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Tommi Inkinen

## **Social Uses of Information and Communication Technologies**

### **Conceptual introduction**

This paper explores the social use of information and communication technologies (ICTs) in the Tampere Region, Finland. It thus focuses on two essential elements: the city as a location and citizens as members of this local information society. Cities and their current state of 'informational development' are commonly assessed through the activities of the ICT industry in the area. Komninos (2003), for example, analyses 'intelligent cities' as locations of innovative production: they are thus measurable through the volume of research and development investments and other 'technopole' metrics. Similarly, if the information society is measured through citizens, the statistics used generally concern households' levels of technology ownership or quantitative data on Internet use.

First, it is necessary to make some conceptual remarks regarding the information society and its citizenship. In this paper, information society refers to the use of technology through three dimensions. First, there is the ICT usage competence level of individuals. In the analysis of citizens' ICT usage, it is always necessary to consider digital divides as an undeniable element of the information society. There will always be groups that are incapable or unwilling to use or adopt contemporary technologies. In this regard, it is as important to recognise the needs of the disadvantaged groups within society, and that the inclusion of these groups is an essential dimension of the inclusive development of the information society.

Second, if we talk about the information society we must understand the social importance of ICT usage. We know from prior studies that the common conceptualisation of the information society among ordinary citizens (for the Finnish case, see Inkinen 2003) is rather pragmatic. For the majority of people, the information society equals the actual use of technology. For this reason, this paper also examines the building of social networks via the Internet. My aim is to evaluate the magnitude and importance of the Internet in the creation of social relations. This analysis gives indications and shows new aspects of the changing nature of social communication. For example, the popular media commonly offer an exaggerated picture of the impact of the Internet on the creation of social contacts.

Third, we must understand the impact of ICTs in people's daily lives. The essential questions are how these devices relate to people's experiences of well-being, stress, family life and happiness. For example, in studies addressing working life and ICTs, it is commonly acknowledged that technology enhances the production process and thus becomes visible in the statistics describing the economic attributes of the information society.

This book is about the local information society in the City of Tampere. From the citizen's perspective, it is important to highlight the social cohesion of the Finnish society. On the nation-state level, the income differences between households are spatially relatively small (SVT 2004). What, then, makes Tampere special in comparison to other Finnish cities? A central aspect is that Tampere has actively integrated the 'social and cultural' side of information society development into its strategy. The City of Tampere has conducted surveys on ICT penetration among its population since 2000. The results indicate that usage and ownership levels are slightly higher than the Finnish average (see Nurmela et al. 2004). However, this is typical of urban areas

in general. Other contributors in this book have discussed the particulars of the Tampere case from various perspectives.

One conceptual clarification is necessary to further specify the focus here: in this chapter, the term information society is used mainly to refer to individuals' use of ICTs (computer, Internet and mobile phone). The selection criteria are based on earlier studies conducted on citizens' understanding of the term information society. In the societal setting, the concept of knowledge society would perhaps be more appropriate. However, as the term knowledge society is often used to describe the common level of understanding, intelligence or creativeness within society, its scope in this context becomes too broad and problematic for our purposes. Thus, when referring to citizens' usage of ICTs, the term information society provides a sufficiently limited conceptual focus for a survey study.

### **Framing the social use of ICTs**

#### Digital divide, socio-economy and skill

The framework used in this study includes three core issues, of which the question of the local digital divide is the first. The causes of digital divides can be categorised into two groups: gaps caused by the costs and financial attributes and gaps resulting from inadequate competence. In the existing literature, digital divides are commonly associated with development studies and global perspectives (e.g. Norris 2001). The existence of digital divides between the North and the South, as the divisions are often presented nowadays, can quite easily be explained using the gross national product (GNP) or other national level economic indicators, such as average household income per month (see e.g. Compaine 2001).

Digital divides exist on all levels of spatial categories. The focus of this paper is on the regional level within an industrialised

Nordic welfare state, Finland. Regionality is an essential element of policy guidance both in Finland and in the whole of the EU-25. Through regions, we are able to conceive of a local context for the activities observed. This is not, however, to say that location would be a 'container', as philosophised by Foucault regarding 'fix settings for social actions'. Tampere is one of the leading European cities in local information society development initiatives: the local authorities have themselves started to promote the citizen-oriented development of the information society by providing a better platform for other organisations and actors to conduct ICT inclusion projects. As an administrative entity, the city itself modifies the development of the local information society according to its specific needs and preferences.

