

Information society, citizens and everyday life: does the Internet make a difference in spatial practices?

TOMMI INKINEN



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The essence of the information society has been under a considerable debate during the last decade. The argumentation concerns the critique of technological determinism and the recognition of political, economic, social and cultural factors that underlie the development. In academic discourse, there has been a noticeable change from engineering based rhetoric towards more humanistic themes and a more qualitative way of speaking about the issue. Also geographical dimensions, mainly related to the urban research and applied urban planning, have emerged. In this paper the essence of the information society is analysed from a perspective of human and cultural geography. The concept of information society is being treated as a subjective construction and it can be conceptualised as a triad. Firstly, it is a tool as such, and the reference is on material symbols representing the tech-sphere of today. This includes actual devices such as computers and mobile telephones and their integrated applications. Secondly, the information society is a set of practices. This refers to everyday routines that are rarely questioned or critically explored. The most common examples of this are e-banking and e-shopping. Finally, the information society is an experience. This theme is characterised by subjective histories, individual contexts and cultural backgrounds. All these dimensions have implications on environment and social conditions of human life. This framework is being used as a tool to evaluate empirical data based on extensive survey conducted in Finland in the year 2001. The sample size was 2750 questionnaires of which 1176 were received back.

Tommi Inkinen, Information Society Institute, University of Tampere, FIN-33014 Finland. E-mail: tommi.inkinen@uta.fi. MS received 9 January 2003.

Introduction

Computerisation is a symbol of the informational society. Computer systems comprise one of the most distinctive and complex technologies of the late 20th century. Many of our transactions with organisations are mediated by computers as reflected in payments, rents, bank transfers, etc. However, not only has the economic side of the society been transformed, but also social interaction and mental travelling through enhanced mediated network systems. The debates about the social and environmental implications of information and communication technologies (ICTs) are scattered throughout diverse fields and can be found in texts ranging from humanistic geography

(e.g., Turkle 1995; Morse 1998; Crang et al. 1999) to economic decision-making and business (e.g., Kalling 1999; Shapiro & Varian 1999).

The purpose of this article is to evaluate some ideas and issues through which the computerised information society can be assessed. These ideas will finally have effects on visible reality: thus, they are spatial (spatiality is conceptualised broadly here). It includes the recognition of human-nature interaction and the aspect of lived social interaction. There are three essential questions. First, is there a “common” experience of the information society among the respondents? Second, will different forms of “mobile media” and the Internet change practices in physical movement? Third, are these technologies having an im-

pact on the everyday life of citizens? The questions are explored with the data obtained from an extensive survey study conducted in Finland 2001.

A brief outlook of issues

Analyses regarding the information society

The information society is a concept of a variety of meanings. In academic discourse, the information society has commonly been discussed with reference to economic activity and the significance of knowledge in production processes (e.g., Crang 2000; Wilson & Corey 2000; Karvonen 2001; Castells & Himanen 2002; Kellerman 2002; May 2002). During the 1990s, mainly due to the commercialisation of the Internet and the mass production of mobile phones, the information society became associated with information and communication technologies. However, ordinary citizens are often forgotten in the discourse concerning the information society. Information society should, after all, be a concept used to describe present time and thus contemporary society – and should not be treated as particular setting or segment of a society.

The information society has also gained the interest of geographers. Kellerman (2002) has extensively analysed concepts related to information and communication technologies and geographical dimensions of the information society. Kellerman discusses the geographies and geographical studies assessing the dimensions of information, knowledge, ICTs and the Internet in particular. According to him (2002: 30):

“Information is viewed as an abstract object... As an object it has its own geography. Cyberspace constitutes a phenomenon of virtual space, consisting of Internet information and its users. Information, on the other hand, enjoys geographical dimensions, spaces and aspects beyond cyberspace. Electronic information is produced in real places, and used in real places as well... Information is an economic as well as social product, produced and manipulated in a similar way to other resources and products... This seemingly non-spatial dimension of information has received a spatial accent with the emergence of the World Wide Web, in which geographical language has become a major tool for the structuring, organization and use of cyberspace.”

