Conceptual Framework 1st version

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1 Introduction

Recent years have witnessed a growing awareness of the extent to which ICT permeates all our society and economy, and of the wide-reaching implications this has on the structures and dynamics of the European society. But in contrast to the wild speculation which was typical of the late 1990s environment before the bust of the so-called 'Internet bubble', researchers have since the turn of the decade made much progress in establishing solid evidence of the often highly complex ways in which the take-up and use of ICT has initiated, enabled or fostered process of social change. While many leading thinkers painted either utopian or dystopian scenarios in the 1980s and 1990s, what is developing now is a well-founded understanding of the real social impacts of ICT in Europe.

This research has shown that deterministic accounts of the effects which 'follow logically' from the features of certain ICTs are ill-informed. There are considerable differences not only in the extent, but also in the ways in which ICT is utilised in the Member States of Europe, and the impacts derived from them. There are, arguably even bigger, differences in the social impact of ICT between Europe and other parts of the world in which up-take of ICT is widespread, such as North America, Japan and the fast developing countries of South-East Asia. What this means is that social practice, which includes policy-making, can have a real effect on the benefits which members of society derive from ICT, and on the extent to which potential disadvantages exert a negative influence.

While considerable theoretical insight and empirical evidence have been collected on the individual factors which underpin 'quality of life', 'empowerment' or 'freedom', a widely accepted assessment of the impact of ICT on individuals in their societal context is not yet available.

It is against this background that the present study was set up. This conceptual framework will provide the basic approach, concepts and questions used to estimate the social impact of ICT in contemporary European societies. The time span that is chosen for this estimation is 25 years. In the year 1983 the first PC with a 'simple' operating system for a mass audience was offered by IBM. This has launched the whole technological development that has led to the breakthrough of the Internet in the shape of the World Wide Web ten years later. Twenty five years of experience affords to strike a better informed balance, both empirically and theoretically than the utopian and dystopian speculations of the 1980s an 1990s.

The following section will give a short overview of the most important general conceptions of the impact of technology on society. It is impossible to escape questions about causality between technology and society in general when our task is to estimate the social *impact* of ICT. These conceptions will be put on a scale between technological determinism on the one side and social constructivism and voluntarism on the other. Often these ideas will be linked to dystopian views and utopian views respectively. A third conceptual distinction will be related to the nature and speed of change discussed here: has the social impact of ICT an incremental, evolutionary or revolutionary nature?

In the third section a number of frequently observed pitfalls in the estimation of the social impact of ICT will be discussed. These pitfalls haunt many popular and policy conceptions of the opportunities and risks of new technologies. Examples are the notion of a *technological fix*, the idea that ICT straightforwardly fixes a large number of existing problems in society and the notion of a *total revolution*, the assumption that new technologies will completely change or overturn basic structures of society such as the meanwhile silently deceased conception of a 'new economy'.

The fourth section is the largest one. Here the conceptual approach of this framework is revealed in the description of ten basic trends in contemporary developed societies that are

reinforced by ICT. This section shows the basic approach of this EU project. The estimation of the social impact of ICT *departs from basic societal trends and not from the technological characteristics of the technology under consideration* such as connectivity and convergence[1]. We first describe and analyze what has happened in the past 25 years in the societal domains that are investigated in this project and subsequently try to answer the question which impact ICT has had on these events. What would have happened without the advent of this technology? This thought experiment affords an unconditional and unbiased estimation of the effects of ICT. The conclusion we reach then, after empirical observation, is that the transformative potential of ICT is more of an evolutionary than a revolutionary nature. Therefore, the section title calls ICT a trend amplifier.

In this concise conceptual framework the ten trends presented can only be described in a general way and provided with references. Empirical specifications of some of these tends will be supplied in the domain reports and the statistical report. However, these trends are so broad that we will not attempt to fully cover them in the domain reports. The function here is to propose a particular approach to the social impact research question.

The following function of this conceptual framework is to provide a number of common themes and questions for the domain reports. We have to prevent the risk that they will produce overviews of particular domains that are fragmentary and have no relationship to each other. Therefore section five will describe common themes running trough all domain reports together with a number of questions all reports will try to answer when appropriate.

2 General Conceptions of the Impact of Technology on Society

The question of the current social impact of ICT is a special case of the general influence of technology on society. Other case examples are the impact of biotechnology and nanotechnology or the impact of older media such as the press and broadcasting.. In the philosophy and history of technology the conceptions of the influence of technology on society range from full technological determinism to pure voluntarism. The first extreme holds that technology has a decisive influence on society; the second extreme maintains that technology affords many, if not any choices societies can make by the use of technology. We will shortly pass this scale from determinism to voluntarism in describing a number of popular conceptions of the impact of ICT on society.

Technological determinism claims that society is shaped by technology in general and techniques in particular. The technology is *defining* because it has a number of intrinsic characteristics that define what people are able to do with this technology. The effects of these characteristics - the techniques in the technology - on the behaviour and conceptions of people are fixed. Often one uses concepts with the adjective technological, such as technological culture and technological environment. Jacques Ellul has written the most technological- determinist analysis that has appeared so far: *The Technological Society* (1964)[2]. This is a deeply pessimist portrayal of man and society that are completely subjected to modern technology without any potential to escape. In 1977 Langdon Winner

[1] This is the basic difference with the approach taken by RAND in their study *Policy Options for a ubiquitous Internet Society* (SMART 2007/0031). This study departs from a technology assessment, in this case of connectivity, convergence and other Internet trends, and tries to assess the social and economic impact of these technological trends and the policy challenges they pose. This is a very common approach. However, it runs the risk of technological bias. In this study we want to explore the approach that departs from societal trends.

[2] Originally published as *La technique ou lénjeu du siècle* (1954).

published a book with the telling title *AutonomousTechnology*[3]*.* According to him techniques have autonomous power; they are 'greedy' and gradually take control of society, politics and culture. Pessimism about the impact of technology is a feature of many evaluations in the twentieth century before the rise of the internet and other supposedly liberating technologies. For example, the members of the Frankfurter Schule, in this case notably Horkheimer's philosophy of technology, strongly testify to this attitude. Pessimism is a common attitude among technological determinist scientists and philosophers but optimism might be more popular among the people. This appears in conceptions of technology creating a complete revolution that offers progress for society. These ideas will be discussed in the next section.

The best-known analyst of the impact of ICT on society that testifies to a (moderate) technological-determinist view is Manuel Castells. Technological determinism is explicitly denied by Castells himself[4] but the central theme in his magnum opus *The Information Age* is the effect of informationalism (a mode of development) on capitalism (a mode of production). He defines a mode of development as a *technical* relationship of production and a mode of production as a *social* relationship. It is a new kind of base-superstructure distinction. Some determinism also appears in Castells' view on the network society. According to Castells the 'logic' of the network society is pervading all spheres of social, economic and cultural life. It is *self*-expanding, *all*-embracing, and tends to marginalize the remnants of the old society. 'In the Information Age, the prevailing logic of dominant global networks is so pervasive and so penetrating that the only way out of their domination appears to be out of these networks and to reconstruct meaning on the basis of an entirely distinct system of values and beliefs'[5]. According to Castells this escape is attempted by particular communities and resistance movements. There is no opposition inside networks[6]. Castells once expressed his view that with networks 'we have created a machine which is dynamic, full of opportunities but is controlled by no one'[7]

At the other side of the scale of general conceptions of the influence of technology on society we find the opposite view of technological voluntarism. Individuals, organizations and societies at large are in control of technology and they are able make it work as they wish. In this view society, culture, politics and individuals create all techniques and all aspects of technology. This affords to make many, if not all choices they like to make: the technology is *enabling*. Techniques have no fixed inherent characteristics and technology is neither good nor bad. Here the instrumentalist view of technology is most popular. This view will be discussed below. Instrumentalism also is an option with technological determinism. However, here the instrument is a powerful force that cannot be escaped and that is used by powerful interests in society to suppress others. In technological voluntarism technology most often is an instrument of liberation and it can be used for progress in all spheres of society. According to Ithiel de Sola Pool they are *Technologies of Freedom*[8]*.* So, optimism is more frequently observed with voluntarism than with determinism.

