanderheiden, "New, More Robust Models for Access to Mainstream Technologies", presented at COST219ter conference "Extending Horizons: Accessibility to Next Generation Networks Conference", London, BTCentre, January 2007

- Federal Rehabilitation Act (Section 508)

Although the laws themselves fall outside of the scope of this contribution, especially Section 508 work is highly important for standardisation[17].

Outside observers (e.g. from the European Union) were welcomed to participate in the 2007 revision of the 508 Guidelines.

2.2.2   UK

In 1995 the Disability Discrimination Act (DDA) was passed to introduce new measures aimed at ending the discrimination which many disabled people face. It protects disabled people in the areas of:
- employment
- access to goods, facilities and services
- the management, buying or renting of land or property
- education

The Act is based on the principle that disabled people should not be discriminated against by service providers or those involved in the disposal or management of premises.

Although the use of standards is stressed no specific guidelines are given[18].

2.2.3   Italy

In Italy the law imposing accessibility measures to ICT systems was accepted in 2004 under the name "Stanca act" (after its main promoter, the minister of for Innovation and Technologies). It refers extensively to ISO standardisation work. The Law aims at drawing up set of rules governing the criteria and requirements for guaranteeing accessibility. The guidelines intend to regulate both the operational and the organisational issues related to accessibility, as well as introducing the Usability Principle, defined in a similar way as ISO 9126-1 and ISO 9241-11 rules.

2.2.4   Japan

Article 13-2 of the Industrial Standardisation Law of Japan states that relevant ministers must enact any drafts proposed by JISC (Japanese Industrial Standards Committee) as industrial standards.

ICT accessibility is being promoted through the Accessible Design Forum. This forum ensures that committee members are aware of ageing and disability issues, that users themselves are represented (and trained if necessary). Their activities are heavily based on ISO/IEC Guide 71 (JIS Z8071).
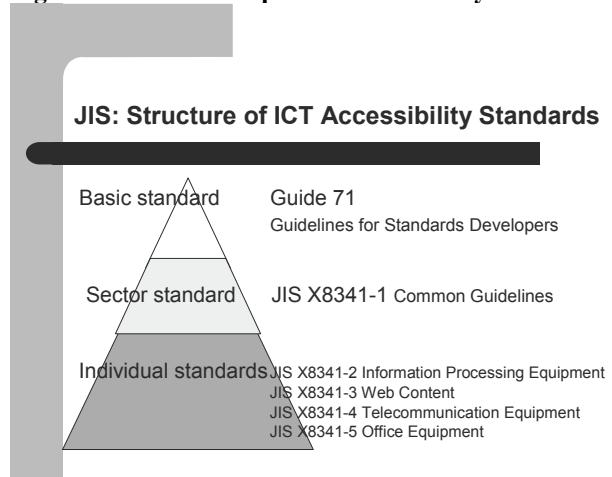
The development of the actual accessibility standards is done trough a hierarchical approach (cf. picture). JISX8341-1 contains the overall framework and the common guidelines. Standards JISX8341-2 and higher then specify the accessibility requirements for the different application domains.

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[17]   Link: http://www.section508.gov/
[18]   Link: http://www.tiresias.org/reports/dda.htm

Fig. 3: Structure of Japanese Accessibility Standards

JIS: Structure of ICT Accessibility Standards

Basic standard — Guide 71
Guidelines for Standards Developers

Sector standard — JIS X8341-1 Common Guidelines

Individual standards — JIS X8341-2 Information Processing Equipment
JIS X8341-3 Web Content
JIS X8341-4 Telecommunication Equipment
JIS X8341-5 Office Equipment

2.3 International initiatives

2.3.1 ISO

ISO (International Organization for Standardization) is the world's largest developer of standards. Although ISO's principal activity is the development of technical standards, ISO standards also have important economic and social repercussions. ISO standards make a positive difference, not just to engineers and manufacturers for whom they solve basic problems in production and distribution, but to society as a whole. ISO has been very active, amidst a huge range of other topics, in computer usability and accessibility.

A few examples of their recent standardisation work related to e-accessibility are:

- ISO DIS 9241-20 "Ergonomics of human-system interaction - Part 20; Accessibility guidelines for information/communication technology (ICT) equipment and services"

- ISO TS 16071 " Ergonomics of human-system interaction -- Guidance on accessibility for human-computer interfaces"

Other important ISO standardisation work is referenced in the documents of JTC1-SWGA (cf. below)

Establishment of a Special Working Group on Accessibility.
One of the major ISO initiatives in this field is the creation (2004) of a Special Working Group (SWG) on Accessibility within the existing Joint Technical Committee 1.
- JTC 1 believes that the work in the area of information communication and technology standardization for accessibility is a major undertaking, encompassing many international, regional and local interests.
In order to reach these goals the JTC1-SWGA membership is kept very much open to all individuals and organisations involved in related activities. Also ALL documents are made public on the SWG's website[19].

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[19] Link: http://www.jtc1access.org/

2.3.2   *ITU*

ITU, headquartered in Geneva, Switzerland is an international organization within the United Nations System where governments and the private sector coordinate global telecom networks and services. Telecom Standardisation falls under subgroup ITU-T. Within ITU-T, Study Group 16 (ITU-T-SG16) is responsible for studies relating to multimedia service capabilities, and application capabilities (including those supported for Next Generation Networks).

Study Group 16 has established a subgroup on "Accessibility and Standardisation"[20].

This group has published an ACCESSIBILITY CHECKLIST[21] for the makers of standards to ensure that they are taking into account the needs of those to whom accessibility to ICTs are restricted, the deaf or hard-of-hearing for example. Such a list ensures that accessibility needs are taken into account at an early stage, rather than having to retrofit existing standards.

Another important issue for SG 16 is Total Conversation. Total Conversation is an ITU Service description found in ITU T Rec. F.703 and covers videophony with real-time text. A Total Conversation Service is an audiovisual conversation service providing bidirectional symmetric real-time transfer of motion video, text and voice between users in two or more locations. The concept is aimed at providing rich media real-time conversation for all people and for varying situations. This includes, but is not limited to, people that are disabled in some way, e.g. the deaf or hard-of-hearing, blind, etc., but also people who find themselves in a situation where the complementing media – video and real-time text – together with voice fulfil the conversation needs much better than only voice.

2.4   Guidelines, task force reports, working groups (informal or de facto standards)

2.4.1   *W3C Guidelines*

In relation to Design for All or Universal Design, there is one very well known example: the World Wide Web consortium and especially the **Web Access Initiative**[22] that produced several guidelines on web accessibility.

Although almost universally accepted as the primary reference point for web accessibility matters, many countries establishing legislative actions for imposing web accessibility, were not able to refer to the WAI guidelines as the W3C cannot be considered a standardisation body in the proper sense of the word. Unfortunately, this has already led to several national variants of web accessibility guidelines.

2.4.2   *ICF: International Classification of Functioning, Disability and Health*

As a new member of WHO Family of International Classifications, ICF[23] describes how people live with their health condition. ICF is a classification of health and health related domains that describe body functions and structures, activities and participation. The domains are classified from body, individual and societal perspectives. Since an individual's functioning and disability occurs in a context, ICF also includes a list of environmental factors.

ICF is useful to understand and measure health outcomes. Strictly spoken ICF is not a standard but it is frequently used by funding organisations to quantify problems caused by impairments.

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20   Link: http://www.itu.int/ITU-T/studygroups/com16/accessibility/
21   Link: http://www.itu.int/ITU-T/studygroups/com16/accessibility/docs/tacl.pdf
22   Link: http://www.w3.org/WAI/
23   Link: http://www.who.int/classifications/icf/en/

3   Activities bypassing formal standardisation

It has been mentioned several times that legislative processes in most countries have a strict need for referral to formal national or international standards. Especially in the domain of e-accessibility these standards tend to be non-formal such as workshop agreements, technical specifications, guidelines instead of formal standards etc.
This has lead to several alternative approaches.

3.1   National laws with own guidelines
In January 2005 a very important European colloquium was held in Paris on "Policies and Legislations in favour of e-accessibility in Europe". Delegates from many countries have explained their national situation. The simple conclusion of the workshop is that almost no harmonisation seems to exist (yet). The details can be found in the colloquium's archives[24].

3.2   Procurement rules as an alternative to standardisation
As stated above the European Union faces a serious problem about supranational legislation: it is almost impossible to achieve in the accessibility domain.
On the other hand long term experience in the US shows that the buying power of governments and authorities can be used to impose accessibility requirements. The principle is quite simple: authorities add, in their calls for tender, special clauses on accessibility features that the products or services they want to buy, will have to meet. This forces manufacturers to pay attention to the accessibility of the equipment they develop and sell.
As a consequence many, also in Europe, see procurement strategies as a way to improve the accessibility of goods and services too.

Mandate 376
The 2005 EC Communication on Accessibility[25] stressed again that Public Procurements in the ICT domain are an important lever for the deployment of eAccessibility as they have the potential to play a vital role in removing barriers to participation in the Information Society by disabled or older people.

By the end of 2005 a mandate (called Mandate 376) has been given by the European Commission to the European Standardisation Organisations (ESOs) to come up with a solution for common requirements and conformance assessment.

The mandate[26] requests both Inventory work (phase I) and real standardisation activities based on phase I conclusions (phase II). The start of this Mandate's work was plagued with several problems. As a consequence the work has not started (yet) in April 2007.

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[24]   Link: http://www.braillenet.org/colloques/policies/program.html
[25]   In full: The Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee, and the Committee of Regions, regarding eAccessibility (adopted on 13 September 2005).
Link: http://europa.eu.int/information_society/policy/accessibility/policy/com-ea-2005/a_documents/cec_com_eacc_2005.html
[26]   Link: http://europa.eu.int/information_society/policy/accessibility/deploy/pubproc/eso-m376/a_documents/m376%20en.pdf

4 Conclusions

In this contribution we have tried to avoid enumerating the many details on DfA and AT standardisation actions. We have focussed on the very important changes that take place in the standardisation field (e.g. the informal work, more open discussions) and especially on the impact of these changes for improving the situation in de field of Design for All and Assistive Technology.

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http://www.etsi.com/cce/proceedings/6_1.htm

Experts Of Two Cost Actions Evaluate Obstacles That Prevent Disability Communities And The Wider Public From Exploiting Broadband Technologies: A Comparative Study

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Abstract

We have applied the Structured Design Process (SDP), to identify obstacles, which prevent stakeholders within the disability communities and within the wider public from exploiting broadband technologies. During two co-laboratories, one with the Cost219ter community and one with the Cost298 community, we identified obstacles that prevent us from producing practical applications, and obstacles that prevent the wider exploitation of broadband by the public at large, respectively. The results are critically compared in the context of Europe's interest to see broadband being exploited in the service of its people. In the case of the Cost219ter community, the major root-cause was "The difficulty of the 'handicap' community to agree on and to define what accessible products are," while for the Cost298 community the root causes included "Inadequate public awareness" and "User friendliness." Detailed analysis of the maps revealed a number of interesting aspects such as: (a) The high cost of the service was *not* a root cause; (b) Issues related to design and user friendliness appear deeper in the root-cause maps; (c) Fear-related issues appear deeper for the wider public than for the disabilities community (highlighting their stronger will to exploit technologies).

Keywords: Broadband; interactive management; structured design process; dialogue; social system design; agora; stakeholders

Introduction

It is generally accepted that both the technological environment and the wider society are evolving through a process of mutual interaction. The exponential evolution of technology brings with it magnificent opportunities for people in general, but especially for people with special needs. In a world in which the elderly, and thus the people with special needs, are also increasing in numbers, the role of broadband technologies in particular increases. Vast investments are being made towards the development of broadband technologies, with certain aims and strategies, and based on some set of assumptions about the future. In fact, all such future-oriented actions are based on some kind of a vision about the future, whether it is explicitly articulated or not. The Cost219ter community has been extrapolating the effects of the ISTAG scenarios on people with special needs. Broadband has a lot to offer, yet, stakeholders don't seem to take full advantage of its potentials. On the other hand, the Cost298 community focuses its activities on taking into account users as innovators and e-actors, thus emphasizing their assumption that the users are currently not engaged in the designs that they will be using. In both European Actions, the experts consider that broadband technologies are not exploited enough. Moreover, they are concerned that if certain obstacles are not overcome, they will not be exploited sufficiently also in the near future.

During recent Cost219ter and Cost298 management meetings, we organized several co-laboratories to identify and "structure" in the form of an influence map obstacles that prevent the stakeholders from exploiting broadband technologies in ways they desire. In both cases the process was initiated using triggering questions. For Cost219ter the triggering question was:

"Considering the availability of powerful broadband technologies and the development of relevant scenarios, what are the obstacles that prevent us from producing practical applications?"

The relative influence of the factors was explored and used to construct a tree of influences. The factors, which exert most influence on others, can be seen as the root-cases. Resolving the root causes will greatly enhance our ability to address other obstacles. Thus, this methodology helps stakeholders focus their efforts where they will have most effect.

The goals of the Cost219ter co-laboratory were:

1. To create a shared understanding among stakeholders regarding the obstacles which prevent the exploitation of broadband technologies.
2. To build commitment within the COST 219ter community to an action agenda for collaboratively addressing the 'system of obstacles'.

Similarly, the experts of the COST 298 network collected and structured all their ideas concerning obstacles. The purpose of the Cost 298 co-laboratory was to identify obstacles, which prevent the wider public from exploiting broadband technologies. The triggering question for the second co-laboratory was:

"What are the obstacles to the wider public benefiting from and participating in the

broadband society?"

The specific objectives set for this co-laboratory were:

3. To create a shared understanding regarding the obstacles that prevent the general public exploit broadband technologies (referred to as the *problematique*).
4. To build commitment within the COST 298 community to an action agenda for collaboratively addressing the 'system of obstacles.

In both cases the co-laboratories were also meant to serve as a model for other European networks working on analogous problems, thus forging a 'chain of interactions' that will embrace the variety of stakeholders to collaborate towards the development and the implementation of an agenda to overcome the system of obstacles.

This paper compares and discusses the results of these co-laboratories.

Method

The Structured Design Process (SDP) methodology was used for both co-laboratories, thus allowing us to compare the results. An SDP co-laboratory is specifically designed to assist inhomogeneous groups of stakeholders to deal with complex issues in a reasonably limited amount of time (Banathy, 1996; Warfield & Cardenas, 1994). It enables the integration of contributions from individuals with diverse views, backgrounds and perspectives through a process that is structured, inclusive and collaborative (for a complete review see Christakis and Bausch, 2006). A group of participants, who are knowledgeable of the situation are engaged in collectively developing a common framework of thinking based on consensus and shared understanding of the current state of affairs. The SDP promotes focused

communication among the participants in the design process and their ownership of and commitment in the outcome. In sum, an SDP co-laboratory provides an excellent opportunity for experts, to not only expand their shared understanding of the current *problematique*, but moreover to develop a roadmap for their future work and achieve a consensus as to how to move forward.

A slight variation of the classic methodology was applied, in close consultation with one of the founders of the process, Dr. Aleco Christakis (for a detailed description of the virtual SDP methodology see Laouris and Christakis, 2007). The authors attempted to exploit virtual communication technologies to reduce the time required to obtain results. This involved the following variations:

The Knowledge Management Team (KMT), comprising of the SDP Facilitations team and selected experts of the respective Cost community, formulated a *triggering question* three weeks before the face-to-face phase of the co-laboratory. The triggering question was sent by email to all participants in order to stimulate their interest and encourage them to begin generating their ideas before the actual co-laboratory. It also served to reduce the time required to explain the methodology at the onset of the workshop. During the following weeks and until the day just before the workshop, participants were allowed to forward their ideas in writing by email sent to the authors.

In the coffee break of the face-to-face part of the co-laboratory, the clustering was done by a smaller group of knowledgeable individuals.

The detailed activities during the phases of the process are exemplified in Fig. 1. In sum, the slight modifications enabled the authors to shorten the process significantly without seriously compromising the quality of the results.

**Fig.1 . Sequence of process for a virtual SDP co-laboratory**
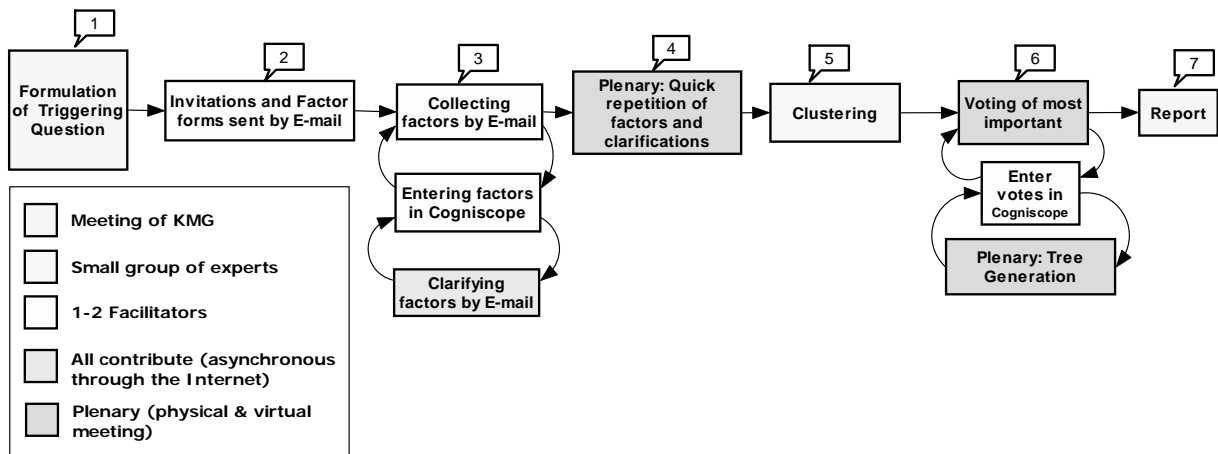
1. The KMT meets virtually to formulate the triggering question.

2. The participants receive the triggering question and the "Factor Electronic Response Worksheet." They are requested to send their responses to the triggering question within a fixed deadline.

3. The local Branch of the KMT meets physically to check and enter all factors received in Cogniscope software of CWA, Ltd. A PDF version of the Factors Table (i.e., Table 1) is sent by E-mail to all participants. The participants are requested to ask questions for clarification of meaning to the authors of the

statements, edit (e.g., re-wording of statements), and return the changes within a fixed deadline.

4. Face-to-face meeting of all participants. Following a quick introduction to all factors already collected (by their respective authors), participants are invited to continue the process and contribute more ideas. In a next round, their authors clarify all ideas. Other participants are encouraged to request clarification (without value statements).

5. During the coffee break, a small number of individuals, who are knowledgeable of the specific topic, are asked to cluster all ideas using common attributes. A Clusters Table (i.e., Table 3) is print and handed to all participants right after the break.

6. The participants are requested to study and choose their favorite factors in terms of relative importance. The votes are entered in Cogniscope software and the participants begin the Structuring Phase of the SDP. The process continues for as long as time is available. In some cases it might be completed. In most cases, it is necessary to have another session to identify additional factors. The Cogniscope Facilitator prints copies of the Map for all participants. At the end of the meeting at least 30 minutes are invested to discuss the map.

7. The KMT prepares a report for the results using the formatted outputs of the Cogniscope, which is sent to all participants for further discussions.

Results

Fig. 2. Influence maps from the two co-laboratories. LEFT: The map of influences developed by the Cost219ter community during their co-laboratory. RIGHT: The map of influences developed by the Cost298 community.
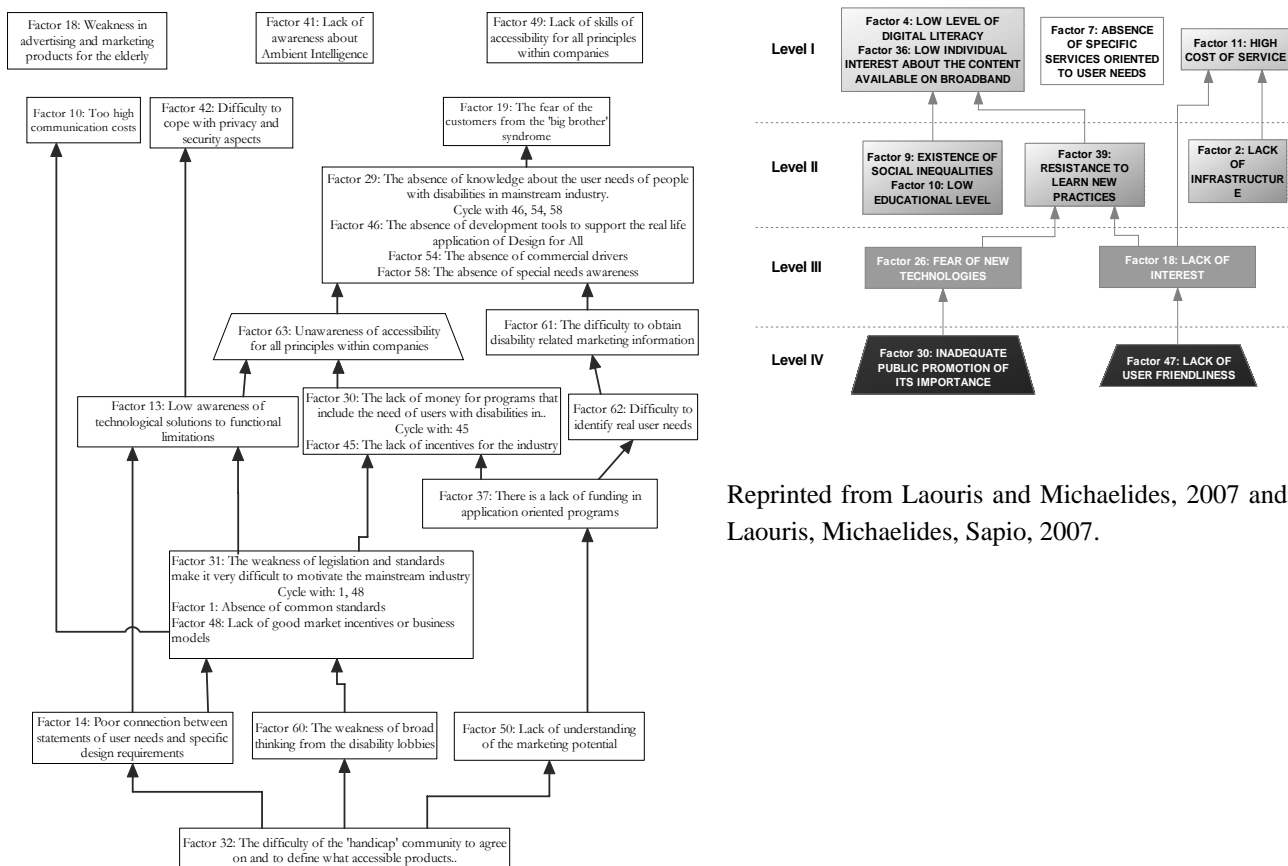
Reprinted from Laouris and Michaelides, 2007 and Laouris, Michaelides, Sapio, 2007.

Fig. 2 (Part A and B) contrasts the results from the two co-laboratories. In the case of the Cost219ter community, the major root-cause was

Factor 32: The difficulty of the 'handicap' community to agree on, and define what accessible products are.

However, the next layer included

Factor 14: Poor connection between statements of user needs and specific design requirements

Factor 50: Lack of understanding of the market potential

Factor 60: The weakness of broad thinking from the disability lobbies

For the Cost298 community the root causes included:

Factor 30: Inadequate public awareness and

Factor 47: User friendliness

Discussion

The above results are compatible with the focus of the two Cost actions and could be considered as expected given that participants are experts in their respective fields. It is interesting that the Cost219ter community produced a more *essostrephic* picture. Their map focuses the attention towards the handicap community itself. In other words, the action that needs to be taken lies with the handicap community itself to define more precisely what accessible products are, so that the industry can have a clear picture. However, if we accept also layer 6 as root causes, then the issue of public awareness (similar to Factor 30 for the Cost298 co-laboratory) becomes important.

Further analysis of the maps reveals additional aspects that were not necessarily expected based on the initial voting:

1. The high cost of the service was *not* a root cause;

2. Issues related to design and user friendliness appear deeper in the root-cause maps;

3. Fear-related issues appear deeper for the wider public than for the disabilities community (highlighting their stronger will to exploit technologies).

These findings are interesting, especially when one looks at the importance voting of the participants. Tables 1 & 2 show the factors that have received the highest votes in each co-laboratory. These are the factors that participants perceive as the most important, before they construct the influence maps of the previous figures. Issues that received high votes did not turn out to be root causes. This finding is very important for designing the strategy and the action of both Cost Actions.

Table 1. Priority votes of Cost219ter co-laboratory

#	Votes	Factor
31	11	The weaknesses of legislation and standards make it very difficult to motivate the mainstream industry
29	10	The absence of knowledge about the user needs of people with disabilities in mainstream industry
30	8	The lack of money for programmes that include the need of users with disabilities in mainstream products
42	8	Difficulty to cope with privacy and security aspects

In the case of Cost219ter, weaknesses in the legislation, luck of money and privacy issues were perceived as high priorities. However, in the corresponding root cause map these factors appeared in layers 3, 5 and 7 respectively. Factor 29 about the absence of knowledge about the user needs of people with disabilities in mainstream industry also appeared very high in the tree, whereas the responsibility for the lack of user needs appeared to be with the disability community itself (see root cause).

Table 2. Priority votes of Cost298 co-laboratory

#	Votes	Factor
4	12	Low level of digital literacy
9	9	Existence of social inequalities [Low income-High costs]
18	9	Lack of interest
7	8	Absence of specific services oriented to user needs
26	7	Fear of new technologies
2	6	Lack of infrastructure
11	6	High cost of service

In an analogous manner low level of digital literacy, social inequalities, fear of new technologies, lack of infrastructure, high cost etc., received high priority votes but ended up not to be root causes.

As a conclusion, one can say that SDDP is very useful instrument to support a community of stakeholders clarify a situation and design an effective action plan which focuses on real root causes rather than on subjective priorities.

Credits

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An Open Book? Personal Information in a Networked World.

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Abstract

As the availability of broadband grows throughout Europe, information and communication technologies (ICTs) are becoming an essential part of everyone's lives. This creates greater opportunities for the development of community, but also poses ethical challenges that need to be addressed, particularly in the area of privacy, security and individual independence.

This paper examines how technological developments such as GPS, mobile technology and PC technology have affected the privacy and personal integrity of the individual as they have developed. It examines what the individual's rights are as currently defined in the European Union, what level of privacy someone has, and how a person's health of mind and body affects their rights as an individual.

This is followed by an examination of the different types of personal information likely to become available through the increased use of GPS, mobile technology, ambient intelligence and smart homes.

The paper concludes with an examination of the factors that may influence what information becomes available, and to whom. A set of ideal circumstances will be suggested for the release or retention of this information, and an analysis done on what factors could cause a deviation from this ideal. Suggestions are offered for addressing privacy issues in the future.

Introduction

This paper focuses upon the ethical and privacy issues that can arise through the increasing use of broadband. Many of the issues faced are common to security concerns; one of the reasons that private data is taken is to steal money from its owner. However, ethics and privacy go further than just security: a person's privacy can be compromised by a government or a company carrying out business on behalf of an individual, and not just by those trying to do someone damage.

There are areas of a persons life that become can become visible to others through the use of technology. Where someone goes every day can be traced through the use of GPS technology, which can reveal their shopping and social habits. How much they spend can be recorded. Other information is also recorded electronically. The retention of this information is not necessarily bad, but the use of this information can have huge implications for an individual's privacy and freedom. For instance, it is sometimes considered necessary for elderly people to be monitored, especially if they suffer for dementia. The question then emerges as to who is given access to this information and in what circumstances.

The idea of ethics can be difficult to define. Part of the reason for this is that what is considered ethical or normal in one country may be frowned upon in another. Similarly, attitudes to privacy differ from country to country. In the context of this paper, the definition of ethics is taken as 'the moral principles governing or influencing conduct' [Compact Oxford English Dictionary, online edition, http://www.askoxford.com/dictionaries/?view=uk].

Technological Developments and Privacy

There are two networks that constantly connect people in their day to day lives (if they are not connected, there's no danger).
- PCs and the internet.
- Mobile phone networks.

As well as this, there are multiple computer systems both private and public that stand alone:
- the ATM machine network for banks,
- a Social Welfare computer network
- Driving license or taxation network

There are also countless other systems used:
- Hospital computer networks
- Utility company computer networks
- Municipal computer networks

As the internet and the mobile phone network has become a tool for day to day living for people, companies and public bodies have been examining ways to deliver their services to their customers, using these networks as a platform. As a result, you can now get bank details over the internet, and in some cases over the mobile phone network. In many countries, you can also pay a number of public service bills over the internet (for example in Ireland you can pay your motor tax).

This trend gives the customer a great deal of new services, and allows for more daily business to be conducted from home. However it also creates a situation where more an individual's information becomes focused in one place. As a result the PC becomes a vulnerability for intrusion on their privacy. Spam emails are part of this intrusion, and in 2006 were claimed by the EU to amount to 50 to 80% of all email traffic (Associate Press, 2006 quoted by USA Today   http://www.usatoday.com/tech/news/internetprivacy/2006-11-27-spam-eu_x.htm?csp=15).

PCs are vulnerable to sacrificing privacy in a number of ways, some legitimate, other illegal. The most common legitimate form of sacrificing privacy is through the use of 'cookies', small files that are saved locally onto a PC to record data about the users interactions on individual web sites. Many of these are for the convenience of users, for instance if you want a password to be saved for the next time you visit a site, a cookie is used. A site can also use cookies to track the purchases made by users. However, if the cookie is set to expire at a date far in the future, the company or website responsible for the cookie can gather information about the end users interaction with their site far into the future.

Users may opt for this voluntarily: many websites require users to create usernames and passwords, and agree to terms and conditions about how the information is used. Under most

European legislation, the end user must give their agreement to information being sent on to third parties, but this is not necessarily the case in all countries.

There are many less legitimate means where someone's privacy is compromised. If a users PC is infected by particular types of virus, a keylogging program can be loaded onto a personal computer. This program records every keystroke the user presses, and sends this information back to the maker of the virus. This is frequently used to obtain credit card details, but it can also be used to gather users password details. Users are sometimes emailed with directions to go to a website purporting to be from a bank or paypal account requesting username and password details.

The other major network used by people as an integral part of their lives is the mobile phone network. This is used mainly for calls and texts, while the ability to browse the internet with your mobile phone is a more recent development. Similarly to the PC, companies are offering their services over the mobile phone network. Some banks allow balances to be requested via mobile phone, while it is becoming possible to pay for things using mobile phone accounts (in Japan this is in place, http://news.bbc.co.uk/2/hi/technology/6400217.stm, and parking meters in Dublin and in parts of England can also be paid for by mobile, http://www.mpark.com/mpark/index.jspx). Unlike intercepting PC network traffic, listening in on conversations and data on GSM mobile phones requires expensive equipment, with encryption between the receiver and the base station, so listening in on GSM calls and texts is less common. One of the other aspects of mobile phones is that it is possible to roughly determine the location of mobile phone users through triangulation with the mobile phone base stations, although it is not as accurate as GPS readings. Each mobile phone network is owned by a single company, so a users information is in possession of a single party. One further different is that every contact with a mobile phone user costs money, which means that 'spamming' is a more expensive business.
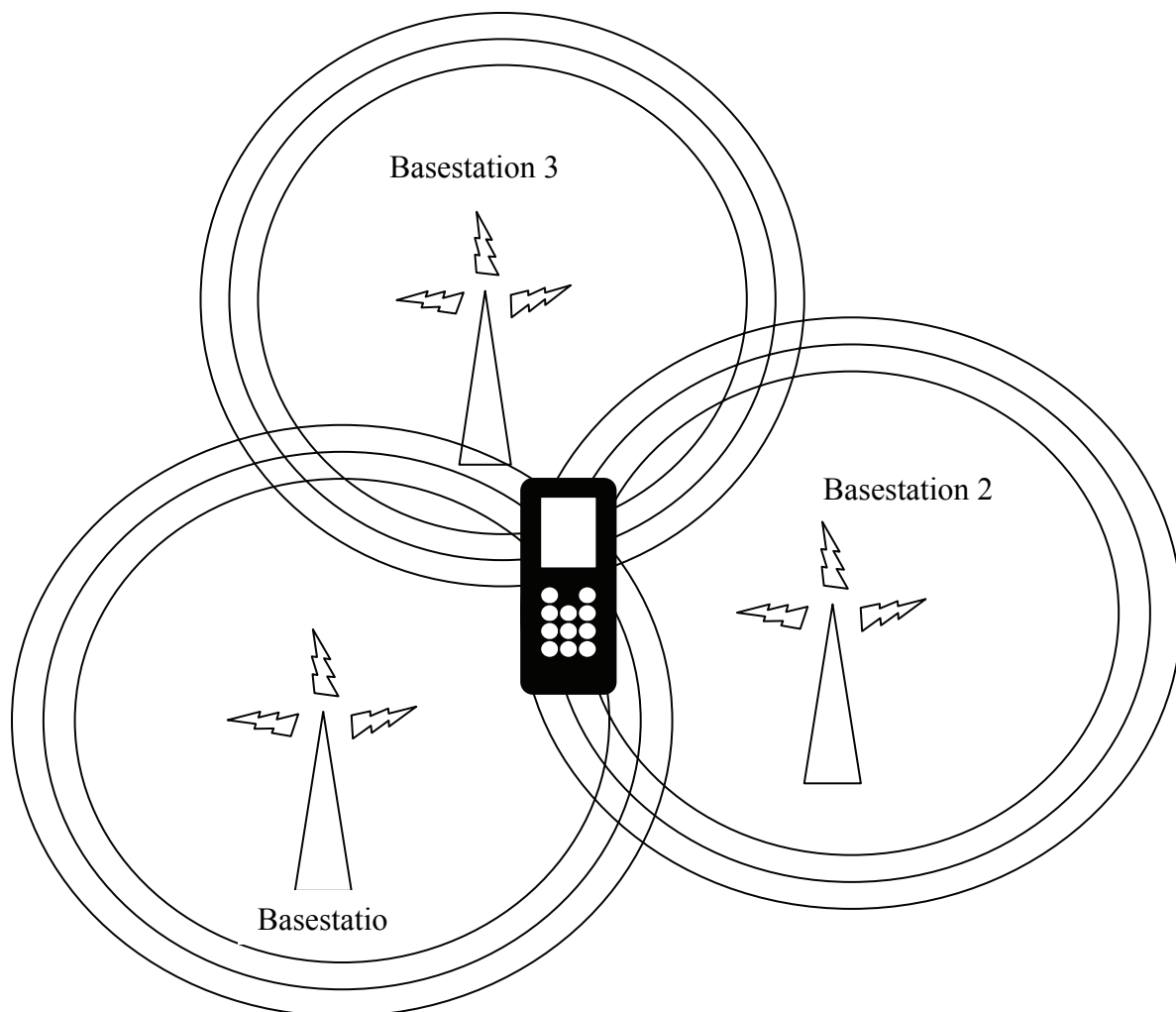
Mobile positioning using mobile phone base stations and triangulation. Distances are measured from the device to each base station, giving the location of the device.

