

Incorporating the Impact of ICT into Urban and Regional Planning

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Abstract: This article examines the need for urban and regional planning practices to be further developed in the light of both the emergence of the information/knowledge/network society and in particular the impact of information and communications technology, (ICT), on spatial change. The ways in which urban and regional planning practices may best be altered in this regard is also addressed.

One major aspect of current spatial development trends can be highlighted with reference to the changing nature of our advanced societies' economic base, where knowledge and skills are becoming the most important factors in production. This fundamental economic change moreover envisages a whole host of new functional and organisational possibilities. In consequence, the traditional ways of running businesses in industry, services and other organisations, as well as the activities of every day life will also undergo a process of fundamental change. Additionally, changes in the traditional prerequisites governing the location of various activities will occur because they now have new determinants.

These developments moreover will have a diversified spatial impact. Therefore ICT, as the main driving force in the development of the information society, should be taken into account in urban and regional planning as an important new aspect in this process. Planners should therefore recognise this new need and challenge.

The incorporation of the spatial impact of ICT into planning practices will not however occur without the purposeful actions of those who are responsible for practical planning or those who regulate and support planning.

Thus there is a clear need for further information, knowledge and understanding about the spatial impact of ICT and about its consequences on urban and regional development. Planners need updated education and training as well as new planning methods and models based on new spatial and urban theories. In addition, planning legislation and governmental guidelines should include provisions for the impact of the development of the information society and ICT on planning.

Keywords: Information society, information and communications technology, spatial change, planning practices.

1. Introduction

The further development of the information / knowledge / network society is now a common goal of many authorities round the world. One of the driving forces of this development is the new information and communications technology, ICT. Modern telecommunications can be seen not only as a new way of working but also as a new form of traffic. The quality and diversity of conventional transportation networks and services are important locational factors for many industries and activities. Therefore analogously one may suppose that ICT and its applications will, over the course of time, similarly come to affect spatial development and thus one may argue that with this in mind, ICT should already now be taken into account in all future spatial planning processes.

The impact of the development of the information society and especially the impact of ICT on the structures of cities and regions and on spatial development and planning in general is thus now a question that should be more widely discussed by planners, as the level of discussion on this topic has been muted at best thus far.

This paper therefore aims to contribute to the discussion on the need to incorporate the spatial impact of ICT into spatial planning practices, with a particular emphasis on urban and regional planning. We will commence by discussing some of the possible spatial consequences of the development of the information society, with the application of ICT in particular being discussed. The main focus then moves on to the action needed with regard to the incorporation of the impact of ICT into urban and regional planning practices.

The paper is based on a review of the already available literature, on the opinions of Finnish urban and regional planners recorded during the process of researching my dissertation: 'Information and Communication Technology: A New Aspect in Urban and Regional Planning', published in Finnish under the title: 'Tieto- ja viestintäteknologiasta uusi näkökulma kaavoitukseen' (Talvitie, 2003a), and on the article 'The Impact of the Information and Communication Technology on Urban and Regional Planning' written previously on the basis of this dissertation (Talvitie, 2003b).

The opinions of Finnish planners were surveyed in a questionnaire for my dissertation. The questionnaire contained 129 different statements about the effects of ICT on spatial development and the development of planning practices. In addition, there were a number of questions identifying the quality of the respondents. I received 310 replies, represented 39 % of the whole target group of 794 persons. The replies received afforded good coverage of the different types of planners, while their geographical distribution was also good. The validity and reliability of the results of the questionnaire was estimated sufficiently good for the analyses of the results. The questionnaire was mailed in February 2002. The opinions elucidated in the responses received on 42 separate statements will be used here.

More information about the planners who participated in the study, the methods used, and the results obtained, can be found in the appendix. In addition, one can also find background information there on Finland, its planning system and the Finnish urban and regional planners contacted. This information will help in the further evaluation of the relevance of the results of this study.

In this context it should also be noted that all of the planners who participated in the study did not reply to all statements. Therefore the number of respondents varies, while the number of respondents is noted in each figure represented in the text. The differences of opinion between the various types of planners were actually quite small. Indeed in only a few cases were they statistically significant ($p < 0,05$). Some of these differences are referred to in the text. The largest group of Finnish planners are the architects (M.Sc.) who constitute about 50 % of the total. The second largest group, about 20 %, are surveyors (M.Sc.), graduated from the Department of Surveying, at the Helsinki University of Technology. The rest have different educational backgrounds. There are civil engineers, social scientists, such as geographers, and also those whose educational level is below the postgraduate level.

2. The Impact of ICT on Spatial Change

An understanding of social progress, and the role of the development of the information society in this process is, for planners, the key to recognising why ICT should be more fully taken into account in planning. For many visionaries in this field the information society represents a new economic era in the history of mankind (e.g. Castells, 1996/2002). This is the fourth era after the agrarian, industrial and service eras (e.g. Molitor, 1999). Therefore the impact of ICT on spatial change and development should not be examined in isolation but rather, as a part of the development of the information society. This chapter will begin with a short discussion on the essence of the information society as a force of spatial change. This discussion will then provide the basis for the proceeding analyses on the spatial impact of ICT and its consequences for spatial development.

2.1 The essence of information society as a force of spatial change

The concept of the information society has been successfully developed over the last 30 years by a number of distinguished proponents, such as Bell (1974), Masuda (1981) and Castells (1996/2002). In a useful work, Webster (2002), distinguishes five definitions from these theories of the information society depending on their primary criterion. These criteria are: technological, economic, occupational, spatial and cultural. The technological criterion refers to the development of information and communications technology and its effects on social development. The economic criterion refers to the development of new products and their effect on industrial structures. The occupational criterion refers to the development of new types of work places and occupational restructuring. The spatial criterion refers to the development of different types of networks and their effects on the organisation of time and space, while the cultural criterion refers to the rapid increase in the information in social circulation.

Although Webster is critical in his evaluation, posing the question, 'Is there an information society?' representing a new wave of social development, his analysis of the content of the emergent information society is clear. It indicates well the different aspects, which in real life are all relevant to the development of the information society. In simplifying and summarising the theories on the development of the information society from the point of view of spatial planning it is however important to distinguish between the following aspects:

- The development of the information society is taking place in various ways and at a different pace across all developed countries, as well as now

gradually also in the developing countries. This development will affect societies as a whole and will cause fundamental changes in economic and social life. Knowledge and skilled people will become the most important factors in production,

- The development of information and communications technology will be the main driving force in the formation of the information society,
- The emergence of information and communications technology makes it possible to create new ways of working as well as making it possible to reorganise industrial, public and personal activities and structures. Globalisation will play an increasing role in these processes,
- The change in the meaning(s) of space, place, distance and time as the determinants of location factors - with probably the best known concept of the changing role of space, place, distance and time in the information age being suggested by Castells (1996/2002) when he introduces the concepts of 'space of flows, space of places and timeless time. As a result we will have a virtual world functioning side by side with that wedded to conventional physical settings.

From a planning point of view the conclusion here is that such developments will also profoundly affect spatial development and thus spatial planning also. In what follows, we will not attempt to address all of the potential spatial impacts of the development of the information society, as the constraints of space permit us to focus on only the principal aspects of the spatial impact of ICT, though this will provide us with the basis for our evaluation of the need to further develop current urban and regional planning practices in this regard.

2.2 The changing nature of space, place, time and distance as the determinants of location factors

Observations made with regard to changes in the meaning of space, place, distance and time suggest that in many cases distance will no longer be a problem where one can easily transmit information via telecommunications networks. The same applies to time. All transmissions will take place at once. Wireless communications will allow the making of connections at any place at any time where the service is offered. In principle, space and place are thus no longer affected by distance and time factors in the same way as before. At least in theory this could mean more freedom in the location of activities. This fundamental question has interested many of the participants in the field.

Mitchell (1999) however argues that lazy references to 'the death of distance, the end of space and the virtualisation of everything' simply obscure the issue. Kotkin (2000) moreover, suggests that when the freedom to choose location increases, companies and people will locate to places of their own choice. Thus the peculiar attributes of locations will play an increasingly important role in this choice.

The way in which Finnish planners view the changing roles of the determinants of these locational factors is shown in Figure 1.

