EVALUATION OF SPATIAL CATEGORIES AND REGIONAL INEQUALITIES IN THE INFORMATION AGE

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Abstract. By the appearance of the new innovations of information and communication technologies a transformation process has got started, which have changed our opinion on spatiality. Geographical features and inequality processes as well as the role of information flow and ICT infrastructure were altered modern spatial differences. This paper evaluates the spatial characteristics of the information economy and society, and emphasises new elements by the application of the terms of spatial sciences (e.g. space, place, distance etc.). It is also important to describe traditional and new features within the role that information economy and society or ICTs play in regional differences.
Key words: information and communication technologies, geography of information society, information networks, death of geography, geography matters

DIFFERENT INTERPRETATIONS OF SPATIALITY IN THE INFORMATION AGE

The extremist wordings of "the end of geography" and "death of distance", as well as formulas of "geography matters", together with the same content appearing expression of "the revenge of distance" and "geography returns" are calling attention on recent geography's interesting diversity in the research of the information economy and society. These seemingly funny, on the other hand gruesomely straight phrases are undoubtedly extreme, trying with this to emphasise the empirical considerations, those of mentioning remarkable novelties in the information age. Behind these terminologies actually the alteration of the aspect of traditional geography is hidden, as well as the concealed notice or simply the recognition that one should be cautious concerning recent usage of geographical terms.

The simple definition of distance used in everyday sense or other accentuated notions of geography such as space, place or mobility have gone through significant changes with reference to their interpretation, irrespectively of which above-mentioned phrase has been chosen. According to extremist opinions it is not about just the revaluation and content changes of terms, but also about their fundamental novelty, or else about the emergence of new forms of interpretations radically different from the foregoing. On the contrary modulated and more rational aspects prefer to see the new interpretations as complements and enrichments of the foregoing, while in certain systems of connections they support henceforward the existence of traditional approaches.

The big "battle" is to be discovered between the two most comprehensive reactions, the aspects advertising the end of geography and those emphasising reconsidered (or rediscovered) importance of geography. One of them has the starting point that in the aura of the possibilities ensured by new information and communication technologies the everyday troubles originated from spatiality disappear, namely the ardently wished dream, the overcoming on space may become reality. The other aspect on the contrary sees the reshaping of justification of geographical theories and notions in the age of information and communication networks. This opinion—in a sense—does not say anything in particular, only that social processes and spatial relations of differences are still decisive parts of our life.

The opposition of the two aspects seems hardly soluble at the first try. But are these approaches really conflict each other? Is any of the statements can be confuted or confirmed? Is it possible that representatives of both aspects are in right, consequently can these opposite statements coexist at the same time?

Before the 90s never ever came up a similar thought, which could have seen emerged the ignorance of geography or spatiality in the world, discounted the utopian, perhaps futuristic, but no way empiric concepts of science. Looking at traditions of the last decades, however, the theories of advertising geography's turning to weightlessness appeared partly independently from the examination problems of information society also in several different contexts. One should only think on certain findings of the global world's economic or political geography (Ohmae 1990; O'Brien 1992). Some from time to time appearing economic theories are sounding the discontinuance of the role of nation states on the one hand because of the emergence of multinational companies and on the other hand due to the increase of global market systems, consequently from that time the geographical location of countries on the planet is not an important question any more.

Later the altered possibilities of interactions generated by the information and communication technologies were obviously superposed on everyday life, making previous considerations of geography unimportant in the space of information economy. In connection with the seemingly immediate appearance of communication possibilities of ICT and particularly the internet and intranet technologies the radical compress of space-time relations were often supposed, which may result the complete

"destruction" of space through time (Atkinson 1998; Brunn and Leinbach 1991; Cairncross 1997; Morgan 2001). In certain compositions this new digital and globa-lised world is similar to a pinhead, or at least to its "sense" (Negroponte 1995). The fast diffusion of information and communication technologies offered obviously new and so far unobtainable opportunities to restructure enterprise activities for example in forms of shaping up new balances between centralised and decentralised functions or in connection with distant control of the production of goods and services. This could resulted that many service industries, which were in the past obviously location-spe-cific and relatively sheltered from effects of international competition became less independent from the location of consumption since it became possible to be directed from the other side of the Globe (Cairncross 1997). All these made it generally a rational thought in the economy to ignore geographical space in decision-making.