The citation comprises essential points of the geography of the information society. Especially networking has been adopted as one of the lead processes made possible by the new innovations in communication technologies. In this regard, Manuel Castells has presented so far the most extensive theoretical synthesis about the character of the ongoing societal transformation. Castells' approach is founded on macro-level analyses and is strongly associated with the economic activities in the global context. The essential argument is that in the current situation, networked societies are interacting with others through global city nodes (also Graham & Marvin 1996). This characterises the development in which (post)modern capitalist societies are moving towards a new “informational” mode of production. This transition has had its origins in the crisis of Fordist accumulation, and it has become possible because of major technological breakthroughs in the processing of information. Economic globalisation has ensured that the new trends will be spreading fast all over the world and profits will increasingly be based upon the production of a new knowledge. Modern firms turn into knowledge-producing organisations that operate and establish networks on a worldwide scale (see Castells 1996; 1997; 1998; 2001).

The core essence of the “informational mode of development”, as presented by Castells (1996), can be characterised through five factors. First, information has to be seen as a product and a resource. Information is something with value and thus a commodity. Second, the technology is all-pervasive in its essence. We all are living our lives with technologies and technology is an essential part of all segments of society and the future developments. The third characteristic is the logic of networking, which is an essential feature of modern information technology. The fourth factor is the further growing flexibility in the societal structures. Hierarchical organisations are losing ground to flexible models of management and production. This takes place not only in corporations but also in everyday life: work and leisure time are intertwining and fragmented modes of performing actions are becoming increasingly popular. Finally, technological systems are convergent and integrative. Already existing systems are integrated into the new ones and finally their separation will be impossible (Ahlqvist 1999:3). For the purpose of this paper, Castells' fourth characterisation is the most interesting. However,

components from all definitions are to be found in the opinions written by the respondents.

Simultaneously with the "informationalisation" process modern societies are undergoing other important changes. New developments can be seen, for instance, in the area of work, in the spatial organisation of modern societies, in the everyday lives of citizens and in the role and functioning of governments. Significant changes are experienced also in the ways in which individuals are building their own personal identities and mobilising themselves politically (Holmes 1997; May 2002). Common to all these definitions is the emphasis on the role of information and knowledge and its role as resource or product. This includes the central role of information and communication technologies and the growing flexibility in the structures of economy with the growth of the service sector and proportion of "knowledge workers". The changing role of work and the concept of knowledge as its main component are crucial when the conceptualisation of the information society evolves. As a matter of fact, the most important transformation deals with the increasing the knowledge-intensiveness of human life. In this process, the development of the new ICTs provides only the necessary tools for the change, and in this respect it might be appropriate to use the concept "knowledge society" (Webster 2002: 29).

Electronic communications and experienced spaces

The theorisation related to space is one of the major intellectual challenges in the evaluation of electronic representations. I will assess these in relation to the use of public spaces and experienced notions of represented environments. The following themes present arguments studied with the structured questions in the empirical part.

Many authors have explored the dualistic notion that the e-space has both public and private tendencies (Virilio 1994: 64; Jones 1995: 13; Fernback 1997: 39; Poster 1997: 217). For example, actions related to privacy, intimacy and personal desires, such as personal email communication, seeking a potential life-mate on the Net and chat communications are generally regarded as private. Conversely, the Internet is often regarded as a freely accessible realm and, due to this characteristic, as a public space. However, the Internet is an "information super highway" only in the

wealthy and highly industrialised countries in terms of transaction volumes and concentration of hosts (e.g., www.mids.org). In addition, the electronic or digital divide within industrialised countries is also evident. This is noticeable on the socio-economic scale between both humans and regions. The virtual space is clearly not a space for all inhabitants even in Nordic information societies.

The experience of space refers to the feeling generated through the virtual representation. Interaction, on the other hand, refers to the social interaction within the network. This interactivity, based on social communication, is thus interwoven with the conception of difference, referring to the space of otherness – what and where we are not. The construction of Internet chat identity, for example, can be argued to be a subjective experience of space and is always a contextualised process involving cultural, environmental, and educational implications. Negative and unwanted processes of harassment and oppression can also be identified in the network environment (e.g., MacKinnon 1997). People similar to each other tend to communicate more eagerly with each other than with those who are misfits. New and reproduced patterns of social relations are evident in cyberspace as the different tendencies to experience virtual space result in the formation of Internet or cyber-behaviour.