A well known moderate type of technological voluntarism is the social constructivist view of technology. This view claims that individual and organizational users and regulators in

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3 Cambridge MA: The MIT Press.

4 M. Castells (1996) *The Information Age Vol I., The Rise of the Network Society*. Oxford: Blackwell, p. 5-7.

5 M. Castells, Idem. Vol I, p. 351.

6 Recently, Castells has changed his position. In *Communication Power* (2009, Oxford, New York: Oxford University Press) he argues that the 'logic' of power in networks can be transformed and that communication networks can be reprogrammed.

7 In an interview with a Dutch newspaper: Oosterbaan, W. (1997) 'We hebben een machine gemaakt die door niemand beheerst wordt: Socioloog Manuel Castells over de netwerkeconomie. *NRC Handelsblad, November 8,, p. 33.*

8 I. de Sola Pool (1983). *Technologies of Freedom. On free speech in an electronic age*. Cambridge: Cambridge University Press.

society are continually constructing the design and operation of technologies[9]. Strong and weak social constructivist claims are available[10]. The weak claim means that 'technological configurations are variable and strongly conditioned by social factors'. The strong claim goes further stating that 'technological change can be entirely analysed as the result of processes of social negotiation and interpretation, and that the properties of technologies are not objective, but are effectively read into the technologies by social groups'[11]. So, social constructivism argues that technologies, certainly technologies with strong human characteristics such as *information* and *communication* technologies are socially shaped. This view certainly denies that technological change follows a fixed, linear path which can be explained by some inherent logic. Instead, this path is non-linear and can go in all directions according to the wishes of users and designers.

In this conceptual framework a dialectical conception of technology that is both *defining and enabling* is defended. It tries to escape the extremes of determinism and voluntarism and it claims that technology and society are in a continuing process of *mutually shaping* each other[12]. Regarding society this view explains the dialectic of social structures and human actions that mutually shape each other[13]. Concerning technology this view defends the dialectic of technical structures or characteristics and their design and use, also mutually shaping each other.

The importance of emphasizing the enabling dimension of technology is that it offers us continuous choices and that it leaves room for policies, among them EU policies. The relevance of searching for defining characteristics of the technology under consideration is that it shows which characteristics are exerting pressures and putting limits on these choices and policies. To emphasize that these characteristics are not purely objective and follow no inescapable inherent logic and that they are not completely (inter)subjectively framed either, the word *capacities* of technology, or capacities of ICTs, might be better than the term characteristics.

Another position taken in this conceptual framework is the conception of the nature and speed of change that is created by information and communication technologies in society. The position taken is that the impact of ICT is *evolutionary*, rather than revolutionary. ICT sooner reinforces particular societal changes that were already going on than revolutionizing society. The technological capacities of ICT such as convergence and connectivity might be revolutionary in their own right, but their impact on society might not be of that nature. A popular everyday notion is that contemporary changes in technology and society have never been so fast before. It is doubtful whether this is true. Exactly hundred years ago, at the former turn of a century, rapid changes also occurred in a short period of time. They took place in society (urbanization and industrialization) and in technology (the introduction and diffusion of photography, film, telephony, radio, television and new transport means such as

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9 W. Bijker, T. Pinch and T. Hughes, eds.(1987). *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge MA: The Mit Press. W. Bijker and J. Law, eds. (1992). *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge MA: The MIT Press.

10 Ph. Brey (2003). 'Theorizing Modernity and Technology'. In: T.Misa, Ph. Brey and A. Feenberg, eds. *Modernity and Technology*. Cambridge MA: The Mit Press, p. 31.

11 Ph. Brey. Idem, p. 31.

12 An important forerunner of this view of technology is the famous historian of technology Lewis Mumford. In his *Technics and Civilization* (1934), Orlando: Harcoutt Brace & Co. he shows that new techniques and important scientific discoveries are mainly used to reinforce existing societal processes and relationships instead of replacing them. These techniques and discoveries are preceded and accompanied by cultural changes. Before humans started to use machines on a massive scale our worldviews and relationships were already mechanized.

13 An instance is the well-known structuration theory of the British sociologist Anthony Giddens.

cars). Who is able to show that the current 'digital revolution' offers so much more sweeping change?

This is not to underestimate the importance of contemporary change affected by technology in general and ICT in particular. - In biology evolutionary change might also be radical: whole species and kinds disappear from time to time in natural history. – Here we will take the position that changes reinforced by ICT are not incremental, but transformative for many social structures and aspects of daily life. According to William Dutton[14], choices about the use (or non-use) of ICT "reconfigure the electronic and physical processes through which [people] access vital social and economic resources", by which he means: people, services, information, and technology. Such reconfigurations, he says, give rise to social transformation, often related to empowerment of people as citizens, workers, consumers, patients etc.

Often, "transformative" is understood as uses of ICT that open up substantially new ways for individuals, firms and governments to achieve their goals. In many cases, this refers to activities which *would not have been possible without ICTs*. Conversely, we will ask ourselves repeatedly in the following domain reports *what would have happened in these domains without ICTs*? By not taking the technology (in this case ICT) and its capacities or challenges as our point of departure we hope to uncover its impact on society in an unbiased a fashion as possible.

Before we are going to describe a large number of current societal trends that are reinforced by ICT we have to reveal a number of pitfalls in the estimation of the social impact of ICT that are commonly made in policy documents and in public opinion. These pitfalls are related to general conceptions of technology that are either overly deterministic or voluntaristic.

3 Pitfalls in the Estimation of the Social Impact of ICT

Usually there are three questionable ideas or types of reasoning behind exaggerated estimations of the consequences of new technologies. They have been listed and discussed by Joseph Corn in the 1980s[15].

3.1 The idea of a total revolution

The first assumption or idea is that new technologies will radically change our lives. This is a conspicuous refrain in many thoughts about the present and the future of technology. However, it would be wise to remember that this refrain has resounded many times in history before. A first example is the invention of electricity that was estimated to lead to a radical decentralisation of society in the nineteenth century, notably just before the rise of massive bureaucracies. Another example is the advent of radio that spurred expectations that people themselves could become broadcasters and direct democracy would lie ahead. What actually happened was the rise of communism and fascism shortly afterwards. Currently, the same song is to be heard. It is argued that the participative nature of the contemporary Internet will fade away the traditional mass media and institutional politics. In education so-

[14] Dutton, W.H. (2004) 'Social Transformation in an Information Society: Rethinking Access to You and the World', Paris: UNESCO; Dutton, W.H. (2005) 'The Internet and Social Transformation: Reconfiguring Access', in Dutton, W.H., Kahin, B., O'Callaghan, R. and Wyckoff, A.W. (eds) 'Transforming Enterprise: The Economic and Social Implications of Information Technology', Cambridge, MA and London: MIT Press, pp. 375-397.

[15] Joseph Corn, eds. (1986). *Imagining Tomorrow. History, Technology and the American Future*. Cambridge MA: The MIT Press.

called independent 'new learning' is held to replace traditional classroom learning. Many other examples could be mentioned. Some of them will be given in the next section. What is actually wrong with this argument? The first mistake of this argument inspired by determinism is that technical opportunities are converted into social realities much too fast. Technological innovations rarely lead to societal revolutions straight away. This did not go for the industrial revolution and it won't happen either with the current information or communication revolution. Technological innovations only drop into fertile soil when they join with social, economic and cultural innovations, subsequently perhaps emphasized and accelerated by these technologies. The second mistake in this type of reasoning is that it often is wishful thinking. The hope that tomorrow will be better than today or yesterday is the driving force behind the idea of a total revolution.