Similarly, the appearance of ICT instruments can be deemed important also regarding their social consequences. In the specific information space of intercon-nected worldwide networks, namely in cyberspace, the emergence of social spaces could have been observed, which completely liberate the users from physical bounds of human body. Virtual space is a social space, where people meet each other hence-forward personally, but besides new definitions of "meeting" and "personalisation" (Stone 1991). The collapse of space-time relations and the evolution of new "space-less and placeless" social spaces lead to the query of the importance of geographical places (Benedikt 1991) to such a pitch that some believe geography and time make up boundaries not any more (Hauben 1996).

The early work of William Mitchell titled "City of bits" expressively formulates the breaking of geographical traditions: Cyberspace is profoundly antispatial, you can not say where it is or describe its memorable shape and proportions or tell a stranger how to get there. But you can find things in it without knowing where they are. The Net is ambient—nowhere in particular but everywhere at once. You do not go to it, you log in from wherever you physically happen to be. The Net's despatialisa-tion of interaction destroys the geocode's key (Mitchell 1995).

Theories representing "death" of geography are basically arguing with wide inter-preted influences of globalisation, as well as with consequences of digitalisation, of them however neither seems to be considerable. According to Kevin Morgan (2001) the representatives of this opinion are largely overestimate "distance-dissolving" ef-fects of information and communication technologies, while the key problems with these claims are that they conflate spatial reach with social depth and they forget that the rapid diffusion of information and codified knowledge does not mean that tacit knowledge and understanding are also so freely available. He is of the opinion that the above-mentioned approaches treat geography as simple physical space, when it needs to be understood rather as relational space.

Researchers, who are standing against the radical transformation of spatial rela-tions or in opposition to geography's revaluation and decreasing importance, are rep-resenting the other end of the discussion arguing with the importance of geography. In

their opinion the theory of "geography matters" actually just rediscovered basic terms of geography. They respectively realised that previous geographical principles are also standing their ground in a brand new environment; the rules are exactly the same, only the comprehension needs some mental twists. As if we reordered the elements of the contents of our recent geographical terms, while having the substantive meaning unchanged.

Although there isn't any "terra incognita" on recent map of the World some still designate nowadays the second age of geographical discoveries (e.g. Johansson 2000). Development theories of innovation and technology recognise and rediscover the importance of geography in ever wider circles. In contrast with radical stand-points it is getting more accepted that although the Internet and the virtual space have essential corrective effects on time-space relations, geographical aspects have important role henceforward in many ways.

It is important that possibilities of information communication network connec-tions and infrastructural grounds of bandwidth, which determine the speed of commu-nication connections, are still unequally distributed in space. This new form of com-munication is dependent on real world's spatial bounds, on geographical position of access points, materiality of cables, as well as on other infrastructural etc. influences outside the world of wires. One shall not forget that global infrastructural advantages and disadvantages will exist in some way also in the future, since international diffe-rences are keeping up in the digital age also besides new e-services (Huws 2002). Also when information takes online form it becomes (seemingly) geographically delo-calised and turns out to be useful only in the locality, where it is interpretable and ex-pendable, which also certifies the importance of geographical position and location.

The statement that virtual space can ever be a real copy or particularly substitute of geographical space is at best doubtful (Morgan 2001). Beside many reasons a fun-damental one is that it's hard to imagine in virtual space the similarly rich diversity of physical distance, where nuances of body talk and different forms of personal (face-to-face) communication mediate at least as many if not more information than verbal communication.

The material character of the Internet and other elements of the technical infra-structure were always of great importance for those who argued for the significance of geography. According to Brian Hayes (1997) the Internet can not exist independ-ently of conventional geography. No bit can proceed via the Net without passing through kilometres of wires and optical fibres or tons of computer hardware, which are all in physical space indeed. All the cables and routers have well defined and with coordinates described places on the surface of the Earth, even when users of the Internet do not take into consideration where their information package is actu-ally travelling. In this sense geography can be discovered in the background of all telecommunication interactions.

In the discussion of the ignorance or importance of geography not only the oppo-sition of virtuality and materiality is to be seen. Representatives of the free choosing

of geographical location have the additional argument that communication technologies already make it possible to let the population and the economic activity not to twit with geographical places thanks to that telecommunication is able to tie up to the network also the peripheral places far from centres. These opinions treat Internet as a great equalising power of business world since it makes distant places possible to compete even with metropolitan areas (Gorman 2002). The Internet and the intranet, or as Robert M. Kitchin (1998) says the "cyberspace technologies" are on the contrary or simultaneously may cause sharpening of differences or intensifying of competition between geographical places by making it possible in the organisation of production to access places with lower wages or better labour force. By and large Krugman's new economic geography has the same conclusion about the role of information and communication technologies in settlement strategies of companies (Krugman 1999). In many cases information technologies foster centralisation tendencies by being connected to telecommunication infrastructure and social milieu of large cities. Similarly services that can be decentralised, are settling rather in regions with suitable labour market and transport conditions (Castells 1996).