Current European directives allow for the retention by all companies of data for a period of up to 3 years (at the discretion of the individual countries), in order to facilitate police investigations. As such, more information about the individual will be available to the state than was previously possible. This will apply to mobile phone companies, and internet service providers amongst others.

Companies are currently encouraging their customers to use more internet facilities on their phones, and to make use of the services offered by the internet. As well as this, more services are being created with the mobile internet audience in mind. The result of this will be the current 'isolation' of the mobile phone networks will vanish, and more of the same privacy issues faced by PC users are likely to emerge. However, provided that there remains a cost for each contact over a mobile phone network, targeting marketing or spamming will not become as great a problem as it currently is on the PC.

Data & the law in Europe

The EU has issued a directive relating to the protection of data [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31995L0046:EN:HTML]. This has been introduced into law in most member states [http://ec.europa.eu/justice_home/fsj/privacy/law/implementation_en.htm]. It also attempted to introduce a Charter of Fundamental Rights. However, as this was to be enshrined as part two of the EU constitution, it was never formally adopted when the constitution was abandoned. However these rights were seen as a summary of what was already in place in the EU, and can still be considered to be a summary of the EU's position on the rights of the individual. It contains the following section concerning information:

Under part II, freedom:
Article 8
Protection of personal data
1. Everyone has the right to the protection of personal data concerning him or her.
2. Such data must be processed fairly for specified purposes and on the basis of the consent of the person concerned or some other legitimate basis laid down by law. Everyone has the right *of* *access to data which has been collected concerning him or her, and the right to have it rectified.*
3. Compliance with these rules shall be subject to control by an independent authority.

This is a summary in simple language of what is contained in the data protection directive. Each state within the EU enacts its own legislation, so the implementation of directives differs between the individual states. In this section, we will examine the data protection directive.

The EU directive on data protection imposes a number of requirements for the member states to abide by. It requires that information is obtained and processed fairly, which implies that the end user should know that the information is being gathered, and has approved it. The information should be only gathered for sepecified and explicit purposes. Although a large amount of information can be gathered, the purposes that it is being gathered for must be set out clearly, and the information should not be reused for other purposes. The information should be kept safe and secure, so that only the company and organisation that requires the information has access to it. The information should be kept accurate, complete, and up to date so that misunderstandings cannot arise. The information should also be adeqate for the purpose it is requested for, relevant for that purpose, and not excessive. This means that no more data should be gathered than absolutely necessary. If the information is no longer required, then there should be a process whereby this information is destroyed so that the risk to the individual is reduced. A copy of the information should be given to the individual involved should they request it – the directive gives the individual the right to know what information is held about them by any organisation. This directive includes exemptions for governments, so the largest holder of information in any country does not necessarily have to comply with all these requirements. Ireland, Italy and the UK data protection law implements the above directive closely. The current state of implementation of this directive can be found on the EU website, http://ec.europa.eu/justice_home/fsj/privacy/law/implementation_en.htm.

As can be seen, an individual's rights have been set out. Although information is allowed to be gathered, there are restrictions on what information can be collected, and the individual has some rights with regard to the data retained. However, the governments of the EU recently agreed to allow individual nations to retain any electronic data for up to 3 years. This was introduced as a means of improving security and allowing for police investigations. If this was introduced, all phone companies and Internet Service Providers would be required to retain data for the 3 years. Although the laws introduced give some protection to the individual, in and of themselves they do not protect the information from falling into the wrong hands. As well as this, the information available even if it is gathered for one explicit purpose, could still be reused to yield more information about the user.

The EU Charter also expresses the following rights for the elderly and for people with disabilities:

Under part III, equality:
Article 25
The rights of the elderly
The Union recognises and respects the rights of the elderly to lead a life of dignity and independence and to participate in social and cultural life.

Article 26
Integration of persons with disabilities
The Union recognises and respects the right of persons with disabilities to benefit from measures designed to ensure their independence, social and occupational integration and participation in the life of the community.

For the purpose of law, an individual is generally assumed to be of sound mind and body. However, this is not always the case. While cases where someone is of sound mind are relatively low for younger, the numbers not considered of sound mind are far higher among the elderly. When someone is no longer considered of sound mind, decisions are taken on their behalf either by the state or by the persons family. Dementia or Alzheimer's disease are relatively common instances of this. Similarly when someone is mentally well, but suffering from some physical condition (perhaps a severe disability, or general frailty for an elderly person), decisions are made on an individual's behalf by the state or by family.

The question then arises, at what point is action taken on the individual's behalf? What is considered mentally unwell? Generally there must be a consensus (usually amongst family members) that the person is unable to look after themselves. In an ideal situation, the person would be monitored by the state or the family, but in cases where this does not happen, sometimes accidents by the individual or contacts with the police bring this to the attention of the state. In situations where the individual is frail, but of sound mind, often negotiations are carried out with the individual involved with their family to decide on the best approach. However what is clear in both of these situations is that there is no universal point as to when an individual needs decisions made on their behalf.

New Technologies=more information

So far, we have examined the kind of information that is currently available, the sort of protection currently in place in Europe for a persons data, and the situations in which a person's right to make decisions on their own behalf is taken from them. In this section , we examine some of the emerging technologies, and look at what extra information will become available as a result of this technology.

Already we have seen that mobile technology has become prevalent. So already people are carrying around a networked device. As we saw in the first section, the mobile network is becoming closer to the wider internet network. WIFI hotspots are being enabled in locations in different cities. These were initially only used by laptop owners, but now more mobile devices are coming with WIFI built in, so people will be using the same device to access the mobile phone network as the internet. This has great potential benefits, as well as opening up people to the same risks faced by computer users at home. The mobile phone, combined with WIFI and 3G technology, creates the possibility of being networked all of the time.

GPS is another technology that has the potential to deliver extra information about an individual. Up until now, one had to purchase a GPS device to take advantage of the location and mapping services. However this is no longer the case. HP and Fujitsu are both offering 'smartphone' / pda devices with GPS built in as another service (the 6915 and the T810 respectively), while Nokia have integrated GPS into their N95 phone[http://www.nokia.ie/A4288041]. This opens the possibility of not merely being networked all the time, but locatable all the time. With the introduction of the EU Galileo location system, [http://ec.europa.eu/dgs/energy_transport/galileo/index_en.htm], location and mapping systems will become more and more a feature of electronic devices and consumer products.

The development of broadband allows for two further developments: firstly , what is known as the 'Smarthome' , while the expanding mobile network allows for Ubiquitous Computing and Ambient Intelligence (AmI). The Smarthome can be defined as "A home or working environment, which includes the technology to allow for devices and systems to be controlled automatically" [Design Guidelines on Smart Homes, A COST 219bis Guidebook by Ad Van Berlo et al]. This is a concept where computers in your home allow for the performance of tasks on behalf of the user. Some versions of the smarthome involve the home learning the patterns of behaviour of its occupants, and performing tasks based on this. Ambient Intelligence is this idea brought into the wider world, whereby services could be delivered to a user based upon where they currently are, and what they require. The main difference is that in a Smarthome, the information can remain within the home network, while AmI relies on information being made available in the world over a larger network.
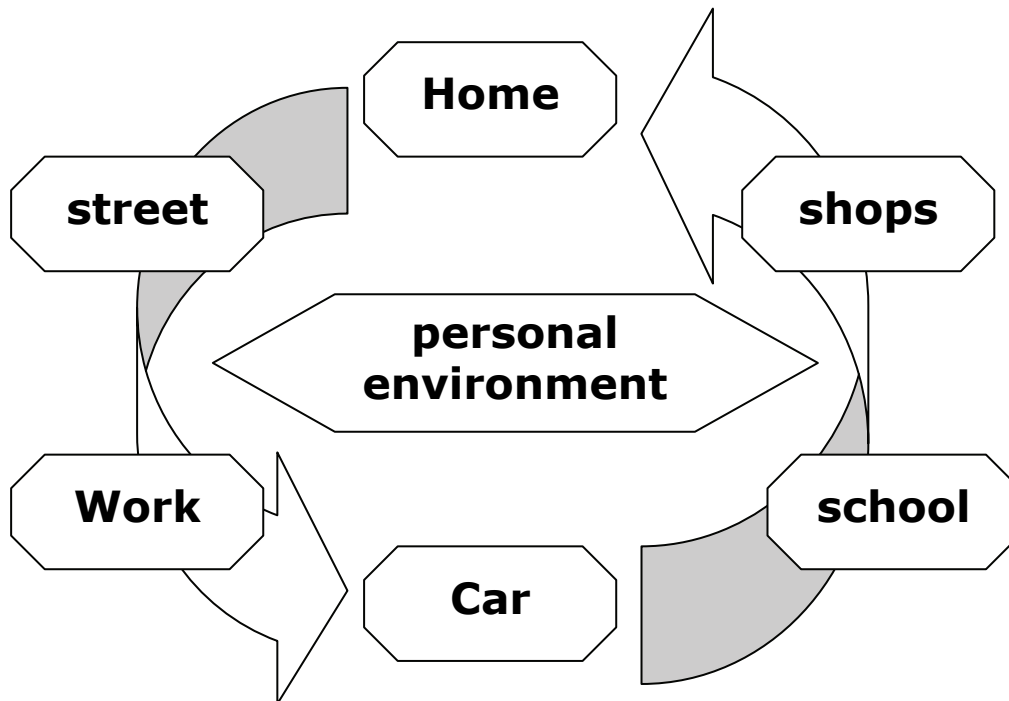
Illustration of Ambient Intelligence, arrows represent the ambient network

The main effect of GPS (& of Galileo when it launches) is that it not only give you your location, it also makes you *locatable*. Most networks rely on certain pieces of information about a device remaining stable (even if it is only for a period of time). For TCP/IP (the system most widely used) this is usually the IP (Internet Protocol address). Due to a limit in the total number of IP address available, providers do not usually give permanent (static) IP addresses, this may change when the next version of TCP/IP (version 6) comes in to place. This will allow individual devices on a network to be identifiable. If this information is a mobile device incorporating GPS, then a persons location and movements can be monitored on an ongoing basis through the use of the device. This could allow the discovery of a persons daily routines, where they socialise, and when they are out of the house. If the locations that a person goes to are noted on the map, it could also show when someone is visiting the doctor, the cinema, the hospital or a shop.

If it becomes possible to use a device like an electronic purse, then information about what a person buys using the device can also become available, so that their personal tastes and preferences can be identified.

This information could be of interest to a number of parties. On the benevolent side, it could be used to track someone about whom there is a health concern. However it could potentially be used by employers to make sure that an employee is genuinely out sick, by companies or marketers to discover what an individual's personal tastes are, or by criminals to make sure someone is away from the house while they rob it. Should a user's Smarthome network information becomes available, any amount of information could be open: when visitors arrive, the TV stations and programs watched, or when someone goes to bed.

As can be seen, a huge amount of information can be generated by an individual if all of these sources of information are in place. Then the important question becomes who gets access to what information, and why?

Conclusion

Ideally, information should only be available to anyone with the prior agreement of the individual. Often end users give their agreement to information being used by a company providing services to the users. The government of any particular country will have a large amount of information on its citizens. This information can be shared between a number of different government departments. With the advent of new technologies, more information about a persons life can be made available, and have the potential to make people vulnerable. These raise questions regarding access to data that previously could not occur.

While information should be made available with the consent of the individual, this is frequently done at the beginning of dealing with a company, either through a written or an electronic agreement. However, should this company be bought over by a third party, then the information is potentially available to someone that the individual did not intend.

Identity theft is an increasing problem online. Currently it is focused upon gaining credit card or bank account details, by illegally accessing company's servers (the least common), by the use of keylogging software installed through viruses, or through the use of 'phishing' websites, that pretend to be the home page of your bank or paypal account, and requesting you to enter your username and password. The more services you access using the one system, the more vulnerable you are to this type of fraud.

There are many solutions already in place for the protection of personal data, such as firewalls and anti virus protection. These will need to be extended to the personal handheld devices, as they come into wider use. Currently these devices have little or no protection.

The following is also proposed:
That information only be made available with the consent of the individual, and only to specified parties.
That information be adequately protected by the company or service that gathered it.
There is currently a trend for converging of services. However, the more connected networks are, the easier it is to gather information on an individual. Therefore, it is suggested that where possible, networks should remain distinct from each other, with separate security systems.
That opportunity be given to people to express their 'digital will and testament' (a digiwill?), to designate what access they wish to give to others in the event that they become no longer sound of body or mind. This will be especially important as there will be people who have only ever met online, and may wish to be contacted should anything happen.

Semantic multimodal analysis of digital media

Reconfigurable Multimedia: Putting the User in the Middle

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Abstract

To date, we notice an increase in multimedia content, applications and users. The role of the user in multimedia environments is shifting and increasing in importance. Current technologies allow that everyone can access or become a consumer of multimedia content. The plethora of devices and networks that can be used make it more difficult for content creators to provide their multimedia content to a maximum number of users. Moreover, the users themselves are becoming more and more critical about the (multimedia) applications they interact with, and even more so about the interaction itself. As such, we see that the new possibilities offered by the current technologies introduce difficulties for the optimization of the user experience. The MPEG-21 Multimedia Framework offers a first step to improve the user experience when dealing with multimedia content. This paper elaborates on the introduction of functionality inside a standardized multimedia representation, as defined within MPEG-21. It shows how MPEG-21 allows for the creation of interactive multimedia content. Moreover, this paper will present a method, using standardized MPEG-21 technology, to even further improve the user experience, by allowing the end-user himself to incorporate functionality in the multimedia content. As such, the interactivity is only constrained by the innovativeness and creativity of the user.

1. Introduction

These days a growing number of users enter the world of multimedia computing. A considerable increase is noticed both in consumers and providers of multimedia content and applications. To become and stay competitive on this growing market, it is important to find the key components in an information technology architecture. We notice that the role of the user in these environments is increasingly important, not only due to the quantitative aspect, namely the growing number of users, but also due to the growing demands these consumers pose. They are becoming more and more critically about the applications they interact with, even more about the interaction itself. Therefore the success of multimedia applications and architectures is increasingly determined by the quality of their associated user models, making it essential to take the user experience into account at design and operational levels. The user should not only become the center of the development process, but should also be positioned in the middle of the actual consumption of multimedia content. Much research has already been done to let the user choose when and where he wants to consume multimedia content, regardless of the device, network, or usage environment (movies are available on cell-phones, players are everywhere, etc.) [1]. The work presented in this paper strives to the next step, allowing the user to choose how he wants to consume his multimedia content.

The addition of metadata (data describing data) to multimedia content is the first step in making the data more user-centric. The description of the multimedia content, the properties of the devices used, the usage environment, and the preferences of the user himself allow for an extensive personalization of the human-computer interaction. It is important to look beyond current technology and investigate the bottlenecks and challenges in future multimedia environments. This is one of the purposes of MPEG-21, a framework under development by the MPEG consortium [2][3]. MPEG standardization has formed the basis for several successes in the past (MP3, DVD, DivX, etc.). The framework is composed of several standards which envision the creation of an entire framework for the production, transport, and consumption of multimedia content. This paper will elaborate on these standards and show how it allows to create a futuristic approach towards multimedia consumption. We will combine several parts of MPEG-21 to allow Users to reconfigure their multimedia data to their needs.

Nowadays, consumption of multimedia content is a relatively static process. A user utilizes specific multimedia rendering software (text readers, music players, video player, web browsers, etc.) to consume multimedia content. Although these tools can each be configured to a certain extent, they only offer a restricted set of functionality and are mostly not interoperable. When using MPEG-21, a centralized approach is used to store the multimedia content in one global interoperable format, including metadata and even functionality. We use the included functionality to provide a user with the means to reconfigure the multimedia content, as well as the functionality itself. As such, the multimedia consumption is only restricted by the user's creativity and innovativity.

This paper will discuss the steps needed by an author to create reconfigurable multimedia content using MPEG-21 techniques. Section 2 elaborates on the MPEG-21 Multimedia Framework, with an emphasis on Digital Item Processing (DIP). Next, Section 3 shows how DIP can be used to allow the creation of reconfigurable multimedia content. Consequently, a number of discussions on our approach are mentioned. Finally, the paper formulates a number of conclusions and discusses future work.

2. MPEG-21

2.1 The MPEG-21 Multimedia Framework

The vision of MPEG-21, a multimedia framework under development by MPEG, is to create a generic multimedia framework for the creation, delivery, and consumption of multimedia content across a wide range of networks and devices. According to successes of past MPEG standards, we can only imagine the effect this latest standard will have on the multimedia world in the future. The framework itself consists of several standards but in the scope of this paper we will limit ourselves to the Digital Item Declaration and Digital Item Processing parts.

2.1.1 Digital Item Declaration

The MPEG-21 Multimedia Framework has defined a Digital Item (DI) to be the fundamental unit of transaction. The second part of the standard, named Digital Item Declaration (DID), defines the structure of a DI; it can contain (references to) multimedia content and metadata [4]. The DI is a static representation of the actual multimedia resource, containing resources, or more likely references to resources, and appropriate metadata,

which provide additional information. An abstract representation of an example DI can be found in Fig.1. The DI is a collection of several items, descriptors, and components, which together incorporate several multimedia resources. To create a formal representation of DIs, the Digital Item Declaration Language (DIDL) is used to define the structure of those items in a standardized manner. DIDL is XML-based and allows for any MPEG-21-compliant terminal, called a MPEG-21 terminal, to process the DI. A DI can for example represent a movie collection, containing references to video sequences in several file formats, posters and trailers of the movies, copyright information, information about the date, actors, genre, and so on. Since the structure is known within MPEG-21 applications, any compliant player has sufficient knowledge to parse the DI.

Fig. 1. Abstract representation of a DI
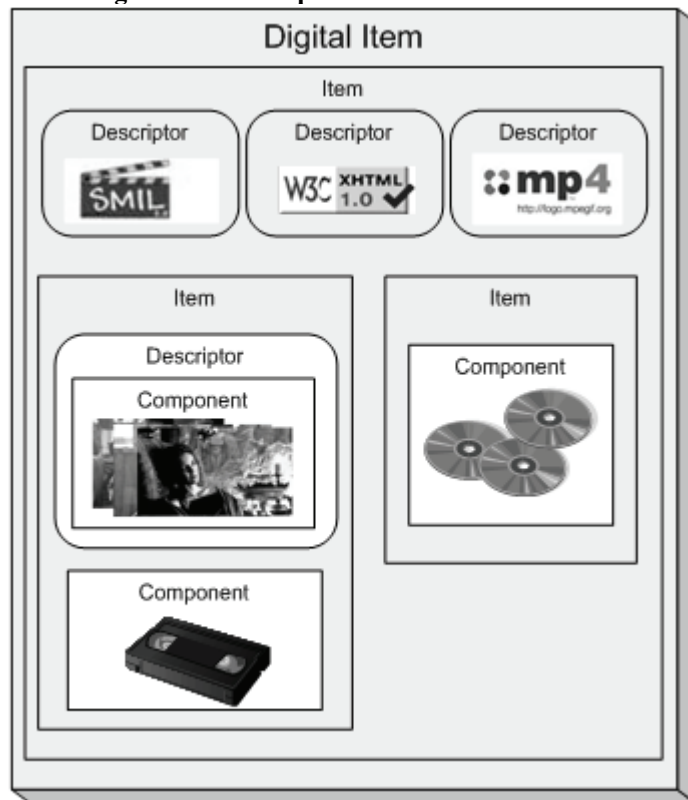
However, the example DI illustrates a number of problems. An MPEG-21 compliant player has the choice of which resource it wants to process. It can choose to only show the information or the posters. As this is not a problem by itself, it shows that the actual processing of a DI can result in very different outputs. If the DI contains the same movie in several resolutions or encoded at different bitrates, a player also has to know which one to choose. The author of the DI might, for instance, want to show the movie with the largest bit-rate, which can still be decoded by the client device. Also, he might want to show the entire copyright notice before a consumer is allowed to see any of the movies contained in the DI, and so on. As such, there is an obvious lack in the declaration of the DI; to suggest a way in which the DI has to be processed. Therefore, MPEG-21 has created part 10, named Digital Item Processing [5], which will be discussed in the next section.
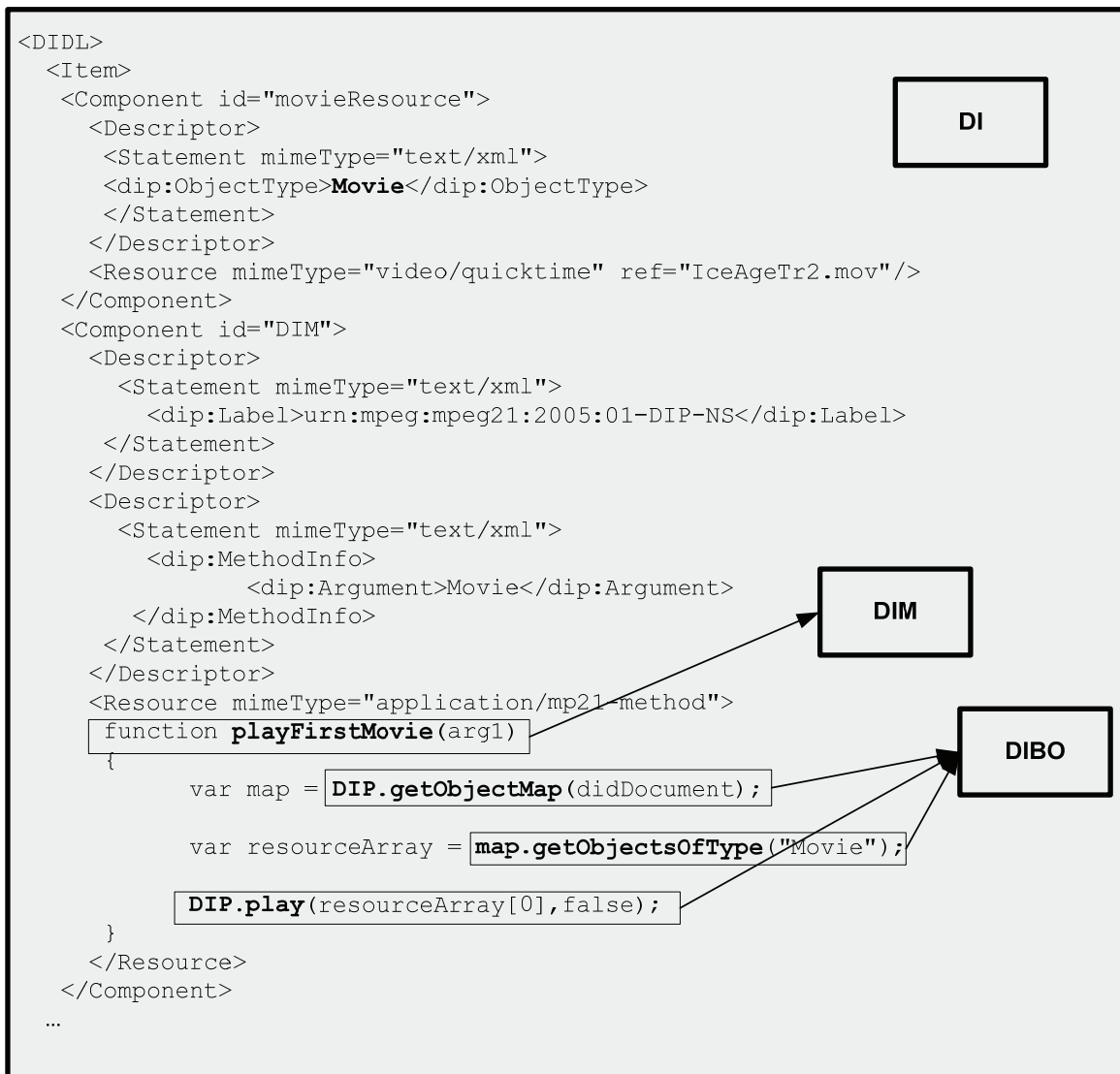
2.1.2 Digital Item Processing

Digital Item Processing (DIP) standardizes a set of tools to allow the declaration of suggested uses or processing of a DI in an interoperable way. Functionality can be added through the insertion of Digital Item Methods (DIMs). These methods are written in the Digital Item Method Language (DIML), which is based on the ECMAScript language [6].

A terminal that is capable of handling DIP constructs in a DI is called a DIP-compliant terminal. Such a terminal needs to provide an execution environment for the DIMs. Typically, when a terminal processes a DI containing DIP constructs, it will present the user with a choice of the methods inserted in the DI. The way this happens is not standardized, meaning that a DIP-compliant terminal can choose to list up the included methods, or present an advanced GUI which couples functionality to graphics.

Since a number of specific actions (for example the rendering of specific audiovisual content) are hard to implement in the DIM itself and are closely related to the actual terminal which is processing the DI, a basic set of functions has been defined. DIP standardizes an interface for DIML to these functions, called Digital Item Base Operations (DIBOs). Consequently, a DIP-compliant terminal should provide an implementation of this normative DIBO set. The interface allows the invocation of the DIBOs from inside a DIM. The DIBOs assure the availability of the same functionality on different DIP-compliant terminals. As such, a DI author can add scripting functionality to his DI and make use of the basic set of DIBOs available on every DIP-compliant terminal. Fig. 2 shows an example of a DI containing DIP functionality. It shows an XML-fragment containing several components (namespaces have been omitted for layout purposes). The first component contains a reference to a movie file and is typed as "Movie" by the *ObjectType* element. The second component contains a DIM called "playFirstMovie". The scripting code makes use of three DIBOs. The first retrieves an object map which maps specific elements of the DI to a certain type. Consequently the getObjectsOfType DIBO works on this map and retrieves all the objects of type "Movie" from the map. Finally , the play DIBO is used to actually render the movie. When this DI is processed by a DIP-compliant terminal and if this DIM is chosen, the result will be the rendition of the movie "IceAgeTr2.mov". This example illustrates how the DIBOs shield the DI author from terminal specific actions. The rendering of a movie is highly related to the underlying platform, so the implementation should be provided by the terminal itself. Different DIP-compliant terminals can therefore be competitive in their implementation of the DIBO set.

Fig. 2 Example of a DI containing DIP functionality.

```
<DIDL>
  <Item>
    <Component id="movieResource">
      <Descriptor>
       <Statement mimeType="text/xml">
       <dip:ObjectType>Movie</dip:ObjectType>
       </Statement>
      </Descriptor>
      <Resource mimeType="video/quicktime" ref="IceAgeTr2.mov"/>
    </Component>
    <Component id="DIM">
      <Descriptor>
       <Statement mimeType="text/xml">
         <dip:Label>urn:mpeg:mpeg21:2005:01-DIP-NS</dip:Label>
       </Statement>
      </Descriptor>
      <Descriptor>
       <Statement mimeType="text/xml">
         <dip:MethodInfo>
              <dip:Argument>Movie</dip:Argument>
         </dip:MethodInfo>
       </Statement>
      </Descriptor>
      <Resource mimeType="application/mp21-method">
        function playFirstMovie(arg1)
        {
            var map = DIP.getObjectMap(didDocument);

            var resourceArray = map.getObjectsOfType("Movie");

            DIP.play(resourceArray[0],false);
        }
      </Resource>
    </Component>
    …
```

[DI]

[DIM]

[DIBO]

In certain cases the functionality provided by the DIBO library is not sufficient. The standard set of DIBOs was selected on the basis of a set of use cases and requirements. Application-specific operations do not need to be normally defined. Nevertheless, to allow the inclusion of these operations, DIP offers the concept of Digital Item eXtension Operations (DIXOs). The language in which a DIXO is implemented is not defined by DIP; only the inclusion and an interface to the DIBOs is normatively defined. Since such an interface is language-specific, it has to be available for every language in which one wants to create DIXOs. Currently, only Java is accepted as DIXO language and DIP provides the information for DIXOs written in Java, called J-DIXOs.

2.2 Users

MPEG-21 defines a User as any entity that interacts with or makes use of DIs and the MPEG-21 Multimedia Framework. So, both content providers and consumers are considered to be Users. In the context of our paper we make an abstraction of this definition. We divide the Users in four categories: the content creators, DI authors, terminal

implementers, and end-users. The content creators are responsible for the initial creation of the actual multimedia resources (such as movies, pictures, audio, …). The DI authors are those who incorporate the multimedia resources in DIs. They decide on the actual structure of the item, add specific metadata, and insert DIP functionality. Moreover, they are also the implementers of the DIMs. By creating these methods, advanced multimedia presentations or collections can be made. While making the DIMs, they can make use of the standardized set of DIBOs or can create J-DIXOs and include these in the DI. The implementation of the actual DIBOs is part of the specific terminal which is used to process the DI. As such, the terminal implementers are responsible for the implementation of the DIBO library. They also provide the execution environment and several MPEG-21-related engines to parse and process the different constructs of a DI. The terminal implementers also choose how the interaction with the end-user should be like. DIP offers only suggestions on the way a DI should be processed. As such, a terminal could choose not to use the DIP functionality and, for example, just randomly render a multimedia resource in a DI. However, the DI author has the best knowledge on how the multimedia content should be presented to the end-user. Consequently, the use of DIP constructs can certainly enhance the user experience. The end-user, or consumer, is the person who consumes the actual multimedia content. He uses an MPEG-21 terminal to process the DI and he interacts with the DIP functionality. As such, in a DIP-enabled environment, the users of a DI will only be able to access the functionality through the DIP engine.

In many cases the implementers of the terminals can be DI authors themselves, but this is not mandatory. Therefore, a DI author has no knowledge of the actual implementation of the DIBOs. DIP does standardize the DIBO interface and thus the semantics, but the actual semantics of the actions are rather vague. A short example is the *alert* DIBO which takes as parameter a string and alerts the user. The semantics of this DIBO is defined as "provide simple textual feedback to the User". It is obvious that the actual interpretation of alerting a user is rather vague and can be synchronously showing a popup message on the screen, displaying a warning on the media player, or even just adding some information to a log file. The DI author has no way to know the actual implementation, since a DI can typically be processed by different end-users on different terminals. To overcome this, we have proposed a solution in previous work to give the DI author ways to even define the implementation of the DIBOs [7]. As such, the user experience is enhanced, for the DI authors. The rest of the paper will focus on how we can enhance the user experience for the actual end-user.

3. Reconfigurable multimedia

A DI is normally not accessible for the user himself: it is probably encrypted, and only readable by MPEG-21 applications, typically called MPEG-21 terminals. Fig. 2 shows the structure of an MPEG-21 terminal. The terminal contains several modules or engines to deal with different parts of MPEG-21 (DID, DII, DIA, etc.)[2]. When parsing a DI, all the relevant parts in the DI will be sent to the corresponding engines in order to be processed. The DIP engine takes a central role, since it interprets the DIP constructs in the DI and since it is responsible for the execution of the inserted functionality. As previously discussed, it can make use of the DIBO functionality and since it is part of a DIP terminal it can use the underlying platform. The DIP engine interacts with the user by allowing him to choose methods and arguments in the DI, which can then be executed in the environment.

Fig. 3 MPEG-21 Terminal.
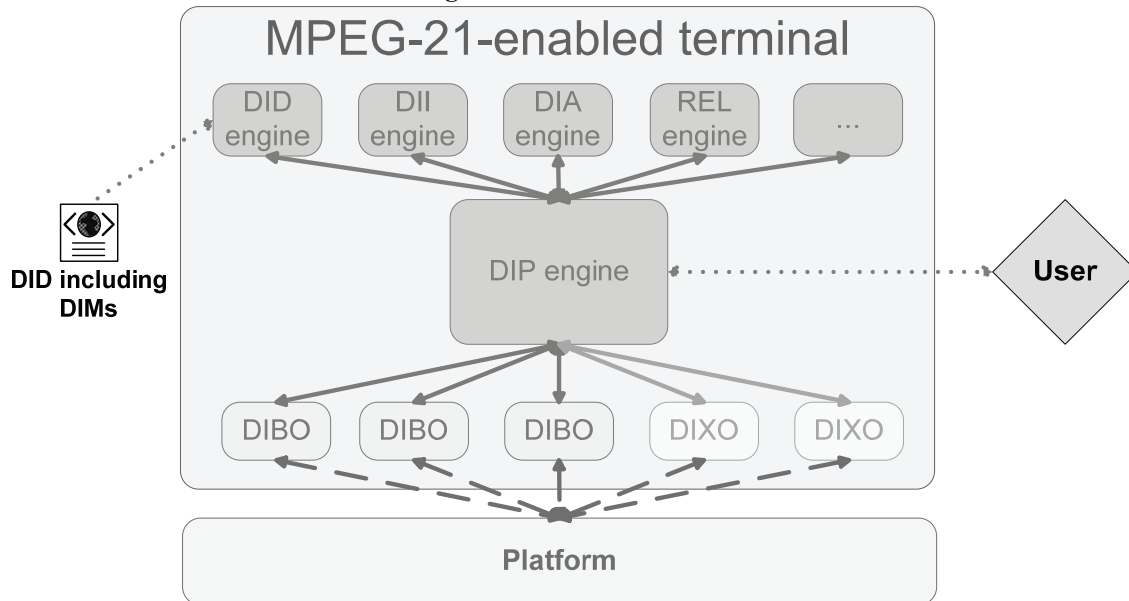
The inclusion of DIP functionality, as defined in the MPEG-21 standard, allows for guided interaction with the multimedia content. However, the functionality offered to the user is limited to the functionality implemented by the DI authors. For example, a DI author might create a DI representing a music collection in which the songs are sorted alphabetically by the name of the artist. However, an end-user might want to sort the collection according to the song title. Since the consumer would typically not be able to access the individual parts of the multimedia content directly in an MPEG-21 environment, a mechanism is needed to encompass this. To allow full interactivity, the end-user should have the possibility to define his own functionality and should have ways to add functionality to the DI itself. This way, the user can define how he wants to consume his multimedia content.