The connection can be established between the real-world essence of the usage location, resulting from the special characteristics of the location (material) and personal desires and the goals of the end-user (social), and Internet forums of communication such as chat-rooms and IRC. The public-private theorisation is essential in the consideration of interactions between the real world context and the Internet usage content. They are interwoven, and this leads to the recognition of the fact that change in one has consequences for the other (Jensen 1990: 71–72). In this regard public control over the Internet is important, as pointed out by Jones (1995). Public interests in the form of control and jurisdiction are experiencing both convergence and divergence with private interests, in areas such as, freedom of speech, intellectual property, copyrights and self-expression. In terms of the Internet policy and control, the balance between individual, public and corporate interests is in still an open question.

The experience of space and, in broader sense, reality is essentially contextual. Linguistic narra-

tives and construction processes of reality through language always include a major intellectual and philosophical challenge. This applies also to the studies of the Internet and other new ways of communication. The purpose of this paper is to evaluate some key arguments widely presented in theories of cyber-life or "new forms of electric being". In the following empirical section, issues arising from these theoretical perspectives are discussed and analysed based on empirical data.

Empirical evidence and results

The data were collected in a mail survey in March 2001. It included three regions, namely, the urban area of the city of Turku, the archipelago, and the rural area (Fig. 1). This stratification was made to assure the general nature of the data. The total sample size was 2750 questionnaires of which 1176 were returned. The response rate was 42.8 percent. The questionnaire was sent to individuals with the principle of one questionnaire per household. This procedure broadened the dispersion of the sample set.

The form contained a total of 52 questions. Six of these questions are discussed and analysed in the following. The questions are related to the use of public spaces and changes in everyday practices and movement. They will be referenced later in the text with their prefix number.

(1) Do you consider yourself as a part of the information society? (yes/no) and open lines

(2) Do you think that the Internet has changed your daily movement? (yes/no) and open lines

(3) Do you think that the Internet has made your life easier in your living environment? (yes/no) and open lines

(4) It has been said that the Internet makes distance meaningless. Do you agree? (yes/no) and open lines

(5) Do you think that the Internet services providing representations of real world locations (e.g., virtual cities) are able to fulfil the experience of the subject? (yes/no) and open lines

(6) How would you define the concept of "virtual travelling"? (nominal variable with 5 alternatives)

The open questions dealt with the significance of the information society, the benefits and weaknesses of Internet services and any change of their everyday lives that has occurred as the result of the computerisation and mobilisation of commu-

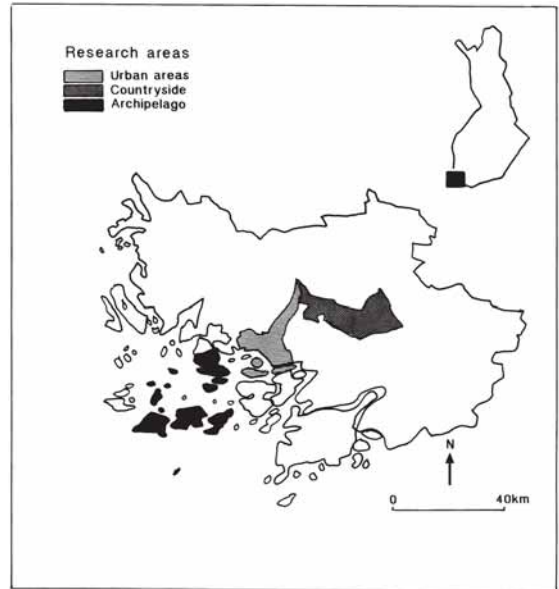


Fig. 1. The three research areas in SW Finland.

nication. The goal of these open questions was to gain a more comprehensive understanding of the perceived significance of technological development in ordinary life. These open questions were analysed through a classification procedure. For each open question three to six broad categories were constructed. These can be described as discourses even though the method is not related to qualitative discourse analysis (e.g., Silverman 1994).

