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Digital Inequality and Types
of Info-communication
Tool Use

Abstract

Although Hungary is in the initial phase of the diffusion of Internet use, digital inequality in terms of differences in use receives more and more emphasis, alongside inequality of access. In addition to an essentially quantitative approach, concerned with the pace of diffusion of Internet use and identification and characterization of social subgroups of users, the broadening access now allows the appearance of more qualitative analyses of the nature of Internet use, of its various ways and types.

The typological analysis based on a kind of 'uses and gratifications' approach to this new medium of communication, and starting out of data regarding several dozens of specific ways of Internet use, delineated four characteristically distinct components of functional types: uses with an emphasis on 'knowledge', 'enjoyment', 'public concerns' or 'high-tech'. The knowledge-oriented area of use, which occasionally generates further cultural advantages, is where the usage gap is most likely to divide the population of Internet users, and where further socio-cultural inequality may develop.

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The spread of info-communication technologies
and the information society

From a wider historical perspective, the course of human communication has been influenced by four fundamental developments: (1) the emergence of speech, (2) the appearance of writing, (3) the invention of printing—the beginning of the 'Gutenberg galaxy'—and (4) the information technology (IT) revolution going on today (Schlamberger 2003). In the past decades in Hungary the change of political regime and the economic and social transformation coincided with the unfolding of the IT revolution. The initial phase of the advancement of info-communication technologies saw the appearance of instantaneous information-transmitting technologies covering long distances (telephone, radio, television). More recently, we have witnessed the worldwide advance of digital technology, which forms the foundations of computers.

Building on this, the telecommunications infrastructure has shown rapid development—consider the spread of mobiles phones and the internet—and industrial production has been increasingly permeated by automated, computer-led processes. Thanks to info-communication technologies, new services and business opportunities have appeared, which reach beyond the boundaries of national markets and find their places in a 'globalized' world economy.

Noting the social effects of technological development, social scientists started speaking of leaving industrial society behind as early as the 1970s (Bell 1973). Today, post-industrial society is characterized by the general category of 'information society', which has, as its economic foundation, the value-added services of the knowledge-based economy within a framework of a globalizing world economy.

Traditional approaches to social inequality
and the information society

Researchers of social stratification borrow the concept of capital from the science of economy and, in addition to financial capital, they distinguish a number of capital 'species' that bring social advantage or 'profit' to individuals, and on the whole determine the individual's social position. After the French sociologist, P. Bourdieu, three types of capital are distinguished:

(1) financial capital, (2) cultural capital, and (3) social capital.[1] By social (relationship) capital, what is understood is an individual's network of interpersonal relationships, while cultural capital references a person's knowledge base. The various types of capital reinforce each other and are mutually convertible (relationship capital, for instance, can be exchanged for financial capital). A further characteristic of these capital types is that they may be passed on within the family in one way or another.

In the context of the information society, the following should be noted with reference to the three types of capital: as was mentioned earlier, in the information age the concentration of economic capital gradually moves from industrial production to the services sector, an increasingly large proportion of the gross national product is produced by the 'third' sector, and an increasingly large proportion of the labour force finds employment here.

In the inequality system of the information society, the role of human (cultural) capital (education, training, foreign language skills, etc.) will be rated more highly, and within this, digital literacy and the knowledge required to operate IT tools will be increasingly important components of cultural capital.

The use of info-communication technologies contributes greatly to the building and maintaining of interpersonal networks. Marketing and political communication experts realized this long ago and have, accordingly, been exploiting the opportunities provided by the media (internet forums, mobile phone text messages, electronic campaign messages, etc.). IT tools work in communication networks, and the structure of these network systems has by now become decisive in determining the structure of the economy and society—or so it is claimed by the theoreticians of the information society. One of them, Castells (2000), for instance, proposes replacing the term 'information society' with 'network society'.

From digital gap to digital inequality

'Digital gap', 'digital divide' and 'digital inequality' are relatively new concepts. The terms are used in a geographical sense ('global divide'), as well as in relation to inequality in the access to, and use of, IT tools between various social subgroups within a given population ('social divide').

Initially, the concept of digital gap was treated almost exclusively as a dichotomic category in the dimension of access to info-communication tools.

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[1] For the systematic description of the capital typology above, see Bourdieu (1983).

More recently, it has become more and more likely to be interpreted in the dimension of use, and various categories of use are also distinguished (Dányi 2003). The categorical distinction (those with access versus those without access) now tends to be put aside in favour of a non-discrete variable, with the purpose of distinguishing the various levels of use on the basis of the kinds of info-communication tool used and the intensity of the tool use. The term 'gap' is being displaced by the more accurate—although in social science jargon somewhat clichéd—term of 'inequality'.

What lies behind the shift in the meaning of the concept of digital gap is, of course, the diffusion of info-communication technologies. With a low level of penetration, greater social differences are displayed along the dimension of access, than in a context of higher diffusion. It is no coincidence, therefore, that in the leading internet-user country, the US, social scientists have turned their attention to differences in the quality and quantity of use within the subject area of digital inequality (DiMaggio and Hargitai 2001; Robinson, DiMaggio and Hargitai 2003).