It is important to recall that digital divides do not only affect individuals. Actually, divides between organisations, both state agencies and private companies, are more easily detected than discrepancies between individuals. This is a question of measurement. On the organisational level, many attributes and causes can be measured through numerical or categorical metrics. I argue that the existence of digital divides in society is, at least, as much a question of conceptualisation and measurement as it is the way in which it is experienced in the everyday life of the citizens. People who are seen as excluded from the information society may not perceive their situation as problematic in any way. The macro-scale social (and economic) indicators easily show differences between regions and actors (individuals and organisations) in ICT usage. However, the most problematic question becomes, how do these experiences transform into experienced and signified reality? An essential characteristic of this paper is to evaluate the 'human-centred' signification of digital divides: What does the usage or non-usage of ICTs mean or represent to citizens living in a certain spatial location with a certain cultural orientation?

Based on the above discussion, the following main problems of digital divides can be formulated. First, how is the social picture of ICT usage problems constructed? Or, what are the essential socio-economic characteristics behind the existing divides, and how vast are the differences? Second, what possibilities do public authorities have to narrow the existing divides? This can be assessed through respondent evaluations of the significance of the divides and their presence in everyday life.

The digital divide theme must therefore be considered as the starting level of the socio-economic framework of the information society. It seems evident that basic economic requirements must be met before a person has access to the information society. In the industrialised countries, economic reasons are often outranked by factors related to competence and know-how as causes of the digital divide (van Dijk & Hacker 2003, 317). The empirical section of this paper considers both domains as regards the working age population. In my approach, the digital divide theme can be viewed as the 'infrastructure' in the analysis of social usage of ICT. From infrastructure we will move to discuss 'content', including the practices of social networking and experiences of the 'speeding up' of society.

### ICTs as a medium of social life

The second part of the framework considers the role and significance of ICTs in personal social networking. I am interested in examining certain persistent notions concerning 'location-free' communication. An essential question is the signification of Internet communication: on what scale does the Internet provide a new and in some cases addictive communicative environment to working age citizens? Technology has provided an easier and, in some respects, time- and location-free mode of communication. However, studies on the signified importance of these communications among the larger population remain rare.

The paper also discusses spatial scales. An important aspect in the 'importance' evaluation is the respondents' practices in creating and establishing new social relations via the Internet. A central question in this respect is: 'Is it more common to use the Internet to establish relations with inhabitants of the same country than with foreigners or those in other countries?'

Far too often the societal impacts of technology are discussed from a technology-driven viewpoint. A concept of technological determinism is commonly used to point out the assumption that technology will inevitably lead society to some predetermined destination. In deterministic discourse it is also claimed, usually with no empirical evidence to support the claim, that ICTs might provide important life content through the various communication channels and information sources that it enables. It is necessary to evaluate some of these claims in detail. Fifteen years ago Eyles (1989, 103) wrote a commentary that is still accurate today about the routines and the geographies of daily life:

Everyday life is . . . a taken for granted reality which provides the unquestioned background of meaning for the individual. It is a social construction which becomes a 'structure' itself. Thus, through our actions in everyday life we build, maintain and reconstruct the very definitions, roles and motivations that shape our actions.

It seems clear that the quote continues to have relevance in the current 'mobile information society'.

When discussing ICTs as a social medium, it is necessary to consider the concept of interactivity. The question of interactivity was central for social scientists who studied the significance of the Internet and other media technologies in the mid 1990s. This was also the period that saw the origins of the triumph of the 'information super highway'. We might say that

interactivity and contextual behaviour are essential nominators for the social information society. Technological development has provided the tools and opportunities for enhanced interactive communication and the transmission of electronic material. However, the exploitation of information is always bound to subjectivity (individual decision making) and subordinated to the social structures and cultural values of the location in question. In addition, we must also understand the importance of spatiality, which is pronounced when analysing mobilities: When the surrounding environments change, interactivity and social behaviour on the Internet change with it. This concerns the impact of the spatial context. Thus, we have to include the significance of mobility and spatiality of usage (the context of an environment) into the analysis of social change.