A first method to allow end-users to include their own functionality in the DIs, is by using the DIXO constructs of DIP. The DI author should insert a link to a user-created J-DIXO and invoke this operation. The end-user should make an implementation of the DIXO and give it an appropriate name. This works similar to the use of Dynamic Linked Libraries in C++. DIP allows to include externally defined J-DIXO declarations by using XInclude [8]. This makes it possible to refer, from within the DI created by a content author, to a DI created by an end-user. This is shown in the DI-fragments from a `contentDI.xml` and a `userDixoDI.xml` file below. The `contentDI.xml` file represents an actual DI created by a DI author. The `userDixoDI.xml` file is a DI which the end-user should create and which is referenced to from within the `contentDI.xml` file.

contentDI.xml

```
…
<Component>
    <Descriptor>
        <Statement mimeTyp="text/xml">

    <dip:Label>urn:mpeg:mpeg21:2005:01DIP:DIXO:Java</dip:Label>
        </Statement>
    </Descriptor>
```

- 1161 -

```
        <xi:include href="userDixoDI.xml"
                xpointer="element(userDefinedJDixo)"/>
</Component>
…
```

userDixoDI.xml

```
…
<Component id="userDefinedJDixo">
     <Descriptor>
          <Statement mimeType="text/xml">
               <dip:JDIXOClasses>
           <dip:Class>com.userhome.javadixos</dip:Class>
               </dip:JDIXOClasses>
          </Statement>
     </Descriptor>
     <Resource mimeType="application/java-archive"
ref="userDefinedClasses.jar"/>
</Component>
…
```

The `contentDI.xml` file contains a link to a `userDixoDI.xml` file, more specifically to an XML element identified by the name "userDefinedJDixo". The `userDixoDI.xml` file is created by the end-user so he can add directions to any Java archive he wants to use (`userDefinedClasses.jar` in the example). This way a Java executable generated by the end-user can be incorporated in the original DI. Since the interfaces between such a J-DIXO and the DIBO libraries are normatively defined within DIP, the J-DIXO can make use of this predefined functionality available in the DIP engine. If the contentDI invokes the J-DIXO, it will find the denoted Java classes by using the XInclude description. Consequently the inserted functionality will be executed.

This method allows the incorporation of user-defined, Java-based functionality in a DI. However, this method has a number of disadvantages. The name of the file containing the user-defined J-DIXO declaration needs to be known when the initial DI is composed by the DI authors. As such, a common definition is needed, which is hard to enforce. Secondly, only Java is currently supported for implementing DIXOs. As such, this might put a serious restriction on the development of user-defined functionality. Finally and most importantly, the support for the DIXO mechanism is not enforced by the DIP standard. Therefore, not all MPEG-21 terminals will be able to process and execute the DIXOs, even though they are compliant to the DIP standard.

It is obvious that an alternative is needed to allow the inclusion of user-defined functionality by making use of standard DIP constructs, which are supported by all DIP-enabled terminals. Since DIP was intended for interaction with the end-user, we will use this interaction to allow the user to reconfigure the content. A first way of letting the end-user reconfigure the DI was already proposed in the MPEG-21 Book [2]. In this solution, the DI author needs to insert specific DIMs in the DI, which are solely used to change parts of the DI. DIML, the language in which the DIMs are written, extends the standard ECMAScript by also including the ECMAScript bindings for the W3C DOM Level 3 Core and W3C DOM Level 3 Load and Save specifications [9][10]. As such, several standardized constructs are available to access, manipulate, load, and save a DI. These are present in

DIML, so content creators can make use of these, when building DIMs and DIBOs. This way, a content creator can, for example, create a DIM to remove a song out of a music collection, as shown in the following DI-fragment.

```
…
Function removeSong(song)
{
  var parent = song.parentNode;
  parent.removeChild(song);
  var reg
      =DOMImplementationRegistry.getDOMImplementation("LS");
  var domWriter = reg.createLSSerializer();
  var modifiedDID = domWriter.writeToString(didDocument);


}
…
```

Here, *removeSong* is a DIM, which takes an element (*song*) as argument and removes it from its parent node. Consequently, this modification is saved by using a *domWriter*. By using similar constructs, a content creator can present methods to the end-user to reconfigure the content. This approach indeed lets the end-user reconfigure the multimedia content. However, the reconfiguration has to be predetermined by the DI author. As such, this still puts a burden on the freedom of the end-user.

We propose to generalize the above idea and make similar DIMs to allow the user to add new DIP constructs to the DI. This is in fact a novel use of the DIP standard, since it was initially created only to suggest how a DI should be processed in order to create the best multimedia presentation possible. By using the DIP constructs for different purposes, we can increase the interactivity with the end-user. Analogous to the *removeSong* example DIM, the DI author should implement an *addDIM* method. The method allows an end-user to create and insert his own DIMs. The *addDIM* method will interact with the end-user and request for all the information needed to make the actual method. This information consists of a name, list of (types of) arguments, and the actual body of the DIM. DIP offers DIBOs which interact with the user and request certain values. As such, the *getValues* DIBO can be used to ask for the name of the DIM and the number of arguments. An implementation of this DIBO can present a graphical user interface to the end-user, showing a specific question and displaying an input text area where the data can be entered. As mentioned before, the actual implementation can vary and is dependent on the terminal used, but the result is that certain values are received from the end-user. The following DI-fragment shows how to invoke the *getValues* DIBO.

```
…
var dataTypes = new Array(2);
dataTypes[0]="String";
dataTypes[0]="Number";
var requestMessages = new Array(2);
requestMessages[0]="What is the name for the new Digital Item
Method?";
requestMessages[1]="How many arguments should it take?";
var values=DIP.getValues(dataTypes,requestMessages);
…
```

The fragment shows how to ask for the name of the DIM and the number of arguments. The data types are necessary to allow a correct interpretation of the entered data. This fragment would result in the DIP engine posing the two questions to the end-user and providing some means of receiving the actual data from the user.

The next step is to ask for the object types of the arguments. Using the *MethodInfo* and *Argument* elements of DIP (see Fig.1), we can declare the object types of the arguments passed to the DIM. Since these need to be known to the DIM, the object types should be asked to the end-user. Possible hints on the object types found in the initial DI can be given. To finish the creation of the DIM, we need the actual script code which forms the body of the digital method. Since this is plain text, we can again use the *getValues* DIBO to ask the user for the desired script. At this point, we have all the information that the end-user could freely choose. The format of the ObjectTypes, MethodInfo, Label and DIMs is defined in the DIP specification. As such, this can be created automatically and the end-user should not be asked to fill this in manually. After these steps, an entire component representing the new DIM can be made and attached to the current document. This can consequently be stored using the W3C Dom Level 3 Load and Save specifications. When the DI is reloaded by the DIP engine, the new DIM will be recognized and the user can select his self-defined method. Annex A shows an entire DI which contains a DIM that allows a user to create a self-defined method. When opening this DI, the user is asked for a method name and body. Consequently, the new DIM is created and, in this case stored in a new DI. The result of this processing is shown in the DI of Annex B. It shows the user-defined DIM in which the user has added in the body of the new DIM a command to show an alert. When processing this DI, the MPEG-21 terminal will alert the user and show the message ("This is a user-defined DIM!").

4. Discussion

The above mentioned system succeeds in extending the user experience. Since the user himself can define the functionality he needs, the user experience can be enhanced. The system allows to incorporate user-defined scripts into the multimedia content if the DI author prefers to provide this possibility. Since specific multimedia categories represented by DIs will mostly have a similar structure, there is a possibility of re-use of the scripts (for example, music collections created by different DI authors will have a similar structure). As such, an on-line community can be imagined, which hosts scripts for specific purposes. This way, even users with less experience in programming with scripting languages can incorporate predefined functionality in their multimedia content.

Although the proposed freedom for the end-users, to reconfigure their multimedia content, improves the user experience, it also introduces a number of potential risks. DIP was created to let the content authors make suggestions on how their content should be processed. This way, the authors could compete in the creation of multimedia presentations and not only in the content itself. However, when allowing the end-user to add self-defined functionality, this can collide with the functionality of the DI author. For example, a malicious user could make a script that redefines all the original methods in the DI. If the DI would subsequently be distributed, the DI author would have no idea anymore of how it would be processed by client applications.

To overcome this issue, a mechanism is needed to decide whether the newly inserted DIM intends to alter the initial DIP constructs in the DI or poses security risks of any kind. This is

in fact closely related to rights checking and MPEG-21 has standardized a Rights Expression Language (REL), exactly to express this rights checking in a formal way [11]. In REL, rights are determined by an actor who wants to perform a certain action on a specific resource. This can be mapped on our system, to see which actions (DIBOs) are allowed by an actor (the new DIM) on specific resources (other parts of the DI). We need a module that is able to analyse the script that the end-user wants to insert in order to see if it does not form a hazard for the initial DIP constructs. Research on supporting rights checking within an MPEG-21 environment has been done by De Keukelaere *et al.* [12][13]. His work allows to map specific DIBO constructs on rights-related terms, as defined in the Rights Data Dictionary (RDD) verbs, specified in MPEG-21 RDD [14]. DIs can be created by several DI authors and can collect several different metadata and resources. Different parts of a DI can therefore be liable to different rights restrictions. De Keukelaere *et al.*, have introduced the rights check on the DIBO level, so that a terminal implementer can check whether a certain sequence of DIBO calls doesn't infer any rights conflicts. In our case, it is the DI author who should implement such a system in the *addDIM* method. By using the mappings introduced by De Keukelaere *et al.*, the DI author can check whether the new script would harm the initial DIP constructs. It is the responsibility of the DI author to decide what to do with user-defined DIMs that could harm the original integrity of the DI.

5. Conclusion and Future Work

This paper presented a novel use of the MPEG-21 standard, more specifically the DIP part, to improve the user experience. The presented system allows an end-user to insert new, self-created functionality inside an MPEG-21 Digital Item. As such, the end-users can extend the provided functionality to reconfigure the multimedia content according to their needs. It are the authors of the DI who provide the end-user with the necessary means to insert their own functionality. As such, the DI authors are also responsible for checking the behavior of these new methods to insure the integrity of the original multimedia representation.

Future research is needed to see how one can insert version information in a DI to track the changes introduced by an end-user. Since multimedia content tends to be highly portable and distributable, means are necessary to uniquely define who the initial DI authors are and who manipulated the DI.

An interesting field of study would be to investigate the actual user experience. Wide spread studies should be done to see if the average end-user, of today and tomorrow, is willing to or capable of creating such functionality. The MPEG-21 framework is still under development. As such, the main question is whether and how fast it will be adopted by the broader public.

Annex A: Full DI with support for reconfiguration

```xml
<?xml version="1.0" encoding="UTF-8"?>
<DIDL xmlns="urn:mpeg:mpeg21:2002:02-DIDL-NS"
xmlns:dii="urn:mpeg:mpeg21:2002:01-DII-NS"
xmlns:mpeg7="urn:mpeg:mpeg7:schema:2001"
xmlns:dip="urn:mpeg:mpeg21:2003:01-DIP-NS"
xmlns:dia="urn:mpeg:mpeg21:2003:01-DIA-NS"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:mpeg:mpeg21:2002:01-DII-NS
Schema/MPEG21DII-2002.xsd urn:mpeg:mpeg21:2002:01-DIDL-NS
Schema/Mpeg21DIDL-2002.xsd">
     <Item id="testc_id">
          <!-- Digital Item Identifier -->
          <Descriptor>
               <Statement mimeType="text/xml">
          <dii:Identifier>reconfigurableContent</dii:Identifier>
               </Statement>
          </Descriptor>
          <Item>
               <Component id="createDIM">
                    <Descriptor>
                         <Statement mimeType="text/xml">
                              <dip:MethodInfo
xmlns:dip="urn:mpeg:mpeg21:2003:01-DIP-NS">
                                   <dip:Argument/>
                              </dip:MethodInfo>
                         </Statement>
                    </Descriptor>
                    <Descriptor>
                         <Statement mimeType="text/xml">
                              <dip:Label
xmlns:dip="urn:mpeg:mpeg21:2003:01-DIP-NS">DIM</dip:Label>
                         </Statement>
                    </Descriptor>
          <Resource mimeType="application/mp21-method">

function addDIM()
{
var dataTypes = new Array(2);
dataTypes[0]="String";
dataTypes[1]="Number";

var requestMessages = new Array(2);
requestMessages[0] = "What is the name for the new Digital Item
Method?";
requestMessages[1]="How many arguments should it take?";
var values = DIP.getValues(dataTypes,requestMessages);
var domImpl = DOMImplementationRegistry.getDOMImplementation("");

//create serializer
var serializer = domImpl.createLSSerializer();
```

```
//create the new document and elements
var newDoc = domImpl.createDocument("urn:mpeg:mpeg21:2002:02-DIDL-
NS","DIDL",null);

var newItem = newDoc.createElementNS("urn:mpeg:mpeg21:2002:02-DIDL-
NS","Item");
newDoc.documentElement.appendChild(newItem);

var newComponent = newDoc.createElementNS("urn:mpeg:mpeg21:2002:02-
DIDL-NS","Component");
newItem.appendChild(newComponent);

var newDescriptor =
newDoc.createElementNS("urn:mpeg:mpeg21:2002:02-DIDL-
NS","Descriptor");
newComponent.appendChild(newDescriptor);

var newStatement = newDoc.createElementNS("urn:mpeg:mpeg21:2002:02-
DIDL-NS","Statement");
newStatement.setAttributeNS(null,"mimeType","text/xml");
newDescriptor.appendChild(newStatement);

var newMethodInfo =
newDoc.createElementNS("urn:mpeg:mpeg21:2003:01-DIP-
NS","MethodInfo");
newStatement.appendChild(newMethodInfo);

var newArgument = newDoc.createElementNS("urn:mpeg:mpeg21:2003:01-
DIP-NS","Argument");
newMethodInfo.appendChild(newArgument);

var newDescriptor =
newDoc.createElementNS("urn:mpeg:mpeg21:2002:02-DIDL-
NS","Descriptor");
newComponent.appendChild(newDescriptor);

var newStatement = newDoc.createElementNS("urn:mpeg:mpeg21:2002:02-
DIDL-NS","Statement");
newStatement.setAttributeNS(null,"mimeType","text/xml");
newDescriptor.appendChild(newStatement);

var newLabel = newDoc.createElementNS("urn:mpeg:mpeg21:2003:01-DIP-
NS","Label");
newStatement.appendChild(newLabel);
var newContent = newDoc.createTextNode("DIM");
newLabel.appendChild(newContent);

var newResource = newDoc.createElementNS("urn:mpeg:mpeg21:2002:02-
DIDL-NS","Resource");
newResource.setAttributeNS(null,"mimeType","application/mp21-
method");
newComponent.appendChild(newResource);

//create the textual body of the newDIM
```

```
var script = "function ";
script = script + values[0] + "(";
var nrArg=0;
script = script + ")\n";
script = script + "{\n";
var scriptType = new Array(1);
scriptType[0]="String";
var requestScript = new Array(1);
requestScript[0]="Please enter the body of the DIM.";
var scriptText=DIP.getValues(scriptType,requestScript);
script = script + scriptText;
script = script + "\n}\n"

var newScript = newDoc.createTextNode(script);
newResource.appendChild(newScript);

serializer.writeToURI( newDoc, "newDI.xml");
DIP.alert("Done",MSG_INFO);
                                    }
                        </Resource>
                    </Component>
            </Item>
        </Item>
</DIDL>
```

Annex B: Result of reconfiguration

```
<?xml version="1.0"?>
<DIDL xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns="urn:mpeg:mpeg21:2002:02-DIDL-NS"
xmlns:dii="urn:mpeg:mpeg21:2002:01-DII-NS"
xmlns:dia="urn:mpeg:mpeg21:2003:01-DIA-NS"
xmlns:dip="urn:mpeg:mpeg21:2003:01-DIP-NS"
xmlns:mpeg7="urn:mpeg:mpeg7:schema:2001">
  <Item>
    <Component>
      <Descriptor>
        <Statement mimeType="text/xml">
          <dip:MethodInfo>
            <dip:Argument/>
          </dip:MethodInfo>
        </Statement>
      </Descriptor>
      <Descriptor>
        <Statement mimeType="text/xml">
          <dip:Label>DIM</dip:Label>
        </Statement>
      </Descriptor>
      <Resource mimeType="application/mp21-method">
          function boe()
          {
                DIP.alert("This is a user-defined DIM!",MSG_INFO);
          }
```

```
      </Resource>
    </Component>
  </Item>
</DIDL>;
```

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Playing with Broadband: Circulating Digital Snapshots

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Abstract

This paper addresses playfulness as a factor behind snapshot photographers' choices in broadband technologies, and their creative use of these technologies. The paper is based on my doctoral study on the circulation of digital snapshots with information and communication technologies. The empirical work was carried out among sixteen Finnish cameraphone and digital camera users in 2006. The principle data collection methods were photo collection and interviewing based on the photos, and the analysis and interpretation methods were writing case studies and thematizing across data. I will present examples of how the participants circulated snapshots playfully, consider their choices in using related technologies, and discuss valuations of these technologies and creative practices in using them. I will suggest that humour and playfulness are important motivations for using broadband technologies creatively; that mobile broadband technologies are less valued by snapshot photographers than computer-based ones; and that the photographers themselves do not tend to value their creativity in circulating snapshots playfully. Concerning methodology, I will highlight the importance of analyzing and interpreting snapshots both as pictorial user-generated content and as technology.

1. From albums to online circulation

Digitalization and the introduction of cameras to mobile phones have brought snapshot photography into close connection with broadband media. Circulating snapshots with broadband applications is as important to snapshot photographers today as it was to collect photos into print albums in the past. The variety of services available for online snapshot circulation is startling. The most visible ones are public photo galleries on the internet that range in purpose from displaying one's artwork through finding a date to simply chatting with friends. To reach a more restricted private audience, snapshot photographers use internet photo-sharing services, instant messaging, or e-mail. The most private way of sharing photos is sending them from a mobile phone to another, known as mobile multimedia messaging. While carrying out my doctoral study among cameraphone users, most of whom also used digital cameras, I heard reports on the use of each of these services for circulating photos for different purposes. It caught my attention that often, creative ways of using cameras and online communication channels were related to playfully distributing or exchanging photos. The question, therefore, that I will explore in this paper is: How does playfulness influence snapshot photographers' choices in broadband technologies and their creativity in using these technologies for digital photo circulation? I will suggest that humour and playfulness are important motivations for using broadband technologies among snapshot photographers and that playfulness fosters creativity in broadband use; that mobile broadband technologies are less valued by snapshot photographers than computer-based ones; and that the photographers themselves do not tend to value their creativity associated to the playful circulation of snapshots.

At this point, I wish to clarify the core concepts of this paper: circulation, playfulness, creativity, and broadband. To understand digital snapshot photography from the photographer's or user's point-of-view, I have chosen to examine snapshot photography as circulation. With the term circulation, I refer to the process that starts from taking (or downloading) a photograph, proceeds to either saving or deleting it, perhaps modifying it, continues with possible sending, publishing, or otherwise sharing the photo, and ends with decisions on storing the photo, be it in print, digital, or both. From the photographer's perspective, the process entails numerous choices that concern not only the photo, but also a host of digital tools that the snapshot photographer works with. "Circulation" highlights the transition from the era of film to the era of the digital, where snapshot photographers work with more opportunities and challenges of using their snaps than what have existed before. One of these opportunities digital snapshot photographers make use of is being playful with the cameras and photos. (Rantavuo 2005, 2006a, 2006b; Van House, 2005; Kindberg et al., 2005) In her book Cyberplay, Brenda Danet (2001, 8-10) distinguishes between play and playfulness. She points out that playing can be serious and is often governed by rules, whereas playfulness means being humorous or experimental, and involves having fun or experiencing joy. With creativity, in this paper, I refer, first, to the voluntary effort that the participants made in order to be playful, crafting their photos and circulating them, and second, to the spontaneous and witty action that often was involved. With brodband, I refer not only to personal computer-based connections and applications but also to mobile phone messaging services that allow for the circulation of photographs.

2. Theoretical framework, methods, and data

The frame of reference for this paper in research literature is the field of domestication and cultural studies. Particularly, research that studies how people make sense of digital media technologies in the context of the home or the household, as opposed to the context of paid work. (See, for example, Bakardjieva, 2005; Berker et al., 2006; Lally, 2002; Peteri, 2006; Silverstone and Haddon, 1996; Uotinen, 2005). Close to this field, and relevant to my approach considering playfulness in particular, are recent British ethnographic works on the internet and mobile media. They stress these media "as continuous with and embedded in other social spaces (...)" (Miller & Slater, 2001, 5) and as technologies that are used to fulfill "desires that are historically well established, but remain unfulfilled because of the limitations of previous technologies." (Horst & Miller, 2006, 6) Finally, regarding methodology, my approach on cameraphone use is explorative and stresses the user perspective. This has been lacking in cameraphone research so far characterized by experimental studies for technology development (see, for example, Koskinen et al., 2001; Van House, 2005; Hypermedialaboratorio 2005; Oksman, 2005.) Recently, however, cultural anthropological contributions to this field have emerged (Ito & Okabe, 2006; Okabe et al., 2006) that share similarities with my approach.

Studying snapshot photographs means stepping onto the field of visual culture. In visual culture studies, interaction with images in digital environments is only gradually becoming a topic to discuss. (See, for example, Sturken & Cartwright, 2001, 160) Film snapshot photography, in turn, has been studied in this field. (Chalfen, 1987; Slater, 1995; 1999; Spence and Holland, 1991; Ulkuniemi, 1998) However, research on photography in general in the field of visual culture has focused on the image. In other words, the symbolic has been the primary focus of interest, at the cost of examining the contexts of production and distribution of the photos. However, when studying the circulation of digital snapshots from the user's

perspective, it is useful to see the images as part of information and communication technologies that people make sense of as "social products: symbolic and aesthetic as well as material and functional." (Silverstone and Haddon, 1996, 44) When people make decisions that concern taking and using digital snapshots, they make sense not only of the image content but also of the technologies and media that they are about to make, use or circulate the image with. Interpreting the technology starts long before the picture is taken, upon purchasing it, thinking about the suitability of different cameras for different occasions, forming intentions about the future use of the picture, and evaluating one's skills in photography and using ICT's. Digital snapshot photography and the circulation of photos, in other words, is guided not only by cultural notions on photography, but also by cultural notions on mobile and internet messaging technology and one's competency in these areas.

Methodologically, therefore, it was a key decision in my study to examine snapshots in parallel with the technology with which they were made, circulated, and viewed. In practical terms, this meant that while discussing the participant's snapshots, we discussed how she or he used and made sense of the cameras, software applications, cables and appliances, computers, storage media, messaging services, and online environments involved. With my interview questions, I did not approach the snapshots only as textual, symbolic content, but as digital files that were part of information and communication technologies. Collecting photos from the participants and eliciting information based on them at the interviews were the most important methods of data collection in my study. Other methods included questionnaires for background information on practices in photography, diary notes to serve as a memory support at the interview, and pencil drawings to complement the linear, verbal representations of the participant's snapshot photographic practices.

The participants were sixteen Finnish cameraphone photographers of whom fourteen also used digital cameras. I had chosen cameraphone users as the group to study because I was interested in the impact of private, portable technology and the possibility for messaging to snapshot use. The group of participants consisted of five 17-18-year-olds, two girls and three boys; five 20-35-year-olds, three of whom were women and two men; and six 35-53-year-olds, two women and four men. The adult participants came from different professional fields ranging from health care to the IT industry. None of them were experts in digital photography or mobile or internet technologies. All of the participants resided in urban areas in Southern Finland (the resources available for this study did not allow otherwise.) However, one participant resided half of the year in Northern Lapland. In finding participants, my aim was not to form a representative sample but a purposeful one. (Mason, 2002, 124, 134-139) I sought for active cameraphone users who could tell me about their thoughts and experiences in using it, and made sure there was a possibility for varied accounts to emerge by seeking for participants of different ages, places of residence, and aiming for gender balance. The research period during which the participants made notes of all of their interactions with digital photos, and saved the photos as far as it was possible, varied from two to three weeks in the spring 2006. Soon after, we met for the interview.

I analysed the data by first writing case studies on eight individual participants based on all parts of the data they had submitted. Next, I sought for significant themes across the cases. The themes, which I will not extend on in the context of this paper, were: valuations concerning digital snapshot photography, cameraphone as a medium for social interaction, and technological networks around cameraphone use. These themes formed the basis for examining the remaining eight data sets and were both consolidated and refined through this examination. Playful and creative circulation of photos occured under all of these themes of

interpretation. I will first present detailed examples of how the participants in my study circulated snapshots playfully. Next, I will consider how they evaluated and made choices in using the circulation technologies. Before concluding, I will discuss why the snapshot photographers themselves did not value their creativity in the playful circulation of photos. The quotes in this paper have been translated by the author from Finnish, therefore they do not apppear in quotation marks.

3. Circulating snapshots playfully

Raimo's, 53, stevedore, most frequent cameraphone activity was sending picture messages at work to other stevedores. At the port, there were matters that the stevedores could not discuss in the radio frequency phones because the managers were connected to the frequency as well. As a solution, the stevedores used their own, private cameraphones to communicate amongst themselves. The matters that needed to be kept secret from the managers concerned, for example, the way the stevedores organised their work, or the selling of alcohol and cigarettes on the ships in the port. Much of this communication was carried out by a humorous exchange of photos. There was, according to Raimo, a practical reason for exchanging pictures instead of phonecalls, for example. Stevedores work outdoors or in unheated spaces. In the Finnish winter months, December to March, the temperatures are generally freezing, and can drop to 35 degrees below zero, even in Southern Finland where Raimo works. This makes it difficult to operate anything with your fingers for long, and your glasses turn foggy when you put them on. It can also be noisy at the port, which makes it difficult to make phonecalls.

Raimo: It's extremely rare that I send text messages, because I have to wear my glasses, and wearing glasses - at least at work I never wear them. (...) Just sending the picture, it's like, it saves you from so much. I don't have to start making a call, or writing a text message with some long explanation. Really, one picture tells you so much.

Although Raimo stressed the practical reasons for sending photos instead of text, it became clear to me during the interview there were other reasons behind it as well. The men had found a way to extend the verbal joking of the workplace to a pictorial form of communication. Most of the pictures that the stevedores exchanged were visual puns, whether they were related to tasks at work or to topics of private life. Raimo explained to me that the photo messaging often took the form of a question-answer pattern. In this exchange, it was important, first, to be able find a clever picture for the message, to be able to react back with equal wittiness, and, a fundamental factor, to be able to understand the joke. The pictures were either not accompanied by a caption or the caption would not explain the picture but add to the joke. In a subtle way, Raimo made it clear to me that he took pleasure and pride in the fact that he was skilled in all of these respects. Raimo enjoyed a position of organising the work at the port, which made him one of the centre points of communication. He would summon the men for a specific task or invite them for coffee, for example. The playful exchange of the pictures reflected the relationships and the hierarchies in the workplace while also contributing to them. Raimo mentioned it was the younger colleagues who did not seem to understand the jokes and were silly enough to even sometimes show the photos at the managers' office. To prepare for these situations, when the stevedores exchanged messages concerning the organization of work for the day, they tried to conceal the original purpose of the messages in case one of the managers saw the message. This was done, for example, by adding frames on the photos (Fig. 1).

Figure 1. Stevedore camouflaged by a picture frame

Many of the messages that Raimo sent were visual puns that played on the meaning of the question to which they were answer, or on the meaning of the picture itself. The wit of these puns was increased by the fact that frequently, Raimo would use a photo that he already had on his phone and that he may have had used many times before in other contexts. For example, when someone on the radio frequency had asked for the time, Raimo had sent him a photo of the coffee machine, knowing that the recipient would show it to others around him. Another photo that Raimo told me had served as an answer to many kinds of questions was a picture of a glass of brandy (Fig. 2). At the port, he had used it to answer questions about his plans for the weekend, and I received the photo while arranging the study, with the message: Doctor's orders - three days sick leave. Raimo called these kind of depository photos, which he kept on his phone for a long time, found funny, and used over and over again, classics.

Figure 2. Glass of brandy with many significations

With older colleagues, Raimo exchanged humorous messages also outside working hours. One night, a colleague had sent Raimo a message from the pub, picturing a woman with whom he had failed to make closer aquaintance with. As a consolation, Raimo sent him back a loud animation that he found on his phone with a plaited girl swinging her arms and singing. The tone was no different when messaging with his family members. When Raimo's partner had been on a business trip and sent him a message asking if he missed her, he had sent her a video clip whe she told him off for shooting the video. Another area of playful and creative cameraphone snapshot circulation was planning, making, and sending greetings. To send a birthday greeting to his girlfriend, Sami, 28, had cut out a heart of red paper, lit tealights, and taken numerous pictures to reach the outcome he was looking for. (Fig. 3)

Figure 3. Birthday greeting

Sami: Well, this was supposed to be, like, a picture to Saara, what day was it again, yeah it was her birthday. A picture that would convey that candles are burning. The problem was, well, there was some photographic technique problem-solving involved [smiles]. So, the problem was that if I took a photo and it was too dark, you couldn't make anything out of the picture. Although now that I uploaded them to the computer, it looks better. On the phone, it looked much worse. And if I added too much light, you couldn't see there were candles burning, [but you could see] the whole background. So I was, like, looking for the perfect [smiles] picture that would be a nice birthday greeting. (...) I thought I'd look for, like, a clichéd love feeling [emphasis Sami's] here, and what would be more of a cliché than a candle and a heart.

The participants in my study who were creative with their cameraphone photos, or used them playfully in their communication, did not restrict photo messaging to phone-to-phone exchange. In fact, multimedia messaging was something they normally sought to avoid. The main reasons for this were the price that was regarded to be too high, and the technical problems that people encountered when trying to send or receive the messages. In addition, Aaro, 52, who used a cameraphone provided by his employer, had restricted possibilities to send photos from their phone. As an alternative route, older adults preferred e-mail, while the younger generation preferred chat and instant messaging. Whatever the channel, a common denominator to this circulation became that it was no longer relevant whether the photos were cameraphone, digital camera, or downloaded. (Generally, the participants were often careful to separate cameraphone snaps from other kinds of photos.) In e-mail photo circulation, the emphasis, in this data, was on visual jokes. In real-time, synchronous online communication, it was on the ironic tone of the whole exchange.

Sami: Well, sending photos by e-mail might be something a bit more official, like if I, if I have happened to snap a photo related to work, it's more for that. And the general use, which is not too common either, is, I don't know, with Skype maybe, well at least through Messenger (...) through them with my friends (...) something a bit more humourous [laughter] I've been sending to friends at times.
HR: Umm, well, how do you happen to send them, like, why do you send, how do you come to think of sending a photo to someone?
S: Well, it's about what we have chatted about while instant messaging, for example, a mate (...) went back to Seattle, and in December, when he had gone back, we chatted and he mentioned he had some kind of a car there. It was pretty humourous, this chatting of ours, so I had to make fun of him a bit. I remembered I had a picture that I took when I was interrailing in Croatia in the summer. On one of the islands there was a, you know, one of these bicycles with a motor installed on it. So I remembered I had this photo, and I send it to him, saying, you must have something like this, then. And another mate who happened to be in

the same chat (...) he sent something similar, a picture of a tractor he had taken (laughs), in Southern France, looking pretty miserable. So, like, I've sent pictures to mock other people [laughter].

Aaro, had made a habit out of e-mailing cameraphone photos and digital video clips that he found amusing to his friends, colleagues, and acquaintances.

A: So, this mate is a head of research, or a professor at a physics lab, running some research project, and because [the licence plate] said FYS-1, it was logically related to physics, so I took a picture and e-mailed it to him, like, is that your company car [laughter].
HR: Yeah.
A: And this, in turn, our estate manager [?] is called Jalonen, well, there it is, so I, it's related to that. So, this kind of pictures I take a lot. I mean, you can take a photo right there in the situation.

Because Aaro used a company phone, he could not send the photos directly from his phone. First he had to transfer them to his computer, which he did via bluetooth, to be able to send them out by e-mail. For some messages, Aaro made even more effort. Every winter, he sent photos that depicted freezing weather in Finland to friends in what he called the hot zone. He chuckled with the thought of how his friends, and their friends, would react to the photos. He told me he knew that they would claim the photos were fake. During January 2006, shortly before the interview, Aaro had taken photos of the television weather forecast in order to increase credibility to the quoted 28 to 35 below zero degrees. In the e-mail to his friends that accompanied the photos, he explained that the black stripes in the photos were due to the television transmission. (Fig. 4) Aaro also reported having made a film, a previous winter, with his digital video camera, featuring the temperature meter in his kitchen that showed the outside temperature.