On the research

The aim of the current study is to highlight a few characteristics of digital inequality in Hungarian information society, primarily from the perspective of functional differences manifest in internet use. The analysis is based on data from the October 2003 election sociology survey of the Hungarian Centre for Democracy Research Foundation (DKMKA).[2]

A special feature of the research is that the data collection was commissioned by DKMKA and carried out in collaboration with the TÁRKI Social Research Centre, Ipsos–Szonda Research Institute and Medián Public Opinion and Market Research Institute, on a nationwide sample of 3,000 people representative of the adult population of Hungary. The research was supported by the Ministry of Education and the Ministry of Informatics and Communications.
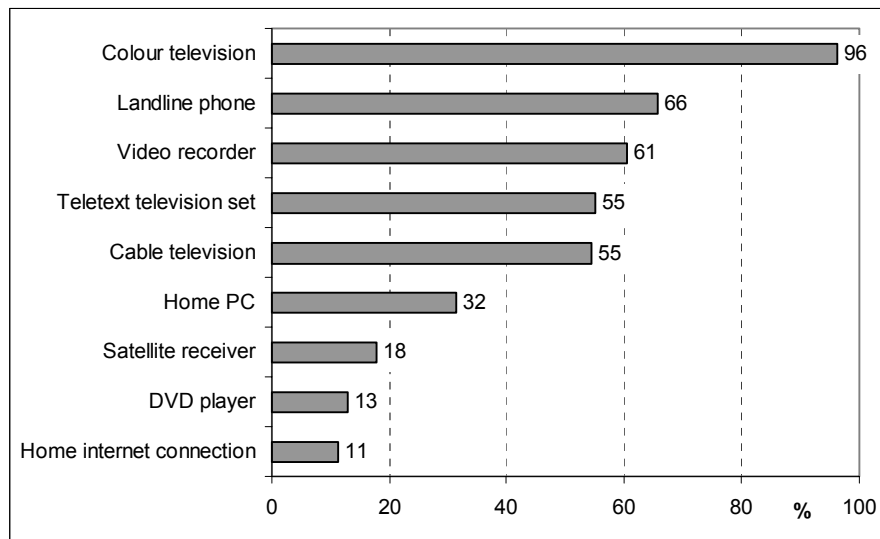
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[2] The DKMKA investigation is concerned with the interrelations and mutual influences of the digital gaps and cut-off points brought about in Hungary by the political divide and social and cultural stratification on the one hand, and the diffusion of info-communication technologies on the other. The supervisor of the project is Professor Róbert Angelusz (Eötvös Loránd University, Budapest). The members of the project: Zoltán Fábián (TÁRKI Social Research Centre), Tibor Gazsó (Századvég Centre for Political Analysis), Gergely Karácsony (Medián Public Opinion and Market Research Institute), Péter Sándor (DKMKA–Budapest University of Economics and Public Administration—since 2004 Corvinus University (*eds.*)), Róbert Tardos (Eötvös Loránd University, Budapest), Gábor Tóka (Central European University, Budapest), Tibor Závecz (Ipsos–Szonda Research Institute).

The study covers the interrelations between each type of internet use and media consumption, and between internet use and each feature of the interpersonal relationship network.
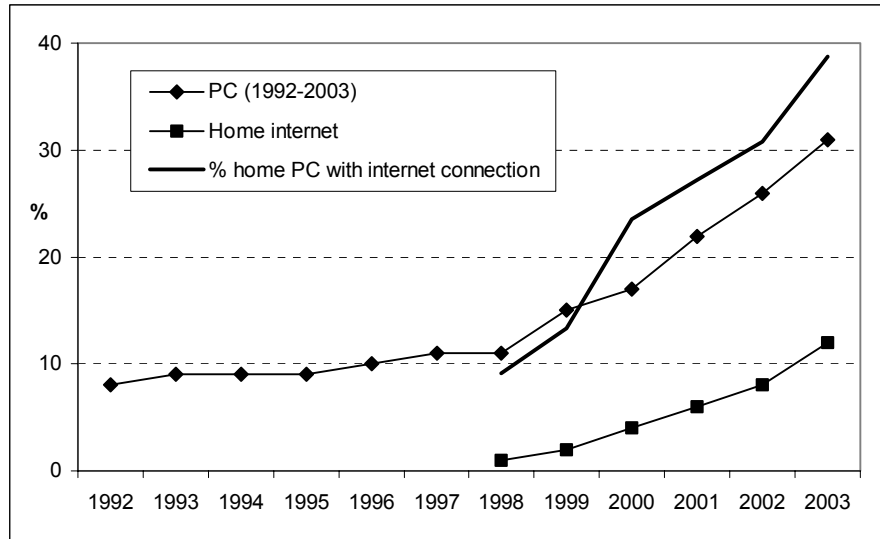
The availability of IT tools in the home

Some 96 per cent of Hungarian residents aged 18 years or over live in households equipped with a colour television. Relatively high levels of penetration (over 50 per cent) were found for landline phones (66 per cent), video recorders (61 per cent), television sets with teletext (55 per cent) and cable television (55 per cent) as well (*Figure 1*). Some 18 per cent of the population live in homes equipped with satellite receivers, and the diffusion rate of DVD players is 13 per cent.

Figure 1: *Availability of info-communication tools in the home, October 2003 (percentage of subjects)*

Almost one third (31.5 per cent) of the population questioned in 2003 had a computer at home. The diffusion of home computers was slow between 1992 and 1998, but picked up in 1999, according to the TÁRKI Household Monitor (*Figure 2*).

Figure 2: *The diffusion of home computers and internet use in Hungarian households, 1992–2003 (%)*

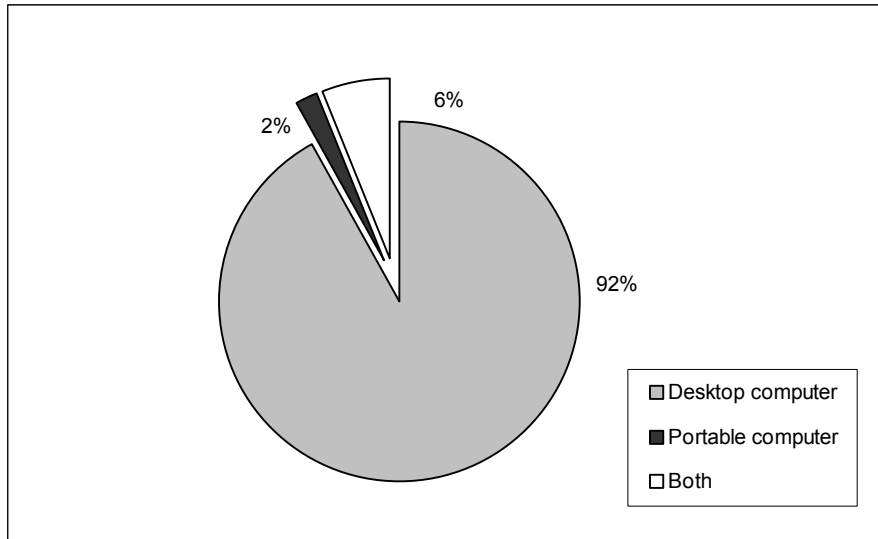*Note:* The results are expressed as a percentage of total number of households.
Source: 1992–1997: Hungarian Household Panel Survey; 1998–2000: TÁRKI Household Monitor Survey; 2001–2003: World Internet Project.