The question of 'selection' refers to the growing number of issues that citizens must be aware of in a societal setting. Selection refers, on the one hand, to a growing number of services that have emerged on various forums. For example, Internet services complementing (and also substituting for) services taking place in 'real locations' clearly provide us with an increased range of choice. On the other hand, the process also works *vice versa*. The idea of free selection can be seen as a construction serving the goal of efficiency. In time, this will lead to a further shift towards a 'do it yourself' ideology. However, product and service provision is only the practical side of the selection culture. It is possible to observe the phenomenon more deeply and think about the essential causes behind the actions: How are these decisions reached and what are the implications of these decisions in relation to aspects such as privacy and information security?

It is clear that the availability of information has increased after the expansion of Internet usage. We might think that the information society is transformed into a knowledge society at a point at which the general level of 'citizens' knowledge' increases



with societal development. Some theorists argued in the late 1990s that ICTs will lead us to a social revolution comparable to other major innovations in history. I am sceptical regarding the significance of these changes, particularly in relation to a 'social revolution'. May (2002) discusses this issue from a critical perspective:

There are a number of problems with these overarching claims for revolution. . . . Obviously they involve a view of society that assumes a major determining role for technology. Indeed, technology is perceived as imposing its character on the rest of society. However, technologies are developed in specific social circumstances and deployed reflecting contemporary social relations. . . . The relationship between technology, its 'character' and society is much more complex than unidirectional determinism allows. (May 2002, 13–14)

Indeed, societal change and the role of technology are intriguing phenomena, although they can, in many contexts, also be seen as boringly practical. An important aspect here is the distinction between the 'micro' and 'macro'. All of the above discussion focussed on the macro-sociological perspectives. Yet, even macro-level indicators and discourses are based on individual actions and choices (whether or not structurally guided). The 'change' becomes less dramatic when we stop to consider people's individual social behaviour. This behaviour also has reflections on the experience of the information society.

To conclude the social change perspective, I present the essential questions relevant for this chapter. First, it is necessary to evaluate the extent to which new social relationships are created through the Internet. Second, it is as important to evaluate the significance and depth of these online relations. In other words, is the Internet only an additional communication device, and to what extent are ordinary citizens expanding their social sphere

through the Internet? Third, and perhaps most importantly, this paper looks at the fundamental question of respondents' evaluation of the subjective impact of the Internet on the quality of life.

### Stress and fragmentation as two imperatives for 'informational citizenship'

Are we feeling more stressed than before? Are social inequalities increasing? Is the border between home life and work life disappearing? All these questions are nominators for aspects related to the social understanding of the information society. This focus has a clear working-life orientation. The content of the work and the societal structure of sources of livelihood are determinants underlying the occurring visible developments. One of the best-known writers on the 'speeding up' of society is Jeremy Rifkin, who discussed the 'nanosecond culture' as early as 1987. Computer technologies are most often designed to 'speed things up'. How this 'speeding up' relates to the social reality of ordinary citizens is a research area that still needs focusing on.

The social aspects of ICTs have appeared in public debate recently due to the transformation towards increasingly knowledge-based working cultures. Pekka Himanen (2001) writes about 'hacker ethics', according to which young computer hackers (mostly boys/men) are so ambitious about their work that, for them, a lasting supply of soft drinks and a computer are sufficient requirements for a satisfying life. The hacker work ethic is thus based on individual enthusiasm, and Himanen argues that it is replacing the old protestant ethic characteristic of the working culture of information societies. At this moment, however, it seems that hacker ethics are adhered to by only a small group of people. From my point of view, 'high-end' professionals and computer-wise youngsters represent only a fraction of the 'working culture' of the information society. Richard Florida

(2002) discusses the 'creative class' as the *primus motor* for the information society. Societal change signifies an increased proportion of creative workers in relation to operative workers. Additionally, it can easily be argued that successful societies in global competition can produce industries capable of making the most of creativity.

In Finland, the number of people receiving the 'highest' level of education (including universities and polytechnics) make up approximately 60 per cent of the relevant age cohorts. The competition for employment between the highly educated is intense and continues to intensify. The availability of work, short-term contracts and increasing organisational efficiency are key features of the contemporary labour market for highly-educated people. What perhaps best describes the situation is the experience of lacking time for anything except work.