The survey was conducted using a systematic random sampling method. The survey was targeted to persons of work age (from 18 to 60). The methods used are common statistical tests including chi-square based tests (phi, Cramer's V and contingency coefficient) and log-linear models. Three essential independent variables (numerical) and their properties are displayed in Table 1. Three categorical variables such as gender are also grouped into separate section with percentages and absolute numbers. These independent variables were tested with official statistics provided by Statistics Finland. There are no significant disparities between the data sets, and therefore the most important independent variables (age, education and gender) are not biased in relation to the larger sample of Finnish population.

Table 1. Essential independent variables and their properties/proportions in the survey data.

Age in years N = 1172	Mean: 42.7	Median: 44.0		
Number of persons living in the house- hold N = 1170	Mean: 2.5	Median: 2.0		
Time (yr) lived in the municipality N = 879	Mean: 16.6	Median: 14.0		
Gender	Male: 48.3% (N = 568)	Female: 51.7% (N = 607)		
Education	Aca- demic: 16.5% (N = 194)	Poly- technic: 23.5% (N = 276)	Second- ary: 39.8% (N = 467)	Elemen- tary: 20.2% (N = 236)
Household income	Highest: 18.4% (N = 211)	Upper quarter: 31.0% (N = 355)	Lower quarter: 31.2% (N = 357)	Lowest: 19.3% (N = 221)
Owns a car	Yes: 81.9% (N = 968)	No: 18.1% (N = 212)		

All categories in Table 1 are evenly distributed. The coverage of the sample is relatively good even though the response rate among the unemployed (6.6%) is lower than the figure provided by Statistics Finland (10.3% in April–July 2001). A general feature of the data is that they represent well the working and studying population but not the unemployed. The bias of the survey is towards those with high income and education. This is a general problem related to all survey data (e.g., de Vaus 1996).

The household income level in Table 1 perhaps requires an explanation. In Finland the average income level (for an individual) is 2141 € per month. Considering gender division the males have an average income level of 2354 € and females 1924 € per month. The division into displayed four income groups in Table 1 is based on the figures provided by Statistics Finland (29.8.2002).

The experience of the information society and general facts

It is useful to clarify some facts about the usage of the Internet, computers and mobile phones in

the data. First, 69% (811 cases) of the respondents use a personal computer. The usage level is higher than the ownership level of 54% (642 cases). The official percentage of households owning a PC provided by the Statistics Finland in March 2002 is 49.2. The survey data are somewhat biased in this respect. Regardless of the bias, the data are adequate to give a general picture of the usage of the technology on a broader scale.

Second, 39.5% (465 cases) of the sample population have an Internet connection at home. This figure is lower than expected. The average usage time of the Internet is a little over one hour per day for those individuals who are using the Internet daily. In these data the most important Internet service is online banking. Over 50% of Internet users in the data use different banking services at least twice a week. However, if the whole data are considered including those who are not using the Internet, the relative amount of persons doing banking via the Internet diminishes to 19.2%. Other services such as Internet shopping, are at a considerably lower level. Only 7.5% of the sample population uses the Internet for shopping occasionally (once or twice a year).

Question (1) dealt with the general experience and significance of the term "information society" from the viewpoint of ordinary citizens. In dichotomous form 702 individuals (59.7%) regarded themselves to be part of the contemporary information society. It is noticeable however, that 444 persons (37.8%) experienced that they are outside of it. The latter figure must be considered high. From the open-ended definitions (totalling 568 expressions) three categories were created on the basis of the written contents. In table 2 these classes are presented with three sample answers with gender and age information provided.

The first category has 131 (23.1%) answers. In these answers, the information society was experienced through work and expanding possibilities to career progress. In some answers the technology was evaluated as a significant transformer of life. The general attitude of the respondents in this first category is on the optimistic side and in some cases, over-optimistic, regarding their attitudes towards the effects of new information technologies. The second category contains the answers related to practical experience of technology. A total of 312 answers (54.9%) were classified in this group. The common feature in these answers was that the essence of the information society constitutes mainly as devices or their explicit us-

Table 2. The mental construction of the information society according to generalised opinions.