3.2 The idea of social continuity

The second argument is the exact opposite of the former. This is the assumption of social continuity. Here new technologies are seen as mere continuous improvements of existing technology. The motor car was an improved coach. The Internet primarily is faster: it is an electronic highway. Potential societal effects do not bring much news. At the most new technologies can solve old problems. What is wrong with this pragmatic and sober argument? In the first place this type of reasoning underestimates the transforming potential of ICT. Not all changes brought forward with the aid of ICT are incremental. But transformation is not yet a revolution. This would require structural changes in society. Examples of such changes are the break away of the 9 to 5 working day as a norm, the replacement of the modern capitalist economy by a 'new economy' and a domination of the mass media by so-called user generated content. In the analysis below we will argue that these revolutionary changes are *not* to be expected.

A second underestimation of this argument is that the technology in its own right certainly can be revolutionary or disruptive. The most important revolutionary characteristic of present-day digital technology is the convergence of most old infrastructures creating a all-embracing, digitally enhanced infrastructure for our (network) society. This might lead to a number of substantial social changes. Some of these changes will never be discovered following the argument of social continuity. Usually they are called second order effects of new technology: social side-effects not foreseen.

The last mistake in this argument is that it appears to have a blind spot for new effects. This is caused by the fact that new technology creates new problems, and not only helps to solve old problems.

3.3 The idea of a technological fix

A third type of doubtful reasoning is the idea that new technology can solve most if not all social problems. This is the voluntaristic idea of a technological fix. The new technology, e.g. ICT is seen as a solution for a large number of societal problems. Does one observe a gap between politics and citizens? Internet democracy is the solution. Is our car circulation stuck in traffic jams? Telework shows the exit. Is there not enough manual care in hospitals as compared to administration? Electronic patient systems free doctors and nurses for physical care. The obvious mistake in this simple reasoning is that it is much too superficial. The problems mentioned have much deeper causes. They are not to be solved by ICT as a set of instruments alone when no organizational and political measures are taken simultaneously. Moreover, in this argument a certain technology is often related to one particular effect only. Telework reduces traffic queues. Video camera's in public spaces have a 'Big Brother' impact.

3.4 Instrumentalism

We want to add a fourth pitfall. The main argument in this conceptual framework is that ICT primarily reinforces a number of existing societal trends. At first sight this seems to reveal an instrumentalist view of technology. Apparently, technology is seen as some kind of lever. In this respect some call ICT a *general purpose technology*: it can be used for any purpose, good or bad. However, we try to escape an instrumentalist view as this is much too simple and does not correspond to the argument we propose. In the instrumentalist view technology is a *means* for a particular *goal*. Several actors are able to use this means for their own goals. In this way technology is seen as a solution for existing societal, organizational and individual problems. This view easily leads to the view of ICT as a technological fix. However, the difference between the two is that the idea of a technological fix is always framed in a positive manner while instrumentalism can also be linked to negative uses and consequences. This possibility of both positive and negative effects immediately shows the first problem with this argument. Often totally different goals are reached as compared to those expected or desired. In the section below we will come across many instances of this occurrence. We will mention a few examples. One expects to save time using applications of ICT but increasingly full calendars or schedules and a speed-up of all social, economic and cultural processes are the actual result. One assumes that telework can solve traffic jams but the overall use of ICTs supports mobility instead of reducing it. One notices that the Internet gives access to more knowledge and information for everybody, but we will also show that an increase of inequality is a more probable result because the Internet and these sources of information are used so differently by people with different social backgrounds. Frequently, these unforeseen effects are so-called *second order* effects. They usually have much deeper social causes than the *first order* effects expected by people defending an instrumentalist view of technology.

A second problem with the instrumentalist view is that in fact goals and means are not independent, but they influence each other. This is the well-known interaction of technology and social context. This means that the instrument is continually reshaped through goals that are aimed for in practice. As soon as particular users of mobile phones, particularly young ones, started to use the marginal design feature of SMS, to the utter surprise of the telephone manufacturers, these producers immediately adapted their means (supply) to this goal (demand).

A related problem is that a means is able to corrupt a particular goal. It can cause new problems. Sometimes the means, the cure is worse than the problem to be solved, the disease. Examples are the many failures of automation in organizations that tried to improve their effectiveness and efficiency with the aid of ICT. A very high percentage of automation projects in companies and government departments is known to fail or at least delayed. In these cases goals are not only not attained but in practice often also changed during the project to prevent explicit failure and image damage. The interesting conclusion of many evaluations of these projects is that many times a very narrow instrumentalist view of ICT was adopted and important social and cultural characteristics of the organization concerned ignored.

A final problem with the instrumentalist view is that ICT as a collection of means reveals a clear affinity with particular goals. So, ICT cannot be easily separated from these favourite goals. And it cannot be used for opposite goals. In this regard ICT is not a general purpose technology. In particular respects technology can be defining. This goes for instance for the registration and control potential of ICT. This cannot be cut out of this technology. Particular social effects of this potential, such as likely privacy loss can be combated but the registration and control potential remains. In these defining aspects of technology probably hide the most important social effects of ICT in the long term. Unfortunately, the instrumentalist view tends to emphasize the enabling aspects of technology that are much easier to find.

4 ICT as a Trend Amplifyer: The Reinforcement of Ten Major Trends in Contemporary Society

In this long section we will describe ten major trends in contemporary European societies that might be influenced by and are often even believed to have been caused by the arrival of ICT. The selection of these trends was made with the following considerations:

- They should be social, not technological trends
- They should be sufficiently broad to encompass social, economical, political and cultural aspects; basic coordinates of society such as time, space, scale and social structure should be contained
- They should be sufficiently broad to be influenced by other factors than technological factors only;
- They should be longitudinal or epochal trends that may have already started several decades ago in order to be able to observe the influence of the arrival of ICTs
- They should be related to ICT in many scientific analysis and policy documents; this is not to conflate ICT and its social impact but to rule out the possibility that important social trends are ignored that might be influenced, if not caused by ICT.

Nevertheless, others may observe other major social trends influenced by ICT that we have not selected. The pretention of completeness would be too high for this relatively short framework.

4.1 Time: the acceleration of all societal processes

Let us begin with the most basic dimensions, those of space and time. The core of the opportunities of ICT according to many analyses and documents is that the technology works 24 hours a day and seven days in a week, and that this goes world-wide. The popular view is that ICT annihilates the significance of space and time and that this is a new phenomenon. Promoting this view Cairncross declared 'the death of distance'[16]. Some scientists such as Castells support this view with expressions such as 'the annihilation of time'', 'timeless time' and a 'space of flows that replaces a space of places'[17]

In fact the importance of the dimensions of time and space grows in the contemporary network society[18]. Their significance radicalizes because they are used ever more selectively. The new media support this. However, this trend is not new. The acceleration of social life already appears from the start of Western modernization in the sixteenth century. After the industrial revolution it was set into a following gear. Without the intervention of ICT acceleration would have stepped-up again in the twentieth century, if only by the steep rise of transport means.

Giddens[19] has described human history as an extension of the dimensions of space and time. Traditional societies rest on direct interaction between people living close together. Modern societies expand more and more in both space and time. Time barriers are crossed by a turn over of tradition in all kinds of sources. Spatial barriers are crossed with transport and

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16 Cairncross (2001). *The Death of Distance: How the Communications Revolution Is Changing our Lives . Harvard Business School Press.*

17 M. Castells (1996). *The Information Age Vol. I The Rise of the Network Society,* Oxford: Blackwell

18 J.A.G.M. van Dijk (1999/2006). *The Network Society, Social aspects of new media*. London, Thousand Oaks CA, New Delhi: Sage.