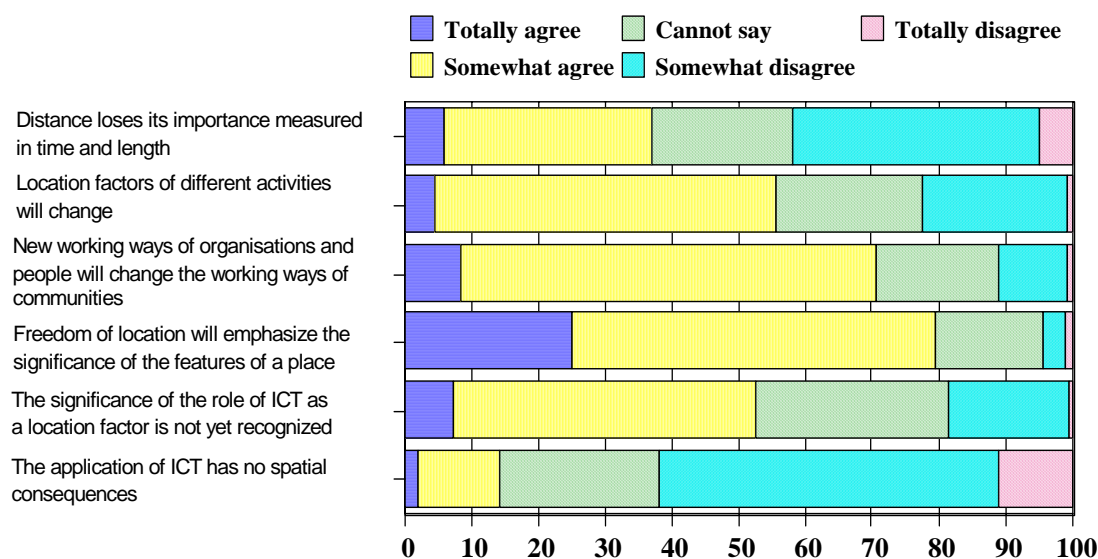


Figure 1. The opinions of Finnish planners on statements concerning the impact of ICT on some of the principal location factors. (n= 306-308). The results are statistically significantly skewed in the 2nd, 3rd, 4th and 6th statements. Source: Talvitie, 2003a and 2003b.

We can thus see that the majority of Finnish planners agree with most of the suggestions presented concerning the principal spatial effects of ICT. Opinions are however split over the issue of the changing importance of distance, as this is also the case among many scientists. The results obtained illustrate the uncertainty we have in evaluating this impact. Sixty-five planners did not take a stand on this statement.

Although some 55 % of the planners accept the statement that the location factors of different activities will change, an interesting phenomenon emerges here in the opinions of planners of different planning tasks. Support for this statement grows when moving from the opinions of detailed land use planners (39 % totally and somewhat agree) to the opinions of master (71 %) and regional (82 %) planners. This result indicates that the impact of ICT is easier to understand in respect of overall than in detailed planning. One explanation for this could be that the general and alternative development perspectives are studied in overall planning, while in detailed planning the task is to concentrate on the solutions to be implemented in the near future. In this statement differences also emerged between planners from different educational backgrounds. The share of opinions of architects that ‘totally and somewhat agree’ was 45 %, for surveyors it was 59 %, for civil engineers, 79 % and for social scientists 93 %. In these groups all levels of education within the respective categories were included. This statement was the only one where the opinions of planners with different educational backgrounds were divided so clearly. This result most probably reflects differences between the opinions of planners of different planning tasks. The share of architects was largest among planners of detailed planning. Therefore it is not possible here to draw the conclusion that the majority of architects in general do not believe that ICT has any spatial impact.

The statements regarding the freedom of location and new working methods received the strongest support, with 80 and 70 % totally and somewhat agreeing, while around 50 respondents did not take a stand. These results are important from the point of

view of planning. Places which have special features, even different ones, regarding housing and the location of other activities will offer new development possibilities because of the new type of demand. The changing working methods of communities require new planning principles or the adaptation of old structures in light of changing systems.

Over 50 % of the planners accept the statement that the role of ICT as a location factor is not yet recognised. Nearly 30 %, or 89 persons, hesitated to take a stand on this statement. The result indicates that about the same level of uncertainty exists here as with the first statement. Few accepted the statement that the application of ICT has no spatial consequences.

2.3 The Spatial impact of the application of ICT on production, services and everyday life

As noted previously, the consequences of the application of ICT in production and services will change the traditional ways of running businesses in industry, services and other organisations as well as changing everyday life more generally (e.g. Toffler, 1980; Mitchell, 1999 and 2003; Castells, 2001 and 1996/2002). These developments form the basic driving force on spatial change and have been discussed by many scientists and futurologists. In the following some of these development factors will be discussed.

Industry

The automation of industrial processes was one of the first applications of ICT (Naisbitt, 1984). It led in many cases to the reduction of labour. Subsequently ICT has been used in the structural reforms of production. Mass production has often been replaced by customised production, with enterprises being restructured into network companies (e.g. Castells, 1996/2002). This has led to the relocation of production to cheaper places.

Industries that develop ICT have special requirements as regards location. The vicinity of universities, qualified labour and good housing are some of the location factors identified in many studies. This means that the ICT industries are not easily spread but rather concentrated on selected cities. Enterprises producing manufactured goods are normally globally structured and have plants in different continents. This does not necessarily apply to the software industry however because they can deliver their products via the Internet.

The spatial consequences for traditional industries that use ICT are not necessarily the same as with for the ICT industries themselves. Traditional industries can benefit from the possibilities inherent in reorganising their activities and from the greater freedom available to them as regards selecting their location.

Services

The spatial impact of ICT on the service sector is highly diversified and constantly evolving, with electronic banking being a good example here. For example in Finland most financial transactions are made via computers or mobile phones. A great number of bank branch offices have thus been closed. Electronic commerce is also becoming more common among ordinary people especially as regards buying and selling intangible products such as flight tickets, music, insurance etc (e.g. Mitchell, 1999).

When buying goods however you need to have confidence in the existence of a good delivery system.

The traditional range of public services is an area where ICT provides almost limitless possibilities. In many countries central, regional and local authorities are now offering a lot of information about their services, with online two-way communication often being made available for citizens. Libraries offer online services, while distance learning and telemedicine are developing fast.

In many cases the services provided via ICT will improve the service standard, especially in small communities and in rural areas. It will also save on time and travelling costs, while the physical location of the service provider will not be as important as in the past.

Business Location

As ICT offers the ability to deliver some services via the Internet – regardless of the location of the service provider – this naturally creates a need to reconsider the suitability of the locations of these workplaces.

The first phenomenon was probably the establishment of so-called ‘back offices’, when some of the office activities were relocated from central offices to cheaper places and away from the city centre (e.g. Graham and Marvin, 2001). ‘Call centres’ are now a very common new type of office where services, which can be delivered by phone or e-mail or via the Internet, are re-located to places with low cost labour and cheap office premises (e.g. Castells, 2001).

One such example of this is best illustrated in the suggestion, made by Mitchell (1998), that companies create so-called ‘resort’ offices with good telecommunication facilities for intensive short-term teamwork. Moreover, companies in Finland have used this type of practice for many years, at least in relation to high-level negotiations.

The opinions of Finnish planners on some proposed practices are shown in Figure 2.

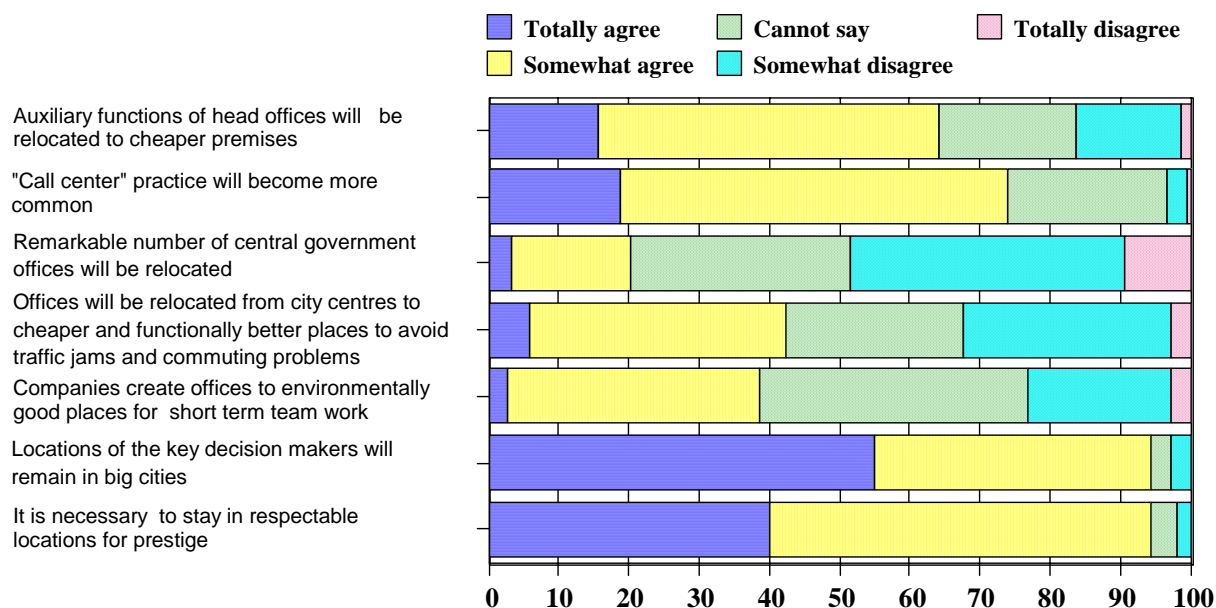


Figure 2. The opinions of Finnish planners on some proposed spatial impacts of ICT on the location of offices. (n= 303-307). The results are statistically significantly skewed in the first, 2nd, 6th and 7th statements. Source: Talvitie, 2003a and 2003b.