Category 1: Positive benefits and technological utopianism	
-	The information society is a society with no borders and distances (male, 43)
-	Easy services and access to various information resources (female, 27)
-	The adoption of new information technologies and their usage (male, 37)
Category 2: Devices, communications and everyday practices	
-	I have a computer, mobile phone and fax – isn't that an information society (female, 25)
-	A society with a lot of information and data (female, 29)
-	A computer as an essential part of everyday work (male, 51)
Category 3: Threats and uneven development	
-	Information society is a society of unfairness (male, 38)
-	Destruction (male, 48)
-	A nightmare of humans living their lives through a computer screen (female, 52)

age. In 16% of all the answers the information society was described as a society of mobile phones and computers. This reflects a common way of evaluating technological innovations and their daily significance through practices.

The answers grouped into the third category were negative in their attitude. There were in total 125 (22.0%) answers in this group, which makes it roughly the same size as category 1. The amount of people experiencing the information society as a hostile or unpleasant development is surprisingly high. The negative answers were more common among the older (over 50 yr) respondents. Devices are experienced as difficult to use and personal incapability of learning was commonly stated as the most important issue.

The information technologies, movement and the end of distance

Questions (2), (3) and (4) dealt with the argument that the advent of computer mediated communication will transform earlier communication practices and eventually make distance or physical movement obsolete. If physical movement is considered, the Internet has had a little effect. Only 8.9% of those using the Internet feel that they have changed their ways of movement in the physical environment. The most common refer-

ences were made to banking practices and library book renewals. It seems that the Internet is not changing the actual practices in movement except in the case of these specific services (e.g., banking).

The experience of an "easier life" through network technologies is interesting. Less than half (43.7%) of the persons using the Internet stated that it had significantly improved their lives. The main contribution that the Internet has in the pursuit of a better life derives from easy access to timetable information and library services. The diminished significance of distance is commonly acknowledged. 70.9% of the Internet users feel that the tyranny of the distance is defeated through technological advancements. 75% of the open-ended answers include statements related to the social communication with the Internet and e-mail. Distance is meaningless because individuals are able to connect to same services and persons regardless of their physical location.

Based on the results, it seems that the advertised information revolution has clearly made itself known but the actual effect on physical reality is limited. In other words, people tend to think that there are some changes going on but these changes have no discernible consequences on movement and physical acts. The open-ended definitions show that distance is mainly understood as a social construction. The old conception of time-space compression has therefore been upgraded to the sphere of social communication.

The experience of virtuality

Questions (5) and (6) dealt with the claim of "transforming life practices from the street and public places to the private sphere". The concept of virtual experience was analysed with a nominal variable with five alternatives. Also, the significance of virtual cities was assessed with dichotomous variable and open-ended definitions.

These questions have a deep philosophical background, involving the idea of separating visual knowledge from actual knowledge. In other words, the phrase "I know that there are no more Twin Towers in NY" can be justified via direct experience (I have been there) or indirect assumption (I saw a picture/broadcast about it). This relates the computer presentation to the essence of ontology. "I know what this city looks like – I visited the place" or "I know what the city looks like

– I saw a 3D version of it on the Internet”. The empirical evidence shows that the public takes the question very much for granted in a negative sense. Only 5.1% of the Internet users consider the knowledge obtained through virtual modelling to be satisfactory substitute for the real world experience. The open-ended answers emphasised the limitations of the two dimensional screen to provide a comprehensive experience of a city.

Respondents considered the concept of “virtual travelling” mainly as marketing rhetoric (35.2%) and pre-knowledge gathering (53.8%). In this sense, the virtual experience diminishes to an alternative to traditional paper travel guides. Less than 4% regarded that the virtual models to be acceptable as a substitute to actual travelling to the city. The virtual models and representations were mainly described as technically proficient abstractions but lacking in content value.

Two important findings can be addressed. Firstly, there is the learned presumption of technological change and secondly, there is the practical routine of everyday life. This division illustrates the fact that the belief in technological change is adapted from advertising or literature. However, it rarely has an impact on physical movement and the person’s environment. The way of life seems to stay the same, even though time-space compression in movement and communication is evident. The concepts of knowledge and assumption are also of importance. The change is a construction that can be deconstructed into the tangibility of technological devices, the daily practice (with the technologies) and knowledge achieved through these actions.