19 Giddens, A., *The Consequences of Modernity*, Stanford (Cal): Stanford University Press. Oxford: Basill Blackwell, Cambridge: Polity Press, 1990.

communication means. ICT has only continued this historical trend. Until the trend reaches a particular tipping point and bounces back. Then time and space actually start to shrink within expanding limits. For this phenomenon Harvey uses the term *time-space compression*.

The term compression best expresses what happens: a radicalization of the significance of these dimensions. The time and place options are treated ever more critically. The new media enable this treatment. Despite or by means of the existence of ICT the location of a company or institution becomes ever more important. With applications such as Google Maps and the mobile phone we can make appointments on the exact spot of a meter. Our very precise electronic calendars stimulate to fill the last holes in a daily schedule. The plain fact that one is able to check ones email at home, or everywhere else gives us the opportunity to complete a task for Monday morning already on the Sunday night before.

Does this mean that the radicalization of the significance of time also has a decisive influence on our daily spending of time? This is not the case. The technological opportunity of time compression collides with the physical and social reality of human beings. These poor creatures are not able to meet the speed of systems of ICT for seven days a week, let alone 24 hours a day. Biological and social rhythms are standing in the way. The best proof of this statement is that 25 years of PC and Internet experience and the real opportunities of telework, telestudy and the like have not managed to break the nine to five daily rhythm. This stands solid as a rock[20] for both full-time and part-time employees, though small fringes of the nine to five time-span are cut back by those trying to escape traffic jams going to work and returning home. [21]

Future expectations are that these fringes will be stretched more with the aid of ICT, but not that the basic synchronization of humans living together or fixed rhythms for the day or the week will be broken. That would be a true revolution.

4.2 Space: increasing mobility

A comparable popular idea is that place is no longer significant with applications of ICT. After all one is able to get access about everywhere to the global network. Initially, this was linked to the assumption that getting access would happen primarily from the home. In 1980 Alvin Toffler in his Third Wave still proclaimed the electronic cottage as a serious future perspective. In the mean time this appears to be a mistake of the same order as the paperless office projected in the same 1980s. Nothing has come true of this perspective, despite all marginal attempts to realize telework at home[22]. Actually the opposite has happened: a sharp rise of overall mobility in society[23] and a strong support of this trend by ICT.[24]

Increasing mobility is a deeply rooted trend in modern society. By itself it has no relationship at all with ICT. Instead it has many social causes[25]. On the field of demographics we are able to observe the shrinking household and the rise of the number of people living alone that

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[20] European Survey on Working Conditions. Available www.eurofound.europa.eu. Breedveld, K., Broek, A. van den, Haan, J. de, Harms, L., Huysmans, F. en Ingen, E. van, *De Tijd als Spiegel, Hoe Nederlanders hun tijd besteden*, Den Haag: Sociaal en Cultureel Planbureau, 2006.

[21] Harms, L., *Overwegend onderweg, De leefsituatie en de mobiliteit van Nederlanders*, Den Haag: Sociaal en Cultureel Planbureau, 2008.

[22] The maximum current number of teleworkers (broad definition) in the EU ranges between 5 and 10 percent.

[23] Breedveld a. o p. 31 a.n. See note 19

[24] Harms, p. 86; cf. G. Sciadas, *Our Lives in Digital Times*, Research paper, Statistics Canada, 2006, http://www.statcan.gc.ca/pub/56f0004m/56f0004m2006014-eng.pdf

[25] Mokhtarian, P. et al., TTB or not TTB, that is the question: a review and analysis of the empirical literature on travel time (and money) budgets, *Transportation Research Part A-Policy and Practice*, 38(9-10), pp. 643-675. 2004.

drive people outdoors for social life and assistance. In the economy the geographical scale of labour processes is expanding and labour participation of women and housewives is rising. The growth of income and car ownership enable unimpeded travelling for work, study and leisure time. In a cultural respect spending leisure time outdoors is intensified and varied. ICT strongly supports all these trends. Below it will be argued that the new media enable an individualized existence and lifestyle. Simultaneously, these media maintain the possibility to keep in touch with employers and colleagues at work being on the road or working at home. These days appointments for our overfull calendars of leisure spending can only be realized with the aid of cars and modern communication means such as mobile phones, PDA's and e-mail.

As argued above the selectivity of space and places also increases. This goes for location of companies, the choice of places to live and of appointments for meetings and joint activities. Better logistics is not only a secret of efficient modern business management, but also for the coordination of modern life. ICT is becoming an essential means for this purpose. However, the successful use of ICT for everyday logistics largely depends on the extent to which online communication can be a replacement of offline communication or a supplement of this. Or can both be successfully integrated in the coordination and realization of our daily activities?

Considering the relationship between online and offline communication we have witnessed three periods with different perspectives in the past 25 years. In the 1980s and the start of the 1990s online communication or CMC ('computer-mediated communication') was seen as a potential replacement for offline or face-to-face communication. The image of the electronic cottage as a replacement of outdoor living and working fits into this perspective. Frequently online communication or CMC was immediately characterized as a second-rate substitute for familiar offline activities that regarding quality is no match for face-to-face communication.

After the breakthrough of the Internet and the World Wide Web in the second half of the 1990s the value of online communication was rated higher. For many activities this would be a serious supplement of offline communication with its own additional qualities such as independence from time, space and physical conditions. All kinds of e-activities, from eCommerce to eGovernment started to be viewed as required supplements for comparable traditional activities.

After the sudden end of the Internet hype in 2000 and with the rise of mobile equipment of ICT the perspective of the integration of online and offline communication appeared. As a supplement both types of communication are used in parallel. With integration both types of communication merge. Lightweight mobile equipment allows to be both or simultaneously active in online and offline environments. Undoubtedly, this is the perspective of the future. It enables us to attach an ever more selective importance to particular times and places. We can choose the best times and places for high-quality communication while keeping in touch with messages and events with a lower value for us.

The argument above implies that the trend of increasing mobility will only be reinforced more by ICT in the future. Until this trend also reaches its limits. Mobility will collide with the physical limitations of humans to be on the road al of the time, the material restrictions of rising transport costs and the limits of ecological non-sustainability.

4.3 Scale: globalization

That ICT supports globalization, is a statement almost everybody takes for granted, whether one believes in McLuhan's *global village* or not. Yet, a number of comments have to be added to this statement. Globalization is no new phenomenon either. It has occurred in many waves since the Western colonization of the world[26]. Each time progress in information and

[26] C.A. Bayly, C.A., *The Birth of the Modern World, 1780-1914*, Oxford: Blackwell, 2004.

communication technologies offers a strong support. At the former turn of the century a worldwide industrial capitalism caused a new wave of globalization. This was supported by the technology of the first communication revolution of modern times[27] that gave us telephony, photography, film, radio, television and an (inter)national press among others. The second communication revolution currently happening, marked by digital media, is indispensable for the acceleration and deepening of contemporary globalization characterized by the diffusion of borders in a worldwide production, circulation and consumer processes and by a liberalization of the world market. In the cultural sphere international satellite television and telephony have unified the world before. The Internet, e-mail and wireless mobile communication have added a significant further step, particularly in the experience of people.

An important difference between the former and the current wave of globalization can be observed. While the former was dominated by scale extension, among others supported by powerful new mass media, the present wave is a combination of scale extension and scale reduction. The last trend is a reduction that among others appears in the growing attention to local activities or identities and in the basic process of individualization. Sometimes the term 'glocalization' is used for this combination of scale extension and reduction. Networks, among them networks of ICT have both a centralizing and a decentralizing effect, though many will emphasize the horizontal dimension of networks. In the course of the twentieth century information and communication networks have primarily supported a spread of transnational companies across the world. From the 1930s onwards they enabled a simultaneous process of downsizing and a division of production activities followed by expanding subcontracting with a central management still being able to keep an eye on the divided process by means of ICT. In this way the processes of centralization of capital and control of production have been combined with a decentralization of production itself[28]. ICT and forms of network organizations have realized this combination and created a sweeping flexibility of economic processes.