Most Finnish planners agree with the suggestions on the relocation of the auxiliary functions of head offices and also on the development of call centres. 60 and 69 respondents respectively did not take a stand on these statements. The results are easy to understand in Finland because there are a number of practical examples of similar types of actions. The majority of planners do not however believe that the Finnish government will succeed in the relocation of some central government activities away from the capital region as a part of the current objectives of regional policy. This policy is currently under wide discussion, with few relocation decisions having yet been made. Opinion is split on the statement that offices will be relocated away from city centres because of traffic and commuting problems, as well as being divided over the policy of building office premises in good environmental locations for temporary working possibilities. Many planners (78 and 117 respondents respectively), see those statements as being difficult to answer, though about half accept them. The results again indicate uncertainty where, according to these statements, no clear or practical examples currently exist. Nearly all expect that the big cities will in future continue to be the places where important decision makers work, and that the 'image factor' will determine the need to stay in respectable locations. These statements received most support, and are in line with the opinions of many researchers in the field.

New working practices

Thus we can say with some certainty that ICT continues to affect the content of work and of working practices. We only have to think here of how use of the internet, e-mail, mobile phones and laptop computer technology have changed current working practices. Castells (1996/2002) expects that ICT as such will not 'cause' unemployment, but rather that the nature of work and work places will simply change. As such, the spatial dimension of new working practices is probably one of the most often discussed topics in the evaluation of the spatial impact of ICT.

Tele-working/tele-commuting/e-working/distance working was one of the first new applications of ICT to affect traditional ways of working. Tele-working is applied in different forms depending on the content and quality of work and naturally on the preferences of the employees, a common practice here being to tele-work for only a few days a week and thus keep contacts regularly with the main office. In addition, work that is done mainly at home, or in the field meeting customers etc, also exists.

According to Lorek (2002) during the last decade many companies in the USA have introduced formal telecommuting programmes to promote tele-working among their employees. The experiences here have been good. From the point of view of the employers, productivity has increased while the need of office space has decreased. Employees also enjoy the new freedom they have in their work. However, while employers can save money by having a smaller office space, employees have to provide space at home for tele-working. More people have also established their own businesses and work from home.

There are also a number of other types of tele-working now emerging. ICT solutions provide companies with the ability to use cheap foreign labour in some work phases (e.g. Graham and Marvin, 2001), while of course online commercial activities are now also possible. Pelton (1992) calls these types of workers 'electronic immigrants'. The possible applications here relate not only to selling however. A Finnish company METSO, which produces e.g. pulp and paper machines, provides online remote diagnostics services for controlling the functioning of its machines. This service is available to their customers round the world (<http://www.metsopaper.com>). Benefiting from the different time zones is also becoming a common practice as regards implementing some work phases (e.g. Mitchell, 1999). Companies who operate in global markets are most likely to apply such practices. It is obvious that time will bring about various new combinations of working habits when organisations and people recognise the new possibilities inherent in ICT.

Housing

Traditionally employment has had a significant impact on the development of the housing market. As noted previously the situation will now change. People who can work by using telecommunications systems can locate anywhere. As such, the desire to re-locate to somewhere with a pleasant climate and a healthy environment, and sufficient service standards among others will increasingly be used as the criteria of a good location. Naturally also the ready availability of secure access to ICT services should also be available. There are numerous examples of these types of solutions to be found, and in most cases these places are famous resorts (e.g. Mitchell, 1999). Other types of locations could however be possible, depending on peoples' individual preferences.

Those entrepreneurs whose customers are spread across a wide area could also enjoy a significant level of freedom in choosing their place of residence. An interesting aspect here is the impact of the availability of skilled people on the locations of enterprises who need qualified labour. Kotkin (2000) expects that if enterprises want to safeguard this, they will have to locate to the vicinity of places where such well - educated people want to live.

Mitchell (1999) argues that the digital revolution will reunite home and work. As such, homes will have to be planned to enable both housing and working functions

(e.g. Mitchell 1999; Moss and Townsend 2000). The impact of ICT on housing is in many cases also indirect. ICT enables people to implement some of their objectives, which would not have been possible previously.

Conventional traffic

Höjer (2000) argues that the indirect effects of ICT on transport demand come e.g. from changes in land-use and in the organisation of activities. This opinion reflects the findings represented earlier. Tele-work, e-commerce, services provided over the Internet, e-mail, changes in life style etc. will all have impact on traffic. In some cases the need to travel will diminish when one can get things done by using electronic communications tools. Sometimes the need for transport will change, as with e-commerce. The customer can order goods over the net, but the seller has to transport the goods to the buyer. In the case of intangible goods, all transactions take place over the net.

Changes in transport demand due to the increased use of ICT are however notoriously difficult to predict. Very much will depend on how well people learn to benefit from the opportunities ICT offers. The human need for 'face to face' contact will however guarantee that traditional transport functions will not be completely replaced by ICT, which in theory could be possible.

2.4 General overview of the spatial development possibilities

When estimating general changes in spatial development it is common to ask the question: does the development point more towards a centralised or a dispersed direction? A simple answer here is that, in principle, both trends are possible because ICT allows more freedom to be given to the locations of different activities, and thus the outcome depends on how this freedom is actually applied.

The Roundtable Participants of the Lincoln Institute of Land Policy (2001) – under the heading 'The New Spatial Order?' – discuss the centralisation versus dispersion theme. Atkinson thinks that in the USA there two different development trends currently exist. Inside the metropolitan areas such developments are leading to increased decentralisation, while on the other hand, some activities are being moved from the large metropolitan areas to smaller ones. Gillespie however does not believe in any future competition between centralisation and dispersion, but instead thinks that the question is rather one of seeking balance between the forces behind the change. He does however acknowledge that the general rule of profit maximisation under capitalism requires the continual identification of cost savings, which in turn inevitably leads to decentralisation in the long term.

This discussion about centralisation, decentralisation and dispersion leads on to a discussion about the roles of urban and rural areas in this development. Hall (1999) agrees with those who believe that the role of cities will remain paramount. Cohen (2000) speaks on behalf of cities by arguing that to minimise risk it is wise to invest in already dominant areas. Castells (2001) moreover argues that the discussion about the 'death of cities' is a myth that cannot be based on any firm arguments. Instead he believes that urban and metropolitan areas continue to grow because of the spatial concentration of jobs, services and income-generating activities.

Kotkin and DeVol in their research on 'Knowledge-Value Cities in the Digital Age' (2001) deal with the development of cities in the USA. They stress that opportunities

differ in different cities because different types of activities have special requirements for particular locations. However they do argue that despite these differences there are some basic factors that are critical in all cases. The most important of these is that of ones preferred lifestyle, and the need to provide an environment where people want to live. The second important factor is the availability of a skilled workforce. A good living environment attracts skilled people. When added together these two factors form a magnet to businesses. In conclusion, ultimately they expect that the guarantee of success is the quality of the community; it should be good for living in every possible sense.

Graham and Marvin (2001) argue that in the large metropolises such developments splinter urban structures. This leads to the development of 'premium network spaces and glocal sosio-economic enclaves' and less developed areas. Many other researchers (e.g. Castells, Hall, Kotkin) have also warned of the danger of the 'dual city' phenomenon, i.e. when a city becomes divided both socially and spatially into different areas. This danger should of course be avoided through the conduction of proper urban planning.

The discussion of the future role of cities in the information era concentrates predominantly on the destiny of the large cities and the metropolitan areas. Small cities and communities within the large city regions may however also attract workplaces, often located in cheaper premises and closer to the employees who work there, or for quality of life factors. For the same reasons, traditional 'old' towns and other small communities not influenced by large urban areas may also find that they have a new future, with perhaps call centres forming a good starting point in the generation of new jobs.

Although there are many who do not believe that rural areas would benefit noticeably from the possibilities ICT offers, it should be noted that probably a more important factor for the future of these areas is the improvement in the service standard ICT will herald. This does not only make life easier for current residents but also enhances the competitiveness of rural enterprises. What effects these have in the long run on the future of rural areas remains however difficult to predict, though it is possible that, in the medium term, changes in lifestyle could to some extent favour rural areas.