To be able to compare statements of different interpretations about the importance of geography in information age the following table can be created (Table 1).

Table 1. Comparison of different interpretations of the importance of geography in the information age

	Concept of "the end of geography"	Concept of "geography matters"
Substances of the interpretations	Interpretations radically different from the foregoing	Interpretations as complements and enrichments of the foregoing
Space	Overcoming on space may become reality, liberation from the bounds of physical space, instead of that web space or virtual space is important	Justification of geographical theories, spatiality and geography are still decisive, physical space is important
Place	The role of discrete place disappears by the possibility of spatial independency	Spatial dependency differentiates space and appreciates selected places
Distance	Physical distance is not important, only network distance and social distance can be emphasised	Distance is a major constraint. The roles of physical and social distance are both important.
Geographical differences	Global, everywhere accessible networks may cause global equalisation	Unequally distributed infrastructural and other capabilities still result geographical differences
Character of the concept	Utopian	Empiric

Detailing of standpoints announcing the end or the importance of geography can obviously be continued, however, it is already observable that many arguments can

be found alongside both approaches. As a matter of fact to keep off the sterile polarisation between the two concepts, the physical and virtual proximity or geography and cyberspace, the best defensible solution is to recognise that they cross, intersect and pervade each other. It can be declared that virtual space is not a province separated from geographical space, but empirical continuation of people's everyday life (Dodge and Kitchin 2001). Virtual proximity can be a good substitute for geographical distance at connections of standardised interactions, but not if complexity, ambiguousness and tacit character play a great role in communication (Morgan 2001).

The statement that the above-mentioned radically different narratives parallel exist is unwarrantable until someone recognises that in reality it is about different aspects of the same thing. The concept professing the "end of geography" is focusing on equalising effects of globalisation, while representatives of the concept of "geography matters" accept the standpoint of spatial differences those appear in national, regional and local frames. These two tendencies—equalisation and differentiation––form a permanent dialectic in regional economies, comparing geography to a two-way street between localisation and diffusion, in contrast with a one-way highway of spreading (Storper 1997). After all recent geographers have the task to call the public attention on the existence of both concepts, and to declare that geography is still important but in different aspects.

EVALUATION OF REGIONAL INEQUALITIES OF INFORMATION SOCIETY

Dimensions of inequalities in information economy and society are tracing out with different characteristics along spatial categories. Essentially these are the features that substantiate geography of information economy and society, and they figure the peculiarity on the ground of that spatiality of this society can be disassociated from spatiality of traditional, non-information societies.

Theoretical researchers explain the altering role of the influencing effects of factors related to regional inequalities of information society mostly by the assistance of diffusion models, primarily starting from that inequalities are basically determined by the adaptation level of ICT. Social and spatial diffusion in time is characterised by an "S" curve, which shows a time-lagged shape depending on the development level of the analysed social group (Figure 1). As a result of later adaptation certain social groups (peripheral regions) are becoming relatively lagged behind, which can be realised in social and spatial inequalities. In phases of the adaptation process different types of inequalities can be discovered. In the phase of early adaptation, when only few applies ICT, differences can be seen in accessibility, in the phase of diffusion there are differences between users and non-users, while in the phase of saturation differences in quality can be emphasised (Molnár 2002)
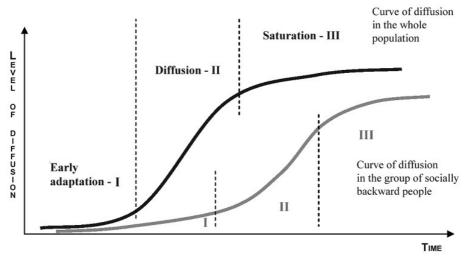
Figure 1. Diffusion model of ICT innovations in the whole population and in a group
of socially backward people (own construction after Galácz and Molnár 2003)