Figure 4. Greetings from Finland to the "hot zone"
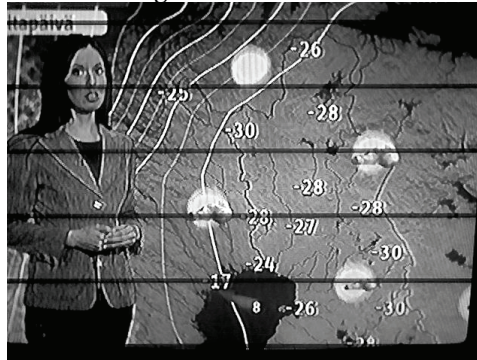
HR: How did you, why did you send these photos to them specifically? You were watching the weather forecast and how did it go from there?
A: Well, I mean, I've always bombarded the foreigners with this type of photos. Some years ago I shot with the video camera in the kitchen, where we had this old fashioned temperature meter. So I shot standing by the kitchen door, in a distance that is, I shot the kitchen window, then started zooming into the meter (...) closer and closer, you still couldn't see how low below zero the meter was pointing to, only when it got to minus 35 you could see it.
HR: I see.
A: And I made a clip out of it and sent it ahead, and got pretty good feedback for it, too.
HR: Oh, okay.
A: Well, you can imagine if someone in Kuwait sees something like that, you know.

The tone of the messages and the effort related resembled the e-mail spam traffic that took place among Aaro's colleagues. While we were in contact related to this study, Aaro sent me all the spam he received or sent. In three weeks this amounted to 65 messages, varying from zero or one message per day to a maximum of twelve messages per day. The most popular themes had to do with sexual insinuations, cars, or sports, and they were one-off visual jokes instead of an evolving exchange of photos such as in Sami's chat conversation described above. Some of the messages were elaborate and time had been spent on constructing them. For example, a mail titled *Traffic round-a-bout* included a Word document where photos had been added of a round-a-bout in Great Britain that the author of this file had found particularly confusing. He had added text, in fonts of different sizes and colours, to tell a little story of the driver arriving to the crossroads and becoming confused over how to drive through it. The examples show that the participants were prepared to see some trouble for, first, creating their playful messages, and second, for finding the most suitable way in each context to transmit their message. Considering the audience for the message, the technology that was at the audience's disposal, the level of immediacy needed for the delivery of the message and the response, and possible restrictions involved at the recipient end, the participants evaluated the options that the broadband technologies at their disposal provided for messaging. Sometimes, however, the evaluation lead to the decision of not to use information networks at all but to simply show the snapshots to their desired audience from the camera, computer, or the phone.

4. Evaluating technologies for snapshot circulation

The most frequently cited reason for not sending mobile multimedia messages was the cost of it. However, apart from a teenage couple who, after a substantive phone bill, were conscious of the prices of their messages, the participants were not in fact aware of exactly how much the messages would cost. When multimedia messaging services became available in Finland in 2002, they were generally considered expensive, because the price was compared to that of text messages. The price has come down significantly since, but the image of multimedia messaging as expensive compared to other services persists. Evaluations concerning price were not, surprisingly, made against the quality of the service. This was surprising because at the same time, problems were frequently reported with the service. It seemed that the active users were more concerned with the problems in the service than with the price. Raimo, with the most experience in multimedia messaging, had for long debated problems in the transmission of his messages with the operators and his mobile phone manufacturer. Sami reported problems caused by having to often switch his SIM-card between two phones.

Raimo: There are certain restrictions, and they are pretty, I mean, they are an obvious inconvenience in using mobile phones. The criteria for buying - I mean, people don't buy computers either unless they know all the features in it will work. The mobile phone is the only, let's say a bestseller, where there are no guarantees given that all of its features will work. And I find that pretty odd.
HR: Yeah, you're right.
Raimo: If it's got the multimedia features - I don't know why no-one brings this up. They don't work. And what's more, it's brand-specific, the malfunctioning, and operator-specific, getting to the bottom of it, but all of it is up to the customer to pay for. And no-one takes responsibility. That's the biggest problem. I mean, the synchronization [of different phone models], it's like, even dummies and old people [can use the phones] because it's been made so easy, but they expect the phones to work, too, but they don't. [I'm expecting] the next

version of my phone, it's got a harddrive [laughter] but it doesn't help me one bit unless someone else has the same kind of phone. So, in that sense, it's a bit inconvenient.

Sami: (...) I had to order [the missing settings] from [my operator] and so on, blah blah, install them. Plus, as a side comment, for the [operator] service, you have to remember your user name and password that I didn't remember either, and I can imagine how difficult it is for some Jack Smith [laughter] to get the settings right on their phone [laughter.]

Sami's complaint highlighted a common problem. I realized during the study that many cameraphone users who would potentially wish to send photo messages did not have an inkling on whether they had the right settings installed in their phone, or how they could install them if they did not. The same concerned the use of infrared or bluetooth. The problem was corroborated by the fact it was difficult to get through to the operator customer service numbers, which made them expensive calls. Based on my personal experience, it is also rare that the sales staff in shops that sell mobile phones could advise the customers on their features. In other words, in the case of multimedia messaging, the lack of services, or the bad quality of them, was a common reason for devaluing this medium among cameraphone users. Raimo had nothing to replace mobile messaging with at his workplace, but those who did and possessed the skills to find a way around this problem, like Henri, 17, relied on other techniques.

Henri: Well, I think the last time I sent a picture message was at New Year's, and I guess at Christmastime I sent one to someone. It's rare that I send picture messages, I tend to send e-mail if I have pictures that I want to send. (...) If I want to transmit or send a photo, I do it directly from the phone with the infrared or bluetooth connection, or by e-mail or the Messenger. Sending picture messages, it's, like, if you don't have someone's e-mail address, or you know that they never read it, the picture message is a more sure way to get the message through right away. If you want to, say, wish someone happy birthday, you might send a message with a picture. But I don't, if I take a photo of something, I don't usually send it to anyone.
HR: Why?
Henri: I do it on the computer, with the Messenger. Because of the cost. Well, it's not so expensive, but it's just not my thing. I'd rather say, come online and you'll get a few photos, like. Much easier. Neater.

Apart from technical or economic reasons, people sometimes decided not to use any kind of messaging due to the importance of shared presence while viewing the photos. Tomi, 17, told me that he acted as cameraman while his friends made stunts. Later, he was mostly responsible for editing the video clips, and while doing it, he uploaded clips onto his phone to look at with his friends. I suspect that the reasons for this method, instead of mobile phone or internet messaging, had in common with what I experienced with the participants while they showed me the videos they had on their mobile phones. Apart from Raimo's video clips, we looked at a digital camera clip with Aila, 44, teacher, where her 11-year-old daughter and her friends performed a music video. Jani, 30, showed me videos on his phone of him teasing his girlfriend, telling him to stop shooting, and of his dog playing in the snow. Sami showed me a digital camera video clip from a party where his guests were playing the flute. In all of these occasions, we laughed together, making comments on the events on the video, and the participant provided additional information related to the people and events that were featured in it. Viewing the clips brought about a sense of trust and bonding that I can only imagine to

be much stronger when the clips are viewed together with close ones and people who have been present at the shooting of the video.

5. Playful circulation of snapshots as "just playing"

In association to being playful, during the study, I noticed a contradiction between the way that the playful moments or messages were played down in words, and the manner in which they were told. Being playful with the cameras and photos was mentioned in passing, and as a response to further questions, the participants convinced me it was "just playing", nothing important to discuss at length. The playfulness, however, always took place between people who were very close to each other: parents and children, girlfriends and boyfriends, or close friends, and I sensed a feeling of joy and enjoyment whenever I was told about these events in the interviews. The moments were also remembered very well. However, the participants never explicitly acknowledged the playful moments as important, memorable ones, or even simply "fun" without any reservations. What I mean to bring forth is that while the notion of the creative use of broadband technologies, and its value, may be obvious to researchers in the field, it is not always that to the users - at least when associated to playfulness.

For example, cameraphone use in its totality was often called "just playing." It meant that the participant was aware of the fact that looking at the photos on the phone, for example, was not useful. As it did not respond to any requirements of efficiency or achievement, it was unimportant. Cameraphone use was thus judged by the average Western notion that morally justified use of computers and other ICT's is goal-oriented and purposeful use where tasks are performed (see, for example, Hartmann, 2005, 141-158). Cameraphone use did not involve any personal obligations. Also, the social and cultural valuations and status of the cameraphone were still in flux at the time of the study. Among the teenagers, the cameraphone was already a common possession, and it would have been "uncool" to show too much excitement about it. The adults, on the other hand, were enthousiastic about the phones, but saw them as gadgets and made clear that they preferred digital cameras as far as cameras were concerned. Tapio, 52, for example, liked to paint a picture of cameraphone use as somewhat ludicrous. He sneered at the at the way his sister sent him photo messages from her skiing holidays, according to Tapio, bragging. Today, however, circulating snapshots in both private and public internet messaging increases. Snapshots gain new roles that are in contrast to the notion of lasting photos in print albums. In the future, the basis for evaluating different cameras and photo use may shift from valuing snapshots only as static aesthetic objects towards valuing them also as objects of use, as short-lived, context-specific vehicles of communication and self-representation. The proliferation of internet picture galleries for social networking, for example, point to this direction.

For the moment, still, the currency of creativity in broadband use or snapshot circulation is not strong among the users. When I asked the participants about their future plans or desires regarding snapshot photography, most often the answers turned the discussion to the lack in their skills in using digital cameras or image processing. Although many of the participants had found ways of using their cameraphones that I found smart and creative, and could infer that they were proud of their innovations, they did not value these practices explicitly, or envisage any continuation or variation to them. Only Tapio mentioned that he was planning to try out online applications to find new ways of archiving and sharing his photos.

6. Conclusions

The examples of humourous and playful circulation of snapshots show that broadband technologies can provide an area of creative and surprising communication in workplaces, in intimate relationships, and among friends. Based on my study, it seems that the users of chat and instant messaging services were the most satisfied with the support that these applications provided for their communication and creativity. Even e-mail, which potentially involves a long delay in delivering the message, was seen as a more convenient medium than the mobile multimedia message for circulating humorous messages. Mobile multimedia messaging entails several problems from the perspective of enabling the user's creativity in photo circulation. First, it has the image of an expensive service. Second, there is a contradiction in providing an easy user interface for sending the messages, on one hand, but making it difficult to manage the settings needed for sending pictures, on the other. Furthermore, without a reaction from the recipient, the sender is unaware whether the message has been delivered. It is also easier, and cheaper, to include multiple recipients to the message in online than in mobile environments, and the pace of the exchange of messages is quicker in the former than in the latter – both important elements in the instances of playful communication with pictures online that were reported in my study. Apart from technical issues, there are cultural and social issues that potentially encourage or restrict creative broadband use. The image that consumers have of the price of a service is one example of these issues. More complex ones are related to interpretations of the purpose and value of a technical device. The cameraphone, for example, is still seen by many as a gagdet, without the same capacity to fulfill the tasks and desires of its user as the personal computer is seen to have. Among the youth in my study, this seemed to lead to valuing the creative use of online internet applications more than the creative uses of the cameraphone and mobile messaging, which were downplayed as "just playing."

The distribution and circulation of different pictorial content in the internet increases, and its browsing and producing among so-called ordinary people extends from personal computers to mobile devices. Given this situation, it is important to continue empirical research on both the practices of the users who generate media content and of those who are satisfied with browsing it. What is more, it is important to see the visual and technological dimensions of these practices as two sides of the same coin. Only this way, in my view, we can learn how to innovate and design services and environments that support and build on the users' creativity and their ideas of what is purposeful, and fun, socially, culturally as well as technically. After all, digital pictorial content is digital technology.

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Automatic Recognition Of Image Environment

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Abstract

The aim of this paper is to contribute to the development of JPSearch standard.
Algorithm is developed for simple recognition of the image environment. Our aim was to distinguish indoor and outdoor environment, and in particular, determine the probability that image contains sky and grass or tree foliage. Algorithm principles are presented here, together with adequate examples.
Region of interest with homogenous sky color is defined as square area (block) without significant color changes, in accordance to predefined homogeneity criterion. If the homogeneity criterion is not fulfilled, block is divided into subblocks of smaller size and homogeneity test is repeated. Region without edges is defined as region where edge detection and image dilation did not produce any content. Results of two methods are multiplied giving image mask. In sky detection, the original image is searched with the image mask for pixels colored within the predefined sky color limits in HSV color space. If the percentage of sky color pixels is above threshold, sky is detected.
In grass detection, inverted image mask is used, thus enabling search in non-homogenous area filled with edges. Original image is searched for pixels within grass color limits. If the percentage of grass color pixels is above threshold, grass is detected.

1. Introduction

Creation, storage, retrieval and usage of digital images has significantly grown up for last several years. Image compression has been one of very important topics for many years. Today, not only compression but also image classification has gained importance. According to various marketing research [1,2,3], digital photo spending will increase more than 10% a year, billions of digital prints will be made each year, while number of cell phones with cameras sold each year will rise close to 400m by 2008. This enormous increase is further boosted by introducing multimedia messaging service (MMS) that enables completely new kind of visual communication. Classification, organizing and accessing such enormous amount of images, available both in personal (private) and shared databases, becomes an important problem. JPSearch standard is proposed as a solution to problem of organizing the images. The paper is organized as follows. In Chapter 2, general properties of JPSearch standard are presented. Chapter 3 is central chapter where algorithms for extracting secondary visual features are presented. Experiments are described in Chapter 4, while discussion and conclusions are given in Chapter 5.

2. JPSearch

One way of organizing the images is in specifying metadata and various functionalities which would enable efficient and flexible still image search. This has been one of main reasons for the development of JPSearch standard.
Within the JPSearch standard scope and requirements, there are many examples of possible applications and markets. Some of them include Web image search (because search engines are not capable of indexing images after the image contents), Surveillance (because of

enormous amount of captured images), Professional image libraries, Medical imaging applications, etc.

General requirement for the standard concerning metadata has been simplicity, comprehensibility, compactness and search-efficiency. Another important topic is the image indexing process. Image indexing is a necessary pre-condition for image retrieval system.

The basic steps in image indexing process are as follows:

a) Create image information schema and the corresponding indexing structures. This means that features must be selected, index structures must be designed, as well as their intercommunication. It is also possible that the schema must be designed so that new features can be added in simple manner with results being compatible with previous.

b) Input, analyze and process the images. For each image the following activities are required:

- process the intrinsic information (image data, data in the header, file organization, i.e. filenames, folder names, etc.)
- extract primary visual features (color histograms and other unambiguous features),
- **extract secondary visual features (regions, faces, etc.),**
- deduce additional information (add external knowledge to primary and secondary features)
- extract the non-visual features in the case the image occurs in a context (like webpage, document, or like)

c) Generate the index

d) Create the data features like number of images in the collection, categories, semantic labels, etc.

e) Manually augment the data features.

Query process flow is highly user dependent. User must be active during the result evaluation. It is possible to define the following evaluation steps:

a) The user sets the task (there are several ways to do it: to continue the previous task, update its features, implement the location, time and other requirements, etc.)

b) Translate the task into query for that system

c) Enter the query into the system. This is a non-trivial step which can take many forms

d) Execute pre-search processing, search and post-search processing. All steps are non-trivial and are explained in details in [2]

e) Output the result list to the user

f) Evaluation of the results by the user

g) Retrieval of result images and post-search housekeeping activities.

After completion of non-trivial multi-level image researching [3] user is supposed to be satisfied with the results and use them in everyday life.

3. Extracting secondary visual features

We have selected a part of the extensive work, marked bold in the above Chapter, i.e. process the images in order to extract secondary visual features. Among various features we have developed algorithms for detecting sky in upper part (upper quarter or third of the image) and grass or trees in lower image parts (lower quarter or third of the image).

3.1 Sky detection

Sky is often seen in photographs. Detecting the sky is very important for image understanding, processing and retrieval. Sky presence is a strong indicator for scene categorization, e.g. outdoor versus indoor, landscape versus city, and in most cases, for image orientation [4,5]. Color, usually light blue when there are no clouds, has been one of the most important sky properties. Many authors have used color as the main feature for sky detection.

We have proposed a combination of two methods: image decomposition and edge detection, together with color utilization. Details of the algorithm are explained here, together with appropriate examples.

3.2 Image decomposition

Image decomposition is carried out in square blocks of predefined size. Grayscale version of image is used for this purpose. Homogeneity is checked within each block. Homogeneity is determined using very simple algorithm. If the difference between the maximum and minimum value in the block is smaller than the predefined threshold value, block is declared homogenous and it is not split. If the block is not declared homogenous, it is split into four smaller blocks and homogeneity is checked within each smaller block.

The process is repeated until the block size reaches single pixel, or larger if required.

Resulting homogenous blocks usually have several various sizes.

Image shown in Fig. 1 is used as an example. Result of image decomposition with threshold equal to 0,2 is shown in Fig.2 and threshold equal to 0,5 is shown in Fig.3. Both images are given in the form of binary image with zeros along rectangular borders and ones within the square. Comparing images in Fig. 2 and 3 it is obvious that threshold value selection is very important for the decomposition properties.

Fig.1 Test image

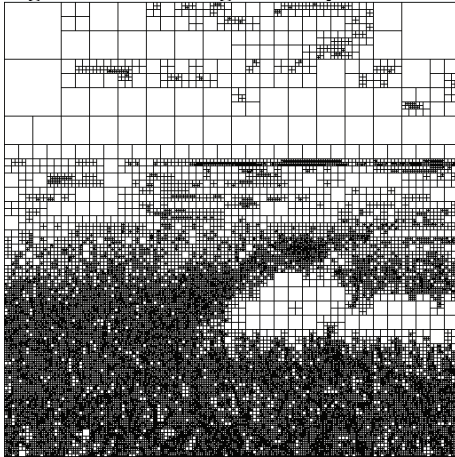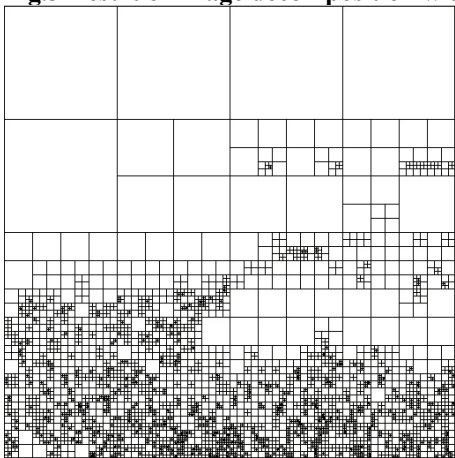**Fig.2 Result of image decomposition with threshold 0,2**

Fig.3 Result of image decomposition with threshold 0,5

3.3 Edge detection

Edge detection is carried out using Canny method. The Canny method finds edges by looking for local maxima of the gradient image. Gradient image is obtained using the derivative of Gaussian filter. Two thresholds are used, strong and weak. Output image is a binary image which consists of strong edges and weak edges if they are linked to strong edges. Along the detected edges image value is zero.

Line along the detected edge is thickened using dilation with structure element in the form of rectangular unit matrix of size 3x3, in order to mask the transition pixels surrounding the edge. Within the edges, values are equal to 1.

Strong threshold is calculated as global image threshold, determined using Otsu's method.
Weak threshold is calculated as a fraction of strong threshold. Two examples for edge detection are shown in Fig.4 (lower weak threshold, more detected edges) and Fig.5 (higher weak threshold, less detected edges).
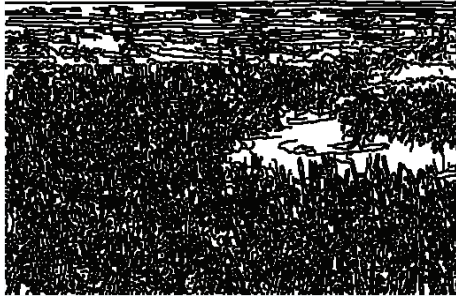
Fig.4 Edges detected for lower weak threshold

Fig.5 Edges detected for higher weak threshold

3.4 Mask image

Mask image is created by multiplying binary images obtained for decomposition and edge detection. This image consists of zeros along region borders and detected edges, ones within regions with uniform texture. Pixels with "1" are considered as a candidate sky pixels, whereas those with "0" are either non-sky pixels or edge pixels with colors out of the sky color range.

Multiplying the images shown in Fig.2 and Fig.4, mask image is obtained, shown in Fig.6, named Strong mask image because of strong decomposition and many detected edges.
Multiplying the images shown in Fig.3 and Fig.5, mask image is obtained, shown in Fig.7, named Weak mask image, because of weak decomposition and few detected edges..
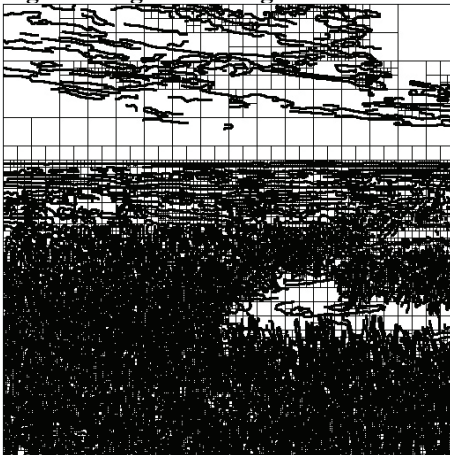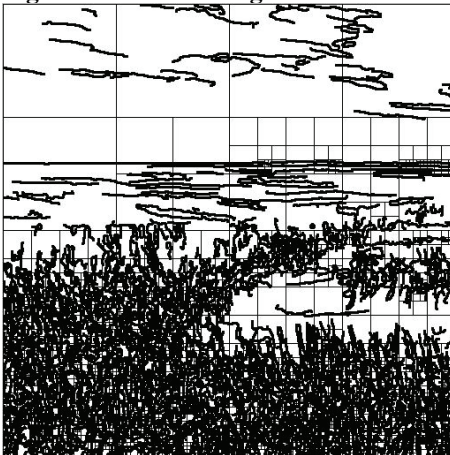
Fig.6 Strong mask image

Fig.7 Weak mask image

3.5 Masking and sky identification

Original color image is masked (formally multiplied) with mask image.

Resulting image consists of color pixels in areas with very simple texture, with no edges and no strong color change, of irregular form, surrounded with black lines.

Masking is followed by counting and sky identification. Pixels with color belonging to sky color range and non-masked pixels are counted, their number being N_S and N_N respectively, $N_S \leq N_N$. Several identification modes are possible, depending on application. For example, it is possible to count pixels in upper half or upper quarter or some other predefined part of the image. Identification ratio is given as

$$R_I = \frac{N_S}{N_N}$$

The value for R_I is usually expressed in %. It can be described as percentage of pixels in simple texture areas having the color in sky color range.

3.6 Grass or trees detection.

Grass and foliage have completely opposite properties comparing to sky properties, described above:

- in typical images grass is located in lower part of the image

- decomposition gives very small blocks with uniform contents, often the smallest possible
- edge detection gives plenty of edges

We have again proposed a combination of image decomposition and edge detection. Image decomposition and edge detection are performed in the same manner. Mask image is inverted. Area with many detected edges thus became transparent in the mask image, while area with uniform contents were masked.

4. Experiments

We have carried out extensive experiments with a large image database containing several hundreds of various images with sky and non-sky contents. Outlook of the test window is shown in Fig.8.

Fig. 8 Test window for the test image shown in Fig.1
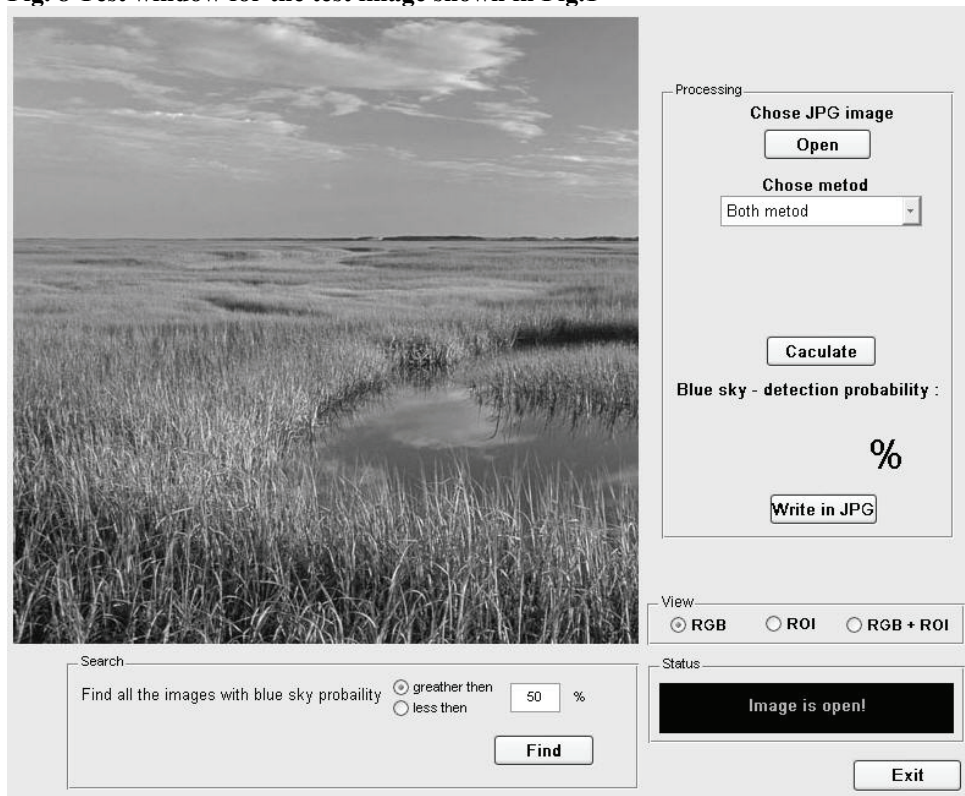
Comparing the results expressed as Blue sky-detection probability with the image contents, we have concluded that probability falls in two groups, low (lower than 10%), and high (higher than 80%).

Intermediate results were obtained only with images where part of the sky has been covered with objects with uniform non-sky color, or the sky contained large red or even white areas (twilight or clouds).

If the calculated probability is in low group, it means that sky was not detected in the image, and vice versa. The only real problem occurred with underwater images, but the system was not designed to solve such particular cases.

In the case of grass detection we have used similar program with modifications explained above. Test window is not shown here for brevity reasons.

Results were similar, with very high accuracy, except the cases where the grass was not green at all, or shooting distance was so high that grass appeared homogenous, with no edges.

5. Discussion and conclusion

Experiments using various image sets have shown that identification ratio falls in high group (higher than 89%) for most images displaying clear sky with dominantly blue color.
As the sky color range, we have included a wide range of grey and blue grey colors covering thus most of the cloud colors. In the case of heavy clouds, proposed masking is capable of eliminating most of edges and nonuniformly colored sky and cloud parts, giving very high identification ratio even in these cases.
In the case of sunrise or sunset, however, with dominantly reddish sky and cloud colors, identification fails. It is also difficult to obtain high identification ratio for images showing sky seen through tree branches, or sky partially covered with large objects (building walls, objects located close to camera) with homogenous surface.
Tests with images containing grass or trees have shown that edge detection sensitivity must be reduced in order to detect weak edges that occur in panoramic images, with grass seen from distance.
If the grass, bushes or trees are shown from normal distance, identification ratio is very high, close to 100%.
We have shown that simple algorithms with image decomposition and edge detection, followed by color comparison are capable of extracting some secondary visual image features, namely outdoor locations with sky and grass or trees as a part of the image.

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Visual-Semantic Inference For Image Retrieval

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Abstract

This paper presents a new image retrieval approach based on 'semantic features'. In order to effectively bridge the semantic gap, low-level analysis of visual content in image data needs to be incorporated to semantic descriptions. The proposed model is designed to exploit underlying low-level cues embedded in elementary image blocks building objects of interest. It is assumed that users are mostly interested in finding objects in images and do not care about other elements in the depicted scene, e.g. background and surrounding objects. The proposed approach is based on Bayesian networks. Its graphical models are used to represent a factorised joint distribution over random variables from both visual and semantic evidences. The (in)dependent relations between them are encoded in the networks. In particular, a two-level network structure is built in this paper to model the problem of semantic-visual inference. The originality of this structure is that it uses a top-down approach, in which a global level network encoding is considered. It exploits high-level semantic relations as the essential layer. It is firstly constructed directly based on the output from a learning unit. Then, a local level network is built between the global layer and the learning unit. The aim is to further exploit the visual-semantic interrelationships between multiple local semantic evidences. This is different from conventional Bayesian network based approaches that builds the two-level structure in a bottom-up order. The parameters of the model are obtained from visual similarity matching in a multiple visual descriptor space. The visual primitives are combined according to a concept-specific metric, which is 'learned' from some representative blocks.

Introduction

Nowadays digital cameras are becoming more and more advanced and affordable, as a consequence an enormous number of digital picture databases have been created. The need of efficient technique to manage and browse these databases becomes evident. The goal of semantic image retrieval is to search for natural images that contain some predefined high-level semantic meanings. This area has been investigated for several decades by the image processing and computer vision research communities. In this paper an object-centered image retrieval framework is proposed. It is based on an object-centered approach to image retrieval employing Bayesian Network for non-monotonic inference.

In the literature the Bayesian approach is mainly used in region or object-based image retrieval systems [1, 2, 3, 4], in which the object's likelihood can be calculated from the conditional probability of feature vectors. These systems use probabilistic reasoning to exploit the relationship between objects and their features. Some other systems employ Bayesian approach in scenario of scene classification e.g., sunset, indoor, outdoor, landscape [5, 6]. However, this kind of classifications has been restricted to mutually exclusive categories, and so is only suitable for images that have only one dominant concept. But in more realistic scenarios in image classification and retrieval, images are complex and they

usually consist of many semantically meaningful objects. Therefore the relationships between semantically meaningful concepts of the objects cannot be ignored and need to be explored in great degree. In [7], multi-categories are introduced with a simple "sub-class-of" relationship between some of the parent categories with their children categories. While in [8, 9], a statistical analysis of the relationships among concepts is adopted and achieve image retrieving by using metadata (e.g. the RDF triples or semantic web ontology model) that describe and organize the concepts in images.

The framework proposed in this paper consists of three main steps: pre-processing step, local semantic understanding step and global semantic inference step. Indeed, in most realistic scenarios users are more interested in semantically meaningful objects present in pictures instead of the whole pictures, which usually include several other objects and complex background. For this reason, the approach used here is focused on single objects by first splitting images into small regions and first extracting local semantic features from the regions. Then the most relevant local semantic features are directly used as cues for global semantic image retrieval. More details on the approach using only the first and second steps are reported in [11]. In the third step, a Bayesian modelling approach is adopted to synthesize local semantics and infer the semantic information on the picture level. This step has two advantages: it considers local semantic information from all regions in image instead of a single region; and it explores the underlying relationships between the local semantics. In [12], the new framework including this step was initially described and experiments on a fully annotated dataset were presented. Based on [11, 12], in this paper a more comprehensive study is done. Besides, the algorithm is tested on a very large dataset in order to better validate our approach.

The paper is organized as follows: the framework is overviewed and the first and second steps are briefly introduced in Section II. Section III gives full details of the third step, which is the emphasis of this paper. Experimental results and conclusions are given in Section IV.

The Proposed Framework for Object Based Image Retrieval

The proposed framework retrieves natural images using knowledge explored from a well-selected training dataset. It has 3 important features: it first tries to extract semantic information from small block regions of images in order to focus on semantically meaningful objects which are closer to human semantic understanding; it utilizes Multi-Objective Optimization (MOO) to integrate multiple low-level visual primitives to more closely bridge the gap between human and machine understanding of images [10]; it uses Bayesian networks as a tool to model an ontology belief network for global semantic exploitation.

In most image retrieval scenarios users' attention focuses on single objects. For that reason, in this work the emphasis is on single objects rather than on the whole scene depicted in the image. However, segmentation is not assumed here since we argue that segmenting an image into single semantically meaningful objects is almost as challenging as the semantic gap problem itself. Therefore, to deal with objects, a very simple approach is taken based on small image blocks of regular size called elementary building blocks of images. In Figure 1 an example is presented illustrating these observations. The highlighted elementary blocks are clearly representatives of the concept "tiger", "vegetation" and "stone".