In the great majority of cases the computer in the home is a desktop computer: 29 per cent of subjects have only a desktop computer in the home. The proportion of those who only own a portable computer (notebook or laptop) is just one per cent, and two per cent of subjects have computers of both kinds (*Figure 3*).
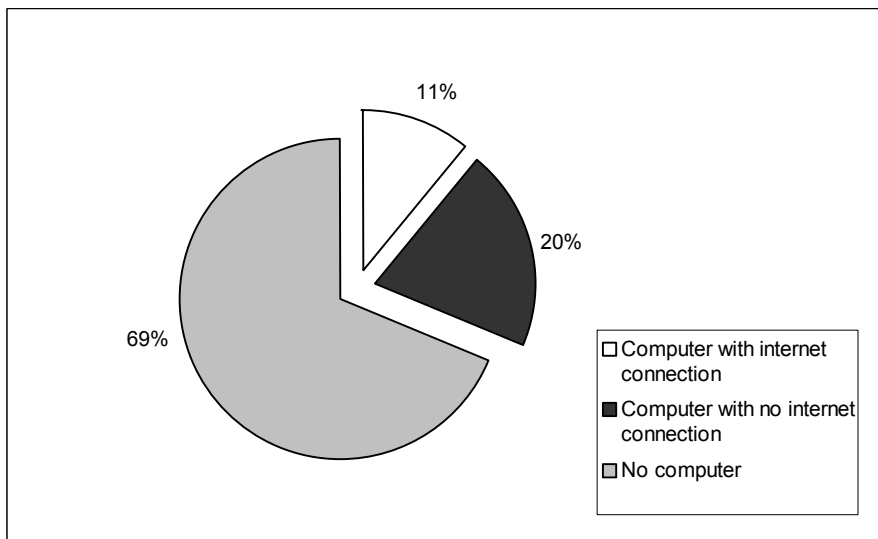
Some 11 per cent of the sampled population have internet access in the home. That is, every fifth adult lives in a household where a computer is available, but where there is no internet connection (*Figure 4*). A broadband internet connection (cable or ADSL) is available to three per cent of respondents in their homes; an ISDN connection is available to two per cent; and six per cent of people have an analogue modem at home. Within the group of subjects having access to the internet, the proportion with broadband connection was 27 per cent at the time of sampling (*Figure 5*).

Figure 3: *Types of home computer as a percentage of subjects with internet connection, 2003*
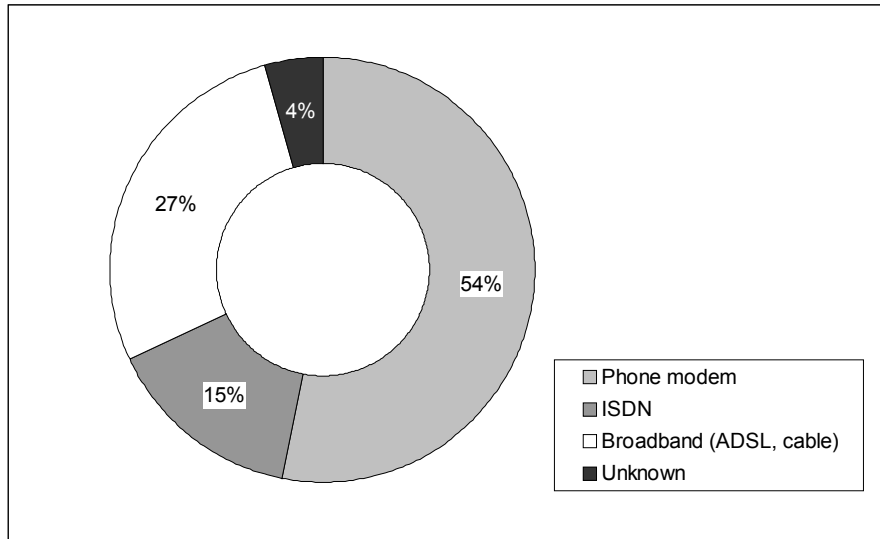

Figure 4: *Distribution of home computers and internet connection, 2003 (%)*

Note: Number of cases, N=3007.

Figure 5: *Types of internet connection as a percentage of subjects with internet connection, 2003*

Internet use at home and digital inequality

The magnitude of digital inequality will now be presented through the data on regular internet use in the home. Some 11 per cent of subjects connect to the internet at home. The proportion of those connecting at least once a week is eight per cent.

Over the total population in the sample, substantial digital inequality can be observed between various social subgroups. *Table 1* shows not only the proportions of penetration as a function of gender, level of education, age, settlement type and ethnicity, but also an indicator of digital gap based on the SIBIS Digital Divide Index (Hüsing and Selhofer 2002). This indicator, expressed as a percentage, compares the penetration value observed for each social subgroup to the mean of the total sample. As regards regular internet use, the most significant gaps appear among Roma subjects, subjects with low levels of education and the elderly (over 60 years of age). Among subjects categorized as 'definitely' Roma by the investigators, there are none who are regular internet users at home, which means that the indicator of digital gap takes a value of 0. For those with at most elementary education, the indicator value is six, and for the elderly it is 11 per cent. The penetration index of the population living in villages is 40 per cent of the national mean and the corresponding figure is 75 per cent for female respondents.