A description of the independent and dependent variable relations

In the following I will discuss some brief notions concerning the results of the covariance and regression analyses. The usage of the new information technology is connected mainly to age and education. Observed income level was also a significant explanative variable, but as commonly acknowledged, it is highly multicollinear with several other independent variables (e.g., education). The data were also analysed in relation to urban-rural residence. The urban-rural dimension was characterised by a more critical attitude in the countryside. This means that rural dwellers do not use technologies as much as city dwellers do. However, there were no statistical differences in

the levels of ownership (computers, home Internet access and mobile phones) in different areas. The significance of local cultures and local ways of life gain importance. The access to technology is not a regional issue, but the cultural and social construction of the experience and feeling related to these technologies is.

An interesting finding in the data was the non-significant role of gender in the usage of the Internet and mobile phones. In the data both sexes used similar services with similar usage levels. However, a significant relationship was established in leisure usage. Women tend to use communicative technologies more for social activities than men do. However, for both groups work related usage is the most important. This illustrates the nature of innovation to even out between sexes. A commonly held belief is that men are more active in the use of technologies than women are. This survey suggests this is a (false) stereotype in the Finnish context.

The use of one technology supports the use of other technologies. There are clear covariation patterns with the dependent variables meaning that a person using one technology is likely to adopt the usage of other technologies. People using a variety of Internet services tend to use also a variety of mobile-phone services. Combined solutions, such as a laptop with cell phone creating wireless Internet connectivity, were also evaluated as a means to gain efficiency. However, the number of persons taking advantage of these services is very limited. Less than 4% of the cell phone users are using their phones for payment procedures and banking services.

Conclusions and future prospects

One way to interpret the results obtained is to conclude that the most essential changes taking place in the information society development are not happening solely at the level of technology. Beliefs, values and, most importantly, contextual local cultures and ways of living are essential determinants underlying the actualising reality. The construction of the information society is always dependent on the contextual setting in which the societal changes are taking place. In these settings various societal actors participating the process have their specific goals and strategies, which finally determine the realised form of the development.

At the empirical level, the concept of the "information society" is experienced mainly through devices as indicated by the results of question (1). Theoretical reviews and thoughts concerning the effect of ICTs and particularly the Internet on masses of citizens often overestimate the short-term impact of these new innovations. Moreover, estimates also have a tendency to underestimate change on a long-term period. The fuzziness of the "information society" and its conceptual content require empirical understanding to support theoretical arguments. The essential question of the information society of the future is how to include individuals who now are excluded both on the levels of practical skill (cannot) and mental experiencing (will not).

In geographical sense, the most essential theoretical arguments since the early 1990s have been trying to assess the significance of distance in the information age (e.g., Brunn & Leinbach 1991; Mitchell 1995; Castells 2001). These impacts were analysed in questions (2) and (4). In the light of the empirical results, it is evident that the respondents distanced themselves from the naive "technological bliss" rhetoric according to which the information technology revolution and the development of the information society would automatically lead us towards a "spatially non-significant" and highly multi-lateral boundlessness society. Observed levels of the web content usage also indicate the same. The most important service having impacts on movement is ebanking. People do not visit physical bank locations as frequently as before, but it remains unclear whether this has significant implications for the total amount of movement. Moreover, if the whole sample is concerned, only 37% of the respondents are using the Internet bank services. This figure is of course increasing as time passes but in the contemporary situation the usage level must be regarded low.

The potential substitution that virtual systems or interactive computer applications have is concentrated on issues related to leisure and information collection as indicated by question (6) and open-ended definitions from questions (3) and (5). Human life and particularly the lived everyday geography is still very much real world based (bound). There are, however, certain subgroups within the society who have serious problems with the Internet addiction, for example, but in the data the relative amount of these respondents is marginal. In the broad sense, Internet usage is

mainly pragmatic and the penetration of the more advanced services in the usage cultures is still rather limited.

The contemporary status of the information society is an important challenge for researchers. The academics have only recently started to receive reliable empirical evidence about the societal impacts of ICTs, but now it has become an open question whether we should at all speak about the spatial changes or the transformations of the society. If there are transformations, what is their extent and significance in the broader and, inevitably, global development scheme? Researchers still have a limited amount of data regarding the citizens thinking about the new ICTs and the information society – particularly after the burst of the .com bubble in 2000 and 2001.