Figure 1: Elementary building blocks in an image.

tiger

vegetation

stone
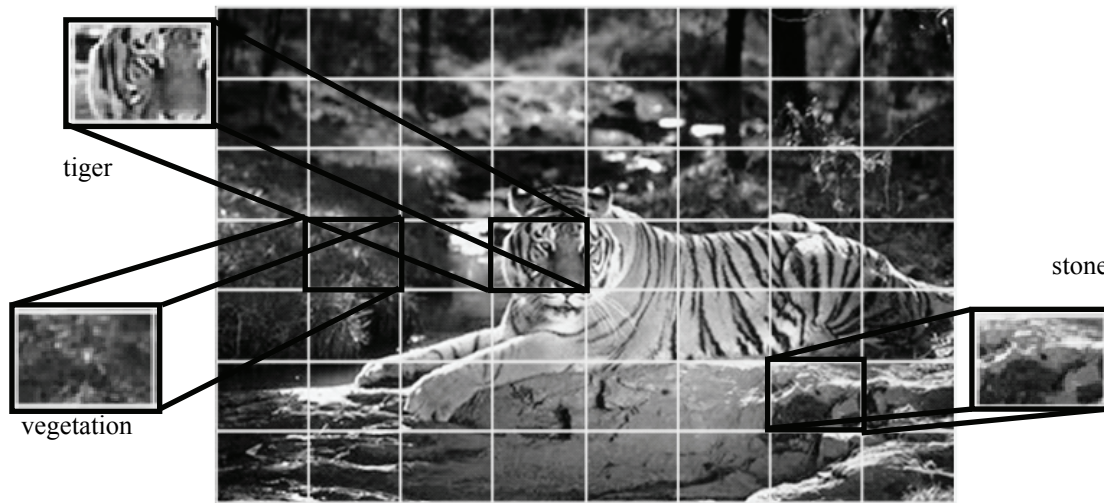
Figure 2: Three-step framework structure.
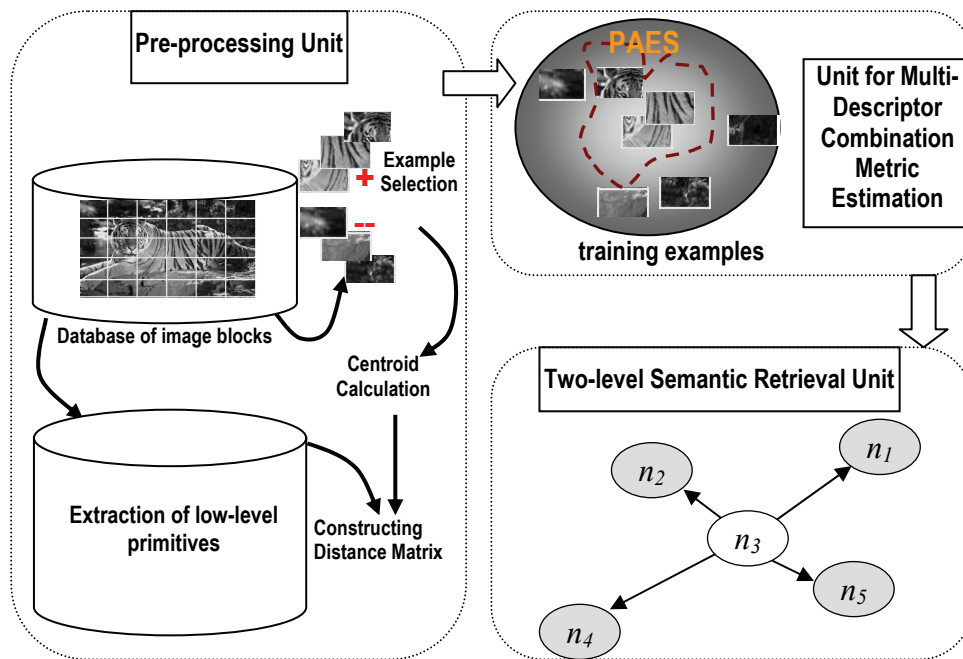
The second feature is motivated by the fact that semantic objects cannot be described by single low-level descriptors and metrics. Their nature is usually complex and requires a suitable combination of descriptors and metrics in multi-feature metric spaces. To find an optimal combination of low-level primitives into single multi-feature, we apply a Multi-Objective Optimization (MMO) technique based on a Pareto Archived Evolution Strategy [10].

Finally, to exploit a semantic retrieval scheme for natural images, Bayesian network is chosen as a robust method to infer the global semantic features from local semantic features existing in images.

A three steps approach is then proposed to achieve the framework which includes pre-processing step, local semantic understanding step and global semantic inference step. Figure

2 illustrates the proposed three-step approach of semantic image retrieval. As the focus of this paper is on the third step – global semantic inference step, the first two steps are only briefly introduced here.

The pre-processing step is conducted offline and consists of four different steps. First, each image in the database is partitioned into a fix grid of $x \times y$ blocks. The size of the grid is chosen adaptively according to the database to reduce the effect of scaling in images of different sizes. Secondly, low level feature are extracted automatically. Thirdly, given a semantic concept, a training set of representative building blocks is selected. Finally, once the training set is available, a virtual centroid of the training set is calculated using each one of the different similarity measures of the considered feature spaces. The training set and its centroid are used to build a distance matrix for constructing objective functions of the optimization strategy.

Then the next step focuses on combining low-level visual primitives into a powerful 'super' visual cue for object centred image retrieval. For a given semantic concept, MOO is performed to find an optimal combination metric for multiple visual descriptors. This combination metric is assumed to represent the symbolic nature of the concept within a multiple visual feature space. The initial semantic understanding is done within this optimal multi-feature space. This local semantic information extracted in this step forms the basis on which the Bayesian belief ontology is constructed. Full details of the first two steps can be found in [11].

By applying the optimal combination metric, a multi-feature similarity $D(b,n)$ for each block b to concept n is estimated in this optimised multi-feature space. The similarity the block that is closest to the concept centroid among all blocks in its image is used as the image's similarity. Images are then ranked according to their similarities.

Two-level Bayesian Inference

This module contains two layers: the local semantic layer which focuses on block level semantic understanding and the global semantic layer which focuses on image level semantic synthesizing and inference. Figure 3 illustrates the structure of the proposed two-level Bayesian scheme for semantic image retrieval and annotation.

Assume all the pre-processing steps are done and the multi-feature distances for each blocks are also estimated as described in the previous section. The prior probabilities of each block containing each concept are modelled by these similarity distances. Then in the local layer of Bayesian network, all concepts are jointly considered for each block to infer a class-conditional probability of one concept in the case of the other concepts. A block is annotated with the concept that has the highest class-conditional probability. These 'chosen' class-conditional probabilities are further used as the prior probabilities of the global layer of Bayesian network. The details of how the two layers are instantiated are explained in the following sub-sections.
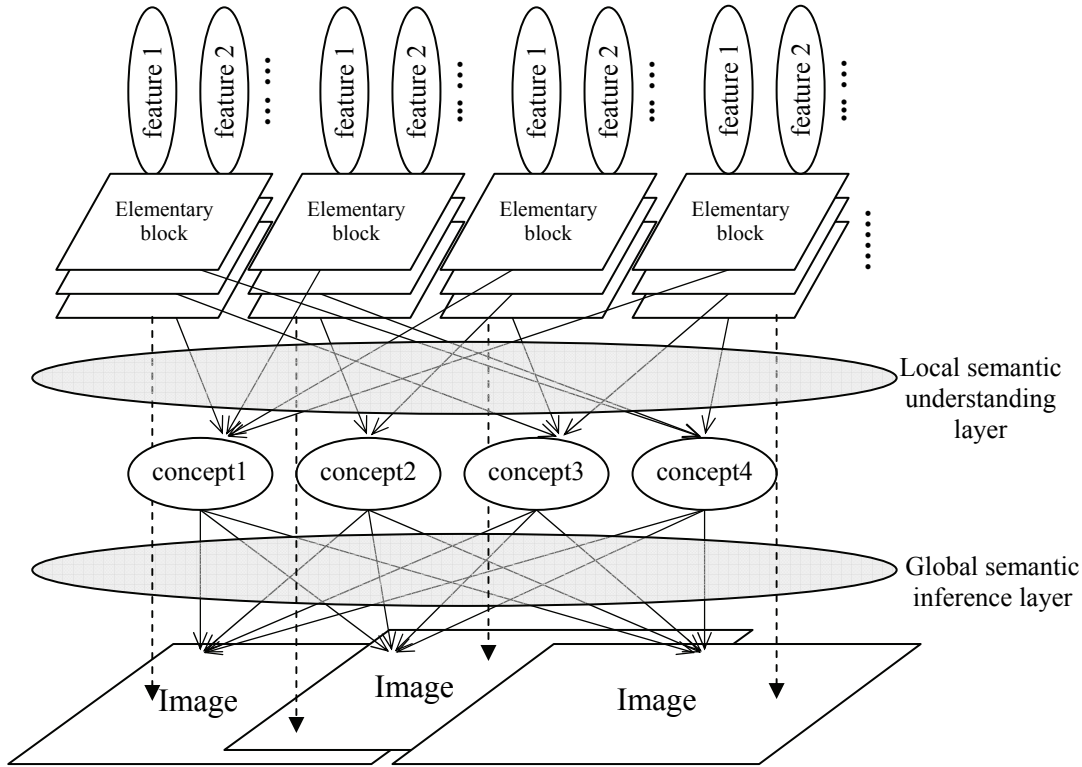
3.1 Local Low-level Level

The aim of building this layer is to take multiple concepts into consideration on a local block level based on low-level primitive features, so that better similarity estimation of blocks to images can be achieved. Here, the regional level concepts are defined to be mutually exclusive to each other. For that reason, the fact that a block is very similar to one concept should naturally imply it is less similar to the others. Based on this rationale, the following local-layer Bayesian network is constructed.

Suppose W concepts are pre-defined in the experimental ontology $\mathbf{O} = \{n_w \mid w = 1,2,...,W\}$. In Bayesian theory, the values of a variable are required to be mutually exclusive and exhaustive. To satisfy this, apart from $\mathbf{O}$, a virtual concept $\bar{\mathbf{n}}$ is defined which means 'none of the pre-defined concepts' since the pre-defined concepts are not an exhaustive set of all possible concepts in the whole database.

Suppose $n_x, x \in [1, W]$ is the target concept that user is looking for. In this layer, the meaning of evidence is different from the global layer, it represents the set of low-level visual features that are used for image understanding. Therefore, they are referred to as the *visual evidences* in order to differentiate them from the *semantic evidences* in the second-level Bayesian network. These *visual evidence*, or *visual features* in general context, are denoted as:

$$\mathbf{F} = \{f_l \mid l \in [1, L]\},$$

where L is the number of visual primitives that are considered in the paper, and each $f_l, l \in [1, L]$ represents one of the L visual features. Again, these visual features should be consistent with Assumption 1 as follows:

Assumption 1   When a local low-level Bayesian network is constructed for target concept n_x, the visual features of each block $\mathbf{F} = \{f_l \mid l \in [1, L]\}$ are regarded as the *visual evidence factors* and are assumed to be *independent* with each other in the Bayesian net:

$$P(\mathbf{F}) = \prod_{l \in [1, L]} P(f_l) \qquad \square$$

It is obvious that the local semantic features are not yet available before the low-level layer. On the contrary, the extraction of those local semantic features from low-level features is the goal of this layer. Therefore, for this layer of network, the inputs need to be taken from some more primitive information in the dataset we have in hand.

Defining the priori

According to Assumption 1, $P(n_x)$ is the prior probability that a block or an image contains concept $P(n_x)$ when no other information is available. In this layer, it corresponds to the definition of the original prior probability of concept n_w, which is obtained by:

1. Make a randomly selected subset of the whole image database; the number of images in this subset is denoted as r;

2. Manually annotate this small subset with all the concepts. Then of the original prior probability of concept n_w is calculated by:

$$P(n_w) = \frac{\text{The number of images annotated as } n_w}{r}.$$

For the local region of a block, the probability that it contains n_x based on $\mathbf{F}$ can be written as $P(n_x \mid \mathbf{F})$. However, since it is difficult to calculate this value directly, a Bayesian network is constructed which allows us to infer the value of $P(n_x \mid \mathbf{F})$ indirectly using some other information that is easier to obtain. According to Bayes' theorem, we have:

$$P(n_x \mid \mathbf{F}) = \frac{P(\mathbf{F} \mid n_x) P(n_x)}{P(\mathbf{F})} \tag{1}$$

Defining the likelihood

In (1), $P(\mathbf{F} \mid n_x)$ is called the 'likelihood', which means that when the class indicator variable C holds a value of n_x, how likely does the evidence equal to $\mathbf{F}$. Throughout this paper, we also refer to the likelihood $P(\mathbf{F} \mid n_x)$ as the 'similarity model' because its goal is to predict what the visual primitives $\mathbf{F}$ of block region b will be like, given the assumption that n_x is present in b. As described in Section II, a similarity distance of block region b to concept $n_x, x = 1, 2, ..., W$ can be defined as $D(b, n_x)$. Intuitively, the probability function that can best represent this similarity model is the reciprocal of similarity distance of b.

$$P(\mathbf{F} \mid n_x) = 1/D(b, n_x) \qquad (2)$$

When more than one visual features are considered, the similarity needs to be estimated in a multi-feature space that combines all elements of $\mathbf{F}$.

Building the network

Using the law of total probability, we have:

$$P(\mathbf{F}) = \sum_{w=1}^{W} P(\mathbf{F} \mid n_w) P(n_w).$$

Then (1) can be rewritten as:

$$P(n_x \mid \mathbf{F}) = \frac{P(\mathbf{F} \mid n_x) P(n_x)}{\sum\limits_{w=1}^{W} P(\mathbf{F} \mid n_w) P(n_w)} \qquad (3)$$

Replacing terms of likelihoods in equation (3) with the definition in (2), we get:

$$P(n_x \mid \mathbf{F}) = \frac{(1/D(b, n_x)) P(n_x)}{\sum\limits_{w=1}^{W} ((1/D(b, n_w)) P(n_w))} \qquad (4)$$

Based on local regions, the joint probability distributions of multiple concept nodes are considered and their inter-relationships are explored as another kind of useful information apart from visual cues.

3.2 Global Semantic Level

The global layer takes similar form with the first phase of this module, which aims at making use of the interrelationships between the concepts in the pre-defined experimental vocabulary for better semantic understanding; and synthesizing the local semantics detected in different block regions so that the focus of the visual-semantic mapping from regional level is moved back to whole image level.

Again, the Bayesian network is used to model an ontology network. The prior probabilities are taken as the output posterior probabilities from the local-level network, in which the probability distributions of multiple concepts are jointly considered for each block, as in (4).

In the local layer, for each block b and each concept n_w, a conditional probability $P(n_w \mid \mathbf{F}_b)$ can be calculated according to (4). The largest conditional probability among all blocks in an image I is used to represent the conditional probability of I containing n_w:

$$P(n_w \mid \mathbf{F}_I) = \max_{b \in I} \{ P(n_w \mid \mathbf{F}_b) \}$$

Assumption 2   When a Bayesian network is constructed for target concept n_x, the other concepts $n_w, w \in [1, x-1] \bigcup [x+1, W]$ are regarded as the *semantic evidence factors* or

semantic features $\mathbf{E}_x$, in contrast to the *visual features* $\mathbf{F}$, and are assumed to be *independent* with each other in the Bayesian net:

$$P(\mathbf{E}_x) = \prod_w P(e_w) = \prod_w P(n_w), w \in [1, x-1] \bigcup [x+1, W] \qquad \square$$

Based on Assumption 2, for image I an ontology network is modelled using:

$$
\begin{aligned}
P(n_x \mid \mathbf{E}_x, \mathbf{F}) &= \frac{P(n_x, \mathbf{E}_x \mid \mathbf{F})}{P(\mathbf{E}_x)} \\
&= \frac{P(\mathbf{E}_x \mid n_x, \mathbf{F}) \times P(n_x \mid \mathbf{F})}{P(\mathbf{E}_x)} \propto P(\mathbf{E}_x \mid n_x, \mathbf{F}) \times P(n_x \mid \mathbf{F}).
\end{aligned}
\tag{5}
$$

In (5), we refer to the term $P(n_x \mid \mathbf{F})$ as the *visual semantic term*, which means it focuses on the visual-semantic inference on local level; whereas refer to $P(\mathbf{E}_x \mid n_x, \mathbf{F})$ as the *pure semantic term* since it focuses on the inference of global semantics from local semantics.

On this 'pure' semantic level, since the inter-relationships between local semantics via their visual features are taken into account in the 'visual semantic term' on local block region basis. Then the local *visual semantic terms* are provided to the global network layer as inference factors. Obviously, if the visual evidences are considered again in the *pure semantic term*, they become redundant, or in other words, they fall into the case of *inhibition of return* (IoR).

In the two-level network structure, only the target concept node on each local level net is linked with the semantic nodes on the global layer. The contributions of the feature nodes are denoted as the links between the feature nodes and the local semantic nodes, and are encapsulated as the visual semantic terms for the local semantic nodes on the local level. Therefore, duplicate considering of the visual features within the *pure semantic* relationships between the local target concept nodes and the global concept nodes is unreasonable and redundant. Taking the idea of *inhibition of return*, we can reduce the redundancy by omitting the visual feature factors in the *pure semantic* inference process. For the sake of clarity, we base our reasoning on Assumption 3 as follows:

Assumption 3 All the contributions of the local visual features are encapsulated in the local *visual semantic term* as the input from local layer to the global layer. Therefore, the factor of $\mathbf{F}$ is eliminated from the *pure semantic term* on the global semantic layer as defined in (5). The *pure semantic term* reduces to:

$$P(\mathbf{E}_x \mid n_x) \qquad \square$$

According to Assumption 3, (5) is re-written as:

$$P(n_x \mid \mathbf{E}_x, \mathbf{F}) \propto P(\mathbf{E}_x \mid n_x) \times P(n_x \mid \mathbf{F}). \tag{6}$$

On the local visual layer, all the concepts are considered as indirectly inter-linked with each others through their visual similarities. This implies that the non-target concepts are NOT independent on this layer. However, when we come to the semantic level, these inter-links are discarded. This is because the factors of $\mathbf{F}$ are eliminated on this level, and there is no direct relation between the non-target global semantic factors. Therefore, on the semantic

level as in the global semantic layer of network, the non-target concepts are still assumed to be independent to each others, Assumption 1 still holds.

In (6), $\mathbf{F}$ generally represents the visual features for all concepts. When it is considered as an evidence for one concept such as n_x, we use $\mathbf{F}_x$ to show that it is now indicating the visual features for concept n_x. According to (4), (6) can be re-written as:

$$P(n_x \mid \mathbf{E}_x, \mathbf{F}_x) \propto P(\mathbf{E}_x \mid n_x) \times P(n_x \mid \mathbf{F}_x)$$

$$= \prod_{w \in [1, x-1] \cup [x+1, W]} P(n_w \mid n_x) \times \left(\frac{(1/D(b, n_x))P(n_x)}{\sum_{i=1}^{W}((1/D(b, n_i))P(n_i))} \right). \tag{7}$$

The posterior probability of an image containing concept n_x, given the semantic evidence $\mathbf{E}_x$ and the visual evidence $\mathbf{F}_x$ can be estimated using the overall framework containing two-level Bayesian network. These probabilities are used to show how similar each image to a target concept is.

There are only two possible classes $\{c = n_x, c \neq n_x\}$ for both of the propositions. The classification criterion used in this phase is to compare the posterior probabilities calculated from (7) of each image with some threshold decided by experience. The label indicates an image belongs to the positive class if the posterior probability is greater than the threshold and vice versa. If c is the class label and H is the threshold,

$$c \begin{cases} = n_x, & if \quad P(n_x \mid \mathbf{E}_x) \geq H \\ \neq n_x, & if \quad P(n_x \mid \mathbf{E}_x) < H \end{cases}.$$

After this step, the image similarities obtained from the distances within the optimised multi-feature space are replaced by the posterior probabilities. Therefore, the output order of images is re-ranked, and the concept labels for the images are modified.

Experiments

The test dataset contained 700 images selected from 'Corel' dataset. The images were labelled manually on 5 predefined concepts as ground truth. The concepts were *building*, *cloud*, *grass*, *lion*, and *tiger*. The primitives used by the proposed approach were selected from the visual descriptors including MPEG-7 Colour Layout (CLD), Colour Structure (CSD), Dominant Colour (DCD), and Edge Histogram (EHD) [13]. Two texture features were also used as low-level primitives: Texture features based on Gabor Filters (GF) and Grey-Level Co-occurrence Matrix (GLCM) [14]. To emphasize invariance to saturation, Hue-Saturation-Value (HSV) colour system was also considered [15].

In this paper, the precisions are all calculated from the first 50 images in the ranking list. All the precision values are presented as percentages. To show the effectiveness of the multi-feature combination approach introduced in Section II, precision values of retrieval based on the multi-feature distances are listed in Table 1. For comparison, a set of experiments using each single descriptor have also been performed, as shown in Table 1.

Table 1: The retrieval of image retrieval using obtained metric for multi-feature combination.

%	obtained metric	CLD	CSC	DCD	EHD	GF	GLCM	HSV
building	70	48	24	20	**74**	40	38	42
cloud	**79**	76	70	38	68	28	34	78
grass	**92**	**92**	86	28	82	64	88	88
lion	**88**	50	36	16	50	24	40	66
tiger	**60**	2	46	7	14	26	34	57

After the multi-feature based retrieval step, the image similarities were obtained. These similarities were further used in the Bayesian network module for semantic inference. This step adjusted similarities of all the images. Accordingly, these images were re-ranked. The second set of experiment results are shown in Table 2 as precision values using the proposed Bayesian network module for retrieval.

Table 2: Precision Values of Retrieval Using Bayesian Network Compared with Initial Results in Initial Experiment.

%	building	cloud	grass	lion	tiger
Initial results from obtained metric	70	79	92	88	60
Bayesian network module	**76**	**84**	**94**	**90**	**62**

From these results, it can be observed that relevant images of tested concepts were effectively gathered within the beginning of the ranking list through applying the proposed methods. In particular, using the Bayesian network based semantic inference module further improved the retrieval performance based on only using the first retrieval module employing multi-feature optimisation technique.

Conclusions

A Bayesian network based approach for object-centered image retrieval is presented in this paper. It combining a number of advanced image processing and machine learning techniques such as multi-objective optimisation based multi-descriptor combination and Bayesian network based semantic inference. The core of the framework is using Bayesian networks to infer global semantic information from local visual and semantic evidences. The resulting methodology is applicable to generic image collections. Experiments conducted on large collection of natural images using generic concepts of objects demonstrate the effectiveness of our approach.

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ICTs and China

e-Actors: Mobile Phone and Migrant Workers' Job Mobility in the Pearl River Delta, China

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Abstract

The shortage of migrant labour has started to eat into factory output and drive up production costs, particularly in industrial cities along the Pearl River Delta in Southern China. The XinHuaNet (2005) reported that there were about 2 million job posts being not filled up in September 2004 amounting to 15% of the needed workforce in the Pearl River Delta. A total of 655 migrant workers were successfully interviewed in April 2006. It was found that there was a relationship among migrant workers' job changes and the increasing use of mobile phones mushrooming information on jobs with better pay information. In a 'broadband society' affected by our experience of telecommunications, the use of mobile phones and SMS messages seek to empower migrant workers' quest for job changes not only with better pay but also with better working conditions.

Acknowledgement

Telecommunications and the shortage of migrant workers in the Pearl River Delta, China

Since late February, 2007, the media reported that there is a rising shortage of migrant workers in Guangdong Province because of its relatively poor working conditions and low wages (South China Morning Post, February 26, 2007 and XinHuaNet). A survey, done by Guangdong Department of Labour and Social Security found that there were 7.3 million job vacancies in the province in 2006, but only 4.8 million positions were filled (Guangdong Department of Labour and Social Security, 2007). A previous estimate by the same Department in 2005 reported a shortage of 20% of the needed workforce but observed that the shortage was particularly acute for labour-intensive industries which offer low pay

and poor working conditions (South China Morning Post, May 2, 2005). The 2006 survey reported that manufacturing, wholesale and retail, and catering services faced the biggest shortfall, especially in the demand for skilled labour and young female workers in the age range of 18 to 25. This phenomenon appears a marked contrast with the situations in the 80s and 90s where large number of migrant workers from inner provinces in China flooded to work in Guangdong province. What have been going wrong with the mismatch in the demand and shortage of migrant workers in the South?

Some labour expert speculated that factories in the Peal River Delta were losing out to employers in the Yangtze River Delta and elsewhere notably Shanghai because they generally paid less and often flouted labour laws (South China Morning Post, April 9, 2007). Li Qiang, from the Dongguan branch of the China Labour Watch organization, alleged that "the employment environment has not improved at all. Guangdong raised the average minimum wage in 2006, but very often factory owners then made cuts in other benefits. The cost of living is high in Dongguan (when compared with other provinces), welfare is not as good and companies are not as well closely nor effectively supervised by local governments" (XinhuaNet). He thus remarked that migrant workers who used to work in Guangdong had moved to the Yangtze River Delta in recent years:

"When they go home for the Lunar New year holiday, they hear from friends who work in Shanghai or Suzhou that companies in the Yangtze River Delta offer better pay and benefits. Then they will follow them to Shanghai and will not come back to Guangdong." (XinhuaNet)

However, this is only one side of the coin. In our study with 655 migrant workers in Dongguan in April 2006, a clear picture seems to emerge in the following areas:

1. **A record of frequent job changes than moving out to work from Guangdong areas to the Yangtze Delta;**
2. **Telecommunication experiences, especially the use of mobile phones, SMS messages and blog or junk-mail messages seek to empower mobile workers' quest for jobs with better pay and working conditions;**
3. **A protest against poor working conditions and a rigid household registration (hukou) system in Dognguan;**
4. **A new brand of young migrant workers who are less tolerant of poor working conditions in the Pearl River Delta when compared with their senior peers (with a work history of more than ten years):**

The data described below will substantiate these observations. But why do we prefer to have

our field data in Dongguan?

Background leading to the study on 655 migrant workers in 2006

Diagram 1 shows that among the various sectors in telecommunication industries in China in the year 2006, mobile phones had contributed to almost half of the total income (47.26%) (Ministry of Information of the People's Republic of China, 2007). Diagram 2 further shows that the Guangdong Province emerged as the first top ten provinces in mobile phone users in China, constituting 35.6% of the total sales and income in mobile phone industry in China in 2006 (Diagram 3). The use of mobile phones in Guangdong provinces is a common phenomenon among young migrant workers who had arrived to work in the Pearl River Delta for some time. It would be interesting to examine whether or not there is a relationship in migrant workers' job changes and the use of mobile phones.

Diagram 1: Income in Telecommunication Industry in China, 2006
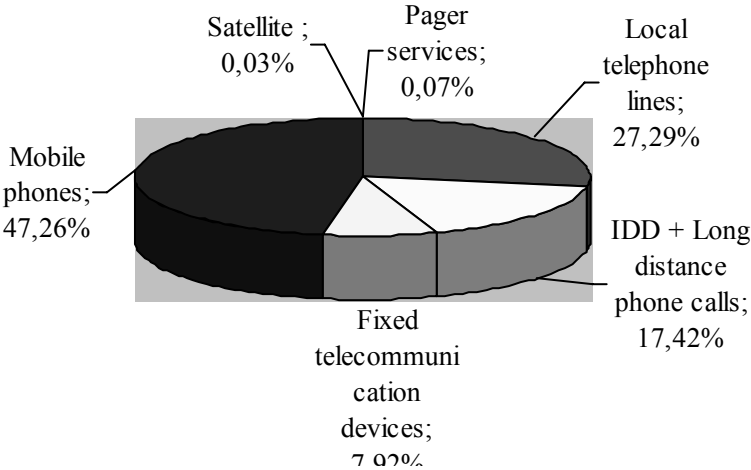
Source: Ministry of Information of the People's Republic of China, 2007

Diagram 2: First top ten Provinces in Mobile Phone Users in China, 2006

Million Users
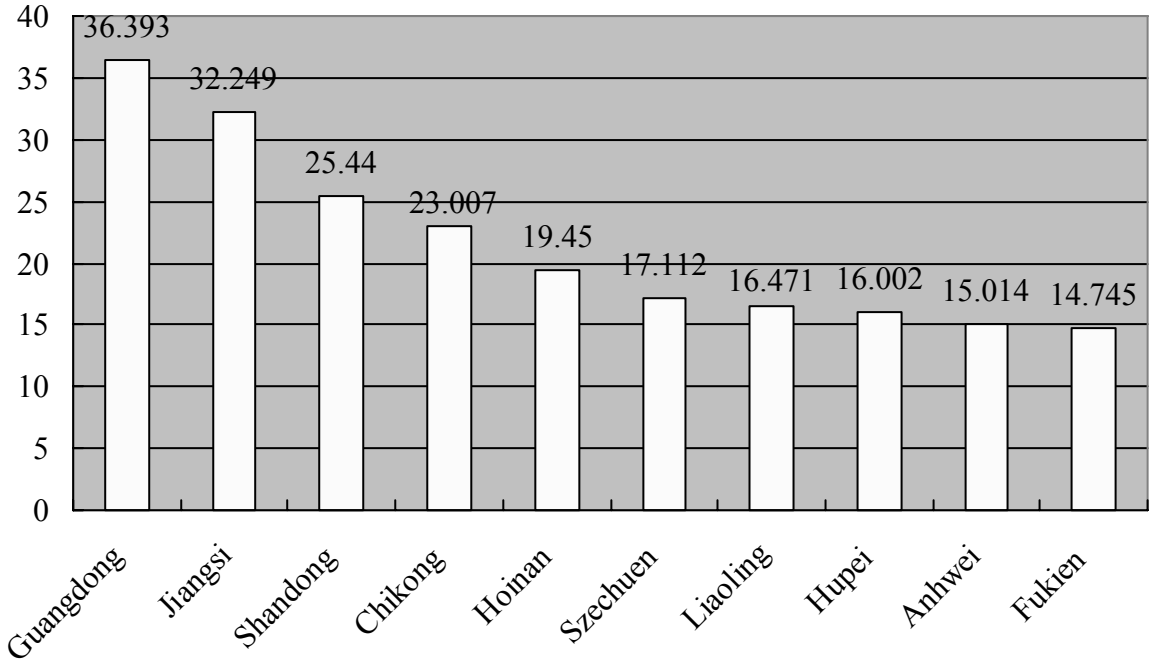
Source: Ministry of Information of the People's Republic of China, 2007

Diagram 3: Percentage share in total sales and income in Mobile Phone Industry in China, 2006
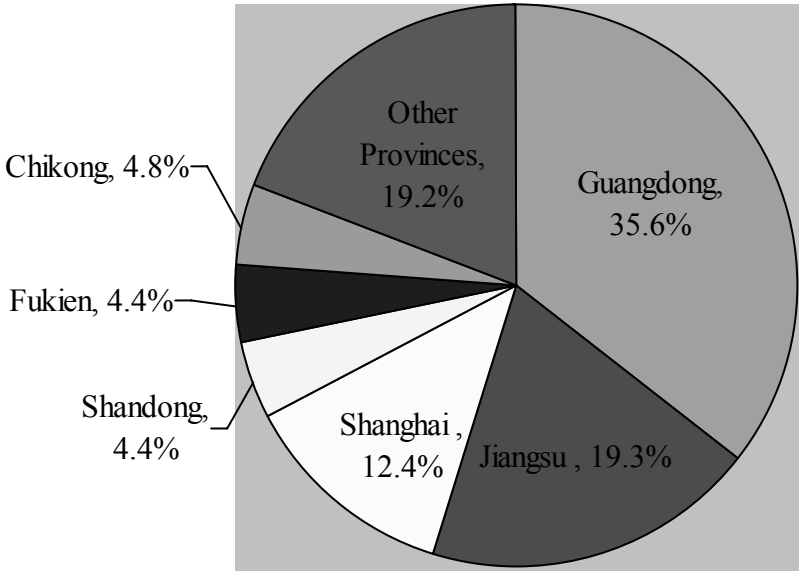
Source: Department of Information Industry of Guangdong Province, 2007

Besides the above reason of growth in the use in mobile phones among workers in Guangdong provinces, there are also sociological reasons leading to the research team to conduct a survey of 655 migrant workers in the Pearl River Delta areas. We started with a

sociological investigation that a shortage of skilled labour had become a problem in Guangdong Province's Pearl River Delta region since 2003 as noted by the Ministry of Labour and Social Security. Mr. Liu Ying li, the Vice-Major in charge of Shenzhen's technology development, admitted that "Hi-tech is one of our new industries. A skilled workforce is very important for its success. We now don't have enough technicians and skilled blue-collar workers" (Sourth China Morning Post, May 26, 2005). The labour supply problem has been aggravated by the Central government's declared plan to develop China's inner West Regions. Professor Wei Jie at Tsinghua University in Beijing observed that "Nowadays, migrant workers have more choices. They can choose to work in Jiangsu, Zhejiang, Fujian provinces wherever higher salaries and better benefits are offered" (South China Morning Post, May 26, 2005). The XinhuaNet (2004) commented that "during the peak of China's economic boom, over the past 12 years in the Delta, migrant wages had risen only 68 yuan or US$8, according to State Council figures. Migrants are actually losing, not gaining, as urban living and food costs are rising." The Christian Science Monitor (2004) noted that "Chinese workers are maturing, and their aspirations are expanding in a manner that implicitly challenges the cheap labour paradigm that makes-up China's comparative advantage." To what extent is the recent labour shortage in the Pearl River Delta areas notably Dongguan related to workers' sense of unhappiness with the poor working conditions in the factories and establishments?

There has not been too many updated nor large-scale studies on the use of mobile phones and job-changes among migrant workers in Dongguan. An earlier study by Chu Wai-chi and Yang Shanhua (2006) found that the sending and receiving of SMS messages via cell phones has become a significant pattern of communication among the new migrant workers. Another study by Law Pui-lan and Peng Yinni (2006) among 40 young migrant workers in Dongguan further found that with expanded social relationships in workplaces and new ways of connecting via the cell phones and SMS messages, migrant workers are more resourceful in obtaining information. By making calls to their kinsmen and friends, migrant workers can more easily find out about job opportunities in Guangdong. To what extent such telecommunication networks and mushroom of job information with pay levels and working conditions seek to empower migrant workers' mobility in job changes? This is a major research question for the present study.

The present study was conducted in April 2006 in three industrial towns in Dongguan in the Pearl River Delta areas. The 3 towns are: Tangxia, Taiping and Dongguan city. Successful questionnaire interviews had been conducted among 655 migrant workers, with the sampling frame as follows: 41.98% in Tangxia, 35.27% in Taiping and 22.75% in Dongguan city. The 655 respondents were drawn from 3 industrial sectors among 9 factories: Metal manufacturing (64.73%), Plastics products (19.24%), textiles and

garment (16.03%).   Field interviews were conducted with the help of 14 research and under-graduate students from the Department of Sociology,   Peking University,   supervised by 3 teachers.   Members of the research team are: Raymond Ngan, Stephen Ma and Law Pui lam.

Summing up,   we chose Dongguan as the area for our survey because Dongguan is considered as a city of migrants,   as migrant workers make up over 5 million of the total population of 7 million (Law, & Peng, 2006).   Besides,   Guangdong Province has the highest mobile phone penetration rates in China (Ministry of Information Industry (2007).