4.4 Social infrastructure: network individualization

This global infrastructure of scale extension and reduction combined is also reflected in the social infrastructure of contemporary Western societies. According to many sociologists individualization is the most important trend of these societies. This means that increasingly the individual is the basic unit of society instead of groups or collectivities. This process appears in quite a number of trends such as the reduction of average household size, a bigger part of the day that people are spending alone or in the company of media, the differentiation of needs and activities and greater personal independence from the immediate physical and collective environment. ICT is one of the technologies enabling this way of living, together with transport, energy and household technologies. All these technologies have supported this way and style of living.

Sociologist Berry Wellman[29] has invented the concept 'network individualism' for this trend, while van Dijk prefers the term 'network individualization'[30]. The increasing significance of social and media networks for our network society is the necessary counterpart of individualization. After all, the social, collective and societal aspects of our existence are not less important than before; they are only organized in a different way. Henceforward, the individual is the starting point, at least in Western societies.

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27 J. van Dijk (1991/2006). The Network Society. See note18

28 J. van Dijk (1999/2006). The Network Society, Chapter 4. see 18

29 B. Wellman (2000)., Changing Connectivity: A future history of Y2.03K. In: *Sociological Research Online*, Vol. 4, No 4., 2000. www.socratesonline.org.uk/4/4/wellman.htm, Retrieved at 8-12-2000.

30 J. van Dijk, See 18

From 1975 onwards the number of direct, physical social contacts, both in households and outdoors has been steadily reduced[31]. This is a clear sign of individualization. However, from the 1970s onwards this decline of physical contacts is compensated by fast increasing telephone use. In the last fifteen years this has been stepped-up by mobile telephony, e-mail and instant messaging or chatting[32]. So-called strong ties have partly been replaced by weak ties on a longer distance. In recent years we have witnessed the phenomenal rise social networking sites such as Facebook, Friendster, Hyves, LinkedIN and MySpace. In EU countries it is estimated that between 20 and 50 percent of Internet users have a profile on these sites[33]. Another fast growing phenomenon is online dating that is estimated to be used by 20 to 25 percent of Internet users searching for a partner. These are all appearances of network individualization on a personal scale. The new media support this trend with ever more facilities that strongly stimulate our abilities of creativity in communication.

The classical sociological discussion on the question whether the Internet in general reinforces or reduces the sociability and the social cohesion in society, recently is ever more settled to the advantage of those who observe a reinforcement[34]. According to Katz and Rice the Internet increases social capital in terms of social , citizen engagement and community. Only, the problem is that some sections of the population benefit much more than others from these opportunities (see below).

The Internet does not only offer unprecedented facilities for social contacting but also for community building. Existing communities are not only going online more and more ('communities online'). The Net also creates virtual communities that often are communities of interest ('online communities'). Does this mean that both types of communities are recovering the so-called 'lost communities' of traditional mass societies and that they will compensate the lost direct social contacts in online environments? Most likely this example of a technological fix will not occur. Traditional forms of sociability will not return. They will be replaced by new forms that might be new in their electronic or digital shapes but in fact will only extend a number of trends that are a hundred years old and that do not depend on ICT a all. These are trends such as the extension of social and personal networks across much larger distances than before, the support of our social relationships by telecommunication media and the blurring dividing lines between public and private communication[35]. The trend of greater personal discretion in choosing contacts according to ones liking in stead of being determined by birth or location also is an older modernization trend.

4.5 Complexity: the rise of registration for control

That ICT offers the most important means to satisfy the growing need or drive for registration and control in all parts of contemporary society is easy to understand. The question what is the origin of this need is more difficult to answer. That requires a typification of our society. For this purpose a large number of classifications are offered that all are related to registration and control. The classifications information society and network society have a very general nature. The first indicates that all activities in our society have a growing information intensity. This implies the registration of these activities. The second

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31 W. Breedveld a,o. See footnote 19.

32 Huysmans, F., Haan, J. de en Broek, A. van de,. *Achter de schermen, Een kwart eeuw lezen, luisteren, kijken en internetten*, Den Haag: Sociaal en Cultureel Planbureau, 2004.

33 OECD (2008) 'Measuring user-created content: Implications for the "ICT Access and Use by Households and Individuals' Surveys, Working Party on Indicators for the Information Society, Paris: OECD. See also: Fisch, M. and Gscheidle, C. (2008) 'Mitmachnetz Web 2.0: Rege Beteiligung nur in Communitys', *Media Perspektiven*, 7, pp. 356-364.

34 See a.o. Katz & Rice (2002) *Social Consequences of Internet Use,* Cambridge MA: The MIT Press and Wellman and Haythornthwaite (Eds.) (2002) *The Internet in Everyday Life*. Malden MA, Oxford: Blackwell.

35 J. van Dijk (1999/2006). *The Network Society* Note 18

classification points out that increasingly the organization and structure of society are carried by integrated social and media networks. Networks happen to be vulnerable social and technical (infra)structures that require control and need particular norms, codes, standards or protocols to operate[36]. What would be the Internet without the TCP/IP protocol? To communicate in decentralized environments and in peer-to-peer networks would be impossible. So, in certain respects a technology can be defining.

The use of the general terms information and network society does not rule out more traditional classifications. Clearly, European societies are capitalist in an economic view, constitutional democracies in a political sense, post- or late modernist in a cultural fashion and non-sustainable in an ecological respect. It would be possible to show the relationship between all these classifications and the needs for registration and control. That would go much too far here. After all, two other labels seem to be better suited to the trend discussed here.

Ulrich Beck[37] has called contemporary society a risk society. This is a type of society that continually prepares itself on risks that are created by humans themselves, not so much the risks of nature. These self-made risks originate from her exceptionally complex present-day technology and organization. These risks can only be kept under control by permanent control by, among others, registration and signal systems. According to David Lyon[38] this leads to a surveillance society. This term indicates a society in which the individual is observed by a focussed, systematic and permanent registration of personal data in order to reach more influence, to be able to lead, to manage and govern and to protect[39].

Van Dijk[40] has tried to specify these general classifications linking them to the rise of ICT. He has done so via an extension of the historical analysis of James Beniger in his book The Contol Revolution[41] In this book Beniger describes a number of societal innovations in the second half of the nineteenth and the first half of the twentieth century as solutions for a crisis of control in production, distribution and consumption, a crisis that appeared in the aftermath of the Industrial revolution. These solutions were the innovations of the bureaucracy, new ways of transport and communication and the rise of mass communication and mass consumption. According to van Dijk these solutions became impediments for the organization of society in the twentieth century. For instance, it got caught up in bureaucracy. Gradually they have been replaced by new solutions, a large part of them carried by ICT. Now bureaucracy is replaced by '*infocracy*': organizational control supported by ICT. Old connections of transport and communication are supplemented and partly replaced by ICT networks. Finally, mass communication and mass consumption are partly replaced by narrowcasting and personalization in the media and in marketing. These processes are clearly backed by the Internet and other digital media. The three series of solutions or innovations completely depend on the registration and control potential of ICT.

So, in this respect ICT again is an amplifier of trends that are much older than 25 years. They are a consequence of the epochal trend so thoroughly analysed by Max Weber: the rationalization of politics, economy, culture and worldviews that started at least 50 to 100 years before the coming of ICT. In turn, rationalization is a response to the increasing

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36 L. Lessig (1999). *Code, and other laws of cyberspace*, New York: Basic Books; D. Grewal, (2008). *Network Power, The Social Dynamics of Globalization*, New Haven en Londen: Yale University Press.