Blom et al. (2001) have studied 'informational' workers in Finland. Their study clearly indicated the dilemma of knowledge or creative work. On the one hand, knowledge workers get more satisfaction out of their work and are more often content with their work, compared to workers carrying out operative and practical tasks. On the other hand, knowledge workers are more stressed and feel the limitations of time more strongly than other workers. A central empirical question thus becomes, on what scale do ICTs impact the respondents' views of the information society, its individualism and its consequences for the different dimensions of society?

Another important theme in the 'fragmentation of everyday life' is the frequently heard promise of the information society: the emergence of distance work or e-work. The question relates the two essential life spheres of work and home and their emerging fusion and interdependency. This paper approaches the question of 'location-free' employment through respondents' evaluation of their possibilities to decentralise their work. The theme relates

strongly to the notions presented by Florida (2002) regarding the general level of innovative (or creative) work tasks. The level of distance work in a nation-state (or region) can thus be seen as an indicator of the existence of a creative class within the society.

### Final commentary on the essential research questions

All of the three domains presented above constitute topical issues than can easily be found in information society related social scientific literature. These domains are interlinked. First, the digital divide thematic provides a practical foundation for experiencing the information society. The existence of a digital divide can, in the majority of cases, be explained through financial and educational aspects. The general level of ICT usage can, therefore, derive from the socio-economic situation. After the definition of different user-level groups, we can focus on the social implications of ICTs. These issues cannot be as easily explained through socio-economy. Rather, they are individually determined reflections of subjectivities and personal histories. In the following, I will evaluate the proposed Contents domain in the light of an extensive survey from the Tampere Region.

## **Empirical overview**

### Discussion of the data and methods

The empirical data was collected through a mail survey in May and June 2004 from the Tampere Region (Pirkanmaa). The sample size was 2,000, out of which 1,061 questionnaires were returned (52.6%). The sample derived from two-stage random sampling targeted to three pre-defined regional types (the regional capital Tampere, small towns and rural areas) and households. The sample population consists of working-age people from 18 to 61 years of age. Table 1 presents the essential respondent

information and comparison to official regional statistics (Statistics Finland 2003). The data is representative in the light of background variables.

*Table 1. The data set and comparison to official regional statistics*

	<b>This data</b>	<b>Statistics Finland</b>
Average age	41.2	39.4
% of females	55.9	52.3
% with university or polytechnic education	25.0	23.7
% of 30–49 year olds	45.4	44.1
Unemployment rate (%)	7.8	12.3
Average household size	2	2

The data provides information in three layers. The first layer consists of device-related questions that refer to levels of ICTs and home entertainment technology ownership. The ‘device’ questions are mainly used as explanative (independent) variables in the analyses. The second layer is related to ‘practice’. This refers to the contents and frequencies of ICT usage. The practice questions are aimed at finding out what the respondents actually have or have not done on the Internet. The practice questions therefore also play an important role in the evaluation of experience. User experience can be evaluated on the individual level only if the respondent actually has experience of the activities in question. For this reason, the practice-oriented questions also include an evaluation of personal user experience. The third and final layer is concerned with questions related to ‘belief’. These questions refer to respondents’ beliefs in relation to ICTs, thus recounting common ideas related to concepts of information society, technology and ICTs. However, the respondents’ ability to provide fruitful information regarding macro-scale societal issues is rather limited. The ‘belief’ questions thus mainly provide

insight into common conceptions and thoughts regarding the information society, with no verifiable grounds in direct experience or real knowledge.

The methods applied consist of standard statistical tests commonly used in social research. Most of the questions are statements with five response categories (Likert). There are a total of 99 variables in the data. Ordinal variables are aggregated to form sum-variables. The larger value scale, provided by the sum-variables, enables a more efficient use of numerical testing such as regression analysis and GLM (general linear model). The main methods, however, comprise simple cross-tabulations and  $\chi^2$  tests.

All the central themes presented in the theory section are qualitative in essence. It might, thus, be asked whether or not an extensive mail survey can be used to efficiently assess some of the issues presented in the framework. It must be remembered here that the subjective experience can be reached (if at all) only through in-depth interviews. The choice of method is always a trade-off between generality and depth of information (or knowledge). However, the questionnaire used was designed to reach some elements regarding the 'soft' experiencing of the information society. Also, if we want to consider even some very general aspects of citizens' ICT usage experiences, the survey method is the fundamental starting point. After these methodological considerations, I will now apply the three domains identified earlier as a framework to analyse the empirical material. I shall start with a consideration of digital divides.

