

Social networks and the network society

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Contents

- The proposition..... 4**

- Theoretical background: the conceptual framework of the network society..... 6**

- Key concepts, key processes, key problems 9**
 - 1. Social networks 9
 - 2. Linked..... 9
 - 3. "Six degrees of separation" 10
 - 4. Social capital, civil society 12
 - 5. Network economy 13

- Network society and social capital15**

- Virtual social networks..... 18**
 - 1. Social software 18
 - 2. Web 2.0 revolution..... 19

- Summary21**

- Revision questions23**

- Key terms24**

- Bibliography.....26**
 - 1. Key bibliography 28
 - 2. Optional bibliography 29

The proposition

Networks have become the most basic elements of human civilization since everyday life would be unimaginable today without modern road, public utilities and communication networks. Although the scientific investigation of social networks has been going on for some decades it has only recently become such a popular area of research. High-powered computers have made it possible to analyse various natural systems (e.g. cells) and social phenomena (e.g. the use of the Internet) which can be interpreted as networks, on the basis of measurable indicators. Hundreds of millions of people use the network of the Internet on a daily basis, which is why it has been found to have a fundamental effect on the social system of relationships, on formal and informal structures, **social capital** and the development of trust.

Sociologists have investigated for one hundred and fifty years the process whereby personal relationships and the attachment of individuals to primary communities (family, neighbours and friends) are gradually becoming less important. This has played a defining role in sociological ideas and argument. This process, which has been underway since the transformation of agrarian societies, can be characterized to this day by the transition in second order relationships from *Gemeinschaft* (community) to *Gesellschaft* (society) (Tönnies, 1957 [1887]). Agrarian society first changed into industrial society, and now industrial society is changing into information society: the significance of the recent change is comparable in importance to the transition which preceded it. Already by 1976, Daniel Bell argued that the strategic resources moving the development of post-industrial societies will be information and theoretical knowledge (Bell, 1976). Bell suggested that two factors had important, society-transforming roles, the development of new infrastructure, namely telephone, computer, fax and cable TV networks that promote communication and data transmission built upon existing transportation and energy-supply networks linking society. These culminate in a fusion of computerized data processing and communication technologies. All these developments have led to the network becoming one of the major areas for research into the information society.

Many researchers see the advance of organisations based on impersonal relations – that is, mediated by institutions, contracts, communication technologies – as one of the basic dangers in the development of modern societies. At the same time, the role of local communities which directly transmit or preserve social values and norms is diminishing. It seems that many modernising processes (for example industrialisation, globalisation, and the revolution of information technology) are actually aiding the decline of civil activity and strengthening individualisation. It is in this context that the concept of social capital plays an increasingly important role in social science: here, one of the most important points of reference is the work of Robert D. Putnam, professor of Harvard University (1993, 2000, 2002), though the concept itself has a history which can be traced back to the works of Mark Granovetter (1973), James S. Coleman (1988) and Pierre Bourdieu (1986). There are several definitions of social capital, but what all of them have in common is that they connect the concept to social networks in which interactions, attractions and friendly relations related to the everyday life of people develop. By social capital, we mean non-material resources that have resulted from relations between the individuals that make up the networks, and influence the social and economic processes of social cooperation taking place on social and community levels (e.g. family, neighbourhood, local and national).

Another reason for the intensifying interest of the social sciences in the conceptual sphere of social capital is the real or imaginary danger perceived, that with the spread of information- and communication tech-

nological tools (hereinafter: ICT) being used in society, the interpersonal communication relationships become more and more superficial, and the direct human relationships that function in primary communities – for example within the family, or in a circle of relatives or friends – simply become atrophied. The vision of millions of lonely users united by the Internet, or the fear that this vision will come true, can be found historically in the discussions of social scientists., which is not surprising, since with each passing year we spend more and more time using the Internet. This observation raises the question: if by facilitating communication ICT tools promote the development of new networks, and effective economies tend to work like networks, how does all this affect social integration, the cohesion of small communities, and the social partnerships of the individual?

Theoretical background: the conceptual framework of the network society

The expression “**network society**” first appeared in sociology in the late 20th Century. The concept became better known through the work of Manuel Castells (Castells, 1996, Castells-Cardoso, 2006). According to Castells (born in Spain) who has researched in France and the United States, network society has a new social structure and process which is ensured by information and communication technologies based on microelectronics. In a network society, it is with the help of computer networks that information is created, processed and transmitted, building on the knowledge accumulated in the **network hubs**.

According to Castells (Castells, 1996), in the age of industrial society, networks played an important role mainly in the private sphere, while in production and in the civil and public sphere, hierarchical institutions; large companies, the state, the church and the army, structured as levels of power vertically built on one another – played the dominant role. In network societies, the basic institutions transform and become more flexible and changeable.

In Castells’ view, the economy also went through a major change at the end of the twentieth century: the foundations of the new type of social arrangement are no longer natural resources, but the digital communication channels., Castells argues using statistical data that the **network economy** is growing at a faster rate than the earlier economic forms typical of the industrial society. In his example he examines the rate of development of the United States, where according to official statistics the rate of growth between 1996 and 2006 was twice the rate measured between 1975 and 1995 (Castells, 2006: 8). Similar observations can be made when European states that converted at an early stage to the network economy are examined, such as Finland or Ireland. When evaluating the effects of the changes they have undergone, several factors must be considered in order to be successful. Finland needed an effective innovation policy and an economic restructuring brought about mainly by external economic factors. In the case of Ireland, they made use very effectively of aid from the European Union.

Castells stresses several times in his work that it is not technology that changes society, but rather that changing social needs interact to generate the development of technology. In the economic sphere, operational methods that have become more effective through technological development can be observed. For example the internal communication and work organisation of multinational companies and the technological innovation accompanying development through production processes supported by robots. In Castells’ model, there were three equally important consequences of all these changes:

1. Science and innovation played a decisive role in the changes since the spread of microelectronics made the development of new information and communication technologies possible.
2. The labour market changed as well with the development of the network economy. The new network company forms require a highly qualified, flexible, independent workforce.
3. The internal organisational structure of the companies changed radically according to the logic of the network.

The formation of network society first started in the 1960's. Network logic has an effect on all subsystems of society, yet at first, only technological and economic changes could be detected. According to Castells, the social, political and cultural effects could only be felt some 15-20 years later.

Communication has always had a decisive role in the use of computer networks. Research shows that among activities carried out with the mediation of the Internet, electronic mail is by far the most prevalent: research carried out within the framework of *World Internet Project* supports this as well (WIP 2002-2006). One may presume, then, that network technology also has a decisive effect on the structure of interpersonal relations and sociability. All over the world, a large volume of sociological research has been reported concerning the social relationships of internet users, and these studies have unanimously shown that the use of the World Wide Web does not reduce relationships based on personal contact, it complements them.