37 U. Beck (1992). *Risk Society: Towards a New Modernity*, London: Sage; Beck, U.(2008). *World at Risk*, Cambridge: Polity.

38 D. Lyon (1994). *The Electronic Eye: The Rise of the Surveillance Society*. Cambridge: Polity.

39 D. Lyon (2007). *Surveillance Studies: An Overview,* Cambridge: Polity, 2007. P. 14.

40 J.van Dijk (1999/2006). *The Network Society* Note 18

41 J. Beniger (1986). The Control Revolution:Technological and Economic Origins of the Information Society, Cambridge, MA: Harvester.

complexity of modern society[42]. Contemporary ICT only reinforces the registration drive and potential of present-day society, linking a longer existing database technology (already available before the computer came) with that of computer networks. Subsequently, these networks have become mobile and ubiquitous. They are currently penetrating in all pores of society and human lives, as no longer only humans are connected but also things with chips built inside. In the mean time individuals can be traced 24 hours a day, and in most of their activities and spheres of life. The loss of privacy linked to this trend is deplored by many. Nevertheless it continues unrelentingly.

Even so, the harm of privacy is no inescapable future prospect. The classifications of society defined above make a determinist impression. In fact, these characteristics of society are created by people that have other needs than efficient organization and safety only. For example, the needs of freedom and protection of personal life. In response to the privacy threats of ICT three kinds of protection have been developed: privacy law and regulation, self-regulation (from codes of conduct to Internet filters) and so-called 'privacy-enhancing technologies' (among others encryption).

4.6 Capitalism: rejuvenation and growing instability

According to Manuel Castells capital is global and, as a rule labour is local[43]. He argues that the information revolution contributes to globalization and the concentration of capital precisely by using the decentralizing power of networks. Opposed to this, labour is disaggregated in its performance, fragmented in its organization and divided in its collective action. The ensuing loss of the strength of labour and the labour movement has led to a reconstruction, we would rather say rejuvenation of capitalism. Henceforward, the value of labour power all over the world can be used. New production and consumption markets, first of all those of China and other emerging markets, have created new sources of profit for capital. The international logistic transport and communication systems required have become so large and complicated that they could not longer be coordinated without ICT.

During the days of the Internet hype many thought that this would lead to a new economy without crises. This thought is a clear case of the idea of a total revolution. However, this expectation appeared to be untenable. There are very few rules and regularities of capitalism that substantially change on account of ICT. All in all, only three can be derived[44].

The first is the reversal of the value chain. In electronic commerce the traditional preponderance of supply partly shifts to demand. Consumers become co-producers in self-service.

The second change is the dematerialization and division of the value chain of production, distribution and consumption. All available information belonging to these parts can be detached from the material processes concerned, and divided among separate businesses. Most often these are the most profitable parts of the whole chain. However, along the same track of dematerialization financial assets can also be uncoupled from the so-called real economy. On the financial markets ICT plays a major role.

The third change is a mitigation of the periodic crises of overproduction that haunt capitalism. Electronic stock management and production on demand can lead to more appropriate production planning.

However these innovations have a counterpart. This rejuvenation of capitalism and this uncoupling of 'virtual' from 'real' economic processes also create excessive complexity and instability in the system, despite the stabilisation brought by the mitigation of overproduction.

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42 J. Urry (2003). *Global Complexity*. Cambridge: Polity.

43 M. Castells (1996). *The Information Age, Vol. I, The Rise of the Network Society,* p. 475.

44 J. van Dijk (1999/2006). The Network Society Note 18

Complexity is increased because the real value of financial products is very difficult to detect in the current far-reaching dematerialization of the value chain. The network society in general and the financial markets in particular have become very unstable because all social and economic processes are accelerated in electronic networks. Behind this acceleration so-called network effects such as power laws ('the rich get richer' etc.) are working[45]. Rumours and hypes are built and exchanged much faster than before.

A good example of more instability in the economic system and the role of ICT as a trend amplifier is the current credit crisis. ICT certainly is not innocent to this crisis. However, it is not the deeper cause of it that lies in the nature of contemporary advanced capitalism with its extended financial sphere. In at least three basic ways ICT has amplified the credit crisis:

1. ICT reinforces the volatility and speed of change in the economy. ICT enables yo-yo-movements on the stock market and a crowd behavior of ever faster selling and buying on this market. This complicates government and regulatory reaction in case of problems. Fortunately, government reaction was faster than ever before in the current crisis.

2. As has been argued before, ICT reinforces the virtuality and immateriality of economic processes. Without ICTs no financial derivatives (packing, selling and securitization of loans, credit default swaps etc.) would have been possible to the extent they are used now[46].

3. ICT delivers the software for all financial trade and product innovations, including automatic selling and buying.

4.7 Class: growing social inequality

Many social scientists and economists have observed a rise of social inequality, particularly income inequality worldwide, and especially in countries such as the United States since the 1980s[47]. So, in countries where this trend occurs it precedes the advent of ICT. In this section we argue that ICT tends to reinforce this trend.

Many will have doubts about the assertion that a technology so appropriate to distribute unprecedented amounts of free information and understandable knowledge among the mass of the population would contribute to rising social inequality. Yet this can be shown and explained, provided that one considers ICT as a technology that is able to reinforce the position of some people in societal competition and weaken that of others. So this concerns relative inequality and much less absolute inequality: the complete inclusion or exclusion of access to computers and the Internet.

Without in fact supporting an instrumentalist view of technology – see above- it can be argued that ICT has a leverage effect on existing types of social inequality. Most research of digital media access, that often deals with the so-called digital divide shows that there is a strong correlation between access and personal or positional characteristics of people[48].

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[45] B. Huberman (2001). The Laws of the Web; J. van Dijk (1999/2006). The Network Society; D. Grewal (2008). Network Power

[46] In the 1970s the first derivatives based on the Black-Scholes risk formula/model were automated for an advanced calculator. Soon computers and a computer model were used for this purpose to produce an exponential growth of options and other derivatives.

[47] IMF (2007) *World Economic Outlook 2007*, Chapter 4, Globalization and Inequality, http://www.imf.org/external/pubs/ft/weo/2007/01/index.htm, Retrieved at 8-10-2007; C. Goldin and L. Katz (2008).*The Race between Education and Technology*, Cambridge MA en Londen: The Belknap Press, 2008; Also see Note 55.

[48] P. Norris (2001) *Digital divide, civic engagement, information poverty and the Internet worldwide*, Cambridge: Cambridge University Press; , K. Mossberger a. o. (2003) Tolberger, C. en Stansbury, M., *Virtual inequality: Beyond the Digital Divide*, Washington DC: Georgetown University Press, and J. van Dijk (2005). *The*

Primarily education, age and societal position appear to be important. Considering physical new media access income still plays a role caused by the regular expenses for purchase of new hardware and software and usage costs that have to be made. People that need ICT for their work or education have a much higher chance of having physical access.

It is important to make a distinction between kinds of access to ICT. Van Dijk distinguishes between four subsequent kinds of access [49]. The process starts with motivation. Subsequently people will have to attain physical or material access to be able to work with digital media, Than they will have to develop digital skills. Finally, they will make various uses of these media,

In 2008 56% of the EU 27 population between 16 and 74 years used the Internet at least once a week and 67% according to the Eurobarometer[50]. This means that currently about 2/3 of the EU population uses the Internet more or less. However, there are large differences between European countries ranging from 26% (Eurostat) or 41% (Eurobarometer) Internet use in Romania to 80 respectively 89% in Denmark[51]. Also there are significant divides between people with different levels of education, employment status, age and ethnic minority membership. Other digital media such as those for telephony, photography, video and music are used by larger sections of the population. The motivation to work with digital media has sharply risen in recent years. In most European countries all parts of the population, from young to old, and from low to high educated want to participate. The phenomena of computer anxiety and computer hatred have diminished. The biggest access problems are now a lack of digital skills and very unequal use, both in time and in type of applications.