Table 1: *Percentage of regular home internet users within various socio-demographic subgroups and the index of digital gap, 2003*

	Non-user (%)	Regularly uses the internet at home (%)	*Total (%)*	Index of digital gap*
Mean	*92*	*8*	*100*	*100*
Gender				
Man	89	11	*100*	132
Woman	94	6	*100*	75
Level of education				
At most primary education	99	1	*100*	6
Vocational training school	97	3	*100*	35
Secondary education	88	12	*100*	148
Higher education	73	27	*100*	330
Age				
18–29 years	86	14	*100*	169
30–44 years	87	13	*100*	163
45–59 years	92	8	*100*	104
60 years and over	99	1	*100*	11
Type of settlement				
Budapest	83	17	*100*	209
County town	89	11	*100*	136
Town	94	6	*100*	75
Village	97	3	*100*	40
Ethnicity**				
Roma	100	–	*100*	0
Not sure	96	4	*100*	47
Non-Roma	91	9	*100*	106

Notes: * The proportion of regular home internet users relative to the total number of users in the sample. A value of 0 indicates maximal lag, a value over 100 indicates an advantaged position. ** As was judged by the investigator.

The group at the greatest advantage proved to be those with higher education, 27 per cent of whom use the internet at home regularly.

Types of info-communication tool use

Trends of use and global functions

In addition to an essentially quantitative approach concerned with the pace of diffusion of internet use and the identification and characterization of social subgroups of users, the gradual expansion of the group of internet users allows the appearance of more qualitative analyses of the nature and methods of internet use, of its various ways and types. This is helped by the

widening range of opportunities provided by the tool itself. In addition to the initial primary uses of information transfer and dissemination, the creation of virtual networks built around newly generated pieces of information and exchanges of opinion concerning them has acquired an ever more important role among the classic functions of social communication. Partly in connection with these and partly independently of them, various recreational functions of personal communication and social interaction have also gained a foothold. With the development of technology, the shift towards broadband connection has not only drawn a wide range of social and individual entertainment functions into the scope of internet use, but has also made the traditional forms of recreational electronics accessible on the internet, from the possibility of listening to and downloading music, to a wide range of radio and television programmes. Although the majority of these started as non-market initiatives, more recently various channels of commercial communication have also recognized the opportunities provided by the process (e.g. advertising, etc.). All this has generated new impulses yet again: further shifts that build on existing content but are convergent to some extent in their nature. In this respect the appearance of direct commercial services on the internet (purchase, mail-order—'e-commerce' as it is known internationally) constituted a significant step, but the range of public service applications has also expanded in the areas of education, training ('e-learning') and public access to government services ('e-government').

Just as the expansion of provider opportunities themselves is embedded in a process of techno-social learning, which theoreticians of the 'information society', 'knowledge society', or 'network society' distinguish—with slight differences in emphasis, but in broadly similar ways—from other current transformation processes, so, too, do we find a similar learning process—in either an individual or a social sense—on the part of the user. As internet use gradually spreads over all those areas that also featured among traditional forms of communication, the question becomes more and more pressing: in what ways do users themselves diversify, as regards the exploitation of these opportunities? Following the 'outer expansion' connected with the diffusion, how does the 'inner expansion', characterizing the full-scale spread or deepening of the process, progress? What basic trends emerge in internet use, and how homogeneous or heterogeneous is the cohort of internet users? In this respect, how important is, on the one hand, the social inequality of resources and, on the other hand, the skill in managing technologies—that is, whether one is a beginner or is more advanced in the learning process mentioned above?

We searched for the answers to these and similar questions when—restricting our investigations to the group of internet users this time—we chose as the topics for our analysis the actual practice of use and demand satisfaction, the diffusion of individual opportunities, the contents of broader

functional classes thus emerging, and the socio-cultural and usage features underlying them.

The investigation referred to above was based on two sets of questions from a questionnaire with a wider scope. The first, shorter, set was concerned with a few broad areas of internet use, and the second, longer, list covered 20 more specific options from among the areas mentioned previously. *Table 2* below sets out the range of diffusion of each area of use, separately for the two sets of questions, progressing from the most frequent to the as yet infrequent applications. So that we can form a picture of the actual social extensity of the process, in addition to the adult (18 years or over) internet user population, the results for the entire adult population are also shown in the first column. In addition—prior to the subsequent global analysis—the socio-cultural profiles of individual internet applications are characterized according to levels of education within the group of internet users.

For the sake of correct interpretation, it needs to be noted that the data presented in the table are the results of a broad interpretation of the class of users in two respects (*Table 2*). First, everybody who ever (however rarely) uses the internet is included, and the same broad interpretation holds for areas of use. The results, therefore, essentially indicate potential exploitation—in order to capture effective, more or less regular practice, these figures need to be reduced slightly, as was shown previously in relation to regular internet use in the home.

Just as pride of place in the list of broad areas is taken by information retrieval (with virtually total coverage of internet users), specific uses are also dominated by informative applications—search engines, professional or educational uses, and reading online newspapers. This is related partly to the early appearance of these applications, and partly to the social composition—namely a high level of education and cultural tradition—of early internet users, who are the 'advanced users' of today. As the right-hand panel of *Table 2* indicates, this type of activity has the strongest association with higher cultural levels within the already relatively highly educated population of internet users. Within this group, the applications mentioned belong among the areas of use that are especially cultivated.

The next category of uses in the ordered list mostly comprises applications related to free time and social, shared activities (such as recreational programmes, listening to or downloading music, and exchanges of opinion, chatrooms). These began life somewhat later and, as is shown by the distribution across educational levels, are more likely to reach users with lower cultural levels (the fate of music-related uses is especially characteristic in this respect). Our further analyses investigate the question of whether the diffusion profiles of various areas of internet use remain unaltered over time.