How Finnish planners experience some of these expected consequences in spatial development is shown in Figure 3.

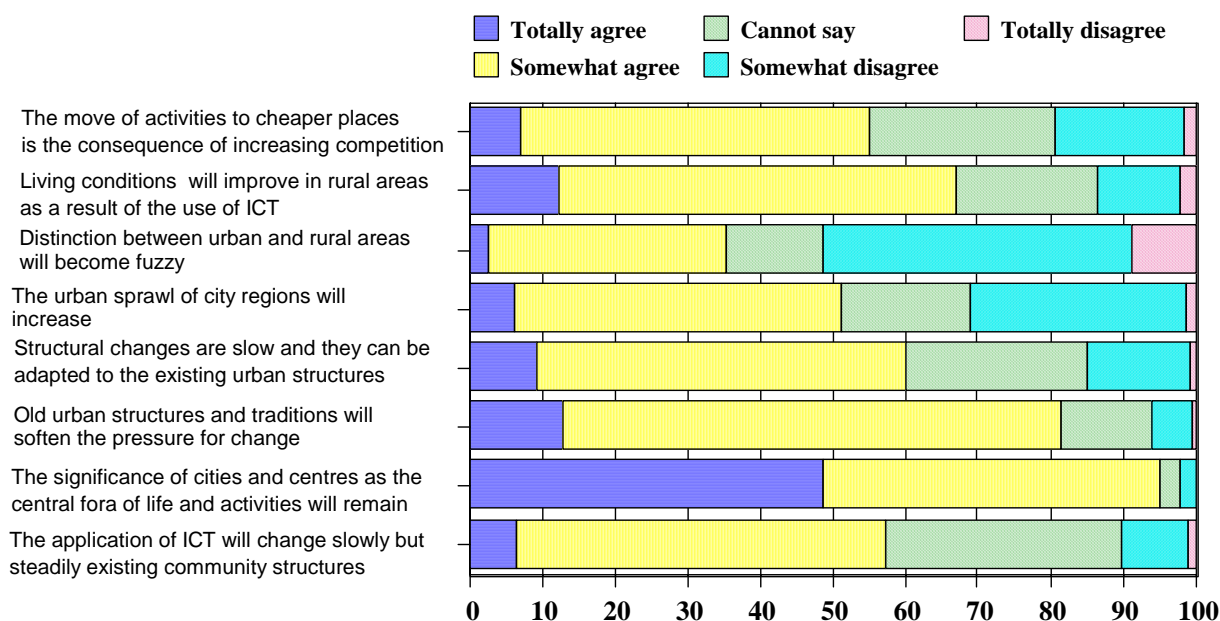


Figure 3. The opinions of Finnish planners on the statements of some possible consequences in the spatial development caused by ICT. ($n = 302-306$). The results are statistically significantly skewed in all cases except in the 3rd and 4th statements. Source: Talvitie, 2003a and 2003b.

The majority of our sample expects that competition will be the main driving force in moving activities to cheaper places and that rural areas will also benefit from ICT. A slight majority do not believe that the distinction between ‘urban’ and ‘rural’ areas will disappear, though a slight majority also believes in the growth of urban sprawl in the city regions. On the whole, opinions in respect of these two statements are split. An interesting result here is the strong belief that spatial changes can be adapted to the existing structures and that old traditions will also soften the pressures of change, as indeed Mitchell (1999) has argued. The continuing belief in the power of cities remaining the focus of life is nearly unanimous. However, the majority believes that in the long run ICT will change existing urban structures. From the planning point of view it is essential to note that planners are thus not expecting large changes to occur rapidly.

On the whole, the possible consequences caused by ICT in spatial development as discussed above do indicate the emergence of clear changes. It is moreover natural that we still have little empirical evidence of the development trends caused by the emergence of the information society and the impact of ICT on spatial change. Only during the last 10 – 15 years has this technology been widely used in the developed world. Most of the expected changes thus lie ahead. The impact of ICT will also differ from the experienced impacts of the telephone and telefax. As Lake (2003) puts it: ‘These technologies were seen and used as tools for supporting traditional ways of doing things’. ICT however is much more revolutionary in its implications, particularly with regard to the development of new working practices. Therefore it is difficult to take a firm stand on the expected spatial changes caused by the applications of ICT. The pace of these spatial developments depends on the amount of time people and organisations need to identify the new potentials for the location and reorganisation of their activities. Such major changes in these physical structures will moreover take place slowly, although the relocation of enterprises could of course

occur literally overnight. Therefore the findings discussed represent not the 'final word' on this issue but merely the beginning of what will be a long process.

3. The development of urban and regional planning practices

The previous discussion clearly illustrates that ICT is now a significant factor affecting spatial change, the consequences of which can often be rather surprising. This necessarily provides planners with some challenging problems. Spatial change from the point of view of urban and regional planning is always both an opportunity and a threat. Current ongoing changes however offer opportunities to use the new possibilities inherent in ICT to enable regions, cities and rural areas to partake in new types of development. New development trends can however also threaten the future of these areas. Therefore planners have to find ways to try to forestall such possible negative effects.

The situation is also a challenging and demanding one for those who regulate, support and advise planning authorities for the same reasons. To include a new aspect into an old planning system is not an easy task. The causal impact of ICT cannot then simply be easily separated from the myriad of other factors, as the nature of this impact is highly diversified. Therefore a systematic approach is needed to incorporate the impact of ICT as a new element into the urban and regional planning and into the respective plans in these areas. It requires purposeful actions by those who are responsible for practical planning and by those who regulate and support such planning.

The following actions should be taken by those who prepare such plans:

- A study of the spatial impact of ICT should be included in the planning process,
- The development of ICT-infrastructure should be included as an essential part of the planning and the content of such plans,
- The current planning principles should be updated and opportunities for gaining new insights into planning should be seen as a challenge for the planners.

To the support organisations themselves it is recommend that at least the following actions be taken:

- The programmes of planning education and training should be updated,
- Research on the spatial consequences of the development of the information society and the impact of ICT on this development should be intensified, and new spatial and urban theories and planning methods and models developed,
- The content of planning legislation and guidelines should be updated.

These aspects are discussed in more detail below.

3.1 Actions to be taken in practical planning

The first thing that the authorities responsible for practical urban and regional planning should do is to make a clear decision with regard to the incorporation of ICT as a new element of planning, with plans being recognised to take account of this. They should decide at the same time what the main actions to be implemented should

be in order to promote the achievement of the adopted principle. These actions should at least include those mentioned above and discussed in more detail below.

This type of decision is needed if the ICT issue has not previously been addressed. For instance only 19 % of the 291 Finnish planners consulted here said that ‘the possible impact of ICT’ had been an item of discussion for political decision makers in their deliberations on the planning policy of their own area. Moreover, other findings (e.g. Lake, 2003) support the expectation that planners have not yet taken much notice of the impact of ICT on practical planning.

- Studies on possible impact of ICT on the planning area

A special study should be carried out in every planning process in order to attain information on what could happen in the planning area and why. Such a study is also important because profound uncertainty remains over the understanding of the impact of ICT among planners. This is understandable however as many researchers (e.g. Moss, 2000; Dabinett, 2002) have argued that it is difficult to understand the impact of ICT on spatial development and that more often than not this impact is more complex than simplified examples allow.

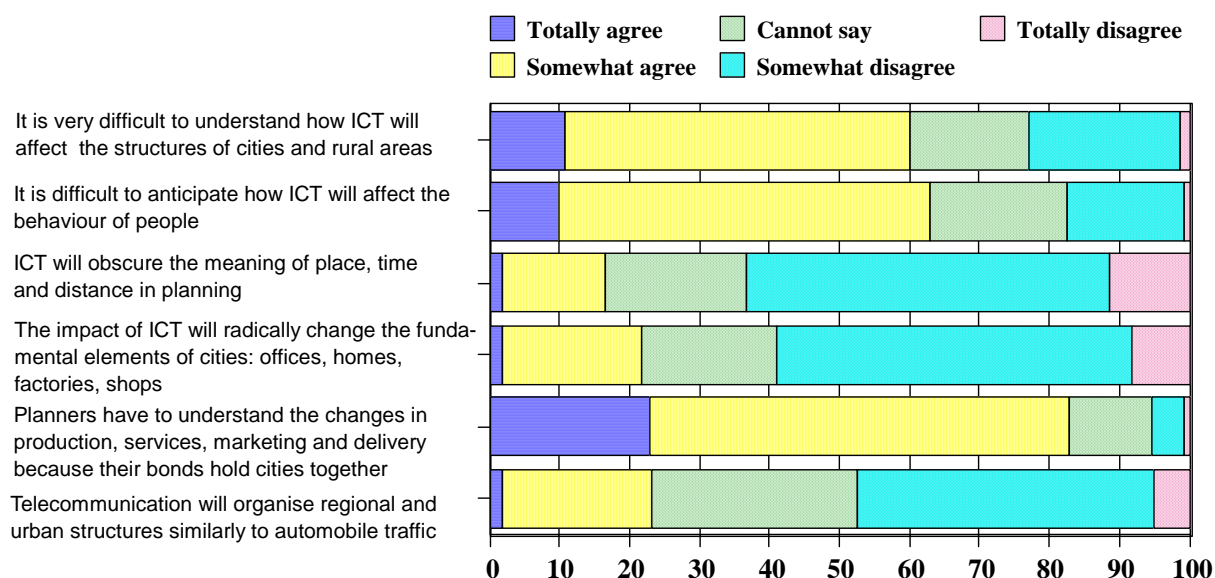


Figure 4. The opinions of Finnish planners on the statements of the understanding of the general impact of ICT on planning. (n= 305-306). The results are statistically significantly skewed in all cases except in the last statement. Source: Talvitie, 2003a and 2003b.