### Digital divides

First, it may be useful to recall some practical facts of computer, Internet and mobile phone usage: in the Tampere Region, 85.9 per cent of the population are using the Internet, 95.1 per cent mobile phones. Over 46.7 per cent of respondents are using the computer for more than an hour per day. On the other hand, a

14.1 per cent share of respondents do not use computers at all (the corresponding figure for mobile phones is 4.9 per cent). The general guideline is thus that if technology is used, it is for the most part used frequently. It is evident that the people not using technologies are also those most affected by digital divides (see also Kling 2000).

The theme of digital divides has two essential strands of argument: cost and competence-related divides. First we look at respondents' evaluations concerning the costs of ICTs. Based on the results, cost is not the most important source of the digital divides. A sum-variable including the following statements was constructed to offer a more general picture of the existence of cost-related digital divides. The statements used were: 'How do you consider your possibilities to purchase ICTs if you wish?' (Scale: excellent–very poor); 'With a view to the cost, how do you consider your possibilities to use ICTs?' (Scale: excellent–very poor); 'Internet usage costs are too high for me' (Scale: fully disagrees–fully agrees). The sum-variable was categorised into four groups according to the aggregate value distribution. The group of respondents who identified their possibilities as the best (costs play no role) is approximately one third (35.1%). On the other hand, the most disadvantaged group covered some 10 per cent of the sample population.

The above questions can be analysed through standard statistical tests on individual and sum variables. Statistical testing clearly brought up that education and current employment status are the most important explanative variables behind the cost-based digital divide. The explanative variables are similar if the second part of the digital divide is observed: the respondents' evaluation of their possibilities to use and interact with ICTs. However, the role of age becomes more prominent in the issues of competence. An interesting viewpoint on the 'Cost and competence' section can be arrived at by analysing the

respondents' evaluations regarding Internet contents: 63.9 per cent of respondents evaluated the general level of Internet content as 'very interesting', whereas less than 9 per cent stated that Internet contents are 'not interesting'. The results clearly indicate that the respondents are able to find contents that interest them on the Internet.

Digital divides are commonly related to regional divisions. If the City of Tampere is compared to other regional categories (smaller cities and rural areas), it becomes clear that digital divides are also a question of urban-rural dichotomy. However, the regional divide is more strongly related to competence level rather than to costs. The regional divide is evident particularly in the amounts of technology use. The usage frequencies of computers and the Internet are the best explanative variables in all segments related to the respondents' experience of ICTs, digital divides included. These results are also supported by other studies (e.g. van Dijk and Hacker 2003).

Perhaps the most important finding based on a single statement concerned the respondents' evaluation of their own need for low cost ICT training. A little less than a fifth (17.4%) fully agreed with the claim. The result indicates that the need for low cost or preferably free training in the use of the Internet is an important instrument in narrowing the digital divide. The age dimension is also clear. There are no considerable differences between age groups until the age of 50. People above the age of 50 report the most difficulties. This phenomenon is most evident in the case of mobile phone use: 3.8 per cent of the respondents agreed fully or somewhat with the statement that they do not possess adequate skills to use the mobile phone. Over 75 per cent of the people experiencing difficulties in the use of mobile phones are over 50 years of age.

The existence of digital divides is, in our framework, largely an age-related question. We might therefore argue that



the magnitude of the divides will decrease in the future. In one sense, we can raise the old idea of computer literacy as a central component. Education, training and ICT integration play key roles in this process. At best, ICTs constitute an efficient educational tool, while in the worst case the technology becomes an end in itself.

### ***Social interactions***

The Internet and other communicative technologies are said to make distance meaningless (e.g. Cairncross 1997). If this is the case, the concept of distance probably merits some consideration in this respect. Distance is commonly understood as a practical geographical metric. In some cases, distance is understood as communication. We might think of communication as content distributed through the ICT infrastructure. An essential part of the content is social networking. In the following, some central statements describing the problem of distance and social relations are analysed. Distance is understood here as a spatial concept that includes not only metrics but also, and more importantly, social processes and the signification of spatial context.