According to Castells, the members of network society are not alienated people, but rather individuals who cultivate highly developed systems of relationships. The value of the individual is positively reappraised in the network society – this is one of the most distinctive cultural characteristics of the new society.

In the network society, the 'communication space' surrounding the individuals is significantly transformed, and one of the important components of this process is the change of form of the media. Castells emphasizes three major transformations of the media:

1. Mass communication is mainly concentrated in the hands of international media enterprises that are both, global and locally embedded. This is true of music publishing, and television, as well as the radio and printed media.
2. In the network society, communications channels are digitalized and interactive. Accordingly, the developed societies of the world are increasingly turning away from the mass media and orientating themselves towards personalized, tailor-made media contents.
3. Thanks to the new communications technologies, a new media type has developed and become stronger, dubbed a 'horizontal communications network'. Good examples of the increasing number of new communications forms appearing on the Internet are three new "inventions": the *blog* (internet diary), the *vlog* (video diary), and the *podcast* (own radio broadcast). These individually provided contents are easily accessible to anyone, at the same time their producers are able to remain independent of media companies and national governments. Castells calls this complex process the spread of mass communication operating according to its own internal rules. (Castells, 2006: 12-14)

Network society also has an effect on political life. Castells names mediatization and globalisation as the two most important factors (Castells, 2006). When he analyses the connections between the media and politics he is reluctant to introduce television and especially the Internet as a kind of "persuasion machine". Referring to the concepts developed by the school of reception theory, he directs our attention to the significance of the individual interpretation of the receptor. According to this, media contents do not have general interpretations; each interpretation is unique and strongly connected to the common interpretative framework of the individual.

Apart from the constant and universal presence of the media, globalisation has also caused significant changes in the political system. Castells is of the opinion that the development of network society is rock-

ing the foundations of the institution of the nation state: since the network society operates globally, the state cannot work solely within a national framework any more. At the same time, there are serious cultural obstacles in the way of setting up a worldwide government that adjusts to the process of globalisation. With the construction of the network state, national governments may renounce part of their countries' sovereignty. In Castells' view, the European Union is the best example of this, where all the nation states are organized into a form of social, economic and political network (Castells, 2006).

Key concepts, key processes, key problems

I. Social networks

Jacob Levy Moreno is considered to be the pioneer of network studies. The Romanian-born psychiatrist who worked in Austria and the United States developed the method of **sociometry**, which enables the mapping of network connections, in the mid-1910's. Moreno sent a letter to the Hungarian government in 1916, in which he recommended the use of sociometry for the reorganisation of a relocated community, and then a few years later, in a newspaper article, he described some other areas where sociometry could be applied. With his method, the internal structures of groups can be discovered, but it can also be applied in action research or in the examination of roles (Moreno, 1923).

According to the relevant entry in Wikipedia, the expression sociometry is of Latin origin, and the meaning of the word *socius* is “companion”, while *metrum* means measure. Moreno characterizes sociometry as a method of investigation with the help of which we can understand the coming into being and organisation of groups, as well as the role of individuals within the group. Sociometry reveals those hidden structures, based on personal likes and dislikes and the unique relationships between individuals, which determine the basis of the group's organisation and operation.

Moreno examined the relationships between individuals with the help of simple questions, supposing that the hidden choices based on personal likes correspond to the structure of the network. The relationships between the individuals under examination can be illustrated with the help of a simple diagram, a so-called sociogram. In this diagram, the members of the group are represented by points, while the relationship between them, whether it is mutual or not, is signalled with an arrow going in either one or both directions. The method of sociometry is often used to examine communities in school classes, or other similar closed communities.

2. Linked

The network approach can be used for analysing relationships within smaller groups and also for analysing complex global systems. Several disciplines deal with the investigation of networks: besides mathematicians, social scientists also take part in network research. In his book, published in English in 2002, entitled “Linked: The New Science of Networks”, a Hungarian-born mathematician, Albert-László Barabási, gives a searching analysis of complex networks (Barabási, 2002). In the introduction of his book, Barabási draws a parallel between a typical case that sheds light upon the operation of the worldwide network of computers and the converting activities of Saint Paul. In the first century A.D., Saint Paul laid down the foundation for the worldwide spreading of a religious belief with the help of network logic: he went from settlement to settlement, and built a community network by creating relations between Christian commu-

nities. In February of the year 2000, a fifteen-year-old Canadian teenager operating under the name of Maffia Boy did the exact opposite by sending viruses and infecting several thousand computers, thereby paralysing the data traffic of leading American commercial and service providers' homepages. The logic of network operation made it possible, via the infected computers, to simultaneously send to *Yahoo*, *Amazon*, *eBay* and other well-known American homepages, an impracticable amount of queries, temporarily making them inoperative. Although these two examples seem distant both in time and nature, what is common in both of them is that they demonstrate the timeless power of networks.

Barabási's work differs from writings that are characteristic of the second half of the 20th century. One of his reviewers' points out that in his mathematical modelling of networks, Barabási applies perspectives from a social science approach, while at an earlier stage it was primarily natural science models that were influential on social scientific recognition and theory construction (Letenyei, 2003).

Originally, Barabási investigated the network operation of the Internet, and realized that the World Wide Web consists of a small number of central homepages, in other words, centres, and of a vast number of peripheral pages. This characteristic of the network, led Barabási and his colleagues to start talking about a **scale-free network** (Barabási, 2002). They meant that there is no typical point on the Internet (regarding the number of relationships) that one could call "ordinary". In other words, all the other points are quite similar to it. Thus, the internal scale, which played an important role in the earlier phase of network research, does not apply to these scale-free networks. The majority of complex networks found in nature are built up of enormous centres and many little peripheral points.

Besides clearly defining the area that he is studying, Barabási illustrates his theory through numerous economic, social and scientific examples. According to his most important observation, both in nature which surrounds us and in human society as well, most networks do not develop accidentally. They develop progressively by taking into consideration the already developed network centres.

Barabási illustrates the difference between the two kinds of development with an example from transport. In the United States, all larger cities can be reached via the interstate highway system. At the same time, however, there are never several dozen highways leading to a settlement (the really large centres are missing). If, on the other hand, the development of US air transport service is examined, there are a few exceptionally important centres (*hubs* in network terminology). The airports of Chicago, Atlanta, New York and Los Angeles are such hubs, while the majority of airports are service stations with minor traffic. So there are centres and peripheral points consequently, we are dealing with a scale-free network.