The opinions of Finnish planners on these questions, shown in Figure 4, indicate a certain level of uncertainty as well as some firm opinions with regard to the general impact of ICT. Over 60 % of the opinions on the first two statements totally or somewhat agree with the suggestion that there are difficulties in understanding the effects of ICT both on the structures of cities and on rural areas, as well as on the way in which people apply this new technology. On the other hand, the majority of planners reject the suggestions that ICT obscures the meaning of place, time and distance in planning, and that ICT radically changes the fundamental elements of cities, as, for example, Mitchell (1999) has suggested. In these statements there were no statistically significant differences between the different categories of planners.

Finnish planners do however agree with Mitchell's (1999) suggestion that there is a need to understand the changes in the operations of some of the basic elements of urban activity because their bonds hold cities together. Planners do not however generally accept the proposal that advanced telecommunications would have similar effects on regional and urban structures as increases in automobile traffic. Only 2 % totally agree, and 21 % somewhat agree with this statement, while 15 % totally, and 30 % somewhat disagree with the statement. One third, (i.e. 90 respondents), consider this statement difficult to answer. Opinions are thus rather divided, and there were no statistically significant differences between the different categories of planners.

Opinion on these statements is somewhat split. Despite difficulties in understanding the impact of ICT on spatial development in general, planners do reject some proposed, fundamental consequences. This implies that the majority of planners are anticipating small and incremental rather than large or radical changes.

The content of the proposed study should be tailored according to the circumstances of the planning area by keeping in mind the fact that the competitiveness of each area is facing new challenges. The leading general questions awaiting answers could simply be: what are the opportunities and threats our community or region faces in the emergence of the information society, caused by the applications of ICT? The main factors potentially affecting the future of an area were discussed previously. Such findings could however form a useful background to the detailed programme of a study.

- ICT- infrastructure to be included in planning and plans

For the future of all regions and communities including rural areas the most crucial element is the kind of telecommunications infrastructure and service standard the area has. Most activities are now dependent on these two factors. The development of traditional traffic networks has normally been a public responsibility. The telecommunications infrastructure and ICT services are in most cases however built and operated by private companies. This dilemma has been widely discussed.

As with traditional traffic networks, the service level displayed by the telecommunications infrastructure is at its best in the big cities, with small communities and sparsely populated areas not generally being well served. In every case it is important to note that planners clarify the situation in their planning areas and identify problem areas. Nowadays it is not enough to be able to use a mobile phone nearly everywhere, or to have low speed access to the Internet. Many services require a broadband connection to function smoothly. This is a critical point in many sparsely populated areas. The development of wireless communications systems may provide new possibilities, but their availability and cost will not be equal in all areas.

The fact that the responsibility for building the ICT- infrastructure belongs to private companies is often seen as an obstacle to regional and local authorities having real influence on the construction of the ICT- infrastructure. This is more likely the case where the authorities only deal with the building permissions that such companies require for the different elements of their infrastructure. In some cases authorities only discuss the location of base stations on the basis of the environmental (visual) aspects. These types of reactions are very limited and do not allow for long-term solutions.

There are also numerous examples of local and regional authorities having been involved in the development of the ICT- infrastructure (e.g. Moss, 1998). In general terms this should always be the case. As such, local and regional authorities should jointly decide on the minimum service standard of ICT that they want in their areas, and then work towards achieving these goals. The situation with regard to technical possibilities changes all the time thus the goal should be, at minimum, to safeguard the basic technical standard for the use of the generally offered services of ICT.

Local and regional authorities should negotiate with the operators with regard to the implementation of desired objectives and also be willing to pay some of the costs. The authorities also have at their disposal many other tools such as planning rights and construction permissions. In addition, in many countries such as Finland (<http://www.e.finland.fi/>), the government promotes the development of a minimum ICT infrastructure level and service standard, to all areas. The EU also has special programmes for the same purpose as a part of its wider cohesion policy. These policies are essentially based on the argument that minimum service standards for ICT are a fundamental prerequisite of all development.

The ICT- infrastructure should be seen in regional and urban planning, and in the content of plans as an element equally important to that of highways, streets, railways, airports and harbours. Thus if planners are not aware of how the ICT-infrastructure and service standard may affect the development of their planning area they can easily miss out on the opportunity to better guide such development.

- New planning principles and opportunities

The maintenance of the competitiveness of regions, cities and communities generally is probably the most important common goal for all areas. The challenges posed by ongoing changes in the economic base, by the restructuring of industry and services and by the development of new life styles requires the ability to compete globally and the ability to attract those who would work in such industries. Notwithstanding this however those communities with lower aspirations, perhaps viewing themselves as having the ability to compete at the national, regional or local levels, also face changes in their potential circumstances which need to be addressed. Many authors (e.g. Mitchell, 1998 and 1999; Kotkin, 2000; Moss, 1998 and 2000; Graham and Marvin, 2000 and 2001; Kotkin and DeVol, 2001; Dabinett, 2002; Pelton, 2004) have offered planners good advice on how to proceed in this regard.

The elements involved in the spatial development of the information age are diversified and thus do not always point in the same direction. The common challenge planners are facing then is, how to find, and define, the success factors for their own planning area. They are not similar to all places and regions because each area is effectively its own 'special case'. In some cases major problems are related to growth management, while others face economic decline and the outflow and/or decline of population. The results of the analysis undertaken in the previous chapter provide a useful starting point in considering how all of these development trends could be taken into account in the planning process. Moreover, it should also be kept in mind that the impact of ICT may be indirect. ICT gives us the opportunity to achieve goals that simply may not have been possible before. It should therefore be easy to accept that there is a need to rethink and renew 'traditional' planning principles.

Planners currently have a greater possibility than ever before of calling on new insights to help them overcome the potential problems they face. This applies to all cases, not depending on the size, location, economic structure or any other feature of their planning area. Planners should also note, as Barker (2001) has argued, that the same innovation and technology can be applied to different places in different ways depending on the goals of the target area.

Current events also provide us with new reasons to rethink old practices, with the case of '9/11' being a good example here. Not only terrorists, but also fires, floods and other natural disasters, digging machines and human error, all can potentially cause significant damage. These are questions, with the exception of terrorism, that are rarely discussed publicly, though they are concerns which fundamentally affect the provision of practical planning solutions, with for example all organisations now having to study the vulnerability of their ICT-infrastructure. Pelton (2004) argues that there is a need to reverse the trend towards mega cities by developing 'telecities' which would not be so vulnerable as are the large metropolitan areas to different types of disasters.

There is no unambiguous advice to be followed in planning. The possibilities are many, and choices depend upon the objectives of each city, municipality and region. The application of ICT can however help in the improvement of the functioning of existing communities as well as in the creation of new types of communities.

The easiest way to proceed is to expect that the possibilities inherent in ICT will be taken into use by the old structures and, if needed, planning regulations will be adjusted to make this possible. This approach will not however be enough. Planners should also consider how best to meet new location demands. Old structures for instance may not be suitable for new types of development. It is however possible to attempt to forestall those aims which do not fit into the planning and construction principles. This possibility makes more room for competition between regions, cities and municipalities. The required conditions will be offered somewhere. Generally people and organisations will work for their own goals and try to implement them. So it is wise to also address such threats in a positive way.

The development of innovative *milieus* for the industries of the new economy has been emphasised as a major success factor safeguarding the future of cities and regions. Although there is no doubt that this is an important point it should however be noted that the use of ICT applications by ordinary people and companies in the 'old economy' will also have a significant impact on spatial development. The automobile plants have generally been very important to the economy and life of the cities and regions where they were located, though an even greater impact on the whole is made by the use of these products (i.e. automobiles) and this impact is spread throughout society.