Major Findings: Telecommunication and job changes among migrant workers

1.   A second wave of young migrant workers born in the 1980s with work values different from the first wave counterparts born in or before the 1970s: Table 1 shows the prominent demographic characteristics of the 655 respondents.   It can be seen that they were mostly in the age range of 17 to 26 (60%),   single (59.24%),   and had worked in Dongguan for 1 to 3 years (77.26%).   Further tabulation of the data shows that those migrant workers born before the 1970s only constituted 8.4% of the respondents,   those born in the 1970s forming 30.2%, with the great majority being born in the 1980s,   especially since 1985.   It shows that a great bulk of the new migrant workers nowadays working in Dongguan are those born in the 1980s,   at a time when the 'one-child' policy in China became a national policy (Murphy, 2002).   This new second wave of young migrant workers were less tolerant of the poor working conditions in their factories because in their eyes,   the importance of "earning money" only constituted 18.2%,   whereas other dominant reasons such as "fresh school graduates to train-up",   "to play outside the village counties",   "learning a new craft for living" and "being dull at home" altogether added up to 71.4% among the reasons of their coming to work in Dongguan.   This presents a sharp contrast to the first-wave older migrant workers born before or in the 1980s whose primary purpose going to work in Guangdong province was to earn money to support families in their host of origin.

Compared with their senior counterparts,   this second wave of young migrant workers normally hold a different work value: among our respondents,   over half (50.0%) changed jobs due to poor working environment,   too much over-time and less private leisure time. Among them,   17% alleged that they did not like the types of industrial plants they were working and wished to have a new and clean environment to work.   This applies especially to those workers moving from metal and plastic industries to work in textile and garment factories.   Among the last but not the least reason for job changes,   the lack of staff training development in the factories or establishment they work emerged as a notable factor.   With such different value orientation to work in Guangdong,   the second wave young migrant workers are typically less tolerant of poor working conditions,   cramped living quarters,

poor canteen meals， long overtime work， lack of staff training opportunities. Thus it is very common for them to have a record of frequent job changes being moved around to look for better working conditions and living environments， facilitated by the widespread of reliable job-hunting information via the SMS messages and the use of cell phones not only among their native friends but also former colleagues known in Dongguan. The following tables show these patterns further.

Table 1: Demographic Characteristics of Respondents (N=655)

Sex	<u>N</u>	<u>(%)</u>
Male	417	63.86
Female	236	36.14
Age		
17-26 years	393	60.00
Marital Status		
Single	388	59.24
Years Working in DONGGUAN		
1 year	209	32.10
2 years	162	24.88
3 years	132	20.28
Native Provinces		
Guangsi	111	17.00
Szechuen	94	14.40
Hunan	76	11.64
Hupei	73	11.18
Hoinan	73	11.18
Kwangsi	67	10.26
Educational level		
Lower Secondary	434	66.26

2. Telecommunication as a catalyst for job changes (e-Actors)

About half of the 655 respondents claimed that they could save up to half of their monthly salaries (diagram 4). This is understandable as migrant workers normally have food and lodging provided by their employers. But 71.75% of the respondents alleged that they would remit the saved money (mean = 330.44 yuan) to their native families. To an average migrant worker， this means that out of a standard monthly rate of 800 yuan， he would have about 400 yuan left behind for use. After deducting the monthly spending on meals with friends (about 100 yuan in average) and daily necessities (90 yuan)， he would only have 200 yuan at hand. Among our respondents， the average monthly bills on mobile phone was 97.56 yuan (mean, s.d.=78.89 yuan)， with another 67.46 yuan spent on Internet

communication and web-search.　It seems that the use of cell phones and internet appear to be a major telecommunication pattern and spending among young migrant workers in Dongguan.

Diagram 4: Able to save how much in monthly wages?

% of
Respondents
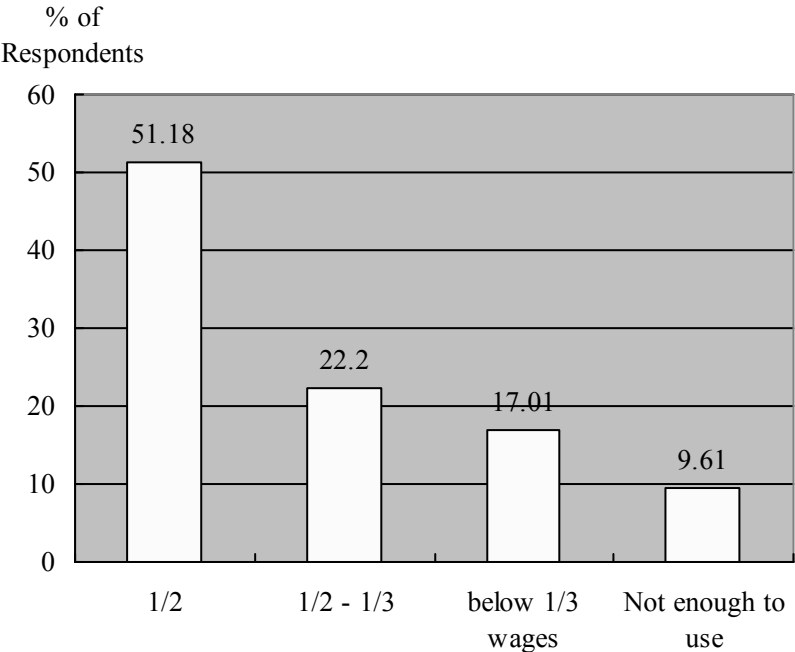
Table 2 shows that among the respondents,　417 (64.17%) had a cell phone. Although it appears that there were 35.23% migrant workers without a mobile phone,　one should not forget that there were 32.1% of the respondents coming to work in Dongguan for only one year or less,　and hence it is not common for this group of respondents to buy a cell phone.　As a great majority of the young migrant workers own a mobile phone,　it dominates their lives much in a broadband society with fast telecommunication that face-to-face conversation.　Apart from using the cell phone daily (43.96%) to often (33.82%),　and making phone calls (83.71%),　close to half (41.87%) were also using the cell phones for sending and receiving SMS messages,　with 39.45% paying a monthly phone bill of 100 yuan.　At times they would also using the mobile phone internet services (36.275), receiving e-mails (21.61%), and searching information on the Internet (35.59%),　it shows that the use of mobile phones is beginning to be a widespread daily use among young migrant workers in Dongguan.

Table 2: Mobile Phones Using Patterns

	N	**(%)**
i) Has a Mobile Phone		
Yes	417	64.17
ii) Frequency of use		
Use daily	182	43.96
Use often	140	33.82
Use seldom	92	22.22
iii)Use Pattern		
1) Making phone calls	350	83.71
2) Receiving phone calls	205	29.04
3) Sending SMS messages	175	41.87
4) Playing games	36	8.61
iv) Monthly mobile phone bill		
$100 RMB	157	39.45
$150 RMB	34	8.54
$200 RMB	25	6.28

Table 3: Web and Internet communication Usage

	N	**(%)**
Using mobile phone Internet services		
Yes	235	36.27
No	413	63.73
Receiving e-mails on phone		
Yes	51	21.61
No	185	78.39
Searching information on the Internet		
Yes	84	35.59
No	152	64.41

Table 4 shows the information sources for new jobs among our respondents. It can be seen that the relative importance of kin as the primary source of information for new jobs had dropped from 48.24% for the first job arriving to work in Dongguan to 37.65% for new jobs, whereas the importance of receiving SMS messages on job information sent by their friends and previous co-workers, and friends known in Dongguan, had increased from 14.09% to 20.59%, and 3.98% to 11.37% respectively. It shows that somehow the job-search patterns among young migrant workers in Dongguan has a relationship with the mushrooming of e-communication via the form of SMS messages sent by their friends and past co-workers. These messages often contain useful to reliable and the most up-to-date

information on pay levels, working conditions and living environment on the types of jobs or establishments which young migrant workers would like to seek a move. In a broadband society, they emerge as "e-Actors" rather than passive "e-readers" acting promptly to a job change to choose the type of living environment and working conditions they prefer. However, this would not have been made possible without the sociological context that they had a work value and attitude very different from their first wave senior migrant workers (To, Lau & Law, 2006). As earning money is not the most primary reason for coming to work in Guangdong, this group of second wave new young migrant workers are less tolerant of poor working conditions and too many overtime and the lack of staff training opportunities. Thus telecommunication information on job information could only serve as a catalyst for quick job changes, but the core magnet for change is the underlying poor working conditions in their employing factories.

Table 4: Information source for new jobs (N=510)

Source of job information	**N**	**% for new jobs**	**% for 1st job arriving Dongguan**
1. Kin	192	37.65	48.24
2. Native place friends	123	24.12	24.81
3. SMS job information	105	20.59	14.09
4. Friends in Dongguan	58	11.37	3.98
5. Others	32	6.27	8.88

3. Telecommunciation and job changes: the underlying messages

Table 6 shows the job change patterns among the 655 respondents. 79.24% had changed jobs despite their short duration of work in Guangdong (1 to 3 years). 39.22% had changed jobs within one year, and 64.95% even had their factory types changed (move from metal industries to work in garment factories). Close to 60% of the respondents had changed jobs thrice, with the mean at 2.43 times, s.d.=2.45. Contrary to the common belief that they would move out from Dongguan to work in the Yangtze delta areas, 89.43% had their jobs changed but were still working in Dongguan. Even though they had attempted to move out of Dongguan, 50.58% still returned to work in Dongguan. What does this job change in localities mean?

To start with, industrialization in Guangdong province provides a platform for developing a new kind of social relationship where people are not simply classified as fellow clansmen. The widespread use of mobile phones in Guangdong since the late 1990s seek to prolong new social relationships developed in the workplace (Law, et al., 2006). Workers come to know each other when working on the same assembly lines or staying in the same dormitories. They develop friendships among workers from different villages, towns, or

provinces; Nevertheless, migrant workers are highly mobile and most of them do not stay in one factory for a long period of time. Once they find other factories offering higher incomes and better welfare provisions, they will leave for these factories immediately. Even though they have left, cell phones enable them to keep in regular contacts with their past co-workers, keeping the latter informed of jobs with better working conditions and pay levels. Workers can usually use their mobile phones to check SMS messages sent from their friends and previous co-workers to share information about the salaries, benefits, promotion opportunities and working conditions of other factories. Once they discover that any of these conditions are better at another factory, they will quit their jobs immediately. Moreover, they will introduce their relatives and fellow villages to this factory as well, resulting in a chain effect making factory proprietors helpless over the process. Thus one factory owner in Dongguan had the following comment: "it is much difficult for us to keep our workers as they are no longer afraid of being fired." Another proprietor lamented: "even though workers were happy with the newly revised salary, skilled workers demanded more holidays and less overtime work." It seems that nowadays, mobile phone has empowered the bargaining power of migrant workers with their factory proprietors.

Table 5: Job change Patterns (N=655)

	N	(%)
I. Has change job?		
i)Yes	519	79.24
ii) Within one year	257	39.22
iii) Changed factory types	420	64.09
II. No of times in changing job:		
i) Once	125	19.06
ii) Twice	131	19.93
iii) Thrice	124	18.80
iv) Mean (no. of times)	/	2.43
v) s.d.	/	2.45
III. Changed jobs but still in		
i) Dongguan	586	89.43
ii) Out of Dongguan but returning to Donnguan again	331	50.58

Table 6 and 7 seek to present a different picture between the rhetoric and the reality among our respondents' expectations in coming to work in Dongguan. To this new generation of young migrant workers born in the 1980s, there are other prominent reasons affecting their job changes than just low wages. It seems that they disliked too much overtime work (10.81%), poor working conditions (like cramped quarters and poor canteen food) (8.84%), not like the job industries (as in the case of female workers in metal industries) (7.47%), poor welfare (no staff training opportunities)(4.13%) and 'new jobs have more of my friends' (4.13%). Thus, as sojourners, the unfavourable working environment in their present factories and a feeling of loneliness in the host society have pushed them to turn on their mobile phones reading SMS job information from their friends and previous co-workers. But there are fundamental underlying messages than this e-Actor telecommunication pattern.

Table 6: Reasons for job change

Reasons	N	(%)
i) Wage too low	204	40.08
ii) Too much overtime work	55	10.81
iii) Poor working conditions	45	8.84
iv) I don't like the job	38	7.47
v) Poor welfare	32	4.13
vi) New job has more of my friends there	21	4.13

Table 7: First Reasons for coming to work in Dongguan (N=642)

Reasons	N	(%)
i) To earn money	176	27.41
ii) Fresh graduate for train-up	156	24.30
iii) To earn a new craft for living	76	11.84
iv) To 'play' outside the native place	61	9.50
v) Dull in working in native places	95	14.80
vi) Do not like farmers' job	29	4.52
vii) Follow my friends' trend to go to Dongguan to work	21	3.27
viii) Others	28	4.36
Total	642	100

Labour supply problems in Pearl River Delta: underlying sociological causes

To go beyond simple supply and demand factors,   the labour shortage problem in Guangdong province has much sociological causes.   The first underlying message is that it is not too difficult to recruit new workers but it is much more difficult to keep them to stay for long.   For more than two decades, Guangdong's low labour costs have made the Pearl river Delta the workshop of the world, making cheap toys, shoes, electrical appliances, computer accessories and numerous other light industrial products for the world market.   But the excessive overtime work and poor working conditions are making the workplace increasingly unpleasant to the second wave of new young migrant workers born in the 1980s who are the majority migrant labour in the South.   This new brand of grown-up 'single children' (as villages and rural areas can be entitled to have 2 children) are less tolerant of unpleasant working environment.   A prominent example comes from the London-based Mail on Sunday newspaper in June 2006 which portrayed Foxconn's Shenzhen plant as a sweatshop that paid its workers just US$50 a month for 15-hour shifts and accommodated in crowded dormitories (South China Morning Post,   April 9, 2007).   Difficult to make better change in working conditions with their present employers,   young migrant workers are making their indirect protest by changing to work in another factories with better conditions.   It seems that factories in the Pearl River Delta that once highlighted low prices founded on cheap labour need to re-package themselves socially responsible, paying better wages and improve staff welfare and working environment.   Help and incentives from local government and labour departments would be a timely move.

The second underlying message is that it is not simply a matter of rising the minimum wage that could solve the labour shortage problem.   The crux of the problem is not

with the level of minimum wages, but the flout and abuses in labour laws. Although Shenzhen's minimum wages had been risen by 17% (from 690 yuan to 810 yuan) since July 2006, Guo Wanda of the Shenzhen Development Research Centre commented that pay rises alone would not solve the labour shortage problem. "We lack skilled workers, not regular labour. I doubt the minimum salary increases can solve that problem." The media reported that many migrant workers welcomed the news but said the government had to ensure pay rises were enforced (South China Morning Post, June 1, 2006). In fact, abuses in labour protection laws such as minimum wage, social security contributions and limit on over-time work, are frequently heard stories among migrants (Chan, 2001 & XinhuaNet). The matter is further aggravated by a plague in the steady supply of workers in the production unit. It appears like a vicious circle. Factories are getting more orders but there are not enough workers, so employees have to do more and more overtime, conditions get worse and worse and, increasingly, workers want to leave. It appears that a determination to improve the long over-time work, poor working conditions, crowded accommodation and staff welfare is an effective solution to improve the high turnover rate among migrant workers.

The third underlying message is that a review of the household registration status – or hukou – system is timely to enable migrant workers to move to large and medium-sized cities as permanent residents. The hukou system, implemented since 1949, has ensured urban residents received free education, medical care and a fixed amount of food, while rural people got nothing. But since the 1978 economic reform, it has failed to prevent social change, including people moving around the country more freely. Because of the lack of a proper hukou status, children of migrant workers are not being covered in terms of collective medical insurance nor free education. Dependents of migrant workers like spouse are also left without medical insurance coverage. The problem of "left-behind" children – rural children missing at least one parent – is on the rise as more migrants move to work in Guangdong. According to a study based on the 2000 national census, more than 22 million rural children rarely saw one or both of their parents because they worked in cities in the South (South China Morning Post, May 26, 2005). In fact, Guangdong has not done enough to improve the treatment of migrant workers and their families who have made the province their home. Many migrant workers have worked in Guangdong for more than 10 years. They children were born here but they still have to pay higher education fees for their kids than local residents. Local governments do little to look after them when they become old or are sacked. The other overriding concern comes from an inspiring in-depth interview with a young migrant worker with a university degree: "To a fresh university graduate, 1,000 yuan per month salary is sufficient for his living expenses. However, to a young migrant worker, it is barely sufficient for use. We have to save at least half of the income to be remitted at home, then a hundred yuan on telecommunication payments, and

another 200 on having meals with our friends, daily necessities and training course fees on our own initiative for a better career." If hukou or permanent residence status could be granted to them to the host cities which they work, migrant workers would have their livelihood and living expenses much improved.

Conclusion: the role of e-communication in a broadband society

In a broadband society, e-communication seeks to promote the widespread information flow to a large segment of the population. In Dongguan, the massive use of cell phones and SMS messages seek to equip migrant workers with quick, reliable and essential information on job change information, notably those jobs with better working conditions, living environment, staff welfare, career advancement and pay levels. Telecommunication messages appeared in cell phones prompt young migrants who are already on the heed to change jobs to act as 'e-Actors' for the quick move together with their friends known in Dongguan. It seems that e-communication media has acted as a catalyst for job changes among migrant workers. However, the fundamental problems underlying a shortage of migrant workers in the Pearl River Delta (in the range of 15% to 20% of the needed workforce) are much sociological reasons: the lack of a permanent residency status (hukou system), a record of abuses in labour protection laws, poor working conditions and cramped living quarters, and the lack of career advancement are the fundamental reasons to the second wave of new young migrant workers born in the 1980s. To them, they are less tolerant of employers with poor record in much overtime work, underpay and late-pay for overtime work, and poor working conditions and crowded living quarters. Their protest needs to be tackled properly by the authorities concerned.

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Privatizing Public Spaces and Personalizing Private Spaces: The Role of the Mobile Phone in Social Networking in Beijing[1]

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Abstract

This qualitative study tries to identify what kinds of social ties are promoted or damaged when the mobile phone is employed as a communication medium by Beijing residents. Our findings suggest that the mobile phone communication is part of the process of privatizing public spaces and personalizing private spaces. The space change is closely related to changes in social networking. That is, the mobile phone communication does not appear to favor ties such as best friends and couples as far as **our informants are concerned.** Rather, it helps maintain kinship ties such as parent/child or facilitate interactions between needs or interests based friends. However, the pattern of mobile phone communication seems socio-demographic specific.

Keywords   mobile phone, social ties, imagined privacy, space

This paper concerns the role of the mobile phone in today's social structures in Beijing. China is in a unique historical movement. Beijing is in the heart of the movement. It is unique because of its strong drive to modernization and active participation in globalization. The mobile phone is an organic part of the process of globalization. Sociologically speaking, the modernization is associated with the transition from traditional communities to social networks, and globalization may be related to what Barry Wellman called the "networked individualism". Nevertheless, both social networks and networked individualism suggest space stretching. Fixed and mobile phones are about spaces.

Beijing is in the leading position in terms of the Internet penetration (30.4%) and mobile phone adoption (97.5%) in China (CNNIC, 2007). [1]New media communication such as making mobile phone calls and sending short messages   become part of the daily lives of Beijing residents. In this paper, we ask how social relationships are changed in Beijing, if there is any, in an age of mobile communication. In order to answer the question, we focus on analyzing what kind of social ties are strengthened or weakened by the spatial change

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brought by the diffusion and implementation of the mobile phone. Such questions are significant for they are rarely explored in urban Chinese context.

Review Of Theoretical Issues And Relevant Empirical Findings

The diffusion of new media such as the Internet and the mobile phone has accelerated the emergence of networked individualism and "imagined privacy" in the context of globalization. In this section, these two concepts as well as relevant empirical findings are reviewed.

Networked Individualism: the Change of Social Structures

The pre-industrial community, spatially compact and densely-knit (Thébert , 1985;

Barthélemy & Contamine, 1985; Ward, 1999), had door-to-door connectivity (Wellman, 2001; Wellman, 2002). Modern technologies such as automobile and telephone brought the change to place-to-place community that is no longer limited to neighborhoods (Wellman & Leighton, 1979; Wellman, 1988; Wellman, 1999a; Wellman, 2001; Wellman, 2002). New media such as the Internet and the mobile phone herald a new transition into person-to-person connectivity. It is assumed that "the shift to a personalized, wireless world affords 'truly personal communities'" (Wellman, 2001). That is, "each person separately operates his networks to obtain information, collaboration, orders, support, sociability, and a sense of belonging" (Haythornthwaite & Wellman, 2002; Wellman, 2001). In such context, people are experiencing a transition to person-to-person community, or say, the rise of networked individualism (Castells, 2000; Haythornthwaite & Wellman, 2002; Wellman, 2001; Wellman, 2002).

The research on the Internet has a longer history than that of the mobile phone. Nevertheless, the Internet and the mobile phone are inseparable or complementary as far as their roles in forming the networked individualism are concerned. Thus, it is necessary to review how the Internet is related to social structures. Generally speaking, the debate about the relation between the Internet and community "comes in two flavors" (Hampton & Wellman, 2001; Wellman & Gulia, 1999). Some take the Internet as creating an illusion of community with impersonal computer-mediated communication (Beninger, 1987; Berry, 1993), luring people away from their families and communities (Barlow, 1995; Hiltz & Turoff, 1993; Kling, 1996; Kraut *et al.*, 1998; Nie, 2001; Nie & Erbring, 2000), and isolating them from the "great good places" such as bars and cafes that make up real life community (Barlow *et al.*, 1995; Slouka, 1995; cf. Oldenburg, 1999). Others tend to positively interpret the Internet as liberating people from physical confines (Adam, 1995; Cairncross, 1997), creating more opportunities for people to communicate with each other (Constant *et al*., 1996; Feldman, 1987; Dobachi, 2005; Rheingold, 1994; Wellman & Gulia, 1999), facilitating the coordination between individuals (Ling & Telenor, 2001), and consolidating established connections (Lind & Zmud, 1995). Although the two groups of scholars emphasize the role of the Internet differently, the difference may be bridged by the concept of networked individualism which features both the opportunity and vulnerability"

(see Haythornthwaite & Wellman, 2002, p.33).

Some researches specifically study the relationship between online activities and the formation of social ties. The amount of time spent on the Internet is expected to be closely related with the devotion to community ties. It is assumed that the more people are engaged in affairs online, the less they would interact with their neighbors (Robinson & Godbey, 1997; Coffey & Stipp, 1997). Since community should not be treated as a "zero-sum game" (Maitei & Ball-Rokeach, 2002;Wellman & Gulia, 1999), some scholars tend to emphasize that the Internet supports a variety of community ties including not only weak ties but also strong and intimate ties (Wellman & Gulia, 1999), and strong ties have already gone beyond the neighborhood before the introduction of new media such the Internet and the mobile phone (Wellman, 1979; Wellman & Tindall, 1993; Wellman & Wortley, 1990). Recently, the strength and nature of the social network tie prior to the mediated communication is taken into consideration to synthesize these disparate findings (Haythornthwaite, 2001).

From this perspective, the Internet is interpreted as having no negative impact either on an overall sense of community (Quan-Haase *et al.*, 2002) or on communication with intimate ties (Boneva & Kraut, 2002; Katz & Rice, 2002; Howard, *et al.*, 2002). Moreover, close relationship tends to increase the frequency of media use (Chen *et al.*, 2002; Katz & Aspden, 1997; Robinson *et al.*, 2002; Quan-Haase *et al.*, 2002), and individuals with a stronger feeling of belonging to a neighborhood are more likely to make a friend online (Hampton & Wellman, 2002; Matei & Ball-Rokeach, 2002).

But the usage of the Internet is usually in fixed locations in Beijing. That is, the usage of the Internet may be in a private location, but not necessarily in personal spaces. It has been reported that one of the key differences between the mobile Internet and the PC Internet is that high-intensity PC Internet users tend to spend less time with intimate ties while heavy mobile Internet users are more devoted to socializing and interpersonal communications (see Ishii, 2004; Castells *et al.*, 2004). Such findings have great implications to the mobile phone research.

Some studies have demonstrated that mobile phone users are more sociable than non-users, and that the use of email via the mobile phone enhances sociability (Hashimoto *et al.*, 2000; Tsuji & Mikami, 2001). Furthermore, the mobile phone is considered as going further in affording person-to-person connection than the personal computer (Wellman, 2001). The mobile phone increases individual selectivity in choosing relationship (Fortunati, 2002a; Matsuda, 2005), and it in a sense maintains and reinforces the established ties (Dobashi, 2005; Fortunati, 2000; Ling, 2000). There is a positive view of the impact of mobile phones on the face-to-face communication as well. The emergence of a wireless networked society makes the informal, geographical co-ordinations of intimate small groups, or say, *rendezvous*, achieve its full sense (Castells *et al.*, 2004). Clearly, individuals, with the assistance of the mobile phone, are regarded as being able to arrange face-to-face activities with kins, friends, and workmates at any time.

While the literature reviewed above shows different findings on social ties, it is clear that the social relationships are changing with the assistance of the Internet and mobile phone in light of the literature reviewed above. We are concerned with the changes as well as the directions for the changes in respect to the mobile phone users in Beijing. We are interested in asking questions such as how the users with different socio-demographic characteristics differ from each other in terms of their social networking activities and mobile phone communication patterns.

The Imagined Privacy: the Public and the Personal

Another unique feature of the mobile phone is its capacity to let its users to be able to communicate in private. Mobile phone communications are interpersonal. Interpersonal communications are dyadic in nature. They are often private and personal. With the diffusion of mobile media, especially the mobile phone, the interplay of the public and the private has become another main concern. In this context, the concept of "imagined privacy" comes into being. Many researches have discussed on the mobile phone's role in blurring the boundary between the public and the private by paying attention to the use of the mobile phone in public places. Before the introduction of the mobile phone, there are certain "public manners" regulating what and how to talk about private matters in public spaces (Castells *et al*., 2004; Kim, 2002). However, "these manners seem suddenly to have evaporated in this era of perpetual contact" (Kim, 2002, p. 65).

The "imagined privacy" is a term used in the social context where the conception of space and time has been converted with the assistance of modern communication technologies. In all pre-modern societies, space and time largely coincides, which means that the spatial dimensions of social life are for the most part dominated by "presence", or say, "the localized activities". However, with the emergence of the "emptying of time", the space is torn away from place by making connections with "absent" others (Giddens, 1990). New media such as the Internet and the mobile phone in particular further liberate people from the spatial and temporal restraints.

Due to its mobility and portability, the mobile phone provides people more freedom in maintaining a "perpetual connection" despite the material and physical surroundings (Gergen, 2002). Before the adoption of the mobile phone, the use of time was generally defined by location (Fortunati, 2002b). While afterwards, communication abstracted from location by the mobile communication stimulates the dissolution of the mapping between activities and places, and everyplace seems to be "for everything all the time" (Agre, 2001). As some scholars have pointed out, the mobile phone removes the need to stay by the telephone and fundamentally liberates individuals from place (Wellman, 2001), and thus reduces the "place-centeredness of schedules" (Palen *et al*., 2001).

According to Fortunati (2000), the sense of belonging to a place "is actually transformed into the sense of belonging to one's communicative network" (p.9). Moreover, she points out that the mobile phone not only enables people to "capture the intimacy of interpersonal

relations… in a public dimension" but also opens up "the possibility of conquering new intimate communicative spaces at a personal level in the home" (Fortunati, 2002a, pp.49-50). This is not only a sign of the rise of "networked individualism" but also insinuates the split of space in the mobile society. As Gergen (2002) puts it, the mobile phone conversation establishes an "inner space" where people are communicating with each other as well as an "outside space" where the significance of the present outsiders are reduced to minimum. This phenomenon has also been described in other terms such as the physical space and the conversational space. As Palen, Salzman and Youngs (2001) indicate, "When mobile phone users are on the phone, they are simultaneously in two spaces: the space they physically occupy, and the virtual space of the conversation" (p. 121). In their research on mobile email use, Ito and Okabe (2005) conclude that mobile phones "create new kinds of bounded places that merge the infrastructures of geography and technology, as well as techno-social practices that merge technical standards and social norms" (p. 260).

Scholars adopt terms such as "full-time intimacy" (Matsuda, 2005), "telecocoon" (Habuchi, 2005) or "co-presence" (Ito & Okabe, 2005) to describe the mobile phone's role in maintaining intimate ties. The term "imagined privacy" puts more emphases on the interplay between the mobile phone user and his or her surroundings. In public places, mobile phone users tend to behave differently from non users (Castells *et al.*, 2004; Murtagh, 2002). They are more likely to "avoid eye contact with people around, often ignoring them"(Murtagh, 2002; also see Castells *et al.*, 2004). Thus, mobile phone users devoted to the mobile phone conversation in public places are considered as a sign of their ceasing to be "full participants in the immediate context"(Gergen, 2002, p.239).

But the concept of "imagined privacy" primarily emerged in facing of the challenge posed by the mobile phone communication. In other words, the concept mainly concerns privatizing public spaces by means of "imagination". It does not deal with social situations such as personalizing private spaces (at home by means of SMS, for instance). Indeed, our research addresses the question and assumes that the networked individualism, privatizing public spaces, and personalizing private spaces are interrelated because of the diffusion and implementation of mobile phones in Beijing.

Research Methods

This study is exploratory in nature. The data are collected by conducting in-depth interviews with 18 mobile phone users who are Beijing residents. There are two kinds of residents in Beijing. The ones with registered permanent residence enjoy full social welfare the city provides. Others do not. This paper primarily concerns the role of the mobile phone in social networking of the registered residents. Thus, migrant workers are excluded for they are classified as temporal residents by Beijing Municipal Government. College students are not considered because we are interested in exploring the impact of mobile phone communication on different kinds of social ties. The social lives of college students are primarily limited to the campus in China. All the interviews were carried out face-to-face and tape recorded with the permission of informants from the period of January, 2006 to

January, 2007.

We used purposive sampling in selecting informants in order to achieve a higher degree of representativeness in our qualitative research. We carefully selected 18 informants based upon their education, occupation, income, gender, age, and marital status. In so doing, we are able to roughly classify the 18 mobile phone users into three groups: (1) Young (Age 21 to 33); (2) Middle aged with higher SES; (3) Middle aged with lower SES. Although such a sample would not provide a good description of either group as a whole, it might be sufficient for general comparative purposes. Table 1 illustrates the socio-demographic characteristics of the 18 informants.

Table 1. The Socio-demographic Characteristics of 18 Informants

Informant	Age	Sex	Marital Status	Occupation	Annual Income (USD)	Education
A	21	M	S	Clerk in Private Firm	2,500	Junior College
B	22	F	M	Receptionist in Museum	2,800	Junior College
C	26	F	M	Part-timer at Home	2,500	Junior College
D	26	F	S	Clerk in Private Firm	7,750	MA
E	27	F	S	Journal Editor	6,750	BA
F	27	F	S	Clerk in Foreign Firm	9,000	MA
G	28	M	S	Technician	10,625	Trade School
H	31	M	M	Civil Servant	6,250	MA
I	32	M	S	Bank Accountant	15,650	MA
J	33	M	M	Bicycle Repairman	1,000	High School
K	37	F	M	Associate Professor	3,750	PhD Candidate
L	37	F	M	Manager	6,250	BA
M	38	M	D	Junior High School Teacher	3,125	BA
N	39	M	M	Entrepreneur	62,500	BA
O	43	M	M	Small Restaurant Owner	……	High School
P	44	F	D	Bookkeeper	1,875	Junior College
Q	45	M	M	Associate Professor	18,750	PhD
						High

R	45	F	M	Waitress	3,125	School

Individualism And Social Ties: The Role Of The Mobile Phone

The past experience has shown that the fixed telephone plays a significant role in the transition from communities to social networks because it can make physical distance irrelevant to some degree as far as voice communication is concerned (cf. Wellman & Tindall, 1993). By its very nature, the mobile phone implies capacities of not only controlling but also manipulating spaces. Spaces are closely related to social relations. Then, it is only natural to concern whether social structures will be changed when the space becomes further "disciplined" because of the use of the mobile phone. Studies from the West suggest that the mobile phone communication is able to increase individual selectivity in choosing relationships and reinforce the established ties in a sense (see Dobashi, 2005; Fortunati, 2000, 2002a; Ling, 2000; Matsuda, 2005). In this section, we analyze the dynamics of the mobile phone communication and social relations in respect to kinship ties, best friends, and other social relationships in Beijing.

Mobile Phone Communication, Kinship Ties, and Non-traditional Love Ties

Kinship ties have been the basic component of social structure in China. This might be still true as far as mobile communications are concerned. Our data shows that the mobile phone communication between parents and children is almost a daily routine and affective in nature. For instance, a mother will call her unmarried son or daughter at work and ask if he or she is going home for dinner. If the son or the daughter is still in school age, checking his or her after school activities becomes a mother's mobile communication routine. For our informants whose hometowns are not Beijing, they call their hometown parents once a week at least. This is consistent to the findings on migrant workers' usage of the mobile phone in China (see Lin & Tong, 2005). Moreover, it is the mother and the daughter who are more likely to take the initiative and maintain their parents-children ties, which is similar to the findings on the gendered use of the mobile phone in Japan (Dobashi, 2005).

It is found that the Internet has been widely used to maintain kinship relations (Quan-Hasse *et al.*, 2002). The majority of our informants also enjoy frequent mobile phone or Internet communications with their selected relatives. Such strong ties include not only blood related cousins or sisters or brothers, but also relatives by marriage. For instance, while the 28 years old technician acknowledges that "blood is blood, [i]t is different after all", he also meets his cousin's husband for lunch quite often. Another 21-year-old male clerk claims that the mobile phone communication with his father's sister-in-law has already become somewhat routine activity for him, "I'll send messages to my aunt at each weekend, for we are in a very good relationship. And probably we will make an arrangement for family party".