3. "Six degrees of separation"

Despite the complexity of human societies, the average distance between two members of a community is perhaps less than one would at first think. In 1967, Stanley Milgram, American social psychologist and his colleagues began an exciting experiment (Milgram, 1967). They asked some 300 randomly chosen American citizens to send a parcel to a person they did not know with the help of their friends and acquaintances. The rules of this playful experiment are simple: the parcel must reach its destination as soon as possible, and in order to achieve this it is worth choosing a person from among one's circle of friends and acquaintances who has a better chance of knowing the addressee or a close friend of his/hers. Most of the letters were sent off from Boston (state of Massachusetts) on the East coast, and Omaha (the largest town

in the state of Nebraska) and Wichita (state of Kansas) in the central part of the United States, and the addressee also lived in one of the cities mentioned above.

In the course of the experiment, of the 296 letters that were sent, 232 were not received by the addressee; the participants simply did not pass on or forward the postal items. Milgram and his colleagues examined the route of those 64 letters that arrived at their destination and came to the conclusion that two randomly chosen Americans are, on average, 5.5 steps “away” from each other. In his study, Stanley Milgram describes the United States as a “*small world*”. At the time of the publication of the study the population of the United States had just exceeded 200 million.

It is interesting to note that prior to Milgram’s experiment, a Hungarian writer, Frigyes Karinthy, had already described this phenomenon in a short story of his published in 1929, almost exactly predicting the conditions of the experiment:

“In order to prove that the members of the Earth’s population are closer, in all respects, to one another than they have ever been, a member of the society proposed an experiment. Let us designate any individual from among the one and a half billion dwellers of the Earth, on any point of the Earth, and he is willing to bet that through no more than five other individuals, of whom one is a personal acquaintance of his, he will be able to make contact with the said individual, through direct acquaintances, as they usually say: You know X.Y., could you please tell him to tell Z.V., who is an acquaintance of his...etc.”
(Karinthy, 1929).

In the short story, the messages reach their destinations each time, with the mediation of a maximum five links in the chain. It is either King Gustav of Sweden who passes on the protagonist’s message at the request of his tennis partner, or the workshop supervisor of Ford, the American car factory, helps a Hungarian newspaper publisher to forward the message. In his short story, Karinthy calls attention to the fact that in the course of history, the distance between people has decreased. However, Karinthy’s example is more about the fact that certain obstacles have disappeared which, during the age of the Roman Empire, might have made it difficult even for the mighty Julius Caesar to pass on a message to an American native as part of a strange experiment.

Small as the world might have become by then (1967), it is almost certain that Milgram could not have come across Karinthy’s short story, because at the time of Milgram’s experiment, the Hungarian author’s work had not been translated into English. It is Barabási who calls attention to this interesting parallel in his book. He also published extracts from Karinthy’s short story in English.

Network research is also strongly intertwined with the discourse of information society. It is not accidental that Barabási was attracted to understanding the network topology of the Internet. Network theory helps us to understand the ongoing process during which in the past few decades, the interrelatedness of individuals, organisations and economic enterprises, in other words so-called **interconnectivity**, has grown significantly.

4. Social capital, civil society

Many sociologists have warned that because of the erosion of those factors maintaining social capital (for example the weakening of **civil society**, the decreasing number of communal spaces that can strengthen social ties, etc.), trust between people and the intensity of human relations have been declining for decades. In a similar way, as the extent to which people are willing to take part in civil activities has declined. In this context, so-called “social capital” is playing an ever-growing part in social sciences, which is further strengthened by the increasing social diffusion of ICT tools.

Social capital primarily expresses the value of human relationships in networks. According to one of the earliest definitions (Hanifan, 1916), social capital is present when, in the course of everyday life, in social connections between individuals and families, good intentions, mutual interests and likes and friendships appear. Hanifan was of the view that when we form a relationship with our neighbours, and they get acquainted with others, we are engaged in the creation of social capital. On the one hand social needs can be met through this route, and with the help of the existing network of connections, the life of the individual and the community can be improved.

This early definition of social capital implies that interpersonal relationships also consist of *resources*. This is what Bourdieu (1986) stresses, suggesting that social capital – the capital inherent in social connections – is primarily, for the individual, a private fortune that they make great efforts to acquire by developing, extending and cultivating their social network.

Coleman (1988), who looked on social capital as a significant element of economic sociology, uses the concept to refer to human relationships in general, including mutuality, support given to one another and trust for one another.

Putnam called attention to the recession, or decline of social capital and that of “civil” social life, as a consequence of this (1993, 2000, 2002). One of the most important elements of Putnam’s work is that he establishes, and supports with much empirical data, the assertion that the once lively civil social life of America has seen a continuous and general decline since the end of the Second World War. One of the strangest and most surprising examples mentioned by Putnam is the observation that fewer and fewer people are willing to take part in bowling as part of a team. Bowling used to be an extremely popular game in America, the title of his best-selling book, *Bowling Alone*, refers to this new phenomenon. Nowadays, more people go bowling in the United States than ever before, but the number of organised bowling clubs and associations has decreased dramatically in the past decade. The number of players increased by 10% between 1980 and 1993, while the game played within the framework of clubs decreased by 40%. This simple example of the decline of bowling clubs clearly shows the development of a much broader social process: “The lonely players give up the conversations they might have had during a pizza and a beer, which means no social interaction takes place. Whether the American citizen votes for or against bowling, it is a fact that the case of the bowling clubs illustrates the destruction of social capital” (Putnam, 2000). The beginnings of this decline could already be seen in the 1950’s. There is an obvious tendency, as far as the majority is concerned, to search for and establish relationships of an informal nature that serve a cause for a transitory period, but this majority group cannot maintain a civil society (the willingness to associate) and community life based on the norms of reciprocity, mutuality and trust. The success of American democracy and their economy was based partly on this type of civil commitment, i.e. it still is to some extent based on those relations and values of which de Tocqueville (2000 [1835, 1840]) gave such a precise pic-

ture in his book *Democracy in America*. In Putnam's view, maintaining success and competitiveness can only be realized by resurrecting their community commitment, and regenerating American social capital.

It is not surprising that when conceptualising social capital, the concepts of "community" or "civil society" arise, for this terminology describes institutions in which people live their lives in the third sector. Here they come into contact with each other through different organisations, clubs, associations and relationships with neighbours, friends and acquaintances, and affect one another by the mediation of norms and values. The Putnam-type of social capital has two important components:

1. the social network: friendly meetings, visits, relationships with neighbours, social events,
2. civil commitment: the willingness to participate in communities, expression of opinion, relationships between members, participation in elections, etc.

Thus, social capital is in itself made up of complex structural elements (social networks) and complex cultural components (social norms, trust, and willingness to participate).

5. Network economy

Networking can be perceived not only on the level of individual social relationships, but it now integrates the economic system as well. So much so that studying the economic structure of the information society is only possible through networking (Kelly, 1998). The economic structure of the information society is called the "network economy". The term network economy signals that the creation of products and services, the creation of value, take place within the networks themselves. The reason why networks operate successfully is that in the new social and economic environment, networks are able to efficiently create knowledge and process information, they are also able to adapt quickly to the rapidly changing global conditions, flexibly adjusting to altered conditions (Castells, 1996).