The opinions of Finnish planners on a number of future possibilities with regard to planning are shown in Figure 5.

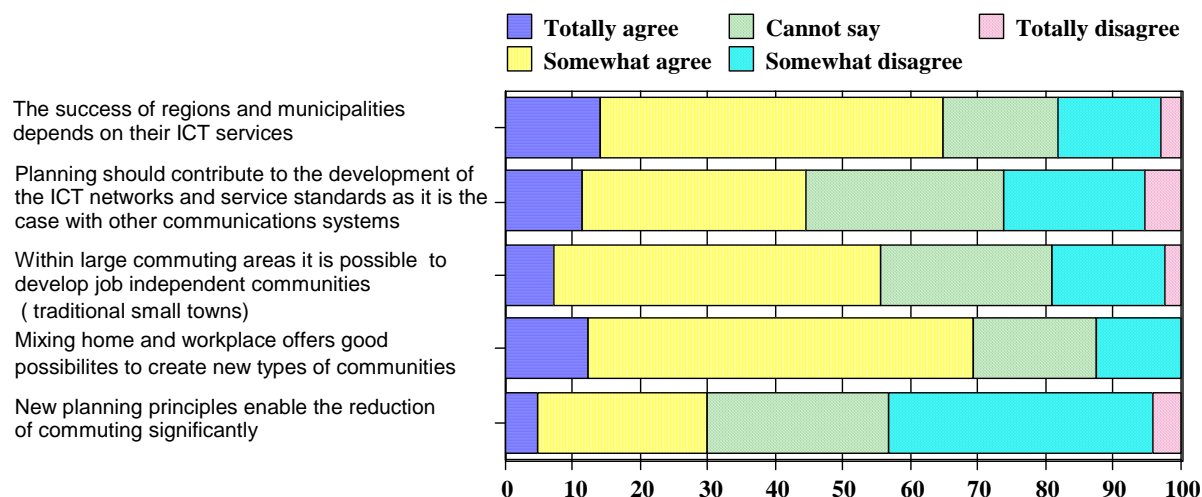


Figure 5. The opinions of Finnish planners with regard to the emergence of some new planning principles. (n= 300-305). The results are statistically significantly skewed in the first, 3rd and 4th statements. Source: Talvitie, 2003a and 2003b.

It is interesting to note that the majority of planners agree with the statement that the success of different areas depends upon their access to ICT services, though not as many agree with the idea that planning should contribute to this development. In the same study 73 % of planners consulted agreed with the statement that local authorities and regions should support activity designed to introduce ICT services to areas where they would not be economically profitable. Planners probably considered that their ability to influence this situation through the various tools of planning were limited, though they understood that the authorities have access to means other than planning to work towards this goal.

Opinions are however divided here as a major section of the replies reject the idea that the new planning principles make it essentially possible to reduce commuting. Another statement, also well represented in the study, that ICT makes it possible to locate activities in such a fashion that commuting will diminish, was however accepted by the majority. ‘What would be possible in theory may not work in practice’, could then be one possible interpretation of these results, while the other could be that ‘a significant number of planners see it as being rather difficult to change old planning principles.’ The reasons for this divergence of views may vary.

It is unlikely that new planning possibilities will be applied by local authorities who expect to encounter the negative consequences of these changes. The aim of reducing commuting may for instance mean that work places located in city centres will be relocated closer to the housing areas in suburbs. This policy could entail significant changes for the current city structure. However, changes will be inevitable if the companies move to lower cost facilities in the suburbs where commuting distances for employees will be shorter. This type of development is in principle similar to what happened in rural areas when they began to lose their economic basis. New planning principles and development possibilities may thus cause problems and conflicts between cities, municipalities and regions, all of which compete over the need to

attract enterprises and inhabitants. Such competition will however have a number of new forms.

How Finnish planners experience some of the statements related to the development of spatial planning practices is shown in Figure 6.

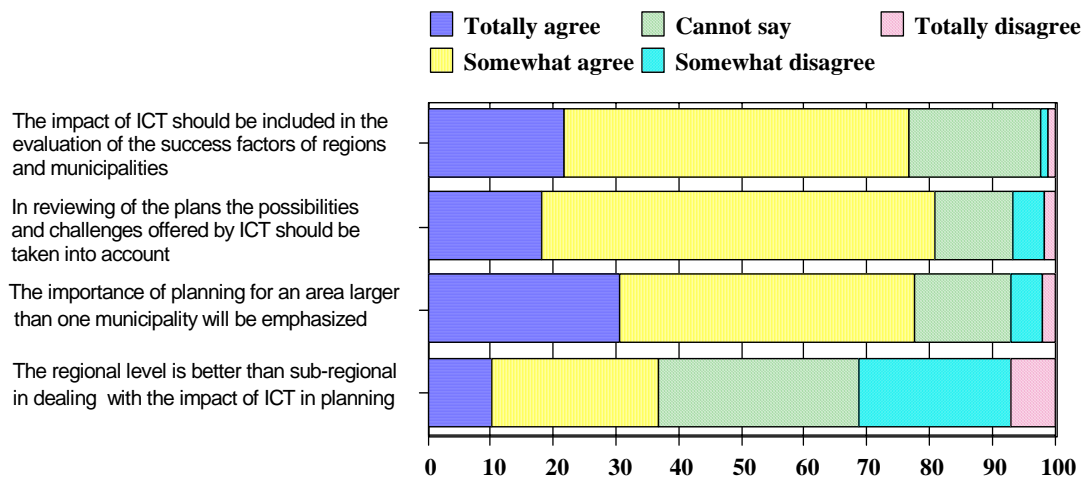


Figure 6. The opinions of Finnish planners on questions relating to the development of planning practices. (n= 302-305). The results are statistically significantly skewed in all cases except in the last statement. Source: Talvitie, 2003a and 2003b.

A large majority of planners agree that the success factors of regions and municipalities should also be evaluated from the point of view of ICT. Over 80 % consider that the possibilities and challenges presented by ICT should be taken into account when reviewing the plans. In these opinions there were no statistically significant differences among planners with different educational backgrounds, though in the first statement there were some discernable differences between planners of different planning tasks. The share of 'totally agree' opinions was 42 % among regional planners, 24 % among master planners and planners doing both master and detailed land-use plans, and 13 % among detailed land-use planners.

An interesting result of this was that a great majority of Finnish planners accept the statement that the need for, and role of spatial planning, which covers an area larger than one municipality, will grow. Opinion is however split on the question of whether this area should be a region or only a sub-region. This data, in conjunction with the previously recorded opinions of Finnish planners can be interpreted such that the spatial impact of ICT would be better seen from a wider viewpoint than one municipality can give. Moreover, the roles of general and detailed planning are seen differently. They emphasise the tasks of master and regional planning in dealing with the opportunities and threats caused by ICT. This result is in line with those presented earlier in point 2.2. The development of new types of communities or the relocation of some activities may not always be possible within the limits of one municipality, but new planning principles should be studied in the context of larger areas.

3.2 Recommendations to the support organisations

The opinions of Finnish planners on their ‘wish-list’ for support organisations are presented in Figure 7.

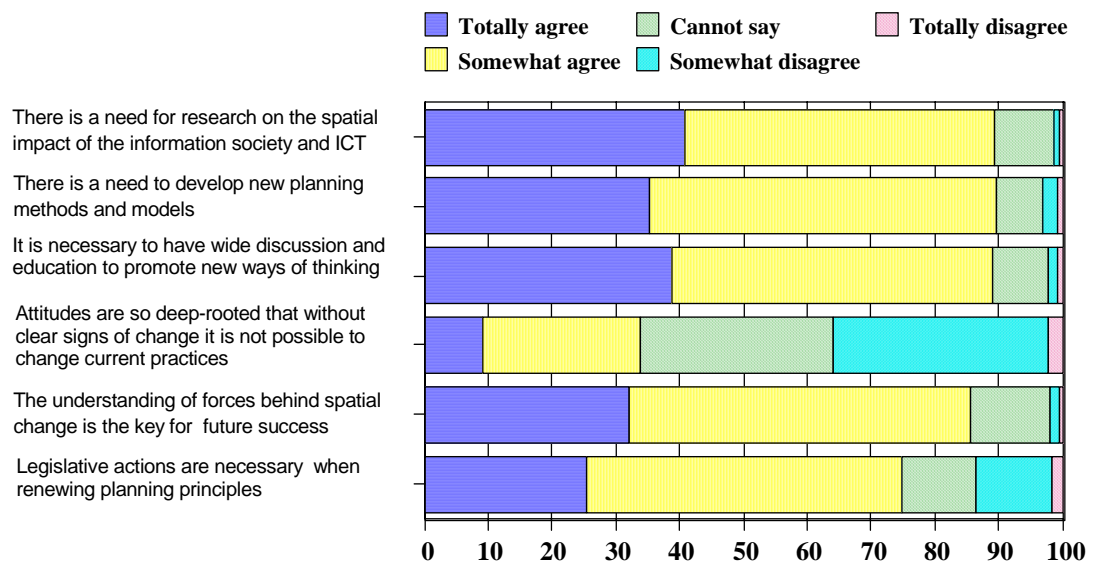


Figure 7. The opinions of Finnish planners on some statements about the need for support in the development of planning practices. (n= 303-310). The results are statistically significantly skewed in all other cases except in the 4th statement. Source: Talvitie, 2003a and 2003b.