Digital divide or sharply saying the digital gap is the expression of the researchers
of information society on describing how specific the inequalities are in this envi-
ronment. In the background of regional differences there are (also) general social
distinctions, namely income, education, gender or age differences of the population.
We should note that digital divide cumulatively foster existing social inequalities,
therefore in many senses this phenomenon arises not just in information society.
According to definitions of the OECD the main feature of digital divide is the dif-
ference of accessibility, which exists among individuals, households, economic and
geographical regions, and which is determined by different variables of economy and
society. The several times mentioned accessibility dimension of digital divide in many
senses was shaped as a consequence of inequalities based on geography. Regional
level of built up infrastructure as well as distance from access points of networks
is usually more unfavourable in geographically peripheral places. Accessibility
is though a central category of the geography of information society. It worsens
the chance of peripheries since the deployment of technical systems as the soul of
network society is defined by regularities of economy (it's worth or not), hence infra-
structure differentiates society and space also on its own. Centre-periphery relations
live further in urban-rural differences, additionally inequalities are defined along
settlement hierarchy as a result of that nodes of information and communication
networks are to be found basically in urban spaces, and the density of connecting
services and activities is also the highest at these places.

Inequalities of the information society in function of the general development
level of the economy and society can be described also in a complex way. Since
the level of development has a significant multivariable character, numbers of social
and economic factors should be taken into account. The resulted picture reflects

both spatial structure of information society development and a new dimension of socio-economic inequalities. The position in information economy and society has a sensible importance in regional competitiveness, therefore it can be interpreted also as a new factor of regional inequalities.

The inequality analyses of the predominantly social terms of development and the rather economic phrases of competitiveness are searching the answer whether new technologies are reproducing former spatial structure of the economy, and fostering differences of competitiveness between regions, or rather shaping up new patterns of spatial structure. It was already clear at the beginning of the 1990s that differences in development are partially consequences of diverse reactions on the challenges of the information age, but not independent from the starting position of the local economy, infrastructure, or social structure and adaptivity (Ruttkay 1992). On the other hand at the beginning of the decade it was believed that Internet and the communication revolution may liberate economy from bounds of geography, since ICT can easily bridge physical distances and can defeat geographical barriers. In spite of disappearance of inequalities the concentration of ICT and high-tech industries and the emergence of technological clusters showed the opposite however. In these cases namely ICT contributes to the increase of competitiveness of cities, metropolitan areas and advanced regions, which stabilised former inequalities.

In differences of economic competitiveness beside inherited inequalities new mechanisms were significantly appeared as well. ICTs in global economic processes revaluated the factors of labour market by different solutions of distant working, or by placing administrative jobs (back offices) to other countries, or simply by the solutions of lease-work based upon the usage of information technologies. In the new information economy these regions and employees are sometimes called as "peripheral workers" in contrast with the central regions' developed "core labour force". Lease-workers of peripheral regions are working only in routine distant jobs, and while they often use modern technologies, these people are not in the position to significantly alter their network jobs. Therefore certain regions become centres of development, while others are left out of this opportunity.

In order to better understand the unequal spatial structure estimations on the level of Hungarian small regions can be prepared (Figure 2). To discover regional inequalities of the information society a complex index can be created, by the usage of the well known simple Bennett methodology. The following indicators were used in the estimation: Indicators of the information infrastructure: Internet subscribers/1000 people, mobile phone subscribers/1000 people, cable-TV subscribers/1000 people, PCs/1000 people, Indicators of social adaptivity: Internet users/1000 people, level of e-Government in municipalities, Indicators of information economy: ICT firms/10,000 people, share of on-line enterprises. An important feature of the spatial structure of information society development is the spatial division according to settlement hierarchy, which is reflected by the above average position of urban areas, while on the other hand the lagging of the eastern part of the country is also signifi-

cant. While maximum values of the index are located mostly in the agglomeration of Budapest, in metropolitan regions (Győr, Debrecen), as well as in the neighbourhood of Lake Balaton, the minimum values of the index can be connected mostly to small regions of East-Hungary.
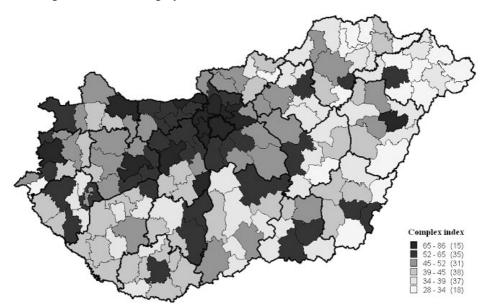

Figure 2. Complex ICT index of small regions in Hungary, 2007

It seems to be that inherited regional differences happen again in this medium, however, on the other hand through revalorisation of distance and place the regional differences got into new light. Traditional and new inequalities are parallel in the information society. Most important structural elements of regional inequalities are therefore the differences between centres and peripheries on regional level, and the differences between cities and villages on small regional level, while in the digitally divided world of cyberspace new social gaps between "people inside" and "people outside" are remarkable.

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