In former, industrial economic structures, companies organised their activities according to geographical factors, their development depended on traditional elements of capital (industrial machines), while in the centre of the network economy stands human knowledge and the complex system of relationships and information flowing in digital space. The essence of the network, in an economic sense, is the long-term relationship of cooperation between companies. The development of these networks is the result of complicated interaction, the boundary between one organisation and another is less marked within the network. The strength of the network lies in the fact that the bilateral relations between the members are embedded in the network, and their value depends on the value of the network. The greater a network is, the more valuable it is (Shapiro – Varian, 2000). The various participants in these networks – small enterprises as well as large companies, self-employed persons, state, university and company research institutes – all have a place of their own within the network.

The best examples of network production are multinational companies, where the seat of a company, its research and development department and its assembly lines may all be in different countries, and even different continents. In order to be able to exploit the flexibility of the network, a company has to become a network itself. The network operational mode appears not only in respect to territory, but also organisation: the previously vertical organisational model of multinational companies has changed and today the "big ones" mostly play a dominant role in a complex network structure, usually taking smaller companies

with them. Strategic alliances between companies have appeared, the essence of these is “cooperative competition” (i.e. “*coopetition*”). *Coopetition*¹ is especially important in the case of high-tech companies working with high research and investment costs, for example in the unification of standards.

The strongest networks were created in the field of information technology, reflecting the extensive interdependence of the hardware and software industries. At the end of the previous millennium, several large companies (e.g. *Cisco Systems* or *Nokia*) owed their competitive advantage and success to having changed to the new network operational mode. From the end of the 1990’s, more and more large companies (among them *Hewlett Packard (HP)*, *IBM*, *Sun Microsystems* and *Oracle*) started to reorganise their operation according to the principle of networking. Other, more traditional, non-IT companies such as car factories, textile manufacturers, banks etc. also carried out the change successfully.

¹ For the definition of term see for example Wikipedia: <http://en.wikipedia.org/wiki/Coopetition>

Network society and social capital

Will the spread of the Internet through information society, enhanced by more ICT tools, confirm the pessimistic predictions of some sociologists that community participation will lessen? Or will the growing use of the Internet and the Web strengthen community participation?

As a consequence of the rapid development of the World Wide Web, around the turn of the millennium, relevant research results were published (Kraut et al, 1998; Nie et al, 2000, 2002, 2003) which showed that the Internet was isolating users even more, tearing them away from their social networks. They were seeing less of their family members, friends and communities because of their increased use of the Internet. Professor Norman H. Nie and his colleagues thought that although *e-mail* was suitable for developing and maintaining relationships between people, if it could not offer the atmosphere of intimate conversations or meetings with a cup of coffee or a beer, then the Internet could be the final isolating technology, which would destroy completely the communities already weakened by cars and television. According to their research (Nie and Erbring, 2002), the more time one spends on the Internet, the less time that person will spend in the company of real live people. According to analyses carried out in the United States on longitudinal databases (Kraut et al, 2004) using the Internet may lead to a drop in the frequency of use of relationships maintained with friends and family members through mutual visits. What is more, this effect is stronger for those who used in the past to have more social connections. All this may result in a whole society becoming more irresponsible and atomised as a consequence of using computer networks (Levine, 2001). Pessimistic researchers think that even if new relationships are formed through the Internet, the majority of these are so-called “weak ties”², for *e-mails* is a “lower” form of communication than talking on the phone or meeting in person (Cummings, Butler and Kraut, 2002). The negative effects of information technologies are strengthened by the fact that these promote anonymity and individualism, and thus weaken social norms and trust, and destroy social capital (Kiesler et al, 1991).

All this raises the question of how modern information technology affects social integration, the cohesion of small communities and the partnerships of the individual. Is this once again a new technology, like television once was, destroying human relationships, isolating the individual and weakening the norm-transmitting and controlling role of small communities? The question comes up more and more often in the specialized literature of sociology.

Naturally, there are scenarios representing the positive but utopian view; not all screenplays are negative. Jon Katz (1997) portrays the “network citizen”, using the Internet on a daily basis, as a tolerant, freedom-loving type of person, who feels responsible for public affairs and has a strong sense of civic awareness. According to enthusiastic appraisals, the spread of ICT tools strengthens the individual against the state and the traditional hierarchical structures, and offers an unprecedented opportunity for many users to communicate simultaneously with many other people. There is hope that with a comprehensive line of newly developed software, network applications, and community information development programs, civil society and trust between people, democracy built on *deliberative*, i.e. continuous consultations, and func-

² We know from Mark Granovetter’s work that weak ties are strong resources as well. Granovetter (1973) distinguishes between strong and weak ties. He regards relationships between family members and friends as strong ties, while by weak ties he means more casual relationships such as acquaintances, colleagues etc. At the same time, as can be seen above, networks become unstable and unpredictable without weak ties, in other words, these actually stabilize the social networks.

tioning with the active participation of the whole society, as well as the institutions of the public, can all be made stronger with the rational, circumspect and innovative use of ICT tools.

Putnam is of the opinion that the changes caused by the spread of television in the lifestyle and time schedule of people are decisive factors in our search for an explanation for the decrease of social capital (Putnam 2000),³ regarding the new information and communication technology tools. However, he believes there is hope that by using them, individuals will be able to increase their social capital (Putnam, 2002). The studies by Cole and Robinson (2002) prove that citizens using the Internet do not spend less time cultivating relationships than those who do not belong to the group of internet users, they also have a more positive social attitude and feel less lonely. Wellman and his colleagues (2001) are even more explicit: “The Internet helps individuals to keep in touch with one another, it increases their willingness to participate in organisations, and ensures new possibilities of community commitment. [...] The Internet can increase social capital, civil commitments, and this development can be perceived in online communities”.

Thus, we can consider social capital as a “*private good*” on the one hand, and a “*public good*” on the other (Putnam, 2000). In the first case, it is from individual interest that relationships are built, in the second case, relationships are formed despite the fact that it is not the general public that develops new social connections, but the individuals, yet the whole community gains from the “benefits” of network mechanisms. It is by realizing their common interests that people start to cooperate, the cultural traditions of cooperation differ from country to country, what is more, they might vary even within smaller regions (Putnam, 1993, 2000).