Table 2: *Internet habits—distribution of broad and specific areas of use over the total population and within the internet user population, the latter broken down into groups according to level of education (%)*

Broad areas	Total adult population	Internet user adult population	Up to voc. training school	Secon-dary educ.	Higher educ.
			internet users		
Information retrieval	20	92	82	94	96
E-mail	15	70	49	77	75
Exchange of opinion, chatting	9	40	44	44	32
Specific areas of use					
Use of search engines	15	71	57	76	74
Professional research, Reading journals	13	60	45	61	69
Reading online newspapers	11	52	42	53	59
Using or downloading educational aids	11	51	37	58	52
Recreational information (cinema, TV, etc.)	11	50	47	57	43
Magazine-type information for entertainment	10	48	46	54	42
Technological or scientific news	9	41	30	44	48
Listening to, or downloading music	9	40	50	43	33
Downloading free computer programs, films, pictures	8	38	44	42	34
Current affairs	8	36	25	35	46
Employment opportunities, job descriptions	8	35	31	42	33
Information on shopping and prices	7	32	24	32	41
Online games, chat	6	29	32	34	24
Business, stock market information	6	25	14	23	42
Web pages of local councils	4	17	14	11	43
Internet banking	3	15	7	15	27
Administrative tasks (e.g. tax related)	3	15	10	14	24
Ordering or booking (e.g. train tickets, hotel, concert)	3	14	9	13	26
Web pages of political parties	2	11	6	7	26
Government web pages	2	11	5	9	24
N	1507	329	75	149	105

Notes: In order of range of distribution within each of the two categories of broad and specific uses. For expository reasons, the results given here pass over the details of frequency of use.

At present we can only raise questions about why there is such a low diffusion level of applications in the area of e-commerce, such as purchasing, ordering, booking or internet banking and administration: to what extent can this be attributed to the relatively late appearance of these functions, on the

one hand, or to problems specific to Hungary (either in terms of the cost and infrastructure of these technologies, or perhaps in terms of having the required level of application security or skills)? Whichever side of the problem we look to for an explanation, it is certainly noteworthy that the applications related to public participation in politics are all located at the rear of the ordered list, with rather low frequency indicators. Within this category, the websites of local councils are somewhat more frequently visited—there is probably considerable variation as a function of local circumstances— although with the overall diffusion being so low, none of these services can be said to be utilized to any notable extent. The moderate success of e-government in Hungary also deserves attention, because in the initial phase of internet culture, many people hoped to see above all an upsurge in democratic participation as a result of the new communication tool. Although the development of formal platforms and official channels of information and communication included here does not, of course, encompass the entire relevant section of the internet, it certainly forms an important part of it, as is also indicated by the fact that international cooperative efforts are targeting this area. Among the 'new democracies', it is in those countries that have seen their info-communication sectors doing best internationally, that substantial progress has also been seen in the area of e-government.

At the same time, it is level of education that is proving to be the hardest nut to crack in this latter (e-) respect. Possibly we are experiencing a correlate of the initial phase of diffusion, which will diminish over time. For the moment, however, we may conclude that the digital gaps of diffusion are accompanied by 'usage gaps' related to the depth and degree of exploitation of the spectrum of internet applications. The fading of these qualitative inequalities is all the more desirable, since the appearance of e-government, for instance, raised hopes among many that, with the general expansion of public participation, disadvantages associated with this area would be evened out.

A look at the inner structuring of applications sheds some light on the functional differentiation between various domains of use. The structural pattern in question is relatively simple to depict with the help of multivariate methods, such as factor analysis. Although the contours of the actual shapes gained by the analysis are clearly not independent of the basic indicators included, the coverage of each area and, to a lesser or greater extent, the choice of actual methods, the validity of the functional typology achieved in this way is supported partly by theoretical considerations and partly by overlaps with other empirical findings.

The analyses in question include the 23 types of application shown above (the three broad areas appear in italic typeface in *Table 3*). The four-factor architecture below—whose principal components are labelled by the corre-

sponding column headings—builds on readily distinguishable components with clearly interpretable contents (*Table 3*).

As is usual with typologies of this kind, one of the key issues is the appropriate content-sensitive labelling of the emerging shapes. Our task here is facilitated both by correspondences with previous initiatives and by taking certain theoretical considerations into account. In fact, each of the emerging functional types fits neatly into one or another characteristic view of (information) society that has developed in the past decade.

Table 3: *Internet habits –functional types within the population of internet users—PCA factor analysis, equamax rotation (factor weights)*

Areas of use	Factor 1 'enjoyment'	Factor 2 'knowledge'	Factor 3 'public concerns'	Factor 4 'high-tech'
Downloading free computer programs, films, pictures	0.79			
Online games, chat	0.78			
Listening to, or downloading music	0.77			
Recreational information (cinema, TV, etc.)	0.63			
Magazine-type information for entertainment	0.60			
Exchange of opinion, chatrooms	0.56			
Information on shopping and prices	0.48			0.41
Employment opportunities, job descriptions	0.41			
Information retrieval		0.76		
Professional research, reading journals		0.75		
Use of search engines		0.68		
E-mail		0.66		
Using or downloading educational aids		0.64		
Reading online newspapers		0.50	0.40	
Technological or scientific news		0.45		0.39
Government web pages			0.83	
Web pages of political parties			0.81	
Web pages of local councils			0.66	
Current affairs			0.61	
Internet banking				0.75
Ordering or booking (e.g. train tickets, hotel, concert)				0.71
Administrative tasks (e.g. tax related)				0.66
Business, stock market information			0.40	0.51
Eigen-value	7.52	2.14	1.76	1.24
Per cent accounted for	32.7%	9.3%	7.6%	5.4%