In the survey, the network generation potential of the Internet was examined with a number of quite practical questions. The questions included the following claims. All statements are answered through 5-point Likert-scale variables (fully agrees–fully disagrees). ‘I have established new social relations via the World Wide Web’; ‘I have become acquainted with new Finnish people on the Internet’ and ‘I have become acquainted with new foreign people on the Internet’. The social networking is thus divided into national and international spheres. A sum variable was constructed on the responses to these claims: 18.9 per cent of Internet users in the sample have used the WWW for social network creation to some extent. On the other hand, 49.1 per cent have not.

Based on the results, it seems that the WWW itself is an efficient medium for social relations creation only for a relatively small group of Internet users. In fact, the share of the 'fully agreed' segment is less than 10 per cent (8.0%) for the statement regarding new contacts to people of the same nationality and less than 4 per cent (3.1%) for foreigners. Distance still seems to make a difference, particularly from the viewpoint of national and international contacts.

I wanted to make a distinction between Internet (WWW) and email communication. The obtained distributions highlighted the fact that email is a considerably more important tool for communication than other WWW-based solutions, such as chat rooms and notice boards. Email was considered an important tool for social interaction by more than 57 per cent of the Internet users, whereas the figure for WWW communication was slightly over 25 per cent. Based on the results, it seems that Internet and email communication function mainly to enhance pre-existing relations. The role of the Internet in the establishment of new relations concerns only a relatively small portion of citizens.

An interesting subjective insight can be obtained through the question 'Would you say that the Internet has improved your social life?' Some 20 per cent of respondents using the Internet agreed either fully (3.9%) or somewhat (15.8%) with the statement. Conversely, the share of Internet users disagreeing with the statement was 54.9 per cent. This finding highlights the fact that technological innovations such as the Internet are fundamentally hollow entities. The signified importance of a specific technology derives mainly from the related social interactions. It can also be argued that even 'one way' information provision is mostly socially driven: people tend to seek information relevant to their lives. These life contexts are social constructed. A central conclusion that can be drawn from this is that with deeper consideration, technology (in this case

ICTs) actually becomes insignificant and the most central aspects originate in the practices of everyday social behaviour.

The mobile phone is an example of a technological solution that has brought new added value to citizens (as consumers). Particular importance was afforded to mobile phones in the experience of safety. Mobile communication, which is in one sense free from distance, has generally enhanced the feeling of security among the respondents (80.1% agreed fully or somewhat). There is a significant gender difference here. It appears that women perceive the change as more significant than men. However, with both genders, the clear majority agreed rather than disagreed with the statement.

Comparing the technologies assessed in the survey, it is evident that mobile communication has had the strongest impact on daily life. Only 11 per cent of the whole sample population disagreed (fully 2.8%; somewhat 8.2%) with the statement 'Mobile phones have significantly contributed to making my life easier.' Interestingly, the youngest age groups evaluated the change as the greatest. The positive assessment of mobile communication is easy to understand. Wireless communication has provided considerable benefits and improvements in daily life. The unequalled penetration of mobile phones among citizens worldwide has demonstrated the speed of technological diffusion. The benefits of mobility are clear to most people and the development of easy-to-use interfaces has evidently been a determining factor of success for business in general.

### The speeding up of society, stress at work and individualism

The third dimension of the empirical segmentation concerns the 'speeding up' of society. Juha Siltala (2004), a Finnish historian, has discussed the birth of 'turbo capitalism'. He uses the term to describe the increasing project-nature of work with tight and often too narrow deadlines. Score cards, gross incomes and deadlines

have entered the common language of the contemporary work sphere.

The following statements were employed in the survey to get an idea of the dynamics of these problems. First, we asked whether or not the respondents were feeling more stress, in their own opinion, than they were three years ago. The portion of citizens agreeing with the statement fully (20.8%) or somewhat (25.7%) was slightly less than a half, whereas one third of the group disagreed with the notion either fully (15.4%) or somewhat (18.6%). Whether or not these differences are significant, it can be said that there is a large group of individuals that experience no increase in their personal stress level. Second, I wanted to review the respondents' opinions regarding the mixing of home and work spheres. With the claim 'Work and home spheres are mixed in my case', 53.6 per cent of respondents fully disagreed and only 5.1 per cent fully agreed.