Social capital also has a macro-level interpretation, according to which this type of capital is not primarily a private good, it is much rather a public good, from which everyone can profit. Similarly to other types of capital, social capital is also a resource, so the more social capital the communities have, the more successful a society is, and the stronger an economy is. The extent of cooperation and trust between people is one of the leading resources of economic-social efficiency. It is in fact the measure of success of each economy. Fukuyama (1995), who can be listed among the protagonists of the macro-level approach, argues that the strength and structure of each economy depends on the level of social capital and that all this is related to the spreading of modern information and communication technology tools. In his opinion, the use of computers and the Internet was a lot more successful in those societies that possessed greater social capital even before the digital revolution, whereas the countries lacking trust and connections were not really able to exploit the advantages of ICT tools.

Regarding the diffusion of the Internet, several sociologists examined the effect of internet use on social capital. Following Putnam, Barry Wellman, a professor at the University of Toronto, and his colleagues (Wellman et al, 2001) distinguish between two forms of social capital. *Network capital* is typically made up of those relationships that we cultivate regularly with our neighbours, colleagues, and close friends. This type of capital is one of the major sources of information, the basis of certain services, and the feeling of “belonging somewhere” is also connected to this. The basis of *participation capital* is its role in political formations and charity (NGO) organisations, ensuring an opportunity for individuals to accomplish something within the community, or to formulate their common aims and represent them consistently. Wellman and his colleagues added a third element to the concept of social capital: *community commitment*

³ Regarding television, Putnam stresses that a whole generation has grown up that uses television strictly for entertainment, as a background noise, or for “surfing” on the different channels, and not for the purpose of gaining information. It is not accidental that compared to their parents’ generation, among members of this young generation, aged 18 – 29, the inclination for association has dropped radically.

represents a strong motivation with the help of which social capital can be mobilized more easily. This also implies a sense of responsibility, and contributes to strengthening the identity of individuals.

If we were to ask today's leading sociologists in what way the Internet influences social capital, we would probably get very different answers, some of them the completely the opposite of others. In their study (2001), Wellman and his colleagues explain in detail their positive views regarding the role of the Internet, namely that the World Wide Web offers new forms of contact that significantly enliven human communities. At the same time, since the limits of time and space no longer exist, the newly formed social groups can become stronger.

The standpoint of the arguments of the opposing camp can be summed up as follows: the Internet reduces social capital, the network alienates people and diverts them from their real relationships. One of their most important arguments is connected to time limits: if we were to insert this new activity – the use of the World Wide Web - into the 24-hour-day, then we would inevitably have to reduce the amount of time we normally spend on other activities such as cultivating our local relationships.

Wellman and his colleagues studied the Internet embedded into everyday life, and found that the World Wide Web does not have a direct, one-way effect on social capital. Instead, it rather complements social interaction and helps to maintain existing relationships. From this it can be concluded that the Internet has an effect on network capital as well: the computer and the World Wide Web extends the already existing relationships. *E-mails* or *chats* cannot substitute for personal relationships, they can merely complement them. Analysing the answers given to their surveys, it was evident for them that network communication did not cause the number of personal meetings to increase. Interestingly, the majority of internet relationships developed between people who lived maximum 50 kilometres from one another. Communication was most intensive in cases where distance kept people apart, and deeper, friendly relationships could only be maintained via the computer.

Taking into consideration the way relationships develop, Wellman and his colleagues came to the conclusion that the Internet has a complementary effect on social capital, in other words, neither the anti-utopians - projecting a dark image of an atomised society of alienated computer users -, nor those who herald the new society's bright future are right.

Apart from studying the changes to social capital, Wellman and his colleagues (2001) pointed out that the World Wide Web increases participation capital considerably. The more time someone spends using the Internet, the more they are involved in things being organised *online*, or in political activities. This phenomenon could be observed among previously active participants of political life, and also among citizens who were less active in public life *offline* outside the Internet and the network.

Virtual social networks

I. Social software

With the spread of internet technology, many new opportunities arose for communicating and gaining information. New kinds of software are at our disposal, with which we can express our opinions, cooperate with others in discussing a question or problem, reflect on the remarks of others, or ask for someone's help regarding something. Through the mechanisms of dialogue, these softwares promote the creation and operation of collaborative social networks. Today the abbreviation of World Wide Web "WWW" could easily be *World Wide Words*, for *e-mail* and the various instant messaging softwares. **Web 2.0** applications can all promote cooperation between people and the creation of *online* communities more than ever before.

The expression **social software** first appeared at the beginning of the 1990's, but it is only now, strictly speaking, that it has won its true meaning.⁴ Even if it does not yet have a generally accepted definition, by social software we mean software that makes collaborative behaviour, the organisation and moulding of communities, self-expression, social interaction and feedback possible for individuals. It ensures these possibilities in a horizontal structure where there is no institutional framework, there are no relationships based on superiority and inferiority, nor control. Another important element of the existing definition of "social software" is that it allows structured mediation of opinions between people, in a centralized or self-regulating manner, from the top down or from the bottom up (Coates 2003). The different social network "ports" (for example *MySpace*, *Facebook*, *Orkut*), blog services (e.g. *LiveJournal*, *Xanga*, *Blogger*), the tools used for so-called *tagging* (e.g. *del.icio.us*, *Digg*), and the media-sharing homepages (e.g. *YouTube*, *Flickr*) can all be listed under the group social software. These services have several common elements, such as conveying content generated by users, graphically representing the relationships between users, ensuring public communication forums and continually monitoring user behaviour.

1. Table: Types of social softwares

Software	Example
<i>E-mail</i>	<i>Outlook, Sendmail, Pine, Hotmail</i>
<i>Weblog, Wiki</i>	<i>Movable Type, Blogger, Wikipedia</i>
<i>Messenger systems</i>	<i>ICQ, MSN, Trillian</i>
<i>Document editing systems</i>	<i>Groove, Hydra, Lotus Notes</i>
<i>Group diaries</i>	<i>Livejournal</i>
<i>Introductory systems</i>	<i>MeetUp, Udate, Ryze</i>
<i>Systems for organising group discussions and exchange of views</i>	<i>SmartGroup, BBS, Usenet</i>

Source: Davies, 2003

⁴ Naturally, similar software (e.g. *Well*, *BBS*, *Usenet*, *MUD*, *IRC*) was used even in the period before WWW, but their social adaptation was still of little consequence.

Choosing and using the appropriate tools is greatly influenced by the size of the group intending to use the given service (Davies, 2003 and Mayfield, 2003b). This may influence how the different types of social capital may become stronger by using them. While the software of *Instant Message* or *ICQ* is more suitable for dialogue, the bulletin board or new group is better suited for larger groups of up to 100 people.

2. Table: Social software according to the size of the group

1-2	2-20	20-150	>150
Correspondence, Conversation <i>E-mail</i>	Circle of friends List of friends	Interest group <i>E-mail</i> address list, <i>Chat</i>	Connecting strangers <i>Google</i>
<i>Instant Message (IM)</i> e-postcards <i>ICQ</i>	<i>E-mail</i> <i>Smartgroup</i> <i>Evite</i>	Newsgroup <i>Weblog</i> Bulletin board	<i>Amazon</i> <i>Yahoo</i>

Source: Mayfield, 2003b

“Social softwares” can only function effectively if they keep in mind the social context (e.g. the size of the group) that they are to be used in. If the application is successful, the *online* social networks become surprisingly similar to the *offline* networks.