One of the main reasons for unequal use of computers and the Internet is a lack of digital skills. Four types of digital skills can be distinguished. First we have operational skills; the popular expression is 'button knowledge'. Then we have formal skills. Every medium has particular formal characteristics. Regarding the internet one has to learn to browse and to navigate using hyperlinks. The third type of skill is information skills: the ability to search, select and evaluate information in computers and on the Net. The last type of (so-called 'higher') digital skills is strategic skills: using computers and the Internet as a means to reach a particular personal or professional goal[52]. Information and strategic skills appear to cause the biggest problems. Only a minority of Internet users master them sufficiently [53].

Unequal skills next to diverse interests of users are the main reason for unequal use of the Internet by different sections of the population. Usage can be measured in different ways. Among others one can look at kinds of applications such as the classes of information and entertainment. On this issue van Dijk has observed a usage gap of Internet applications between the higher en lower educated in several studies[54]. The higher educated primarily use the advanced and 'serious' applications of the Internet that serve their occupational and

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Deepening Divide, Inequality in the Information Society, Thousand Oaks CA, London, New Delhi: Sage.

49 J. van Dijk (2005). *The Deepening Divide, Inequality in the Information Society*. Thousand Oaks CA, London, New Delhi: Sage

50 See this EU SMART Study, Report on the Findings from Flash Eurobarometer, p. 17

51 See former note and J. van Dijk (2008) 'One Europe, Digitally Divided'. In: A. Chadwick & Ph. Howard (Eds.) Routledge Handbook of Internet Politics, pp. 288-305.

52 J. van Dijk (2005). The Deepening Divide, Inequality in the Information Society. Thousand Oaks, London, New Delhi: Sage.

A. van Deursen & J. van Dijk(2009). Improving digital skills for the use of online public information and services. *Government Information Quarterly 26*, 333-340 and A. van Deursen and J. van Dijk (*in press).* Using the Internet: Skill related problems in users' online behaviour. Interacting with Computers, 2009.

54 J. van Dijk and Hacker (2003); Van Dijk (2005), (2008)

educational careers, while the lower educated use the simple applications for entertainment, basic communication, shopping and auctions relatively more.

Unequal skills and differential use of the Internet reinforces existing social and economic inequalities. One social category or class benefits more than the other. Again, we are able to argue that the rise of social and economic inequality in the world is a longer existing trend. It has many causes that cannot be discussed here. It has to be noticed that this rise of inequality is bigger in a country such as the USA than in most countries of Europe. In their book The Race between Education and Technology Goldin and Katz[55] have shown with abundant statistical data that except for economic reasons the extent to which the standard of education and the skills learned in education are able to keep up with technological progress explains a large part of growing wage inequality in America after the Second Word War. Since 1980 the standard of education lags ever more behind technological development. This causes those who are able to keep up with this development to take a clear lead. This growing gap van also be observed on the level of countries according to the IMF[56]. The use of technology, particularly of ICT is the main cause. Previously, Dutch economists Nahuis and de Groot observed a skill premium on wages on account of ICT skills in a large-scale and longitudinal international comparison[57].

The expression of a race between education and technology indicates that future solutions of this problem have to be found in all kinds of education, both regular and adult education. Almost everybody has a need for better information and strategic digital skills. Seniors primarily need operational and formal digital skills[58].

4.8 Politics: civil emancipation and the rise of populism

In the past 25 years organized participation in society gradually has declined in many countries of Europe[59]. Generally, voluntary work in associations also is diminished. In this period, already starting before the breakthrough of the Internet and ICT in general on a mass scale, a clear shift has occurred in kinds of societal participation. The trends are from institutional to personal participation and from physical to virtual or mediated participation. Both trends have been reinforced by the coming of the Internet.

Institutional participation is membership of political parties, trade unions, churches or other large-scale societal organizations, voting or working for these organizations and attending their meetings. This kind of participation has steadily been replaced by a more personal kind that is no more or less than an epiphenomenon of individualization. Personal characteristics, interests or concerns are deciding, not group identities given by birth and kept all life[60]. Conversely, these persons increasingly approach societal organizations in a functional and anonymous way. Membership cards are exchanged for check-book donations. These organizations have come to be seen as facilitators for individuals or citizens. This does not rule out personal contributions.

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55 C. Goldin and L. Katz (2008).*The Race between Education and Technology*, Cambridge MA en Londen: The Belknap Press, 2008.

56 IMF (2007) *World Economic Outlook 2007*, Chapter 4, Globalization and Inequality, http://www.imf.org/external/pubs/ft/weo/2007/01/index.htm, Retrieved at 8-10-2007.

57 R. Nahuis and H. de Groot (2003).Rising Skill Premia, You ain't seen nothing yet? *CPB Discussion Paper* No. 20, The Hague: CPB, Netherlands Bureau for Economic Policy Analysis.

58 See note 53. .

59 For example, data on the Netherlands can be found in: P. Dekker, P., Hart, J. de en Berg, E. van den, Democratie en civil society. In: Sociaal en Cultureel Planbureau, *In het Zicht van de Toekomst, Sociaal en Cultureel Rapport 2004*, Den Haag: Sociaal en Cultureel Planbureau, 2004, pp.181-219.

60 P. Dekker et al. (2004). P. 196

This businesslike and individualized approach of societal organization would have occurred without ICT. After all, check-books and donations are age-old technologies. And the telephone precedes the Internet as an online medium. This kind of personal citizen participation perfectly fits into the contemporary age of individualization and emancipation. However, the Internet and ICT in general do enable individualized citizens to keep in touch with society much better than before. They are able to be kept informed, to exchange knowledge, to discuss views with other individual participants, to draft petitions and to be served with transactions and advice by professionals of the organizations they are linked to. Here the transition is made from physical to online participation. For many years now it has been argued that online participation would be able to compensate for declining collective and institutional participation, in the way virtual communities would revitalize traditional communities. Most data show that this does not occur. ICT does not cause more political and societal interest among citizens, no higher turn-out with elections and no higher membership for political parties, trade unions or churches[61]. However, online activities contribute to the individualized kind of participation and individual citizen emancipation described. The contemporary citizen acts from his/her own environment and experiences and s(h)e inserts these experiences in public opinion, among others the online public sphere. There is less deductive reasoning from collective political, social or cultural interests.

In politics this has lead to the rise of populism in election campaigns and in parliamentary work. Increasingly, political candidates directly address individual citizens as persons, not as members of parties or other organized collective interests. Both more candidates and more voters or citizens prefer this personalized attitude. Political parties evolve from program parties and parties of elected executives to campaign parties. The campaign party supports the popular leader as a person with attractive single issues.

What is ICT contributing to this development? It certainly has not caused it. The rise of populism and the campaign political party took place in the age of television democracy and politics starting in the 1960s. Just like the program party was linked to the age of press democracy and politics before. In that sense McLuhan's expression 'the medium is the message' still carries some truth. However, the role of persons in politics and the media has much deeper roots than in the media only, according to the psychology and sociology of culture. It does not only belong to the epochal trend of individualization described, but also relates to the desire of intimacy and personal expression in an alienating mass society[62] and to the fall of public man in the privatized modern economies and societies[63].