Planners are almost unanimous about the need for research on the spatial impact of the information society and ICT, about the need for new planning methods and models, and about the need for a wider discussion and better education to promote a new way of thinking. An interesting result here being that opinions are split on the idea that attitudes are so deep-rooted that without clear signs of change it is not possible to change current practices. The majority expect that the understanding of current spatial change is the key to success, as well as that legislative action is required in the renewing of planning principles. In this last statement there was one statistically significant difference. The percentage share of the opinions of ‘totally’ and ‘somewhat agree’ was 58 % among planners from the larger cities in the capital region rising to 85 % among planners of other large cities. This result may indicate that large cities in the capital region have better planning resources than is the case in other large cities, and therefore the need for legislative action to renew planning principles is not as important there as it is elsewhere. Moreover, the circumstances in the capital region differ significantly from those elsewhere in the country. Therefore blanket legislation would probably not meet the special requirements of the Helsinki region. The opinions relating to these statements have an impact on the discussions below.

- Challenges to the universities and training institutes

Education has the key position in promoting the adoption of new practices in planning. Universities who provide education for planners should therefore assess the need to update their programmes so that they meet the requirements raised by the development of the information society and the application of ICT. The same also

applies to all institutions that provide complementary and continuing education to planners.

It is also important to note that the impact of ICT on spatial change cannot be dealt with in isolation but must instead be viewed as a part of the development of the information society and the forces behind it. Planners should be aware of the changes in industrial life, as well as of the development of the new economy, and all of the important consequences that these developments have with regard to spatial change. Only such an understanding will provide a sound basis for the development of the much-needed new planning practices.

Institutions that provide further education for planners now face a significant challenge in providing inspiring courses, though they should see this rather as an opportunity to improve their product. Regional and local authorities should ensure that their planners also participate in this type of education. Consultants who offer planning services could find themselves with a powerful marketing asset if their experts had a good understanding of these new trends in society and an ability to apply this knowledge to practical planning.

- Interesting tasks for the research institutions

Providing information and knowledge

There is an immense need in all countries for quality information and knowledge about the spatial consequences of the development of the information society and the impact of ICT on this development. Local and regional authorities need both a good theoretical foundation for their own studies as well as a general overview of the spatial development trends in general and in their own country in particular.

Country specific studies are important because the social conditions, industrial structures, economic life, spatial development trends etc. vary so much from country to country despite many common features. This type of research would also contribute to the development of national education and training programmes.

One special and ongoing task should be the 'follow up' of spatial development to discover the new applications of ICT that could have an impact on the functioning and formation of urban and regional systems. These studies are important because of the uncertainty we still have about these issues, and because of the rapid development of ICT. These types of studies are difficult to carry out by single cities/municipalities or regions. Moreover, there is a need to have neutral opinions here because some development trends may be in conflict with the planning policies of some authorities.

The creation of spatial and urban theories

The other important task the research institutions and universities have here is the creation of new spatial and urban theories, as the old theories no longer give us a suitable foundation for understanding new development trends.

During the 1960s and 1970s the theories of the hierarchical arrangement of centres and areas (e.g. Christaller, 1933; Isard, 1956; Lösch, 1940) were applied e.g. in Finnish regional planning practices. Hall (1995) argues, that we now need a different taxonomy than the one represented in such theories. He argues that while their basic principles remain relevant the fact that we now we live in a global environment essentially 'alters the goalposts'.

Castells (1996/2002) produced the now famous spatial theory dealing with ‘the social theory of space and the theory of the space of flows.’ The outcome of the application of this theory to events in the information age is the network society, as Castells calls it. Castells expects that future developments will focus on global metropolises and large urban areas.

Engaging in ‘global scale thinking’ is good exercise also for urban and regional planners, though they really need to adopt a more ‘grass roots’ oriented approach. Now they can observe that hierarchical structures are weakening and are often replaced with more diversified ICT-enabled networks. Castells’s theory can give them a foundation for the rethinking of the principles underlying the formation of national and regional structures by also applying some principles from the old theories.

The network society would consist of network countries, network regions and network cities/municipalities with all possible inter-linked combinations. In every region and city it could be possible to apply the determinants of Castells’s theory to the local conditions and scale and to try to understand and clarify the impact of different networks on the development of physical structures and their functioning. However, this exercise does not eliminate the need for well argued new spatial theory or theories for regional and urban planning. The creation of these theories is now a demanding challenge for universities and research institutions.

Urban development will, according to our earlier discussion, consist of very different development prospects. As such, there is a now intense need for new urban theories as well. Mitchell (1999) argues, that a result of the emergence of the digital revolution is that ‘familiar urban patterns have lost their inevitability’, and suggests five points, oversimplified as he says, to be taken as design principles for new urban patterns: dematerialization, demobilisation, mass customisation, intelligent operation and soft transformation. The ideas behind this thinking form a good basis for the development of a new urban theory or theories. Suggestions made by Mitchell are not in conflict with those of Castells but rather they compliment each other.

When speaking of the development of new urban theories it is important also to remember the human dimension in this context. Kotkin and DeVol (2001) argue, that communities can only survive if they are more than ‘soulless zip codes of brick and glass, inter-connected by fibre-optic cables’. They stress the need to foster the connectivity of human bonds by creating functioning connections between inhabitants, businesses and all organisations. The research institutions and universities thus will then also have to take responsibility for the development of these urban theories.

The development of planning methods and models

Hall (1975/2002) provides a good overview of the development of urban and regional planning principles and practices over the last 200 years. In the literature there are many principal ideas and proposals for the renewal of urban and regional planning practices in the information age. Some of which were discussed in the previous chapters.

New spatial and urban theories would form a reliable foundation to the development of new planning methods and models. With life becoming ever more complex, universal solutions will not work. Therefore there is a need for the creation of new

planning methods and models for different types of planning tasks. Such an approach would offer a new way of dealing with the growth of large urban areas, the development of new types of communities, and the decline of some regions, cities or rural areas, just to mention a few examples.

It is possible to include the impact of ICT as a feature in at least some of the current planning methods. It would however be more beneficial for new urban planning models to describe the functioning and spatial formation of 'new urbanism'. As a whole, universities and research institutions should also address these needs for new methods and models of spatial planning in the information age. International co-operation would be valuable. For instance 'The Espon 2006 Programme', prepared in 2002 by the European Spatial Planning Observation Network, could offer one possibility under the chapter 'Identification of spatially relevant aspects of the Information society' (<http://www.espon.lu>).

- The need to update planning legislation and guidelines

As shown in Figure 7, the great majority of Finnish planners are of the opinion that legislative action is needed in renewing planning principles. However the relatively new Finnish planning legislation, adopted in 1999, does not include any specific provisions to consider the possible impact of the development of the information society and the impact of ICT. The same also applies to Finland's National Land Use Guidelines, which were adopted in 2000. The planning guidelines of central government deal only very briefly with these issues.

There are examples of governments taking into account the impact of information society and the possibilities of ICT in spatial planning in their national development plans (e.g. Ministry of Land, Infrastructure and Transport, Japan, 1998; Estonian Ministry of Environment, 2001). The spatial impact of ICT is also recognised in the ESDP, the European Spatial Development Perspective, agreed by the European Ministers responsible for Spatial Planning (European Commission, 1999). Despite differences in planning legislation and possible guidelines it would be important to consider in every country whether there is a need to update essential legal documents and governmental guidelines influencing spatial planning to include provisions for the impact of information society and ICT. These actions could help the incorporation of new planning principles into practice.

4. Conclusions

The findings and arguments represented and referred to above justify the conclusion that ICT, as the main driving force of the development of the information / knowledge / network society, should be more specifically taken into account in urban and regional planning. From the planning point of view the situation is also promising, as there is significant untapped potential in the utilisation of ICT-applications in spatial development.