2. Web 2.0 revolution

The fashionable, yet controversial recent concept, Web 2.0, was proposed by Tim O'Reilly (O'Reilly, 2005). The expression “Web 2.0” refers to second-generation internet services that are built on the activities of *online* communities; more precisely on the contents produced by the users and on sharing them. From a technical point of view, Web 2.0 applications operate on a simple, user-friendly principle; there is no need for special (programming) knowledge for someone to be able to create content and publish it on the World Wide Web. The significance of this is, primarily, that the content becomes important as opposed to the technology.

Before the appearance of Web 2.0, one of the characteristics of services was that the contents that users read, listened to and watched – similarly to the traditional, one-way media – were created by only a few creators. Contrary to this, the essence of Web 2.0 is that the contents are created and shared by the users themselves. According to Tim O'Reilly, the services of Web 2.0 could best be understood by comparing them to the possibilities of the original World Wide Web (Web 1.0). A good example of this is Web 2.0 *Google AdSense*, which is based on the advertisements of small businesses and small consumers, while *DoubleClick* deals with larger advertisers. Another good example is *Wikipedia*, which is open-sourced and can be edited by anyone, as opposed to the traditionally edited encyclopaedia, the *Britannica Online*, or *BitTorrent*, which shares music recordings, taking the services of *mp3.com* to a higher level. It can be clearly seen that a new kind of user demand has become dominant, *RSS feed* (ensuring immediate access to fresh news) takes the place of static news, the democratic “labelling” by users takes the place of the traditional (authoritative) classification of contents, which leads to community classification.

3. Table: Comparison of Web 1.0 and Web 2.0

Web 1.0	Web 2.0
<i>DoubleClick</i>	<i>Google AdSense</i>
<i>Ofoto</i>	<i>Flickr</i>
<i>Akamai</i>	<i>BitTorrent</i>
<i>mp3.com</i>	<i>Napster</i>
<i>Britannica Online</i>	<i>Wikipedia</i>
Personal websites	Blogging
<i>Evite</i>	<i>upcoming.org, EVDB</i>
Domain-name speculation	Search-optimization
Page views	Cost per click
<i>screen scraping</i>	Web services
Publishing	Participation
Content management systems	Wikis
Directories (taxonomy)	Tagging (“folksonomy”)
<i>Stickiness</i>	<i>Syndication</i>

Source: O'Reilly, 2005

According to Tim O'Reilly, Web 2.0 is not simply a new technology or tool, it is a platform that has no distinct borders, only a “gravitational nucleus”, which requires a new kind of attitude from the user. It is evident that the concept itself is still immature. However, in practice it works and is constantly renewed.

Those who criticize Web 2.0 usually make these judgements from a number of different points of view: the concept of Web 2.0 has not been defined properly. What is more, there is nothing new in it compared to what the World Wide Web represented earlier: we are describing the same interactive space that connects people (Anderson, 2007). Several characteristics that supporters of Web 2.0 label ‘new’ have actually existed previously⁵, and these technological innovations have not changed the operating principles of the World Wide Web. They are merely supplementary.

By referring to the “dot.com” bubble, several analysts remind us that Web 2.0 can easily become a second burst “bubble”. A profusion of “Web 2.0” companies are appearing on the market, offering the same services, and without a serious business model behind them. According to Josh Kopelman (2006), only about fifty thousand people are really interested in Web 2.0. His estimate derives from recorded blog-entries - the number of registered members listed on *TechCrunch*, dealing with Web 2.0 was 50 thousand. He suggests this is not sufficient for economic viability.

⁵ A good example of this is *Amazon.com*, which, from the year 1995, when it was started, made it possible for its users to publish information sheets and guides themselves.

Summary

With the development of the information society and its technical expertise, the subsystems of society are operating more and more like a network. Instead of natural resources, after the second half of the twentieth century, information and access have become the most important economic and social organising forces. From the 1960's information has been produced, processed and distributed with the help of modern information and communication technologies. According to Manuel Castells, technological changes first reshaped the economy, by the turn of the millennium, however, the systems of society and politics, and the subsystems of culture had also changed radically. In Castells' view, three decisive conditions must be met simultaneously for competitiveness to increase and for successful social changes to take place. Network society builds on the development of technology and on innovation, on a flexible, well-qualified workforce and on a network organisational form adapted to the new operational model.

Social scientists perceive that closer ties with neighbours and relatives form a central part of interpersonal relationships, but now the development and maintenance of community networks is also made possible by the automobile, the aeroplane, the telephone and the Internet. In the main, these earlier technologies make it possible to maintain relationships across great distances, but the functioning of communities is not only made possible through strong ties between neighbours, relatives, close friends and colleagues. Looser connections are just as important because through them, we are able to bridge greater social and geographical distances.

Barry Wellman and Milena Guila (1999) point out that we must go beyond the definition of space-centred, neighbourhood-based communities, towards a definition based on partnership networks: "Analysts of social networks must teach those sociologists who still think of traditional local communities, that the borders of a community reach well beyond the actual dwelling area. Members of virtual communities, however, consider it evident that computer networks are also partnership networks, bridging great distances." (Wellman-Guila, 1999: 3).

If, we see that modern societies suffer from weaker relationships, that is they work less like networks, but we see that interactive technologies are becoming more and more widespread in society, then perhaps we can ask whether the Putnam logic can be reversed? Can the increasing use of ICT tools promote the growth of social capital through the willingness of individuals to form partnerships and make civil commitments?

Based on the results of the studies discussed earlier the answer at the moment is yes rather than no.⁶ This cautious approach seems justified despite the often positively promising research results. The Internet is a very new technology, it is constantly changing, new technological solutions and applications appear all the time and spread incredibly fast. Nowadays, broadband networks, wireless tools promoting mobility and Web 2.0 are all forging ahead, so researching their effect on society offers continuous opportunities for further studies. Another reason why it is dangerous to generalise too greatly from recent evaluations of the real effects of the Internet on the wider society is that it has reached the stage of complete diffusion in only a few countries. In 1995 and 1996, when only 40% of all households in the United States had com-

⁶ To the question of whether regular internet use reduces the amount and quality of relationships between people, and the extent of civil commitments, we can answer with a definite no.

puters and the Internet was only accessible in 30% of all households, Robert Kraut and his colleagues (1998, 2002), wrote, based on their then experimental investigations, that the Internet was an antisocial technology, and that its use caused social separation and depression in users. In 2002, however, the results of repeated, later, surveys showed that the connection between internet use and social participation was positive rather than negative.