While the mobile communication between parents and children is similar to that of spouses in terms of intensity, the later appears somewhat less affective and more

instrumental. Although almost all the informants who are married have kept frequent contact with their spouses through mobile phones, they communicate more for clarification or instrumental purposes. There is a 37 years old female associate professor who lived in one of the major southern Chinese cities. She was on leave and came to Beijing for her Ph.D. degree a while ago. Her husband and child are still in the city she left. She explains:

> "My husband and I talk very often on the phone. He usually calls me. If I did not pick up the phone, he got angry. If he accepted my explanation later on, it would be alright. Otherwise, he would be still angry. ……If there is no mobile phone, there will be less misunderstanding. I sometimes really don't like the mobile phone. ……That is to say, the phone……brings too many misunderstandings, too many restraints. If I did not answer one phone call from him or failed to reply his SMS right away, I had to spend a lot of time in explaining later, explaining where I went and what I did. I really don't like to use mobile phone in situations like this."

While the case of female associate professor may seem extreme because of the physical distance, it is true that the mobile phone is mainly employed by the married informants for the purpose of coordination such as picking up children from school. For the informants who are engaged or have steady boyfriends or girlfriends, mobile phone communication with each other shows similar patterns. One 32 years old accountant who works for a bank describes his mobile phone communication experience with his fiancée:

> "Now we call each other more for practical matters. It was emotional and affective exchanges before [when we were boyfriend and girlfriend]. Now it is just for talking about things, a matter of communication. [The mobile phone] is just a tool of communication."

Another 27 years old journal editor discusses how she used the mobile phone to manipulate two intimate relationships at the same period:

> "I used QQ [a popular Internet chat software in China] to chat with the boy I met after I have had a boyfriend. Then, I used the phone to talk to my boyfriend [when I was] at home. I got to know him in an organized trip to Tibet. The trip members were gathered through the Internet. …… Personally, I don't like phones."

It appears that the mobile phone means different things and is used differently in different stages of intimate relationships. It could be restraining, instrumental, or even manipulative. But for the younger and unmarried informants, it means liberation in terms of disciplining space, controlling time, and reaching out for intimate or affective relationships. Indeed, our informants who are single or divorced are often able to have and maintain intracity or intercity romantic relationships by means of the mobile phone communication, especially SMS. The SMS is preferred not only for its low costs in China, but also because it is easier to express affective feelings. A 27 years old female clerk who has a Master degree and works for a private firm tells us:

> "……I think [we] Chinese are more reserved. If you let him [or her] express his [or her]

feelings directly, he may be embarrassed. Sending SMS [is different] because it is not a direct conversation. So it is possible to have a higher degree of freedom on the expression."

Mobile phone users send out and receive huge numbers of SMS every day in China. Nevertheless, it is only part of the picture for the development of romantic relations. Just as the 27 years old journal editor told us:

"SMS is only part of communication for significant relationship development. I sure have other channels to communicate with them (the intimate male friends). For instance, we can go to the Internet and chat or meet face-to-face. …… Put it this way, if there is such development [in romantic relationships] or any sign of moving towards more intimate direction, it cannot be accomplished by SMS alone. It is only part of the interaction."

The reaching out for romantic relationships through mobile phones may mean many things (Cf. Lin & Tong, 2005). For the informants who are already married, it indicates dissatisfactions with their spouses. At least, studies in gender relations and feminism movements show that the dissatisfaction from the female side has a long history. For instance, one of the main functions of foot-bending for women occurred in China about 1000 years ago and lasted until the earlier last century is the physical restraint of the Chinese women (see Rong, 2001; Su, 2004). The new media such as the mobile phone undermine the spatial limitation.

China is well known for its wall and gate mentality and constructions. Walls and gates, though with plenty of implications, are mainly used to divide spaces and prevent communications undesired. Big walls such as the Great Wall were built and maintained for the purposes of defending the national boards and separating the Chinese from the nomadic tribes of the North in the past. In urban China today, steel gates are installed for every apartment when families move into the high rises in the hope of constructing a safe and private space during the modernization and globalization. But the modernization and globalization, assisted by the new media, are processes in reverse for they are "tearing the walls down" in a remarkable way both domestically and internationally. While the Internet disregards international boards to a large degree, mobile phones privatize public spaces or turn family spaces into personal spaces whenever it is necessary. For instance, the silent and personal SMS often goes through the steel gates and concrete walls effortlessly. These have great implications on social relations. A divorced 44 years old bookkeeper who maintains a romantic relation and three intimate relations with the opposite sex at the same time explains:

"……In general, I use the mobile phone to communicate with [my personal and intimate friends]. ……I work in an office. Everybody would know what I was saying [if I had used the office phone]."

All the three intimate male friends of this informant are married men. She uses the fixed phone for same sex friends for it does matter if others around will hear her or not. But the

cell phone is reserved to her personal and intimate male friends because the mobile phone allows her to "walk to another room" or place where there are no other people around.

Another 41 years old male and married informant who works for a university as an associate professor has had a long-term extramarital affair with a journal editor. He and his mistress meet at the same place in every Thursday afternoon. They usually schedule the "date" on MSN. Then they use the mobile phone for coordination to make sure the "date". Also, one may send short messages to another and see if it is convenient for both of them to go to the MSN for a chat.

Almost all our married informants who are white collars or professionals have or had extramarital affairs or intimate ties with the opposite sex regardless of gender. While relationships as such are greatly assisted by mobile phones, the space for those married informants is redefined by the SMS. The messages are regarded as personal and private.   It is acknowledged by virtually all the married informants that they don't check their spouses' short messages although some of the unmarried informants do secretly check their boyfriends' or girlfriends' short messages.

As far as the married informants who have lower incomes are concerned in Beijing, the mobile phone is not only much less often employed but also used mainly for instrumental purposes. They appreciate their marriages and families and do not have extramarital affairs. However, this does not always imply that they have a higher moral standard or dislike modern communication technologies. A 33 years old self-employed bicycle repairer-man whose annual income between 700 and 1100 US dollars tells us:

> "I rarely contact opposite sex except my wife…….It is not that I am afraid of my wife. I am just not used to it. It is not necessary for I am very busy [and trying to make a living]. I have little time to go out and have some leisure [activities].
> ……I don't share my problems with others. I take my responsibilities. I don't like to talk [my problems] to other people. If there is something [that really bothers me], I will discuss it with my wife. After all, my wife is the closest to me."

Another 43 years old small restaurant owner who has a modest annual income also shows similar behaviors. One of the main reasons for the failure of his first marriage was that both he and his ex-wife experienced extramarital affairs many years ago. Now he does not have female friends and only do short messages with his wife. To him, phone calls are mainly for business purpose. He is trying to make a living for his family. The restaurant and home are the two places he spends all his time daily. It seems that economic restraints and pressure faced in their daily lives suggest that marriage and family may be the most important resources they have during the modernization and globalization processes. That is, they depend upon each other's support for survival. Similar patterns are reported on migrant workers in China. The migrant works are mainly from rural villages with very low income. Law (2005) indicates that the married lives of the first generation of migrants does not show marriage related emotional problems although the couples are physically separated

because the most important thing for them is to fulfill the functional needs of the family (Cf. Yuen *et al.*, 2004).

Mobile Phone Communication, Best friends and Other Social Ties

Our informants' experiences suggest that mobile phone communications are not only associated with the changes in intimate lives by redefining personal spaces but also related to the shift of interaction patterns with best friends and other social ties. As in other places, most of our informants claim that they have 2 or 3 best friends in their lives. However, for the majority of our informants, best friends do not always mean high frequency of face-to-face gatherings or communication in spite of the availability of mobile phones.

To our informants, best friends are of the same sex in general. To our two young unmarried male informants, they neither see nor call their claimed best friends regularly although they use the phone to ratify their ties sometimes. As one of the two told us: "……[we] call [each other] once in a while. There is no fixed frequency. [A call] is made whenever it occurs [to me that it is the time for me to make the call]." We should point out here that it is neither physical distance nor long distance cost of phone calls that prevent them from seeing or calling each other regularly.

The three female informants who are young and single, however, show different interaction patterns with their best friends. They communicate with each other regularly and frequently. The 26 years old clerk who works for a private firm indicates: "…… [we] are on the MSN anyway.[2] So we "see" each other very often and chat for a few minutes each time. ......If something urgent comes up (and my best friends are not on the MSN), I will [use my mobile phone and] send them a short message. But there is no urgent matter normally." Another 27 years old unmarried female professional who works for a foreign firm explains her experiences with her best friends living in another city:

> "My best friend(s) and I send SMS to each other daily. …… [For instance], she will send me short messages on anything. I cannot say that I know what she is doing at 24 hours bases. But I pretty much know where she is or how she is doing everyday. I will know if there is any change in her life anytime. [She] would send me SMS from road, airport or railway station."

Our middle aged informants deal with their best friends differently compared with the younger ones in an age of mobile communications. For our informants who are professionals or white collars, they do not meet their best friends weekly. They do that occasionally such as on holiday or when something comes up. They do not call or send SMS to each other very often either regardless of gender. A female project manager puts it this way:

"I think that the friendship among best friends has stronger base and deeper roots. Yes, it is

not necessary to see each other very often for the ties were established in an earlier stage

[when we were classmates in school]. We may bump into each other occasionally [during

some events] for we work in the same profession. Then we are all very happy and talk about

what is going on with our lives."

To the urban Chinese, best friends mainly consist of classmates in the past. They are strong ties but not active ties as far as our informants who are professionals or white collars are concerned. Again, the less active communication pattern is not related to physical distance.

But our middle aged informants who are blue collars or have lower income tell us differently. Generally speaking, they not only see their best friends often but also communicate with them frequently. The 43 years old small restaurant owner says:

"I have 7 or 8 good friends. We grew up together. I meet two [of them face-to-face] often,

not the others. …… For instance, when there is something unpleasant between me and a

friend, I'd like to discuss it with my best friends."

Another 45 years waitress tells us that "best friends are the ones who come to see each other often, I think so." When she was laid off, her best friends just came over to see her at home and chat, not necessarily talk on the phone. Now she has a job and often takes a walk with her friends nearby after work, especially during the summer. In other words, she and her best friends have maintained their ties based upon what Wellman called "door-to-door connectivity" to some degree (Wellman, 2001; Wellman, 2002). Now the waitress is busy with her new job. But she does not forget to call one of her best friends, who lives in another part of the city and is still laid off, regularly and provide her with emotional support.

For the extended social ties beyond the best friends and family or kinship ties before the diffusion of mobile communication technologies, the Chinese are more likely to connect with their classmates, workmates, comrades-in-arm, and neighbors depending upon their socio-economic status and the neighborhoods where they grow up. [3] We may regard such social networks as traditional networks. One of the properties of traditional networks is that the members tend to know each other well within a network. Our findings suggest that such social networks still exist in today's Beijing. The interaction patterns are similar to a large degree regardless of age, gender, and SES.

The younger informants tell us that they may have about 5 or 6 good friends or extended close ties as explained above. But both the younger male and female only meet their friends on special occasions such as birthdays, marriage ceremonies or the Chinese New-year

although they communicate with each other through the Internet and mobile phones sometimes. That is, their face-to-face meetings are often group gatherings. As the 26 years old female who works for a foreign firm indicates: "[The major hurdles are coordination.] The more people are included, the harder it is [to organize]. It is too difficult to coordinate the time [that suits everybody].   For the younger females, some of them go to the Internet for solution. For instance, the 27 years old journal editor does group chatting with her friends on MSN sometimes.

Almost all our near middle aged or middle aged informants not only meet their good friends in the traditional sense occasionally, but also use the phone to communicate with them more for instrumental purposes. That is, they are more likely to contact their traditional good friends on special occasions or when something comes up and needs to be dealt with because "they are very busy". Indeed, the 45 years waitress indicates that the only period during which she visited her old neighbors and classmates often was the period when she was laid off. In her own words, "…… many were laid off. It was boring at home."

"Busy" or "busi-ness" has become a state of life or lifestyle during the modernization and globalization processes in urban China. Life is busy. But city dwellers are communicating for social purposes without precedent in history both in volume and frequency by means of the mobile phone and the Internet. Among the people they communicate with, parent/child and kin are still on the top list to all of our informants; Intimate relations beyond marriages or prospective husbands or wives are actively sought and developed by our professionals and white collars; best friends are still claimed, but regular communication between or among them is only acknowledged by the younger females and blue collars. The extended close ties based upon workmates, neighbors, comrade-in-arm, and classmates are ignored to a large degree in the name of "busi-ness" as far as communication is concerned. Nevertheless, our informants' "busi-ness" does not prevent them from seeking new friends and forming social networks that are individualism in nature.

Mobile phones have the capacity to store telephone numbers. Although the size of one's telephone network may be often work or occupation related, the number of telephone number stored in one's mobile phone implies the range of one's social connectivity at least to some degree. The data from our informants reveal that the range of the phone number stored is from 0 to over 400. All of our informants but the ones with lower income indicate that they keep more than 100 phone numbers in their mobile phones. Age is not closely related to the range. Income is more significant on the matter. Our informants who have lower incomes with dead end jobs such as the waitress, small restaurant owner, and bicycle repairman report that they have none or less than 30 phone numbers stored in their mobile phones. This is consistent with the amount of money they pay for the mobile phone services. The lower income informants spend from 2 to 6 US dollars per month while the others spend from 10 to 60 US dollars for the service. Some of the "big spenders" on the mobile phone services are either partially or entirely paid by the firms they work for. Then, the question becomes: With whom they communicate besides their business associates or workmates, parents/children and personal and intimate friends, if there is any?

The answer is they make "friends" based upon hobbies and various other needs. This is particularly true for some of our younger informants who actively seek "friends" through the Internet. The 28 years old male technician tells us:

"......[I have different circles.] People within the same circle knows each other, but of course they do not know [the ones] in other circles. For example, I have a singing circle.[4] And I also have a circle within the company I work for. The two circles do not overlap. ......I got to know my singing friends through [a website called] "Accompany me to travel". We started to chart on the net. Then we felt that we could get along with each other. We meet if we feel good. Otherwise, bye-bye. Those friends have no personal interests involved. .....just for we could play together, [no emotions attached]."

To maintain relationship is not an objective for joining and developing the circle or individualism oriented network indicated above although there are such possibilities. They communicate with and meet each other merely for having a good time together. In such circles, history and future are not important. The keywords are "able to get along" for the time being. The driving forces for forming a circle are mainly personal hobbies or needs. Our younger and female informants show similar patterns. They also form or develop interests directed "circles" as the young males do through Internet tools such as MSN. Again, their circles do not overlap. That is, there is more likely no linkage between the groups.

While the Internet may be employed to join or form a particular "circle", the mobile phone can be used to maintain the personal needs based new ties. Although both the younger male and female use their mobile phones to communicate with personal needs based new friends, they make it clear that their friends do not know each other by and large. In other words, such networks often have a star shape. Everyone is in the center of his or her networks developed by means of the mobile phone. Networks as such often have intercity and even international linkages with the assistance of new media in general, SMS in particular. Again, history and future are not major concerns. "Self-centered networks" are often quickly developed or dissolved in an age of mobile connectivity. It all depends upon our younger informants' will and needs.

Our middle aged white collar or professional informants also reach out and develop relationships beyond their traditional Chinese social ties as mentioned earlier. However, they rarely form "circles" as indicated by the younger informants. By means of the mobile phone or the Internet, they are more likely to develop and maintain a few relatively stable ties or linkages. That is, one may have a few "mobile" friends who are not cross linked. However, the person at the center does share his or her life history to each tie at least to some degree. To the lower income informants, their communications are limited to the traditional network ties regardless of the availability of mobile phone communication.

Referring to the migrant workers from rural villages, Law (2005) reveals that mobile phones are not only helping them to maintain existing kinship relationships in expanded

spatio-temporal contexts, but also to prolong new social relationships. Our findings on Beijing residents show similar communication patterns with different motives. While blood related ties are still very strong for our informants in general, the younger ones with higher income have started to form hobbies or needs driven "circles" and explore multiple intimate relationships with the assistance of the mobile phone. The middle aged informants who enjoy higher income are greatly encouraged by the mobile phone in terms of having extramarital affairs and developing other social ties beyond kin, workmates, classmates, and comrade-in-arm. Indeed, the essential feature of the mobile phone is its mobility.

Mobile Phone Communication And Spaces

Spaces are closely related to social relations. We act differently in different spaces in terms of our understanding of "public space", "private space", and "personal space". However, the mobile phone allows its Beijing users to "reach out and touch somebody" by privatizing public spaces and personalizing private spaces such as family. While mobile phone conversations ignore surroundings in public by imagining that they are in private quarters, personal short messages effortlessly penetrates apartment walls and steel doors that guard each family, particularly the supposed "holy" marriage in Beijing.[5] In this section, we further demonstrate our points by analyzing "imagined privacy" and other related categories.

Mobile phone Communication in Public Space

Previous research reveals that the use of the mobile phone in public contributes to the blurring of the boundary between the public and the private (Castells *et al*., 2004; Kim, 2002). Our data show similar results. Mobile phones are commonly used in public spaces by our informants. For those users with higher SES regardless of age and gender, they are more likely to keep their voice low or switch to their hometown dialects whenever private matters are dealt with. The 31-year-old male civil servant reveals his high awareness of privacy:

> "I am afraid of being overheard by people around, even strangers, when it comes to my privacy. Sometimes I speak in dialect, but I feel people all over the country can understand the dialect."

Our informants with higher income and education are more alert when they communicate through the mobile phone in public spaces. But it seems that the less educated or lower income users does not carry the privacy burden in public spaces. The 44-year-old female bookkeeper who has an annual income between 1800 and 1900 US dollars describes her mobile phone communication experience in public spaces:

> "…… however, in public spaces where there are no acquaintances around, the situation is quite different from that in the office. In the office, you are surrounded by colleagues who care or are even curious about whom you are talking to and what you are talking about [on the phone]. But in streets or department stores, I answer phones very often. It doesn't matter, because nobody knows who you are, and I feel liberated when I am talking [on the mobile

phone]."

Almost all of our informants of blue collars claim that strangers around do not exert much pressure upon their mobile phone conversations. Anonymity is enough to make them feel that they have all the privacy needed when they speak on the mobile phone in public spaces. For instance, the 45-year-old waitress "never thought that people on the bus would overhear" when she was making a mobile phone conversation. Indeed, as demonstrated in the previous section, there is not much for them to conceal as far as their social interactions are concerned. Their privatization of public space has little to do with the "imagined privacy". They just do it; they have no need to imagine. Indeed, they are more concerned with the cost of each mobile phone call than anything else. Accordingly, their mobile phone conversations are more likely to be short and brief.

While different groups perceive the privacy issue differently in public spaces, they all agree that restaurants are exceptions. More or less, speaking loud is tolerable in Beijing restaurants. That is, it is already a privatized place even before the diffusion of the mobile phone to some extent. As the 37 years old female manager told us, "It doesn't matter [if I use the mobile phone] when I am dining [in a restaurant]. I answer mobile phone calls directly and make calls according to my need."

To our informants, private mobile phone signals penetrate the walls of office buildings too. Sending or receiving personal short messages seems an accepted behavior in office meetings and on other business occasions. When privacy is assured because of the silent nature of SMS, the office spaces are privatized to some degree. Moreover, it is tolerated to pick up mobile phone calls in offices. The middle aged or near middle aged informants are able to either temporarily "create a personal space" by walking to some place where there is no one around or manipulate the office environment by speaking in a different way.   For instance, the 32 years old bank accountant tries to "speak in the usual tone, and not to reveal real feelings or opinions over the mobile phone conversation" when he doesn't want to draw attention from colleagues nearby. The civil servant adopts different strategies in dealing with different situations so as to secure his self-centered position:

> "If I'm meeting with my superior, I often turn off my mobile phone or switch it to vibration. Or I quickly finish the conversation by saying that "I am in business, [will] get back to you later". The more important the relationship is, the more careful you have to be, …… I adopt language strategies [to filter information]. Sometimes, I only listen to her without saying too much."

There are tentative reports on the privatization of public spaces by means of the mobile phone in China (see Chu & Peng, 2005). Our date further clarify the process. While the informants who are professionals are aware of the risk involved in leaking information in the public and office, the middle aged and married informants with lower SES do not care that much. The 45 years old waitress whose network is relatively restricted to the traditional ties claims that she in fact has little to hide from the others: "I do not mind whether my friends

[and colleagues] will listen to my conversation on the mobile phone or not [in my working place]. It is not necessary for me to avoid them." In short, the line between the public space and private space is blurred because of the diffusion of the mobile phone. However, the privatization of public spaces is class specific. While the informants who are professionals are more likely to privatize the public space by imagining that they are in private quarters, the others who are blue collars just do it without the imagination. In either case, it refers to the liberation from social sanctions in public spaces.

Mobile Phone Communication in the Home

An individual's home is suppose to be the most private place or, in Goffman's term, the back stage, where she feels most comfortable and relaxing. However, our interviews reveal that informants with different socio-demographic backgrounds view and act differently when it comes to privacy at home. In other words, personal spaces among family members are redefined at home because of the use of mobile phones.

Personal spaces are vital for the networked individualism. Mobile phone may facilitate the creation of such spaces at home by personalizing the family spaces. The young and single informants seem particularly versatile to do that. The strategies they adopt include: choosing the mobile phone rather than the fixed phone so that the family space could be easily manipulated; communicating with intimate and opposite sex through SMS when other family members are present. The 28-year-old technician who lives with his parents tells us:

> "They (his parents) are not able to hear my [mobile phone] conversations because I shut the door of my room and hide under my quilt….I often keep my mobile phone conversations away from them. I walk to another room or the balcony when speaking on the mobile phone, you know. ……"

In respect of redefining personal spaces by SMS, the younger and unmarried informants claim that they prefer communicating with the opposite sex through SMS because it is personal and silent. The 26-year-old female clerk communicates with her boyfriend by SMS when she stays at home:

> "I live with my parents, so it's inconvenient for me to chat on the fixed phone. I communicate with my boyfriend by SMS at night. ……SMS is quiet and silent, so nobody knows whom you are communicating with."

The younger and unmarried mobile phone users are able to create a personal space in which communication between personal oriented intimate ties becomes available at home. It might be necessary to point out that a younger and unmarried person could have his or her own privacy by using the fixed phone in his or her room when needed. However, the necessary privacy is only ensured if the room phone is a separated line. This is rarely the

case for a Chinese family. Moreover, a Chinese parent need not knock at the door first before she or he enters his or her child's room. It is not a Chinese custom. So the fixed phone communication in a Chinese family may be private but not personal when family members are present. The mobile phone allows personal conversations because of its capacity to let its users to manipulate or personalize the family space. Guo's (2005) preliminary research indicates that the middle and high school students have started to fight with their parents over the usage of the mobile phone and form their mobile phone based personal spaces at their homes in Beijing.

The mobile phone and personal spaces are even more significant to married informants who are white collars or professionals for they are more likely to have extramarital affairs. Indeed, the mobile phone is able to help personalize the family space. For instance, the male associate professor tells us that he communicates with his mistress through short messages when his wife is with him at home :

> "Most of my mobile phone conversations, short messages, and MSN are made with my mistress. It has become a routine, an [indispensable] part of my life. [She has become] a member of my family [in my thought]. I will surely feel low if I receive no messages from her one whole day. At least I want to know how things are going with her every day."

The 26 years old married female who works part time at home employs both phones and SMS in order to maintain her intimate relationship with her lover who was used to be her teacher:

> "He never called me at the weekend when my husband was home. We talked freely only when my husband left for work. ……I communicate with him very often by SMS. It gives me a sense of warmth and romance. I feel that we have gone back to my old school days when [communicating with him] by SMS."

Most of our informants who are married or have steady boyfriends or girlfriends claim that they do not check each other's short messages. The 37-year-old female manager says: "Our mobile phones are openly placed at desk or somewhere. We do not check each other's [mobile phones]. At least I do not check his and so does he." And a newly married female informant at the age of 22 tells us her experiences like this, "I seldom check my hubby's mobile phone. But sometimes I may want to collect the funny short messages (in his mobile phone), and I will surely ask for his permission before I see them. I won't do it unless he allows it." Nevertheless, taking precautionary measures seem necessary to some of the informants. For instance, the male associate professor always deletes all the short messages from his mistress the moment he receives and reads them in spite of the fact that his wife and son never check his short messages. These messages are "just like landmine that might lead to the deconstruction of my family", he explains.[6] Our interviews show that deleting messages is a relatively common phenomenon among informants who are professionals or

white collars regardless of their marital status. This is understandable for we are told that some of the spouses or fiancés have had the experience of secretly checking their partners' messages for reassurance.

As far as the married informants with lower incomes are concerned in Beijing, his or her personal space is not affected by the mobile phone communication for they do not have the extramarital ties. To them, family is still the family. They still regard the home as the most relaxing place. The bicycle repairer man tells us that his wife gives him a sense of trust and warmth:

> "I feel that I can talk about anything at home. …… My wife doesn't mind what I say on the phone."

While home is still the home for the blue collars, personal spaces are redefined and enlarged at home for the professionals or white collars due to the powerful connectivity of the mobile phone.

In sum, while the informants privatize the public spaces by "imagining" that they are in private quarters when on the phone, they personalize the private spaces such as the family apartments by redefining "personal". However, the degree of privacy needed depends upon our informants' socio-demographic characteristics. Indeed, the mobile phone enables our informants to get the necessary privacy or communicate privately or personally because it is not only mobile but also voice and text based. Perhaps we may say that the mobile phone means privacy by nature. We need to communicate privately or personally because we are afraid of social sanctions sometimes. The mobile phone free or liberate us from such sanctions to some degree. Thus, we may have a better understanding of the changes in social relations discussed in pervious section. Indeed, the mobile phone very much favors "person-to-person" connectivity (see Castells, 2000; Haythornthwaite & Wellman, 2002; Wellman, 2001; Wellman, 2002).

Discussion And Concluding Remarks

Spatial changes affect social structures to a large degree for spaces are closely related to social relations. Among Western researches on social transitions and new media, the concept of "networked individualism" seems particularly useful (see Castells, 2000; Haythornthwaite & Wellman, 2002; Wellman, 2001; Wellman, 2002). Indeed, the traditional conception of spaces has been significantly subverted with the assistance of new media. As demonstrated above, this paper attempts to explore the specific role of the mobile phone in the changes of social structures in today's Beijing. We uncover that the mobile phone further frees its users from space restraints as far as social networking is concerned. That is, it allows the users to privatize "public space" by creating a sense of "imagined privacy" in front of "present others" and personalize "private space" by redefining the boundaries at

home in order to maintain personal and extraneous ties (cf. Fortunati, 2002a).

With the adoption and diffusion of the mobile phone, the public spaces are privatized and the private spaces are personalized, which means the development of networked individualism, or say, a transition to "personal community" (Castells, 2000, Haythornthwaite & Wellman, 2002; Wellman, 2001; Wellman, 2002). As our data have suggested, the adoption of the mobile phone promotes the emergence of "personal community" where an individual acts as the center of his/her network. However, this is not to say that our informants' traditional networks are disappeared. With the help of the mobile phone, many informants, especially the younger or the middle aged with higher incomes, have developed skills in dealing with different social relations belonging to either the traditional network or the individualism oriented community. A large amount of phone numbers stored in the mobile devices for most informants except those with lower incomes suggests to a certain extent the social transition from the "spatially compact and densely knit" communities (see Thébert, 1985; Barthélemy & Contamine, 1985; Ward, 1999) to the more "sparsely knit" communities transcending physical confines (Haythornthwaite & Wellman, 2002).

It has been argued that the Internet possibly lures people away from their families and communities (Barlow, 1995; Hiltz & Turoff, 1993; Kling, 1996; Kraut *et al*.,1998; Nie, 2001; Nie & Erbring, 2000; Rheingold, 1994). But it seems that the mobile phone helps maintain kinship ties. Our informants' mobile phone communications with their relatives appear to be frequent and affective in nature. (Cf. Law, 2005). This is particularly true to the parents/children relationships. But, our data also suggest that the mobile communication between husbands and wives is frequent yet instrumental to some degree. The mobile phone, SMS in particular, has enabled the construction of personal spaces between husband and wife at least to a certain degree. We have been trying to emphasize and elaborate the concept of "personalizing private space" in this paper. Private spaces such as family are redefined with the help of the mobile phone. It is claimed by almost all the married informants that they don't check their spouse's short messages and that they regard the messages as personal and private. Co-presence no longer ensures loyalty or fidelity for couples even at home.

Almost all our married informants with higher social economic status have or had kept at least one romantic relationship besides their spouses with the assistance of mobile phones. This kind of individualistic adventure is correlated to the clear increase of the divorce rate in Beijing.[7] Our point is, marriages need private spaces to maintain and grow. The mobile phone communication has changed the ecology by enabling the personalization of the private space fenced by walls and gates. Thus, the ties between spouses are weakened. Indeed, the mobile phone has provided seemingly unlimited power of person-to-person connectivity.

We may use "soul mates" or "best friends" to describe the ideal communication pattern between a married couple. Such descriptions imply that the couple is able to share each other's life to a maximum degree. In other words, the couple enjoys each other's life in all dimensions. The best friends belong to this category at least to some degree in a traditional

sense. Best friends suppose to know each other's life histories very well, share things in common, be concerned with each other's welfare, and believe that they can always count on each other's support whenever it is needed. That is, the relationship between best friends is multidimensional in nature. This means frequent contacts and regular meetings.

In urban China, best friends are usually classmates, workmates, comrade-in-arm, or neighbors. They often share each other's life history and other life dimensions. Nevertheless, for almost all the informants but the younger and unmarried female users and the married female users with lower income, best friends do not necessarily mean high frequency of face-to-face communications or mediated communications such as via the mobile phone regardless of distance restraints. Actually, they only call each other occasionally and meet irregularly although the status of best friends is still claimed. This is similar to what Wellman (1979: 1214) reported about Easter Yorker's long-distance intimates ties decades ago. "Their infrequent contact ratifies the tie, and a potential is retained for more intensive use when needed." Compared with our findings, the difference is also obvious. Our informants with higher income claim that their infrequent contact with their best friends is due to the fact that they are busy, not distance. In fact, the best friends are local for most of our younger male and middle aged informants with higher income. They occasionally ratify the ties for uses when needed. The multi-dimensional relationship between or among best friends tends to shrink to needs based friendship. In this sense, we suggest that the ties between or among best friends are also weakened for the younger male and middle aged informants with higher income in an age of mobile phone communication.

The mobile phone functions differently in different social ties. In the above, we have discussed about the dual roles of the mobile phone in maintaining family ties. We have also suggested that the mobile phone does not favor the ties between or among best friends. However, this is only part of the communication pattern emerged as far as the mobile phone is concerned. Indeed, most of our informants, especially the younger or the ones with higher income have more and intensive mobile phone communications with others besides kinship and love ties.

The mobile phone is not necessarily used to initiate new ties. The Internet is employed for that because the Internet creates more opportunities for communication with others (Constant *et al.*, 1996; Feldman, 1987; Dobachi, 2005). Our findings show both media are used for developing new friendship. The difference is that the Internet is used to join a particular "circle" where different people come to know each other, while the mobile communication is more likely to be used to maintain the tie with a specific friend or the person selected.

As Fortunati (2002a) puts it, "the purpose of the mobile is to be reachable……by those with whom we want to communicate -- intimate friends or selected others……" (p.51). And Matsuda (2005) has discussed on the "selective sociality" among Japanese mobile users. Individual selectivity in the mobile communication reflects that the mobile phone is a personal device endowing individuals more freedom to establish as well as to filter ties in

real life. Our research found that the younger informants are more likely to develop friendship with the newly met and keep regular contact with them for leisure-time entertainment such as singing in Karaoke bars or group traveling. Some younger and unmarried informants claim that they keep regular communications with their friends living in another city or country, mainly by SMS and the Internet for intimate and emotional exchanges.

Our informants use the mobile phone to communicate with their kinship ties, romantic friends, and other social ties intensively. Such communication occurs not only in private spaces such as home but also in public spaces. Previous studies suggest that the use of the mobile phone in the public contributes to the blurring of the boundary between the public and the private (Castells *et al.*, 2004; Kim, 2002). Our data show similar results in general. While some of our informants are more concerned with talking on the mobile phone in public places, they are all privatizing the public spaces by either imagining that they have the necessary privacy needed or simply ignoring the surroundings when they do the mobile phone communication.

Modern media are about spaces by and large. The diffusion of the fixed phone is one of the major factors that enable strong ties to go beyond the neighborhood (Wellman, 1979; Wellman & Tindall, 1993; Wellman & Wortley, 1990). But the fixed phone is stationed. The diffusion of the mobile phone seems liberating the users from the physical space in all dimensions. By means of the mobile phone, we can turn the public space into private space or private space into personal space. When we are less and less physically and mentally constrained in respect to social relations and sanctions, our social behavior features networked individualism. Such individualism means not only frequently switching networks in daily communications but also ignoring the traditional close ties such as spouses and best friends.

In conclusion, we may argue that the mobile phone communication is instant gratification in nature. Just as going to a fast food restaurant, the mobile phone users who enjoy higher income can reach someone quick and easy. But their communications are often one dimensional or instrumental, not necessarily "nutritious" as far as social relationships are concerned. In a sense, the heavy mobile phone users may have the danger to become relational "obesity" in the new media environment. Speaking of today's family transition, Giddens (2002) argues that "Are you in a relationship" is a more important question than "Are you married". Probably "Are you with somebody right now" is the most important question in an age of mobile phone communication. Indeed, the mobile phone communication is much less concerned with the past or future. The medium is inherently personal and private.

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[1] See Beijing Municipal Bureau of Statistics for the mobile phone figure. "Social and Economic Indicators II, 2006". Released on January 22, 2007. <http://www.bjstats.gov.cn/lhzl/cbtj_2006/200701/t20070122_83931.htm>. Accessed on March 1, 2007.

[2]. MSN has become a popular choice for offices in Beijing.

[3]. Many youths, especially the rural ones, join the army for about three years and develop enduring social ties among their comrades in army. This was particularly true before the 1990s.

[4]. Here it refers to Karaoke.