The result is clear. The intertwining of home and working life that is often discussed in the information society literature empirically concerns only a small portion of the total population. Third, I asked about the respondents' conception of their own Internet usage. The exact formulation of the claim was: 'In my own opinion, I use the Internet too much.' Methodologically, the question is problematic as respondents have a tendency to provide answers that are more neutral than their daily reality. However, the share of people agreeing either fully or somewhat was less than 4 per cent. Viewed in this light, it seems that 'net addiction' concerns only a relatively small minority of the population.

If we look at the explanative factors behind the distributions, it becomes clear that the increase in stress is more pronounced in the more educated parts of population. The most important explanative socio-economic variable is current employment status. The computer and Internet usage levels are closely linked to the phenomena. Persons using ICTs on a daily basis are more

likely to experience stress frequently. The results support earlier studies (e.g. Blom et al. 2001) analysing the socio-economic dimensions of working life and work experiences. The results are also regionally biased. Respondents from the City of Tampere differ from respondents living in small towns and rural areas. The regional difference can be understood via socio-economy because a larger proportion of highly educated respondents (those with an academic degree) are from the regional capital.

The work orientation of ICT usage became clear from the claims concerning distance work. I wanted to look at the question of distance work from the viewpoint of respondents' general possibilities to engage in distance work if they wished. Two opposite claims were used: 'Is it possible for you to work from home if you wish?' and 'Distance work is not suitable with my line of work'. According to Statistics Finland, the amount of distance work carried out in Finland is between 10 and 20 per cent, depending on the definition used. This data indicates that a little less than 15 per cent fully agree with the statement that they have the option to work from home if they wish. More importantly, more than 50 per cent (precisely 51.2%) fully disagree with the statement about having the opportunity to work from home.

Innovative and creative work is always connected to a personal thinking process and the immaterial production of knowledge and practices. Thinking is, in most cases, a process that is not spatially bound to any particular location. This is not to say that the intellectual environment in general would not have an impact on individual creativity; however, this concerns brainstorming and the collective exchange of ideas. In many cases, knowledge exchange can take place effectively also through ICTs. However, at the moment, it seems that the growth of distance work may remain stagnated until there is a new increase in the number of 'knowledge-intensive' job positions. Of course,

employer attitudes and beliefs related to working from home also continue to constitute a crucial bottleneck in this respect.

Regarding working life and the observed technologies, it seems that the number of knowledge-intensive workers or people in occupations requiring efficient and fast ICT connectivity is limited. For example, less than 20 per cent (16.9%) of respondents assessed that they require, even occasionally, work-related mobile applications such as data transfer, conference options (multi-voice and loudspeakers) and laptop synchronised calendar options. These tools are designed to meet the needs of workers 'on the move'. Contrasted with the findings regarding the possibilities to engage in non-location bound work, it seems that the two issues go hand in hand. When the working culture in general moves toward location-free knowledge intensiveness, the interest in data transfer and its significance for the population increases. On the other hand, it will be interesting to see whether or not the increase in knowledge intensive work will actually mean an increase in marketing and project management positions promoting increased consumerism and, at the same time, the increase of short-term project-oriented work with low security in terms of continuity.

#### Discussion: Signification of practices and technological determinism

I have demonstrated some examples of predefined arguments and their relative distributions in a survey concerning 2,000 citizens of the Tampere Region. The citizens' perspective is the most essential if a socially sustainable information society is to be constructed. An essential consideration here is that of the routines embedded in daily life. This simply means that the practices of daily life commonly constitute routines. Even the most innovative work tasks or activities are, in essence, often carried out as routines. This refers to the automation of life: we generally do things we are

good at. This has the consequence that we tend to 'practice' them, and after a sufficient period of time has elapsed we no longer stop to think of the actions and tasks involved in a holistic way.

How does all this relate to ICTs or the information society? Most of the activities carried out through these technologies are not seen as problematic for individuals. They are embedded actions taken for a specific purpose. The situation can be compared to the use of the fixed line telephone. The device itself constitutes an uninteresting tool – the actual element of interest is network creation. The tool as such simply constitutes a 'practical' question of engineering. In Finland, the engineering rhetoric has, however, had the loudest voice so far: technological determinism and the inevitability of technological development have undeniably formed the framework for the linguistic construction of the information society.