More often than not, researchers analyse the spread of internet use as an isolated social phenomenon. They often may not take into consideration how the interactions being realized through the Internet fit into the everyday life of people. The growing number of applications of the World Wide Web offers people opportunities for contact, and this does not mean another “reality”, because the users take with them, to their *online* interactions, their sex, their age, their habits, their culture and their social-economic situation as they do in their *offline* relationships (Wellman-Guila, 1999). For this reason, virtual social networks are also real; that is, the Internet is the largest and most comprehensive social network (Wellman, 2001).

Networking has become the foundation of the new economic structure of information society, where human knowledge and information-flow in digital space and the complex system of connections take the place of traditional elements of capital. The essence of the network can be grasped in the long-term relationships of cooperation and competition between economic operators. Networking appears not only among independent organisations, but also within individual organisations as well. Relationships of subordination and superordination are increasingly replaced by horizontal organisation.

“Web 2.0” offers second-generation services in which the contents are produced and shared by the users themselves. In the beginning the contents made accessible on the Internet were created by relatively few creators, but following the “revolution of Web 2.0”, the users have become the creators of contents. Critics of Web 2.0 warn us about the new services, and they also question the claims of novelty for these services. In their opinion, the concept of Web 2.0 has not been properly defined, and compared to the original concept of the World Wide Web. Essentially there is nothing really new in it.

Revision questions

- 1 In which social areas did the effects of network society first appear?
- 2 Which three important trends does Manuel Castells draw to our attention in connection with changes to the mass media?
- 3 What are the criteria for recognising a company operating according to the principle of networking?
- 4 In the age of the Internet, what methods might you use to examine the distance (in steps) between two people who do not know each other? What did Milgram do in the original experiment?
- 5 According to research results, does using the Internet regularly increase or decrease the number of relationships a person has?
- 6 How many components of social capital does Barry Wellman distinguish between? How is each of them connected to Internet use?
- 7 Compare the services offered by Web 1.0 and Web 2.0.

Key terms

Civil society: For the majority of authors dealing with the topic, “civil society” is understood as organisations that operate on a voluntary basis, serving to balance the relationship between the two poles of the individual and the state by infiltration. From a network viewpoint, it can be defined as the relationship-network of society which develops independently of the state, and its operation falls outside the sphere of influence of state/executive power.

Interconnectivity: On the one hand, the concept that, within dynamic systems such as biological entities, economic systems or societies, the changes between connecting subsystems mutually affect one another; on the other hand, the development of mutually connected information and communication systems.

Network: Every system that is made up of separate elements connected to one another can be considered to be a network. Social networks are formed from relationships between the participants forming a society.

Network economy: The economic system of information society. The attribute “network” signals that the creation of products and services - the actual creation of values, takes place in networks.

Network node: The smallest building unit of the network is the network node. In collective networks, we consider individual acting agents as network nodes, while in computer networks, this is what we call the individual computers connected to the network.

Network society: A social form based on the production, processing and transmission of information. The basis of its operation is ensured by the network of modern information and communication technologies.

Scale-free network: A network in which there is a small number of nodes with many connections, as well as a large number of nodes with few connections. The majority of community networks belong to this category. When analysing the “links” pointing to one another on homepages on the Internet, we come across similar, scale-free network connections.

Social capital: Several definitions of social capital are known, but a common characteristic of all of them is that the concept is connected to social networks in which interactions, preferences and friendly attachments related to the everyday life of people develop. By social capital, we mean non-material resources resulting from relationships between players who constitute the networks, and influence the social and economic processes taking place on the different (e.g. family, neighbourly, settlement, national) community levels of social cooperation.

Social software: Social software is a relatively new collective term, encompassing applications which make the cooperation and communication of different individuals or groups possible. The simplest and most evident examples of this are the *e-mail*, the *Instant Message (IM)* programmes and the diaries (blogs) posted on the World Wide Web. Social software that has been properly used promotes communication between users and network connections, contributes positively and effectively to the accumulation of so-

cial capital, and through investments in information and communication technologies (ICT), they may even serve as a key to increasing productivity.

Sociometry: J. L. Moreno's method of investigation, which shows the structure of the network with the help of mapping the hidden choices within communities. Sociometry is typically used to reveal the problems of small communities such as school classes, or groups working together in departments at work.

Web 2.0: The expression "Web 2.0" designates second-generation Internet services based primarily on the activity of *online* communities, more exactly on the user generated contents (UGC) and on sharing these contents (e.g. blogs, wikis, etc.).

Bibliography

- Albert, Fruzsina – Dávid, Bea – Molnár, Szilárd (2006): Az Internet-használat és a társadalmi tőke időbeni alakulása Magyarországon. Egy longitudinális vizsgálat eredményei (in: *Internet.hu 3. A magyar társadalom digitális gyorsfényképe 3.*, TÁRKI, Budapest, 69-110.)
- Anderson, Paul (2007): *What is Web 2.0? Ideas, technologies and implications for education* <http://www.jisc.ac.uk/media/documents/techwatch/tsw0701.pdf>, accessed 23 June 2007)
- Barabási, Albert-László (2002): *Linked – The New Network of Science: How Everything Is Connected to Everything Else and What it Means* (Perseus Books, Cambridge MA)
- Bourdieu, Pierre (1986): The Forms of Capital (in: Richardson /ed./ *Handbook of Theory and Research for the Sociology of Education*, Greenwood Press, New York)
- Braun, Tibor (2003): A hálózatok új tudományának előfutára: Karinthy Frigyes (in: *Magyar Tudomány*, 48/12 http://epa.oszk.hu/00700/00775/00061/2003_12_24.html, accessed 13 July 2007)
- Castells, Manuel (1996): *Information Age: Economy, Society and Culture, Volume I: The Rise of the Network Society* (Blackwell, Oxford)
- Castells, Manuel (2006): The Network Society: from Knowledge to Policy (in: Manuel Castells – Gustavo Cardoso /eds./ *The Network Society: From Knowledge to Policy*, The Johns Hopkins University Press, Center for Transatlantic Research Relations, Washington, DC)
- Cole, Jeffrey – Robinson, John (2002): Internet Use and Sociability in the UCLA (in: *IT&Society*, Volume 1, Issue 1, Summer 202-218.)
- Coleman, S. James (1988): Social Capital in the Creation of Human Capital (in: *American Journal of Sociology*, Vol. 94 Supplement: Organizations and Institutions: Sociological and Economic Approaches to the Analysis of Social Structure. pp. S95-S120)
- Cummings, Jonathon – Butler, Brian – Kraut, Robert (2002): The quality of online social relationships (in: *Communications of the ACM*, 45(7), 103-108.)
- Davies, William (2003): *You Don't Know Me, but... Social Capital and Social Software* (The Work Foundation, London, http://www.theworkfoundation.com/Assets/PDFs/you_dontknowme.pdf, accessed 13 July 2007)
- Fukuyama, Francis (1995): *Trust: The Social Virtues and the Creation of Prosperity* (Free Press, New York)
- Granovetter, M. (1973): The strength of weak ties (in: *Am J. of Sociology* 78: 1360-1380 <http://www.stanford.edu/dept/soc/people/faculty/granovetter/documents/TheStrengthofWeakTies.pdf>, accessed 23 February 2007)