Three essential themes of future research are addressed in the geographical sense. First, to obtain more comprehensive data sets within industrialised countries. Even though there is a considerable amount of theoretical literature regarding the contemporary information technology and human relations, empirical data sets are limited and are often too superficial. Second, the international aspect of computerisation is important. How are the information technologies used in different cultures, and, are there significant differences in these practices? This relates to the third theme, on what scale do traditional cultural manners and beliefs affect the usage of the new information technologies? By addressing these questions, the essence of the information technologies in computerised societies can be evaluated with more depth.

REFERENCES

- Ahlqvist T (1999). It is all about relations: exploring the geographies of networks. In Ahlqvist T, T Inkinen & S Tuhkanen (eds). Towards doctoral dissertation. *Publicationes Instituti Geographici Universitatis Turkuensis* 161, 1–15.
- Brunn SD & TR Leinbach (eds) (1991). *Collapsing space and time*. 404 p. Harper Collins, London.
- Castells M (1996). *The rise of the network society*. 556 p. Blackwell, Oxford.
- Castells M (1997). *The power of identity*. 461 p. Blackwell, London.
- Castells M (1998). *The end of millennium*. 418 p. Blackwell, London.
- Castells M (2001). *The Internet galaxy: reflections on the Internet, business, and society*. 292 p. Oxford University Press, Oxford.

- Castells M & P Himanen (2002). *The information society and the welfare state. The Finnish model*. 200 p. Oxford University Press, Oxford.
- Crang M (2000). Public space, urban space and electronic space: would the real city please stand up? *Urban Studies* 37: 301–318.
- Crang M, P Crang & J May (eds) (1999). *Virtual geographies. Bodies, space and relations*. 322 p. Routledge, London.
- Fernback J (1997). The individual within the collective: virtual ideology and the realization of collective principles. In Jones S (ed). *Virtual culture. Identity & communication in cybersociety*, 36–54. Sage, London.
- Graham S & S Marvin (1996). *Telecommunications and the city*. 434 p. Routledge, London.
- Holmes D (ed) (1997). *Virtual Politics. Identity & community in cyberspace*. 248 p. Sage, London.
- Jensen J (1990). *Redeeming modernity: contradictions in media criticism*. 221 p. Sage, London.
- Jones SG (1995). Understanding community in the information age. In Jones SG (ed). *Cybersociety: computer-mediated communication and community*, 10–35. Sage, London.
- Kalling T (1999). *Gaining competitive advantage through information technology. A resource-based approach to the creation and employment of strategic IT resources*. 336 p. Lund University Press, Lund.
- Karvonen E (ed) (2001). *Informational societies: understanding the third Industrial Revolution*. 284 p. Tampere University Press, Tampere.
- Kellerman A (2002). *The Internet on earth. A geography of information*. 265 p. Wiley, New York.
- MacKinnon RC (1997). Punishing the persona: correctional strategies for the virtual offender. In Jones SG (ed). *Virtual culture. Identity & communication in cybersociety*, 206–235. Sage, London.
- May C (2002). *Information society. A sceptical view*. 189 p. Polity, London.
- Mitchell W (1995). *City of bits: space, place, and the Infobahn*. 225 p. MIT Press, Cambridge.
- Morse M (1998). *Virtualities. Television, media, art, and cyberculture*. 266 p. Indiana University Press, Bloomington.
- Poster M (1997). Cyberdemocracy: The Internet and the public sphere. In Holmes D (ed). *Virtual Politics. Identity & community in cyberspace*, 212–228. London, Sage.
- Shapiro C & HR Varian (1999). *Information rules a strategic guide to the network economy*. 352 p. Harvard Business School Press, Boston.
- Silverman D (1994). *Interpreting qualitative data: methods for analysing talk, text and interaction*. 325 p. Sage, London.
- Turkle S (1995). *Life on the screen. Identity in the age of the Internet*. 347 p. Simon & Schuster, New York.
- Virilio P (1994). *The vision machine*. Translated by Julie Rose. 81 p. Indiana University Press, Bloomington.
- de Vaus DA (1996). *Surveys in social research*. 411 p. UCL Press, London.
- Webster F (2002). *Theories of information society*. 257 p. Routledge, London.
- Wilson MI & KE Corey (eds) (2000). *Information tectonics. Space, place and technology in an electronic age*. 272 p. Wiley, Chichester.