[5]. As mentioned earlier, vast majority of Beijing residents live in apartments. There is a steel door for each apartment in order to prevent undesired visitors from entering.

[6]. The informant used a metaphor based on a popular Chinese movie called "Cell Phone" directed by Feng Xiaogang, in which the mobile phone is understood as hand mine because it carries so many explosive secrets.

[7]. See Beijing Municipal Bureau of Statistics. "Beijing Statistics Yearbook, 2006". Released on January, 2007. <http://www.bjstats.gov.cn/tjnj/2006-tjnj/>. Accessed on March 1, 2007. Also see Ministry of Civil Affairs of the People's Republic of China. "Reports on Chinese Civil Affairs Development from 2004 to 2005". Released on May 22, 2006. <http://www.mca.gov.cn/artical/content/WGJ_TJBG/2006518170321.html>. Accessed on March 1, 2007.

Gender in a broadband society

How Material Are Cyberbodies? Envisaging The Internet As A Medium Of Re-Embodiment

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Abstract:

Internet use is commonly portrayed as a form of disembodied communication, that is, communication from which bodily performativity has vanished, leaving users free to indulge in identity play and even downright identity fraud. In this paper, I seek to challenge the notion that disembodiment is the principal characteristic of Internet communication. I argue that in the broadband society, enhanced bandwidth is allowing for the return of 'vocabularies of bodily idiom' (Goffman). Secondly, even in its text-based phase, communication on the Internet has always been an embodied process because the body is invariably present in discourse construction. Thirdly, the material body is central to Internet use which is to a considerable extent motivated by bodily needs and desires, as health and lifestyle websites suggest. Finally, I also ask whether the insistence on notions of virtuality and disembodiment may be politically problematic in that these may obscure the context of material inequalities in which technology operates. In my conclusion, I support a vision of online communication as fusing the technological and the organic in a prosthetic manner, enabling the human body to overcome some of its limitations and allowing for an extension (but not necessarily a substitution) of bodily performativity.

Reinstating the body?

Governance of the Internet is interwoven with the utopian and dystopian possibilities ascribed to new information and communication technology (ICT). Regulatory discourses (concerning the question of the role of the state in harnessing the potential of technology) are caught between the rhetoric of progress and decay, reflecting great uncertainty as to whether the gains made through technology will ultimately outweigh what we stand to lose in terms of democratic values and other enlightenment ideals. The perceived benefits and dangers are at times couched in such superlatives (see Robins and Webster 2004 for a critique) that we need reminding that the regulation of social communication has a long and chequered history which stretches back at least as far as ancient Greece when Plato expressed fears about the corrupting effect of profane poetry (Sutter 2000; Thornton 2002). It seems almost axiomatic that any type of new technology, be it writing, printing, cinema, videogames or mobile phones, should give rise to considerable excitement and apprehension.

One aspect of ICTs and the Internet in particular which has led to such characteristic ambivalence is the perceived process of disembodiment brought about by so-called 'virtual' modes of interpersonal communication in which the material body can be reconfigured in such a way as to become ultimately irrelevant and replaceable. The most feverish imaginaries speak of the material body as obsolete 'meat' (Gibson 1984), an unnecessary appendage which has imprisoned us since times immemorial and which can now finally be severed from humanity's true essence: the mind (see Lupton 1995). Despite its clear Carthesian underpinnings –the mind is noble; the body is evil- (e.g. Holland 1995), feminists have embraced the cyborg, the animated machine, as a disruptive category which is capable of

advancing their political aspirations of collapsing nature/culture and mind/body dualisms. Squires' (2000: 360) more cautious assessment is that 'whilst there may be potential for an alliance between cyborg imagery and a materialist-feminism, this potential has been largely submerged beneath a sea of technophoric cyberdrool'. The reverse scenario of extreme cyberpessimism is equally hyperbolic in its imaginings of the dangers of cyberspace, leading at least one commentator to use the charged concept of 'moral panic' in respect of speculations as to where technology is leading us (Sutter 2000) in what Giddens (1991) terms our 'runaway world'. There is no grimmer prospect than that of children being 'groomed' on the Internet for sexual abuse by adults who take advantage of the freedom brought about by cyber disembodiment in a most disturbing way.

Much of the visionary writings on cyberspace came about when the latter's contours were still rather sketchy and its potential had only begun to register. This is undoubtedly still true to a certain extent. However, as we enter the broadband society, there is considerable scope for a re-evaluation of the disembodiment issue. Thus, in a piece on cybersex, Branwyn (2000: 398) comments on the quick wit need by users going in search of sexual gratification in Internet chat rooms saying that 'time on-line is expensive, so users need to "score" as quickly as possible'. This may have been the case when dial-up modems were the main domestic gateway to the Internet, but the economics of Internet consumption have changed considerably in the broadband society: users no longer dial up but they are permanently hooked up to the Internet. Moreover, the expansion in bandwidth capacity means that the Internet is no longer a predominantly text-based medium but a medium which has converged with other technologies (for example, mobile phones) to emerge as a fully-fledged audio-visual medium providing user-driven interactive contents through voice-over-IP, webcam technology, video-sharing, and so forth. The material body rather than being erased as redundant meat, it appears, has been reinstated: the body manifesting its presence through sound and vision on the Internet is once again acutely relevant. Moreover, research also indicates that bodily pleasures and discomforts are a growing incentive for users to go online and share their experiences with each other (e.g. Parr 2002).

In contrast with the visionary utopian usages envisaged by cyber enthusiasts in academia and beyond, everyday applications of the Internet challenges the scenario whereby we would all relocate to a virtual world which is capable of eclipsing the embodied reality of neurological sensations and cancels out needs and weaknesses to which the human flesh is prone. Lupton (1995: 102) sums this up nicely: 'While an individual may successfully pretend to be a different gender or age on the Internet, she or he will always have to return to the embodied reality of the empty stomach, stiff neck, aching hands, sore back and gritty eyes caused by many hours in front of a computer terminal'. Full disembodiment requires something much more drastic than an escape into technology to live out certain fantasies: to stick with a Carthesian image, it would take for consciousness itself to be located somewhere which is not made up of fallible organic matter (even allowing for the possibility that organs can be transplanted or grown from stem cells) and a sensation-inducing nervous system.

This paper, which is a work-in-progress piece, examines the disembodiment discourse against the backdrop of the Internet's widespread domestication and changing technological capabilities. Four particular points will be attended to:
1) Disembodiment relies on an outdated construction of the Internet dating back to its early history when it was a predominantly text-based medium which ruled out reliance on the customary cues which accompany face-to-face interaction.

2) Even in mainly text-based exchanges bodily performativity matters as users are unable to erase facets of their embodied identity such as their gender, race and sexuality. This means that users' freedom to be anyone they want to be in cyberspace needs to be qualified accordingly.

3) Bodily processes ranging from health problems to (illicit) sexual desires are at the centre of Internet use. New online communities based around shared experiences of embodiment are springing up all the time, as the troubling example of pro-anorexia ('pro-ana') websites illustrates. The physical body, in other words, is acutely relevant to our understanding of the broadband society.

4) The insistence that the Internet is a medium of disembodiment is at risk of both exaggerating and trivialising the potential for cyberharm. Giving preponderance to the technological expressions of social problems (for example, child pornography websites) may wrongly suggest that eradicating the problematic use of Internet technology alone will successful address underlying social problems. Similarly, constructing the Internet as a virtual realm trivialises the potential for harm in that it perpetuates the idea that the harm is only simulated, which neglects the primacy of the material conditions in which technology operates.

Broadband and the material body

Stories about identity deception brought about by disembodiment on the Internet abound. An often cited example dating back to the early days of the Internet is that of a severely disabled woman called 'Julie' who built up some close-knit friendships with other women users on the Internet yet who was subsequently exposed as a fraudster when 'she' turned out to be an able-bodied male psychiatrist (Featherstone 2000; Stone 2000; Brown 2003). The outrage and sense of betrayal felt by the victims of the identity scam were predictably great. This, one could argue, is a classic instance of a situation whereby interlocutors in forming a judgment of each other are being deprived of the giveaway cues or 'vocabularies of bodily idiom' (Goffman 1963) they would ordinarily be able to rely on in face-to-face interactions: the pitch of the other's voice, their gesticulations, their facial expressions. Instead, it seems that Internet users in judging each other's trustworthiness depend entirely on how others choose to present themselves in written exchanges. The potential for identity manipulation and the power to be anyone we want on the Internet is entwined with the capacity for disembodiment: we are no longer held back by the prison that is our body but can instead live out any social script of our choosing. To a utopian imaginary, this also means that prejudices to do with gender, age and race can be effectively bracketed or suspended. Featherstone's (2000: 611) cautious assessment is that: 'In effect, in addressing a fax, letter or electronic mail transfer into one's personal computer, the oft-cited usual range of stigmatizing social inequality (gender, ethnicity, age, class, etc.) while by no means eliminated, are not immediately obvious as in the case of direct face-to-face encounters'. Coupled with the global reach of the Internet, virtuality and the potential for disembodiment are also held responsible for severely impeding the reach of the nation-state and the criminal justice apparatus in policing subversive elements which exploit the anonymity and invisibility afforded by electronic text-based communications. Brown (2003: 146) suggests that: 'In the power afforded by the human-machine interface, there is a "value-added" edge to victimization. More people can be affected at once; the possibilities of detection are immeasurably reduced, as is the potential for legal regulation; the potential gains of certain crimes (fraud, hacking, etc.) are huge and perhaps above all the potential to bring down infrastructures which now rely on the virtual, is no longer merely a sci-fi hacker fantasy'.

There can be little doubt that already in the early days of the Internet the paucity of image and voice communication was experienced as a serious shortcoming. Thus, in his study of computer sex, Branwyn (2000: 402) describes how users struggled to translate the physicality of intimate contact using only words: 'An on-line orgasm looks like something out of comic book, with drawn-out ohhhhhh's, ahhhhhhhhhhhs, WOW!!!'s'. Little wonder then that the arrival of the webcam sitting on top of the PC was greeted with such great enthusiasm-and not just in the kind of circles Branwyn is concerned with: users can now see and hear each other, much to the delight of expats everywhere in the world trying to keep in touch with friends and loved ones back home. Coupled with enhanced bandwidth, the uploading and live-streaming of moving images are nowadays well within the range of domestic uses of the Internet. Take the phenomenal success of 'Youtube', the website where everyone can post video materials: the combination of hand-held camera technology and the global reach of the Internet has made user-generated contents, which are no longer stunted by the early day rigidity of the Internet as a text-based medium, the success story of the decade. The American *Time* magazine chose as its 'person of 2006' ordinary people who are busily blogging, camcording and youtubing across the globe, overcoming censorship and challenging the dominance of global media conglomerates. Such optimism may be slightly exaggerated as corporate capitalism still has a very strong stake in the Internet, but it does get across the vital point that in the broadband society ordinary users are able to express themselves using a variety of media which if anything appear to have reinstated the material body.

In assessing the dangers and potential of any new technology, it is worth asking ourselves what is truly innovative and different about it. In the case of the Internet, it is no doubt its ability to store and give interactive access to a phenomenal amount of data, literally at the click of the mouse, enabling users to overcome time-space limitations associated with much slower forms of social communication. For example (and I limit myself here to just one example because this is a topic I cannot possibly do justice to in this paper), there can be little doubt that the Internet, along with other technologies, is playing a significant part in the delocalization of the services economy from the western world to developing countries. On the other hand, from a social communication perspective, the Internet also offers remarkable continuity in that 'identity construction, impression management and conscious self-presentation are common practice in every communicative situation' and that therefore 'there is, for instance, little reason to distrust an email message or information more than a telephone conversation' (Pauwels 2005: 605). In other words, all forms of communication whereby interlocutors are not physically co-present raise issues which are similar to the disembodiment scenario created by the Internet. In pre-Internet days, 'Julie' could have been the pen pal many of us used to write to as children without there ever being as much as a phone call to supplement the letters containing what may well have been entirely fabricated biographies. As the Internet is converging with audio-visual media, questions to do with distortion, deception and manipulation which have dogged conventional mass media for decades will no doubt present themselves in broadly similar terms.

Where does this leave the disembodiment debate? Does convergence (and the reappearance of the material body) signal a loss of the Internet's early emancipatory promise of erasing or at least neutralising identity traits which are at the heart of so much prejudice and discrimination in face-to-face settings? Is broadband technology turning the Internet into a global panopticon enhancing the surveillance of citizens everywhere as they go about their daily activities (see, for example, Google Earth)? Has the broadband society brought about a state of voyeurism by making available in copious quantities materials which are bound to

encourage all manners of unhealthy curiosities? These are once again very wide-ranging questions which I cannot hope to address here. However, I do believe that reading the Internet as a chain of continuity and enhancement of communication infrastructures, rather than treating it as a radical break with the past, is instrumental in unravelling these issues. As I go on to suggest next, the material body never went away: even before broadband technology brought the global multimedia complex into the home, text-based discourse on the Internet already revolved around discursive markers capable of betraying the identity of users.

New technology, same old stories?

Anyone who is familiar with the work of charitable telephone helplines (for example, dealing with child abuse, suicide and depression) will know that anonymity in these settings, far from aiming to encourage deception, actually tries to facilitate honesty and confidentiality, enabling callers to unburden themselves of problems which they feel they cannot share with people in their own environment. Especially where an issue is of a particularly stigmatising or embarrassing nature, anonymity is instrumental in enabling individuals to disclose and acknowledge the full extent of their problem. It is worth noting that the therapeutic benefits of anonymity are most famously associated with the 'Alcoholics Anonymous' organisation involving face-to-face gatherings where participants do not have to reveal their full identity yet are encouraged to be open about their alcohol problem. In a similar fashion, the appeal of the Internet is not invariably that it allows us to be someone else but also that it allows us to be ourselves. Adopting multiple identities, for example, may be way for users to get to know themselves better by experimenting with different personae. In this sense, identity play online may for children and teenagers hold similar benefits to other forms of play and make-belief (Simpson 2005). According to Pauwels (2005: 605): 'People may reveal more of their identities and provide more valid information than in face-to-face situations, where their anonymity cannot be secured and where their conduct may be challenged directly'. Research on Internet dating (Hardey 2002) appears to bear this out: the Internet as a forum for meeting a partner allows users to discuss emotions and feelings which they would not be so willing to reveal to strangers in the offline world. Whittle (2001: 392), commenting on the potential of the Internet for transgender people, observes: 'Ironically, the cyberworld in which others have to learn how to manage their virtuality, is a world in which the transgender person's *actual* identity can thrive'. The transgender example is a particularly interesting one as it is indicative of a scenario whereby the Internet offers a more 'authentic' communicative setting allowing users to overcome their inability to express their 'true' identity in the offline world. Obviously, one has to be careful not to polarise the picture: depicting the Internet as necessarily more authentic than offline settings is as unproductive as the reverse portrayal of the virtual as invariably deceptive and inauthentic. The situation, as I have already indicated, is more fluid than that: what is real or authentic about identity construction is a complex and overarching issue which cannot be explained exclusively with reference to the medium through which it is expressed.

Anonymity also needs to be disentangled from disembodiment. The dominant thinking is that cyberspace affords freedom from bodily constraints and encourages identity play (in the sense of inventing an identity which is different from users' corporeal identity) because users are invisible to each other which simultaneously renders them anonymous. However, I have already established that Internet users may actually use anonymity to reveal more about themselves but also that the addition of sound and vision in the broadband society is aligning

the Internet with more traditional mass media and giving the material body greater sensory exposure. Moreover, it is important to point out that identity play is difficult to maintain even in settings which afford anonymity and disembodiment: pretending to be someone else is hard work and requires considerable cultural competence[1]. 'Virtual cross-dressing', Turkle (1995: 212) points out, 'is not as simple (…). Not only can it be technically challenging, it can be psychologically complicated'. Users may not be identifiable by name (in that sense they are anonymous) but they are still identifiable in other ways which they cannot always avoid: a complete erasure of identity markers is just as unachievable online as it is offline. Whether we are online or offline, we need language to access reality and this means that our use of language reflects who we are and how we think. Thus, Balsamo (2000: 498) comments: 'The fact that virtual realities offer new information environments does not guarantee that people will use the information in better ways. It is just as likely that these new technologies will be used primarily to tell old stories that reproduce, in high-tech guise, traditional narratives about the gendered, race-marked body'. It is not because there is a possibility of concealing some markers of bodily identity that the material body itself has vanished: the body is always present in the way in which we speak. It is, in other words, discursively constructed, which means that even in text-based communications, it cannot be bracketed off entirely. For example, it has been noted that instead of creating a communicative environment which is gender neutral, cyberculture often appears to intensify existing gender scripts (Squires 2000). Simpson (2005: 129) talks rather pessimistically about 'the possibility that the virtual world is (…) reinforcing narrow stereotypes rather than expanding our imaginations'.

That the loss of bodily cues is often experienced as an impoverishment -rather than as an unequivocal liberation- in online settings has already been made clear. It is striking, for example, that our text-based electronic conversations often carry 'smilies' to make up for missing body language used to express emotions in the offline world. Internet users also actively look for alternative identity cues which enable them to recognise the other. Such alternative identity codes can be highly sophisticated. Lee (2006) following Marx (1999) points to the use of 'pattern knowledge' consisting of different elements (usually contextual knowledge of someone's style and content preferences) to piece together a coherent picture of each other's identity. Users leave signatures in the form of links to homepages and e-mail addresses but they also tend to develop a signature style in the sense of subtle identity markers which enable those in the know (for example, regular users of an online message board) to recognise their online persona.

Featherstone (2000: 615) comments in relation to virtual reality that: 'As in all types of communication it is to be expected that forms and conventions will emerge which provide the equivalents of everyday face-to-face cueing devices, turn-taking in conversations, body language etc. which are driven by the economizing imperative of being understood'. What is important about such practices is that through them social hierarchies, inequalities and power relations easily find a way into cyberspace. In a way analogous to letter-writing, posting on the Internet can and does routinely reveal much about posters' social and cultural capital: vocabulary, spelling mistakes, use of idiom, etc. hint at their material status, level of education, nationality, ethnicity, age and gender. The broadband society is likely to strengthen such demarcations for the very simply reason that it extends the range of bodily cues which can be communicated in online settings. Anonymity may still be preserved (in the

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[1] For example, it seems hardly coincidental that it was a psychiatrist, that is someone very knowledgeable of the human mind, who impersonated 'Julie', the disabled woman referred to above.

same way as going to an Alcoholics Anonymous meeting involves a degree of anonymity) but the ability to identify someone's social background through bodily cues is an ever more important aspect of cyberculture. The posting of video materials on 'Youtube' featuring physical harassment or humiliation is one such instance of the Internet's extended bodily capacity. When such materials are labelled 'cyberbullying', it derives from the fact that the victim is physically recognizable from the footage.

The body at the centre of Internet use

The material body does not just emerge in online discourse by accident or default; embodied experience also constitutes an important topic of online communication. Even in the utopian cyber imaginaries which eagerly anticipate a future in which the subject would no longer be trapped in the material body, the body still matters in the virtual world where it is reconfigured so as to allow for an intensification of its pleasures and the disappearance of its many discomforts. What superficially appears to be a desire for disembodiment is often a desire for a re-embodiment minus the physical burden of the material body. Stone (2000: 525) comments: 'The discourse of visionary virtual world builders is rife with images of imaginal bodies, freed from the constraints that flesh imposes. Cyberspace developers foresee a time when they will be able to forget about the body. But it is important to remember that virtual community originates in, and must return to, the physical'. This latter point is of great importance: many online communities are social formations which have as their focal point shared experiences of embodiment (e.g. sexuality, pregnancy, illness, diet and sport). Bodily desires and discomforts find a global interactive forum on the Internet (Parr 2002; Orgad 2004). Such communities range from the ubiquitous sexual to websites dealing with specific illnesses providing the social glue of many online forums. Virtual spaces have given rise to what Parr (2002) terms 'new body-geographies', the cartography of the material body as it maps onto cyberspace. For a medium which is routinely associated with experiences of disembodiment, it is amazing to see how much medical and life-style body-related information users can access online, facilitating self-diagnosis, better public education and patient emancipation. Could it be that the 'cyberpunks', an alliance of cyber visionaries, artists and academics, are out of sync with the actual usages which the ordinary domestic user tends to make of cyberspace?

It is undoubtedly conceptually challenging to try to understand the ubiquitous presence of the material body in an environment where the main attraction is supposedly that it facilitates disembodiment. According to Parr (2002: 75) 'It is relatively easy to begin to argue that the physical body is sometimes forgotten in virtual space, and seek to recall it as an academic project. It is less easy to understand how virtual space both enables a sense of disembodiment and yet simultaneously reconstitutes and reinforces the physical body'. What we are talking about here is not the scenario whereby cyberspace offers an escape for those who are imprisoned by their material body, such as the severely disabled and the elderly, but a scenario in which experiences of embodiment are celebrated and provide a sense of community. There can be little doubt that embodied community sites act as a strategic resource in which 'virtual togetherness' (Bakardjieva 2003) provides a platform for contestation and resistance of existing hierarchies of knowledge. The expertise of users in embodied community settings predominantly stems from their own bodily experiences which when validated by other users can become a powerful basis for challenging medical and scientific authority (Parr 2002).

One of the most troublesome of its kind are the so-called 'pro-ana' websites offering an alternative self-help community for anorexia sufferers. As a body image disorder, anorexia is overwhelmingly treated as a pathology in the offline world. However, on pro-ana sites it is positively valued as a form of embodied identity, generating the dynamics for an oppositional community, that is a community of users who seek each other out for a positive validation of their experiences in the face of overwhelming social and medical disapproval. Most disturbingly for parents of children (mainly girls) with eating disorders and the medical profession is that pro-ana sites appear promote anorexia by providing information on how to starve oneself and depicting it as a beauty ideal (so-called 'thinspiration' pictures). Such sites are routinely castigated in the mass media and are mentioned in the same breath as other very harmful web contents. However, accessing one website (<http://www.pro-ana-nation.com>, accessed 10 April 2007), I was surprised to see how (relatively) measured and cautiously framed the content was. Yes, there was a lot of dieting and exercise advice, but there was also coverage of the ravages of the disease. Upon entering the site, users encounter this statement by the web mistress:

> *The definition "pro-ana" is abused by the media and individuals who want to become anorexic. An increasing number of "pro-ana" websites are created by women who are not anorexic, but desperately want to lose weight. However, anorexia is a mental disorder you cannot choose or learn. (...) If you have lived with an eating disorder for years and not been able to recover, you have found a place where you will not be judged.*

Pro-ana online content is undoubtedly militant and extreme, but it foremost speaks of the enormously complex interplay between the material body and imagined or projected body ideals. The material body is a foe to be brought to its knees by exercising extreme self-control, most notably by strictly policing one's food intake. In a way, the pro-ana movement is similar to the cyborg aspiration of mind over body. One pro-ana website has as one of its mottos for extreme thinness: 'I want to walk in the snow and leave no footprints' (<http://www.fading-obsession.com/thinspo/57-reasons.php>, accessed 10 April 2007). Stone (2000: 521) comments: 'Cyberspace is surely also a concretization of the psycho-analytically framed desire of the male to achieve the "kinaesthetically exciting, dizzying sense" of freedom'. This, she says, amounts to a vision of 'freedom from the body'. The young women making up the pro-ana movement pursue a similar sense of freedom: the sensation of moving unhindered by the weight of one's 'meat' which is captured so strikingly by the image of walking in the snow without leaving footprints. It is even more strongly reflected in another motto posted on the same website: 'Starve off the parts you don't need. They're ugly and they drag you down'. The anorexic body is a high-tech enterprise, requiring the sort of the prosthetic implements the cyberbody needs: weighing scales, pedometers, exercise bikes, chemicals (including laxatives and vitamins) and the Internet are vital to the anorexic's quest for weight loss and self-discipline (itself a cybernetic kind of ideal). Could it be that the pro-ana movement tells us something about the way in which (some) young women are articulating their own practical visions of disembodiment? Pro-ana's radical anti-biological stance (anorexia does not only result in the elimination of body fat but also in the disruption of the menstrual cycle) seems hardly compatible with feminist ideals, let alone cyberfeminism. Yet, it cannot be denied that the movement preaches its own message of female empowerment and demonstrates a very acute awareness of what cyberfeminists have been arguing all along, namely that the female body has always been virtual and 'leaky' leading to its subjugation to and invasion by (medical) technologies (see e.g. Balsamo 1995; Haraway 2000). However, just as the cyber ideal of disembodiment on closer reading points to the body as something to be merely reconfigured, so too do pro-ana websites revolve

around bodily reconfiguration. The real is difficult to disentangle from 'thinspiration' pictures: the 'pro-ana nation' website (referenced above) even devotes an entire section to a demonstration of how pictures of extremely thin women are doctored and airbrushed in both mainstream mass media and on pro-ana websites.

Virtual versus material worlds

On reflection, it could be argued that virtuality and disembodiment are rather unhelpful concepts which do not necessarily advance our understanding of new ICTs as a social and cultural phenomenon. There has always been something 'virtual' about different media of communication and as convergence between old and new technologies becomes increasingly significant, the virtual is likely to merge with other notions of media constructedness. Thus, Pauwels (2005: 605) points out: '"Virtual" too often seems to imply "imaginary" or "fake". Surely all mediated interactions are "constructed" in a very literal sense, but then our whole conception of society is a series of constructs'. With its origins in the world of computer science, virtuality has come to represent what Poster (1995: 85) terms a 'simulational culture'. In the same vein, the notion of disembodiment stands for a simulation of bodily functions and experiences through technology. My argument throughout this paper has been that this insufficiently brings into view the continuing relevance of the material body. Such an oversight could have negative political consequences because it could lead to the neglect of material conditions in which technology is grounded. As Squires (2000: 371) argues: 'It is crucial that we are attentive to these political realities if we are to have a role in shaping the ethical and legal issues currently being negotiated about the development of technological advances –from the patenting of genetically engineered tomatoes to the enscription of email messages'. Foregrounding disembodiment without considering the material context in which the Internet operates risks simultaneously exaggerating and underestimating the potential for cyberharm.

Harm perpetrated on and through the Internet is chronically at issue in the regulation debate: the pro-ana websites discussed above are quite predictably being referred to in terms of their potentially harmful effects on young women. Concerns about media effects are certainly not new. Behind the virtual demon lies a for media scholars familiar image of audiences being sucked into an impoverished and surrogate reality which jeopardises the fabric of society. What such a discourse tends to neglect is that if there is any harm perpetrated, it tends to have its causes elsewhere. The Internet is 'only' a medium: as the pro-ana community is keen to emphasise, you cannot catch anorexia from visiting a website. Anorexia is a complex disorder and the pro-ana controversy is the latest instalment in the long-running debate on the link between the consumption of certain media images and eating disorders. It would not make for a sound public health policy if the attempt to combat anorexia focused exclusively on the media side of the disorder. In that sense, the virtual does not hold the key to solving anorexia (and bulimia) as a 'problem' because it is neither sufficient nor necessary to trigger an eating disorder.

A few years ago I found myself at a conference session in which presenters were pondering the following question: would it be morally acceptable to let paedophiles access a virtual reality in which they would be allowed to act out their sexual fantasies and abuse a 'virtual' child in the hope that this would stop them from abusing children in the offline world? Superficially, the proposition has its attractions: it would be a 'victimless' setup and with the advances of virtual reality technology the experience may be realistic enough to eliminate

paedophiles' urge to harm a 'real' child. For many, however, the scenario would be too horrific to contemplate, but why exactly should this be the case? After all, is this not the kind of simulational culture envisaged by cyber utopias/dystopias, a state of being where the virtual would be real enough to act as a complete simulation and substitution for the material body and its troublesome 'meat'? By the same token, could we not fit anorexia sufferers with a virtual body thin enough to coincide with their ideal (if distorted) body image with the benefit that their material body would be protected against the physical harm caused by their disorder? The reason why this 'solution' would neither work for paedophiles nor for anorexics (and I hasten to add that I do not intend to suggest any further connections between these two groups) is that the virtual body cannot be dissociated from the material body. Crafting a solution which envisages that the cyber will entirely subsume the material comes up against a problem which I have already mentioned: at some point, the computer user disengages from the cyber to return to the world of bodily needs and desires. The anorexic patient spending her time in a super-slim cyberbody will get hungry at some point, reminding her that the virtual is only an illusion, just as the harm fantasies of (potential) sex offenders retain their connection with desires of the flesh, inflected through all sorts of cultural scripts[2]. 'No matter how virtual the subject may become, there is always a body attached. It may be off somewhere else –and that somewhere else may be a privileged point of view- but consciousness remains firmly rooted in the physical', comments Stone (2000: 524). As long as the material body needs to be sustained for human existence to be possible, it will continue to get in the way of a complete cyber solution for all sorts of problems grounded in embodied experience. Suggesting that the material world can be placed under complete cyber control is as fanciful as confining the cyber manifestation of social problems to their technological component alone. While the first downplays the staying power of the material, the second inflates the extent to which social problems are the effects of technology. Both approaches, it seems, fall for the same disembodiment trap.

What needs to be understood are the complex pathways informing the fantasies lived out in the virtual realm. Such pathways cannot meander their way around embodied experiences. For the majority of domestic users, the option of spending most of their time happily ensconced in the virtual realm is simply not available (yet?): people have to go out to work, clean the house, provide childcare, cook meals, in short, labour in the material world. The virtual is littered with reminders of the material and its inequalities. The abiding image of sex offenders and the cyberspace is not that of paedophiles engaging in harmless virtual simulacra of their fantasies but that of Internet pornography and the grooming of children for abuse in chat rooms. I do accept that such associations foremost encapsulate the considerable moral panic generated by the Internet, but they are also reminders that, for now at least, the online and offline world are inextricably bound up with each other to form an experiential continuum. In her brilliant novel *Oryx and Crake*, Margaret Atwood (2003) evokes a post-apocalyptic world engineered by an evil high-tech genius operating in a society where soaring material inequalities go hand in hand with the use of science and technology to safeguard the interests of a technocratic upper crust. The book does not revolve around fanciful sci-fi props but imaginatively develops an already existing spectrum of technological capabilities: the two protagonists spent their teenage years watching live executions and child pornography on the Internet, eventually falling in love with Oryx, the abused child whom (or

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[2] The closest analogy here involves the relationship between pornography and sex crimes: while it is hopeless to argue that consuming pornography 'causes' offenders to commit sex crimes, it would also be too optimistic to hope that pornography could eradicate rape. Granted, virtual reality would be more real than two-dimensional images, but it would not necessarily address the lust for power underlying sex crimes: wouldn't offenders know that their activities are 'only' virtual and would that not reduce their pleasure?

someone who looks like her) they track down when she is a young woman. The virtual is part of this dystopian universe, but it is its usage to deepen material inequalities which stands out and gives it its tremendously disconcerting impact. The harm, as the materialisation of Oryx as a central character in the novel suggests, is embodied harm perpetrated against victims of flesh and blood.

Towards a prosthetic vision of the Internet

One would think that as technology becomes more advanced, the prospect of virtuality and disembodiment is drawing ever closer. I have argued in this paper that the opposite may well be true: the advent of broadband appears to signal the rehabilitation of the material body, but on closer inspection, it is also clear that Internet use has always been an embodied experience because no discourse is ever completely free from the material body. Moreover, thinking of the Internet as enhancing a somehow risk-free and inconsequential virtuality would be a politically undesirable approach to take because it obscures the relationship between technology and material inequalities.

Evidently, any binary distinction between technology and biology is unsustainable, as Stone for example (2000: 517) points out. The task in hand is not to disentangle the cyberbody from the material body but to attend to their fusion and intermingling. Balsamo (1995: 215) comments that 'this merger relies on a reconceptualization of the human body as a boundary figure belonging simultaneously to at least two previously incompatible systems of meaning –"the organic/natural" and "the technological/cultural"'. The concept of the cyborg as a hybrid appears to encapsulate such a boundary figure, but my problem with it is that it often treats the organic and technological as categories of equal standing. The better view, I submit, is one which sees the technological as grounded in the organic: technological enhancement such as bionic implants are put to work to enhance or repair the flesh where consciousness ultimately resides. The primordiality of the material body cannot be dismissed lightly, not matter what the latitude of future technological progress may be. For example, the essentialist categories of gender and race -obviously read as culture- are proving extraordinarily resilient in the technological age (Balsamo 1995). The vision of technology as prosthetic is to be preferred to that of virtuality and disembodiment. The notion of the prosthetic has been informing thinking in this area for quite a while (see Stone 1996) and indeed for some writers it sits quite comfortably with cyborg imagery. The reason why I prefer it is because the prosthetic mobilises a vision of continuity rather than that of a radical disjuncture brought about by technology. As Brown (2003: 143) points out 'even a pair of spectacles would qualify' and one does not have to be a cyborg living in the year 2525 to be able to appreciate the benefits which such a simple prosthesis brings for the individual.

The story of the Internet is not that dissimilar from the humble pair of spectacles: our quest for enhanced bandwidth is that it enables us to see and hear better, learn more about the world and each other, and generally find things faster. Clearly, this is not about technology as a means to an end but about its life-enhancing and identity-defining capacity. Brown (2003: 143) muses about spectacles: 'The popularity of the prosthetic alternatives, contact lenses, and more recently laser modifications, reflects not merely utilitarian ends but questions of "who I am"'. The question of where we begin and end is the ultimate frontier question: *where* would we be without our spectacles, without our cars, without our PC, without our mobile

phones, without our broadband, and more importantly *who* would we be[3]? These remain questions of the utmost importance in an age which did not suddenly turn us into cyborgs or machines but which is the product of a steady extension of bodily capacity. Technology remains firmly attached to the material body which it cannot save from its fallibility and ultimately also its mortality.

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[3] As Stone (1996: 5) famously asks of the severely disabled physicist Stephen Hawking who interacts with the world through prosthetic communication devices: 'Exactly where, I say to myself, *is* Hawking? (…) Where *does* he stop? Where are his edges?'.

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