- Hanifan, Lyda J. (1916): The Rural School Community Center (*Annals of the American Academy of Political and Social Science* 67: 130-138.)
- Karinthy, Frigyes (1929): Minden másképpen van (in: *Ötvenkét vasárnap*, Athenaeum, Irodalmi és Nyomdai Rt., Budapest)
- Katz, Jon (1997): The Digital Citizen (*Wired*, 1997/12)
- Kelly, Kevin (1998): *New Rules for the New Economy* (Viking Adult, New York)
- Kopelman, Josh (2006): 53,651 (<http://redeye.firstround.com/2006/05/53651.html>, accessed 13 July 2007)
- Kraut, Robert – Patterson, Michael – Lundmark, Vicki – Kiesler, Sara – Mukhopadhyay, Tridas – Scherlis, William (1998): Internet paradox: A social technology that reduces social involvement and psychological well-being? (in: *American Psychologist*, 53, (9), 1017-1032.)
- Kraut, Robert – Kiesler, Sara – Boneva, Bonka – Cummings, Jonathon – Helgeson, Vicki – Crawford, Anne (2002): Internet Paradox Revisited (in: *Journal of Social Issues*, Volume 58, Number 1, Spring 2002, 49-74(26))
- Kraut, Robert – Rainie, Lee – Shklovski, Irina (2004): The Internet and Social Participation: Contrasting Cross-Sectional and Longitudinal Analyses (in: *Journal of Computer-Mediated Communication* 10 (1))
- Levine, Peter (2001): The Internet and Civil Society (in: *iMP Magazine*, May 2001)
- Mayfield, Ross (2003a): *Socialtext: Social Software Solutions*.
(<http://radio.weblogs.com/0114726/2003/03/28.html#a369>, accessed 13 July 2007)
- Mayfield, Ross (2003b): *Social Capital of Blogspace*
(<http://radio.weblogs.com/0114726/2003/04/09.html#a391>, accessed 13 July 2007)
- Milgram, Stanley – Travers, Jeffrey (1969): An Experimental Study of the Small World Problem (in: *Sociometry* 32/4, 425-443.)
- Molnár, Szilárd (2004): Sociability and Internet (in: *Review of Sociology* Vol. 10 (2004) 2, 67-84.)
- Nie, Norman H. – Erbring, Lutz (2000): Internet and Society: A Preliminary Report (in: *IT & Society* 1(1): 275-283. <http://www.stanford.edu/group/siqss/itandsociety/v01i01/v01i01a18.pdf>, accessed 13 July 2007)
- Nie, Norman H. – Hillygus, D. Sunshine (2002): The Impact of Internet Use on Sociability: Time-Diary Findings (in: *IT & Society* 1(1):1-20.
<http://www.stanford.edu/group/siqss/itandsociety/v01i01/v01i01a01.pdf>, accessed 13 July 2007)
- Nie, Norman H. – Hillygus, D. Sunshine – Erbring, Lutz (2003): Internet Use, Interpersonal Relations and Sociability: A Time Diary Study (in: Wellman and Haythornthwaite /eds./ *The Internet in Eve-*

ryday Life, Blackwell Publishers, Oxford

<http://www.people.fas.harvard.edu/~hillygus/Wellmanchapter.pdf>, accessed 13 July)

O'Reilly, Tim (2005) *What Is Web 2.0. Design Patterns and Business Models for the Next Generation of Software* (<http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>, accessed 13 July 2007)

Putnam, Robert D. (1993): *Making Democracy Work: Civic Traditions in Modern Italy* (Princeton University Press, Princeton N.J.)

Putnam, Robert D. (2000): *Bowling Alone. The Collapse and Revival of American Community* (Simon and Schuster, New York)

Putnam, Robert D. (2002): Bowling Together (in: *The American Prospect*, Vol 13.)

Shapiro, Carl – Varian, Hal R. (1999): *Information Rules. A Strategic Guide to the Network Economy* (McGraw-Hill Professional, New York)

Tocqueville, Alexis De (2000 [1835, 1840]): *Democracy in America* (translated and edited by Harvey Mansfield and Delba Winthrop, University of Chicago Press, Chicago)

Tönnies, Ferdinand (1957 [1887]): *Community and Society* (translated and edited by Charles P. Loomis, The Michigan State University Press)

Wellman, Barry – Gulia, Milena (1999): Net Surfers Dont Ride Alone: Virtual Communities as Communities (in: Smith, M. A. – Kollock, P. /eds./ *Communities in Cyberspace*, Routledge London <http://www.chass.utoronto.ca/~wellman/publications/netsurfers/netsurfers.pdf>, accessed 13 July 2007)

Wellman, Barry – Anabel Quan Haase – James Witte – Keith Hampton (2001): Does the Internet Increase, Decrease, or Supplement Social Capital? Social Networks, Participation, and Community Commitment (in: *American Behavioral Scientist* 45)

Wellman, Barry (2001): Computer Networks as Social Networks (in: *Computer and Science*, Vol. 293. 2001.09.)

Wikipedia (2007): *Web 2.0* (http://en.wikipedia.org/wiki/Web_2.0, accessed June 2007)

I. Key bibliography

Castells, Manuel (2006): The Network Society: from Knowledge to Policy (in: Manuel Castells – Gustavo Cardoso (eds.): *The Network Society: From Knowledge to Policy*, The Johns Hopkins University Press, Center for Transatlantic Research Relations, Washington, DC)

Putnam, Robert D. (2000): *Bowling Alone. The Collapse and Revival of American Community* (Simon and Schuster, New York)

Milgram, Stanley – Travers, Jeffrey (1969): An Experimental Study of the Small World Problem (in: *Sociometry* Vol. 32, issue 4, pp. 425-443.)

2. Optional bibliography

Barabási, Albert-László (2002): *Linked – The New Network of Science: How Everything Is Connected to Everything Else and What it Means* (Perseus Books, Cambridge MA)

Castells, Manuel (2000): Toward a Sociology of the Network Society (in: *Contemporary Sociology*, volume 29, issue 5, pp. 693-699.)

Gillmor, Dan (2004): *We the Media: Grassroots Journalism by the People, for the People* (O'Reilly, Sebastopol, CA)