An essential element of 'practicing' the unproblematic is the two-fold organisation of current urban life. The distinction between leisure and work has formed the dominant dichotomy in the lives of citizens since the era of industrialisation. There are several arguments (e.g. Siltala 2004) supporting the claim that the importance of work and success holds a significant position among current lifestyle values. Based on empirical results, it seems clear that with reference to current values, these commentators are looking quite far into the future. At the moment, citizens' evaluation of information society technologies takes place in relatively practical terms. Interestingly, in the majority of the cases, the advances in ICTs are reported and discussed only in terms of the sharpest edge of current developments. In many cases, new technological innovations replace older ones before they even properly reach the market. The increase in computing power has made its mark on the microchip industry ever since its emergence. Whether or not citizens (consumers) can keep up with the developments appears, regrettably, (in most cases) an irrelevant question.

### **Conclusive reflections on the future**

Perhaps the most essential point in this consideration is to position the ordinary citizen at the fundamental core of society. The vast majority of information society literature perceives the citizen as a target. Innovation processes and actions are designed to produce and facilitate new methods and activities, and citizens are expected to adopt the new innovations handed down from above. In economics, Say's law refers to 'supply side economics', stating that the supply creates its own demand. Our consumer choices are therefore in most cases predetermined and the 'free' choice is more a myth than existing social reality.

The analysis brought up the following essential issue in the information society development, including the creation of knowledge and competence. Most of the technological solutions are designed with the goal of being 'as easy to use as possible'. Information society is thus also a question of power. These power relations constitute a division between those who are able to understand the operative structures beneath the 'creamy surface' and those in a subordinate position in society. In many cases, it seems that the 'easy-to-use' ideology will inevitably lead to a more biased society with a small fraction of real computer professionals and a vast majority of 'push-the-button users'. The development started when graphic user interfaces began their triumph in the early 1990s and, in particular, after the launch of Windows95™. Whether or not this is desirable is another question, but it is evident that knowledge regarding computers has become less important for citizens who are commonly viewed as objects not expected to think but to 'do it the easy way'. Through this type of development, the information society is in danger of drifting further away from the knowledge society.

This question also has an impact on working life. In many offices and workplaces, the increasing tightening of e-security has



led to an arrangement where only certain system administrators are able to install programmes and software onto the workstation. This can cause delays of many days, naturally depending on the organisation, as IT support staff are often profoundly over-employed and thus rarely have the opportunity to attend to basic operations such as installing relevant programmes. These issues have an impact on the production paradox and on why increases in ICT investments fail to introduce the desired increases in total productivity. There are also experiences that system administrators, aware of their superior knowledge, may act arrogantly towards those requiring their help with their workstations. From an economic point of view, these are relevant questions of efficiency and organisational functionality.

Moreover, study on mobile communications has yielded a number of socially interesting findings, including the expectation of constant accessibility. In other words, the development of ICTs fosters social behaviour based on instant communication and constant accessibility, regardless of situation. In this way, technological development functions to alter the fundamentals of human behaviour, but these changes do not derive from the technologies themselves. They originate in the adoption process and the routines of daily life. It is also essential to understand that the most significant technological changes are often invisible to ordinary citizens. The end-user products analysed in the empirical part constitute only a fraction of the entire spectrum of life-changing technologies introduced in recent years. As demonstrated in the analysis, their significance should not be overestimated, as often happens. In one sense, this connects the information society to the consumer society. The information society is in many cases constructed through business, marketing and technology industries.

We might analyse the data also from a comparative viewpoint. If the obtained results are benchmarked with other

statistical resources concerning citizens' ICT usage in other cities and regions, it seems that whether or not the Tampere Region is seen as being at the forefront of national information society development, at least the statistics for Tampere are above the level of average national figures. However, it should be remembered that the comparability between different datasets obtained by different surveyors is rather low. Often, only indicators concerning technology penetrations, device ownerships levels, technology usage times and Internet usage contents are comparable. More complex and 'experience-related' indicators are easily affected by the phrasing of the question. Essential characteristics of the Tampere case involve investments to educational events targeted at ordinary citizens.

Several projects focusing on computer training among specific target groups are currently active in Tampere. The communication and data transaction speeds continue to develop. With a view to future developments, it remains to be seen whether or not this will generate new and enhanced practices of everyday life. As discussed earlier, there are various alternative social pathways that may actualise in the future. Education is an essential element in the increasing of knowledge. ICT should be incorporated at all levels of educational systems. Preferably, education will lead to a more conscious society that is also aware of the problems related to increasing digitisation of services and activities.

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