This is most striking, perhaps, for the second component of 'knowledge', which includes functions of extracting and analysing information and of learning, all of which form an integral part of the conception of the 'knowledge society'. Nor is the factor of 'enjoyment' novel, however—it was preceded first of all by theoretical perspectives such as the 'enjoyment society' pictured first by Schulze (1992) and then by others, with the marks of individualization tendencies that developed in the second half of the twentieth century, and models of social, recreational self-realization that have taken over the traditional role of work. (Although the fact that this factor occupies first place in the list of factors is by no means free from an element of chance, its central position in the structuring cannot be denied all significance.) The selection of the concept of 'public concerns' is also self-evident—thinking of the conception of participatory internet culture mentioned previously—on the basis of the opportunities for finding information on and participating in politics and public affairs contained in this factor. Of the four factor labels, it is probably the last, 'high-tech', that is the least self-explanatory, considering the practical areas of use (mostly e-commerce or functions involving transactions) encompassed by it. The choice of label was, in the end, reinforced firstly by the fact that these applications can be considered fairly novel in the Hungarian arena and their use presupposes the existence of certain technical preconditions as well as positive attitudes towards them; and secondly by findings—stemming from other research and from further analysis of the current research—that in the Hungarian world of digital culture there really does exist a user attitude that focuses on technological innovations.

A few other theoretical typologies can also be listed among the observations that have formed the foundations of the above conceptualization of the factors. Previous investigations of the Hungarian cultural-interactional stratification, for instance, identified a number of styles of knowledge, among which the 'cognitive-instrumental' type shows kinship with the second and fourth factors (within that the cognitive element is closer to *Factor 2*, and the instrumental element to *Factor 4*), while the 'social-self-representational' type can, in many respects, be paired with the 'enjoyment' factor. Even though the connection is less direct, the power-centred 'autocratic-representative' style of knowledge can be reasonably associated with the political emphasis of the third component highlighting the element of 'public concerns'.

Finally, it is worth mentioning the observation that one of the widely known functional typologies of traditional approaches to (mass) communications is based on the distinction of the notions of information, entertainment, opinion formation and education, which can be shown to correspond, to a greater or lesser extent, to *Factors 1* and *2*, and partly *3* as well.

Table 4: *Explanatory factors of the functional areas of internet use within the population of internet users (Model 1)*

	Factor 1 'enjoyment'		Factor 2 'knowledge'		Factor 3 'public concerns'		Factor 4 'high-tech'	
	Beta	Imp.	Beta	Imp.	Beta	Imp.	Beta	Imp.
Level of education	−0.16	0.14	*0.27*	*0.45*	0.18	0.24		
Financial status	0.23	0.13	0.11	0.09	−0.11	0.06	*0.18*	*0.27*
Network resources	−0.11	0.05	0.16	0.20	0.10	0.08	−0.18	0.19
Interest in politics					*0.32*	*0.59*	−0.11	0.00
Settlement type (Budapest: −)	−0.13	0.05	−0.15	0.18			*−0.21*	*0.27*
Age	*−0.40*	*0.58*	−0.13	0.06			0.15	0.19
Gender (male: −)	−0.11	0.06						
R²	0.25		0.15		0.19		0.15	

Note: Optimal Scaling—categorical regression analysis, (significant) standardized coefficients and importance values. N=325.

Among the explanatory variables, the indicators of level of education, interest in politics (self-classification), age and settlement type are each based on a four-point scale (progressing, for education and politics, from low to high; for age, from young to elderly; for settlement type, from capital city to village). The indicators of financial status and network resources are each measured on a five-point scale (progressing from low to high), based on the consumer durables of the household and on the three network blocks of the survey, respectively. For the variable of gender, male receives a negative, and female a positive sign.

A clearer understanding of the contents of each component is also assisted by the analyses that have been carried out in order to elucidate the explanatory factors, the socio-cultural background of each functional area. The Optimal Scaling categorical regression analysis employed here and in what follows furthers the investigation, not only by allowing the inclusion of data of different levels of measurement (including the lower-level nominal and ordinal data), but also by supplying the 'importance' indicator in addition to the usual standardized (beta) coefficient, in order to capture the global (direct and indirect) contributions of individual factors. In addition to the standard socio-demographic factors, *Model 1* also includes the global indicators of financial status and availability of interpersonal resources in the group of resource factors, together with cultural (educational) status.[3] (The analysis

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[3] The index of financial status is based, in part, on possession of consumer durables in the household and, in part, on indicators of certain types of savings and the use of modern money management methods (bank cards, etc.). The index of interpersonal network resources is based in part on the range of relationships available in various situations (on the basis of name generator technology), in part on membership of societies or clubs, and finally, as a third component of a specifically political nature, on the range of relationships with people supporting different political parties.

works with the functional components acting as the dependent variables aggregated into a five-point scale, with the appropriate scores computed.) The cells of *Table 4* show only statistically significant results, with especially notable figures italicized.

With the exception of the last factor, which is less contoured in this respect, one explanatory variable stands out suggestively for each functional area. Above all, cultural resources lie behind the 'classic' internet culture factor of 'knowledge'. However, it should be noted that, in this case, all resources (i.e. the indicators of both financial and social capital), as well as settlement type—which is equally an indicator of centre–periphery relations—show an effect in the same direction. This knowledge-oriented area of use, which occasionally generates further cultural advantages, is where the usage gap mentioned previously is most likely to be added to the digital gap of availability, possibly bringing about further socio-cultural inequality.

For the 'enjoyment' function, the demographic factor of age stands out. Although an interpretation in terms of youth subculture seems immediately tempting, it is still open to debate how much significance should be attributed to life cycle or generational affiliation, rather than to the development of skills associated with internet use *per se*. It is indeed reasonable to assume—although difficult to prove conclusively for lack of earlier similar cohort data about the older generation—that transformations of cultural-communicational profiles between generations (such as the foregrounding of the lifestyle syndrome called—figuratively—'plaza culture') also has a role. We shall return later to the technical problem of skills acquisition, i.e. to the role of differences stemming from the 'beginner' or 'advanced' user status.