The changing economic base increasingly highlights current spatial development trends – where 'knowledge' and skilled people are becoming the most important factors in production - and the new functional and organisational possibilities of such activities. As a consequence of this the traditional ways of running businesses in industry, services and other organisations, as well as activities in every day life will change. Moreover, the prerequisites for the locations of different activities will have

new determinants. These developments form the basic driving forces on spatial change in the information age.

The expected spatial changes are diversified. The growth of large urban areas is seen as a consequence of the development of global metropolises. Development within these areas will disperse. There are also emerging possibilities for new types of communities. The opinions gathered here on the future of small towns and rural areas however vary. Small- scale developments may yet continue to be possible. New life styles and the special features of places will however play an increasingly important role in decisions on the locations of some types of activity.

If planners want to influence new spatial development they should then incorporate the impact of the development of the information society and ICT into regional and urban planning. Indicators however suggest that this has not been common practice thus far.

Competition, cheaper solutions, activities with improved functionality, possibilities to implement solutions which would previously not have been possible, are some of the arguments which may affect the relocation of current activities or decisions on new locations. Therefore those who are responsible for urban and regional planning should actively work for the application of the impact of the development of the information society and ICT on planning practices. In these processes new types of conflicts between cities, municipalities and regions will however appear.

There is then a significant need for further research on the spatial impact of the application of ICT in general, and in specific planning areas in particular, as well as for the development of new planning theories, methods and models. In addition, the programmes of planning education and further training should be updated, as should the legal provisions for planning. The first thing to do here is to ensure that all planning authorities take the decision to incorporate ICT as a new element into planning and plans, and decide upon the actions which should be undertaken to promote the achievement of the adopted principle. The winners will be those who best understand the emerging new spatial order.

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Appendix

Finnish Urban and Regional Planners

In Finland there is no general education for planners. As such, urban and regional planning is carried out by people with various educational backgrounds. There are about 800 planner/ practitioners, the majority of whom are architects. Most have graduated from universities, having the degree of Master of Science in Architecture. The second largest group consists of surveyors. They have graduated from the Department of Surveying, at the Helsinki University of Technology and have the degree of Master of Science in Technology. The rest have different educational backgrounds. There are civil engineers, social scientists, such as geographers, and also those whose education is lower than a master's degree. Cities/municipalities and regional councils have their own planning staffs. Only municipalities whose population is under 6000 can avoid the legal obligation to have a professional planner on their service role. A number of consultants also provide planning services. Such people are used by nearly all the municipalities and regional councils.

The questionnaire and the analysis of the results

The questionnaire contained 129 statements on the impact of ICT on spatial development and the development of planning practices. The statements were prepared based on the opinions and arguments represented in the literature and on my own ideas. The target group was all Finnish urban and regional planners. The reason for this was simply the fact that planners are on the frontline of those who have to deal with the new trends in spatial development. The quality of respondents were identified by asking their education, age, sex, planning task and area, the use of ICT tools in work etc.

In the questionnaire the respondents had access to five alternatives in reply: totally agree, somewhat agree, cannot say, somewhat disagree and totally disagree. At the end of the questionnaire it was possible to present specific comments.

310 planners replied to the questionnaire. The result was that about 40 000 opinions on 129 statements and 80 verbal comments were gathered. All of the respondents did not reply to all of the statements, the number of replies varied from 300 to 310.

The results were analysed by using the SPSS 10.0 for Windows. The percentage division of the opinions were initially calculated for each statement in order to see how well the respondents agreed or disagreed with the statements. In particular we looked to see whether the distribution was statistically significantly skewed. (In this case the absolute value of the quotient: Skew-ness divided by the Standard Error of Skew-ness should be \geq or $>$ 2,58). (Tabachnick and Fidell, 2001). In cases that fulfilled the criteria one can expect a 99 % probability that the respondents would have the same opinion if the statement would be presented in another fashion. When ICT and its applications develop very fast one has to be careful in interpreting this statistical principle.

The differences of the opinions of different types of planners were studied by using the Pearson Chi-Square test. (The differences were statistically significant if p was =

or $< 0,05$). (e.g. Heikkilä, 1998). In such cases, the probability of attaining by chance the same result is 5 % or less. For this test 14 different groups of planners were formed based on their education, age, sex, planning task and area.

The distribution of the opinions on some statements was represented in the figures with the results being further elaborated in the text. The differences in the opinions of different types of planners were small, and in only a few cases were the differences statistically significant. Such differences mostly related to the share of 'totally agree' and 'somewhat agree' or 'totally disagree' and 'somewhat disagree' opinions, and not to the opposing opinions.

Some statistics on the planners who replied to the questionnaire

310 planners participated in the study, 39 % of the total of 794. 50 % were architects, 20 % surveyors and the rest, some 30 %, were evenly divided between planners of various other educational backgrounds. This relative division complies well with the expected reality.

The division according to planning tasks was as follows: detailed land-use planners 34 %, master planners 11 %, doing both of these plans 31 %, and regional planners 14 %. 10 % did not specify their job title. Architects represented the largest group in all planning tasks followed by surveyors.

The spatial division of planners was as follows. 30 % were planners in municipalities whose population was larger than 75 000, 15 % were in municipalities belonging to the sub-regions of those big municipalities, 26 % were in all other municipalities, and 15 % worked for regional councils. 12 % worked for more than one of these types of areas.

64 % of the respondents were at the service of municipalities, 14 % worked for regional councils and a further 14% worked for consultants. 8 % did not give information on their employer.

The majority of planners were males, 71 %. The age structure was representative of the urban and regional planner population at large. The share of 50- year-olds and over was 52 %, 41-50- year-olds 31 %, 30-40- year-olds 14 % and under 30- year-olds only 3 %.

Urban and regional planning legislation

Finland has strict legislation on urban and regional planning and construction. Detailed land use plans (zoning) are compulsory and should be adopted by the municipal council. Municipalities normally also prepare master plans, which are policy oriented and give guidelines for detailed planning. Building permission is required and will be given by the municipalities.

Regional councils are responsible for regional development and regional land use planning, both of which are compulsory. Regional development plans are policy oriented and regional land-use plans are more specific, dealing with issues of regional relevance. These plans guide municipal planning and also the activities of some state authorities. These plans are adopted by the assemblies of regional councils. Regional land-use plans are approved by the Ministry of Environment.

Regional councils also prepare special regional development plans, which are interconnected with the planning required by the European Union as part of the implementation of the regional policy actions of the EU. Most of these plans are prepared in co-operation with some other regional councils and some state regional authorities.

More information about the planning and building legislation can be found at: <http://www.ymparisto.fi/eng/landuse/>

More information about the regional development activities related to the European union programmes can be found at: <http://www.intermin.fi/en>

Municipal and regional administration

Finland is divided into 444 municipalities (as of 1st January 2004). About 100 of them are called cities. The Municipal Act regulates the activities of all municipalities. Municipalities play a central role in providing public services to citizens. They have their own income tax to cover most of their expenses. State grants are the second important source of income.

Municipalities are also responsible for the land-use planning, the implementation of infrastructure and for controlling construction activities. Finland has no universal regional level administration, but has several sector-oriented actors. Regional councils, 19 altogether form inter-municipal joint authorities, with a legal status, and are the responsible authorities for regional development planning and for regional land use planning. The Åland Island has a special status in the Finnish administrative system, also having its own planning systems.

More information about municipalities at: <http://kunnat.net>

More information about regional councils at: <http://reg.fi/>

More information about Finland at: <http://virtual.finland.fi/>

The development of the information society in Finland

The opinions of Finnish planners on the impact of ICT and spatial development and planning might be interesting because Finland is already considered to be a highly 'connected' country with a high rate of e-literacy. 92 % of the planners who replied to the questionnaire said that they use the Internet to obtain information. 85 % intimated that the homepage of their employer contains information about actual planning. 76 % said that citizens can register their opinions on planning proposals via the Internet. Information on the development of the information society in Finland can be found at: <http://www.e.finland.fi/>

About the author

Juha TALVITIE, born in 1935, in Lapua, Finland, received his M.Sc.(Tech.) in 1960, Lic.Sc.(Tech.) in 1969 and D.Sc.(Tech.) in 2003, all at the Department of Surveying, Helsinki University of Technology.

During the 1960s he worked as a planning engineer in a state rural development organisation and as the managing director of two regional planning organisations, in Lapland and in Southern Ostro-Bothnia. In 1967-1993 he served as the managing director of the Association of Finnish Regional Councils. After the amalgamation of the national associations of Finnish local and regional authorities he served as the director of Structural Policy and EU-Affairs within the new Association of Finnish Local and Regional Authorities between 1993-1998.

He retired in 1998 and established Talvitie Consulting as a free-lance activity and hobby. He is the author and editor of many studies, books and articles relating to regional development and planning.