In interpreting the component under discussion, the sign differences between the effects of various resources also deserve some attention. While the association with financial status is positive, the correlation with cultural level is negative, which in itself highlights the relatively 'light' nature of this functional area in comparison with the 'serious' profile of the previous dimension.

The functional area of 'public concerns' is most clearly associated—not surprisingly—with the aspect of interest in politics within the list of explanatory factors. It is less obvious why, in contrast with the previous component, among the resource factors financial status has a negative, and cultural level a positive role here; it suggests some sort of post-material disposition (as opposed to the previous materialistic syndrome).

The socio-cultural profile of the last dimension, labelled 'high tech', is characterized by an ensemble of factors. The basically favourable resource position relates to financial status and city-type settlements—indeed, the use of the innovative applications under discussion presupposes a certain background or infrastructural support (which is not independent of settlement type). People having high values for this component belong to a relatively

older subgroup within the overall young population of internet users. They are also less interested in politics and, according to the relevant value of the network indicator, show little concern for informal personal relationships. This syndrome appears to be one where online relationships—whether personal or purely technical—take the place of offline nexus. The overall picture that emerges seems typical of engineering professionals (and—as is revealed by the details of the survey—the types of workplace appearing here tend to be associated with the industrial/production, rather than the cultural sphere).

The role of the factor of network relations is also characteristic for the area of 'enjoyment'. Even though the internet activities appearing here typically have a social focus, people with high values for this dimension have fewer than average interpersonal relationships. The intercorrelations suggest that the internet fulfils some sort of compensatory function here, which is in line with a suggestion by a number of analysts that the entertainment function of traditional mass communication has an escapist element to it, in the sense of running away from the losing positions of real life into some sort of fictive reality.

Functional areas and the circumstances of internet use

Up to now we have glossed over the question of how the functional characteristics of internet use are influenced by the nature of availability of the internet and technical and personal constraints. This issue will be investigated in the following, primarily by expanding the explanatory model to include a few general indicators of internet use.

The index of 'nature of access' divides internet users into three groups (of roughly equal size) on the basis of regularity of internet use and means of access. Occasional users are those who connect to the internet no more than once or twice a week. One subgroup of regular users comprises those who can access the internet only at work, school or other non-home location (telehouse, library, internet café, or perhaps a friend's home), while the other subgroup have access in the home. The 'intensity of use' index distinguishes internet users, concentrating on frequency of use alone. Finally, we employed an indicator that distinguishes between 'beginners' and 'advanced users', based on the length of time—less than a year, one or two years, or longer—that they have been using the internet. In *Model 2* presented in *Table 5*, the explanatory variables used before are supplemented with the latter three specific variables (shown in italic typeface).
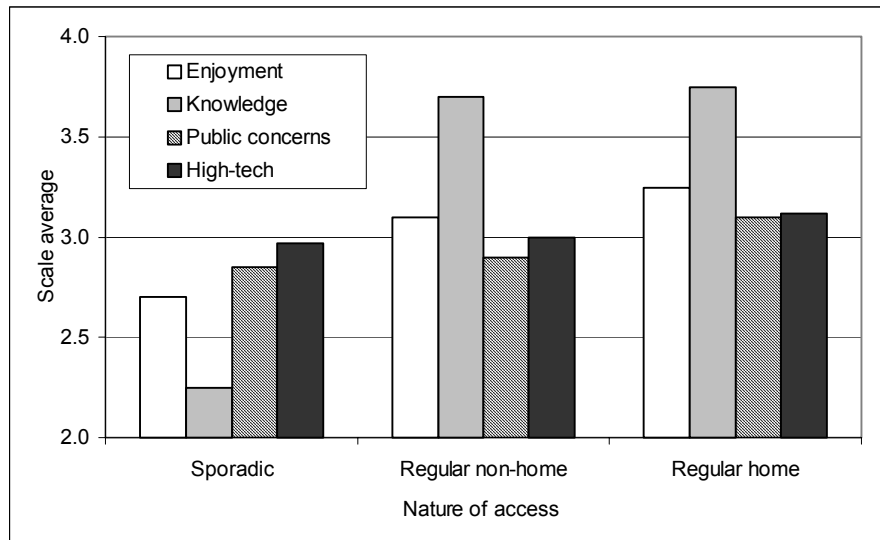
Table 5: *Explanatory factors of the functional areas of internet use, including indicators of internet use (nature of access and intensity) (Model 2)*

	Factor 1 'enjoyment'		Factor 2 'knowledge'		Factor 3 'public concerns'		Factor 4 'high-tech'	
	Beta	Imp.	Beta	Imp.	Beta	Imp.	Beta	Imp.
Level of education	–0.18	0.12	0.15	0.08	0.26	0.26	0.10	0.04
Financial status	0.18	0.08			0.07	0.04	0.20	0.29
Network resources	–0.14	0.04	0.12	0.05				
Interest in politics	0.				0.41	0.68		
Settlement type (Budapest: –)							–0.21	0.33
Age	–0.41	0.54			0.07	0.06	0.07	0.04
Gender (male: –)							–0.07	0.03
Nature of access	*0.21*	*0.17*	*0.53*	*0.67*			*0.10*	*0.11*
Intensity of use			*0.07*	*0.07*	*0.08*	*0.03*	*0.10*	*0.11*
'Beginner' or 'advanced' user			*0.15*	*0.09*				
R^2	0.26		0.49		0.22		0.15	

Note: Optimal Scaling—categorical regression analysis, (significant) standardized coefficients and importance values. N=258.

The inclusion of factors of internet use effected the greatest change in the component of 'knowledge'. This is indicated both by the substantial rise in the total explanatory value, and by the foregrounding of the variable of nature of access. A similar effect of the other two specific factors is added to this. The resource factors become demoted to some extent, which indicates that they produce an effect on the qualitative features of use essentially through influencing the circumstances of use. It is, therefore, the classic knowledge-oriented function of internet use that is most affected by the conditions of access being favourable or unfavourable, the frequency of use being regular or occasional, and the time factor being suggestive of 'beginner' or 'advanced' skills. Although the last point may be interpreted as indicating that in time—as the necessary skills develop—users will tend to move towards 'serious' internet use, we should not reject the possibility that most long-established internet users were initially drawn to it by an affinity for classical internet culture, and that this process was later followed by some sort of 'dilution', with more recent users shifting, in some way, towards applications of 'enjoyment internet'.

Figure 6: *The relationship between nature of internet use and the four functional dimensions*

The nature of access and the intensity of use point in a similar direction for each type of internet user. It is worth having a closer look at the data, however, to separate the contribution to this result of the intensity of use (whether it is occasional or regular) from that of whether or not the internet is available in the home. *Figure 6* above juxtaposes the four functional types in this connection.

The figure shows clearly that the intensity of use (whether it is sporadic or regular) has a greater effect for each type than the home or non-home nature of access. It should be added, of course, that (as will soon become apparent from further analysis) whether someone is a regular or an occasional user is greatly dependent on whether or not the internet is available at home.

In this latter connection a further issue is the effect of the technical constraints on internet use. Although the availability of broadband connection in the home has shown considerable progress, even in an international context, according to the results of the survey still only around a quarter of home users are involved. We have investigated the influence of broadband access for the areas of 'enjoyment' and 'knowledge' (*Table 6*).

Table 6: *Explanatory factors for two functional areas of internet use, including the technical level of home access (Model 3)*

	Factor 1 'enjoyment'		Factor 2 'knowledge'	
	Beta	Imp.	Beta	Imp.
Level of education	−0.12	0.06	0.31	0.07
Financial status	0.24	0.10	−0.15	0.08
Settlement type (Budapest: −)			−0.09	0.05
Age	−0.40	0.54	−0.30	0.43
Gender (male: −)				
Is home access broadband	*0.27*	*0.27*	*0.10*	*0.07*
R^2	0.30		0.19	

Note: Optimal Scaling—categorical regression analysis, (significant) standardized coefficients and importance values. N=162.

Although the relationship is positive in both cases, it is considerably stronger for the area of 'enjoyment' than it is for 'knowledge-centred' use. Indeed, for 'enjoyment' this technical condition directly affects more applications (such as various downloads, listening to music, watching TV programmes and films, or even using chatrooms) than is typical of 'knowledge-centred' use. At the same time, the possibility arises once again that some relatively recent home users were attracted in the first place by the potential of broadband for 'enjoyment' applications—and here again it is worth considering to what extent there is a move over time towards 'knowledge-oriented' applications.

Summary

With the diffusion of internet use, digital inequality in terms of differences in use receives more and more emphasis, alongside inequality of access. Although Hungary is in the initial phase of the diffusion process, it is useful to pay some attention to the so-called second-level inequality.

In addition to an essentially quantitative approach, concerned with the pace of diffusion of internet use and the identification and characterization of social subgroups of users, the gradual expansion of the circle of internet users now allows the appearance of more qualitative analyses of the nature and methods of internet use, of its various ways and types. This is also encouraged by the widening range of opportunities provided by the tool itself.

Just as pride of place in the list of broad areas is taken by information retrieval (with practically total coverage of internet users), specific uses are also dominated by informative applications—search engines, professional or educational uses, and reading newspapers. This type of activity has the

strongest association with the group of users characterized by higher cultural levels. The next category down mostly comprises applications related to free time and social, shared activities (such as recreational programmes, listening to or downloading music, exchanges of opinion, and chatrooms). Along with the current low-level position of practical applications in the area of e-commerce, such as purchasing, ordering, booking or internet banking and administration), applications related to public participation in politics or current affairs (e-government) bring up the rear of the ordered list, with rather low frequency indicators. Educational level is the determining feature of usage. The digital gaps of diffusion are accompanied by 'usage gaps' related to the depth and degree of exploitation of the spectrum of internet applications.

The structural analyses delineated four characteristically distinct components of functional types of use: uses with an emphasis on 'knowledge', 'enjoyment', 'public concerns' or 'high-tech'. Above all, cultural resources lie behind the 'classic' internet culture factor of 'knowledge'. It should be noted, however, that in this case all resources (i.e. the indicators of both financial and social capital), as well as settlement type—which is equally an indicator of centre–periphery relations—show an effect in the same direction. This knowledge-oriented area of use, which occasionally generates further cultural advantages, is where the usage gap is most likely to divide the population of internet users, and where further socio-cultural inequality may develop, to add to the inequality of access.

Extended analysis of the circumstances of internet use also suggests that it is the classic 'knowledge-oriented' function of internet use that is most highly affected by the conditions of access being favourable or unfavourable, the frequency of use being regular or occasional, and the time factor being suggestive of 'beginner' or 'advanced' skills. Broadband internet access in the home is primarily associated with enjoyment-oriented applications.

At the present level of diffusion, internet use is accompanied by the reduced use of traditional electronic media. In contrast, however, we find a positive association as regards traditional news consumption and the reading of printed periodicals and daily papers. Overall, the present population of internet users can be considered to be keen news consumers, but there are differences across the various functional user types.

According to further analyses concerning internet users, continuing to learn the news from traditional media is characteristic of (relatively) older age groups. For them, the new tool has only a supplementary role (rather than functioning as their prime source of information). Information gathering through the 'search' function of the internet is characterized by a selective attitude to information, and this is invariably associated with favourable user positions in terms of resources.

The role of internet use in opinion control is manifest above all in the case of applications focusing on 'public concerns'. The relationship between internet use, opinion control and political activity requires further analysis. It can already be seen, however, that certain functional areas play a significant role in these processes. At the same time, an orientation—primarily related to 'enjoyment internet'—which distances the user from public affairs, has also emerged.

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