Once again, the Internet and ICTs mainly reinforce these trends of citizen emancipation and the rise of populism. Henceforward, favourite political persons and single issues can be consulted and supported by individual citizens on specialized websites. Slowly, but surely the age of Internet politics is approaching. It has not yet supplanted the age of television politics but in the USA and in Northern and Western Europe election campaigns are drawing to the Internet. Recently, Barack Obama could build a large online grass-root support and enormous funding via mainly small online donations. However, it should be noticed that he has spent by far the largest part of campaign funds to television ads and that face-to-face door-to-door propaganda and rally meetings were prominent parts of his campaign as well.

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61 J. Katz and R.Rice, Bimber (2003), S. Ward and R. Gibson (2008). European political organizations and the Internet.; J. Brundage and R. Rice (2008). Political Engagement Online:Do the information rich get richer and the like-minded more similar? Eurobarometer data required.

62 MR. Merelman (1984). *Making Something of Ourselves: On Culture and Politics in the United States*. Berkely: university of California Press. R.P. Hart (1994). *Seducing America: How Television Charms the Modern Voter*. Oxford: Oxford University Press.

63 R. Sennett (1977). *The Fall of Public Man*. New York: Knopf.

So, the integration of online and offline activities discussed above seems more like the future of politics and elections than a replacement by ICT activities alone[64].

4.9 Culture: the rise of participation in the media

A rise of participation in the mass media is a trend that precedes the Internet. From the 1960s and 1970s onwards the number of letters by readers of newspapers and magazines started to rise. Many young people applied for their favourite music numbers on the radio. From the 1960s onwards one of television viewers greatest desires was to personally appear on television to have their '15 minutes of fame' according to the 1960s Pop Art artist Andy Warhol.

With the advent of the Internet the opportunities of participation in this medium and others sharply increased. In the perspective of so-called Web 2.0 and the rise of participatory new media such as weblogs, wiki's, social media (for social networking) and online civic journalism opportunities have again grown in the last five years. However, in the Web 2.0 perspective the individualized kind of participation described above is provided with a touch of utopianism that we know from the time of the rise and hype of the Internet. Once again the Internet is seen as an empowering medium for users. This time users are expected to be able to create alternatives to institutional politics, the traditional mass media and knowledge institutions together with other users. Institutional politics is supposed to be ready to be replaced by forms of direct or teledemocracy, the traditional mass media by civic journalism or on demand media and the established knowledge institutions by peer-to-peer networking or wiki's. These expectations presuppose the following five characteristics of the Internet as a:

- *interactive* medium that departs from the one-sided communication of existing mass media;
- *active and creative* medium enabling users to transform from viewers, listeners and readers to participants;
- *direct* medium in which individual users to determine at a distance what happens in the centre (of among others politics and the mass media);
- *platform* on which everybody is equal in principle as assumed expertise has to prove itself before being accepted;
- *network* medium enabling the collective creation of products online, not primarily by individual authors or businesses.

All these assumed characteristics exist to a certain extent. However, each one of them can be contested too. The Internet has substantially changed in the last ten years. The share of user-generated content has markedly increased by means of the number of personal websites, weblogs, chat boxes, online forums, contribution to online newspapers, journals and broadcasters, so-called wiki's, exchange sites for (partly self-created) music and videos and finally profiles in social networking and online dating. But that does not mean that the Internet is sufficiently interactive for, among others, customer and citizen support. This still is massively given by call centers and service desks. Neither are online media on the Internet flooded with contributions of users. The relatively passive and consumption use of online contents still is much larger than the creative contributions. In 2006 downloading and exchanging online contents was three times as popular in the US than creating own

[64] S. Ward and R. Gibson (2008). *European political organizations and the Internet: mobilization, participation and change*; R. Davis a.o. (2008). *The Internet in U.S. election campaigns*. Both in: A. Chadwick & Ph. Howard, *Handbook of Internet Politics*. London, New York: Routledge.

contents[65]. Apart from chatting, profile sites and the like 'serious' website contributions are provided by less than twenty percent of Internet users[66].

That the Internet is a direct medium which serves as a platform and locus of exchange of knowledge, views and products of culture, such as music and video files does not imply that experts or intermediaries (editors, moderators, educators, researchers and advisories) have no function anymore. On the contrary: the information overload and the inferior quality of much Internet content require more, not less intermediaries. Only those who accept or agree to the abundance of low-quality content on the Internet would support the view that they are not needed anymore. In his book *The Cult of the Amateur* Internet critic Andrew Keen[67] has argued that opinion is sold as fact, rumor as reportage, and insinuations as information. He claims that on the Net differences between information, advertising and sheer nonsense are blurring.

Finally, it has to be emphasized that networks, among other peer-to-peer networks are shaping a third mode of organization in the economy and in governance besides the hierarchy and the market, indeed[68].However, this is not to say that it will become the predominant mode in the near term. The established economic and political institutions, the market and regulation will also keep playing an important, if not decisive role on the Internet of the future.

After the quality of user-generated content on the Internet the actual participation in the production of this content is another overrating that has been made in the Web 2.0 perspective. Serious user-generated content that could play a role in politics, the business world and societal participation is delivered by a minority of people with high education. One will not find many weblogs and much civic journalism among the average of the population. Here one does find the exchange of music files, videos and photos. This is an instance of the usage gap that was discussed in a former section.

So, we are able to conclude that the Internet extends the opportunities of societal emancipation and participation. However, those who were already frontrunners in participation, the higher educated and those motivated to participate, benefit a lot more from these opportunities. This means that existing (relative) inequalities will remain, if not increase (see above). Users will not overtake the power of mass media editors. Institutional politics will not be swept aside by direct teledemocracy. Finally, it would be inconceivable for the extremely complex society we are living in that expert knowledge would be overrun by the lay knowledge of 'wise crowds'. These instances of a revolutionary transformation caused by ICTs will most likely not occur.

4.10 Daily life: increasing choice opportunities

With the growing prosperity in affluent societies, the increasing complexity of modern life and the individualization of social living the number of choice obligations and opportunities in daily life have multiplied. Evidently, ICT very much enables to conduct a life with so much complexity and choice. Perhaps the most important technological capacity of the new media next to speed, virtuality and interactivity is selectivity: the capacity to make choices among a

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65 Pew Internet and American Life Project (2007). Eurobarometer or other European sources to be added.

66 Pew, Idem

67 A. Keen (2007). *The Cult of the Amateur, How today's Internet is killing our culture*, New York, Londen: Doubleday/Currency (Random House)

68 Y. Benkler (2005). *The Wealth of Networks, How Social Production Transforms Markets and Freedom,* New Haven en Londen: Yale University Press, 2005; D. Tapscott & Williams (2006). *Wikinomics How Mass Collaboration Changes Everything,* New York, Londen: Portfolio/Penguin Books,; J. van Dijk (2006). *The Network Society* Note 18; C. Sunstein (2008). *Infotopia*, Oxford, New York: Oxford University Press.

seemingly endless number of products, contents and contacts[69]. The menus of choice in hyperlinked websites, both informational and commercial seem to be endless.

However, once again we should be aware of the fact that increasing choice opportunities and needs precede the advent of ICT in contemporary society. They are derived from the following epochal trends in Western society.

As has already been discussed the individualization of daily life between and within ever smaller households has grown during the whole twentieth century and has accelerated in the 1960s with cultural emancipation and the rise of a youth culture. This life requires that individuals are able to make continuous choices for themselves. After the Second World War (mainly) young people started the make their own life and emancipate from their families and communities. The new media have only intensified this trend. The sharp rise of mobile telephony use is an indication of the need to connect individuals, rather than households. Presently, even children and young teenagers are individualizing themselves from their families in their own rooms equipped with a computer, telephone, stereo and Internet connection.

The second basic trend is the increasing complexity of all spheres of life in modern society. Tasks at work, in education and in leisure or family life have become more complicated and more difficult to coordinate. In the course of the twentieth century all kinds of information and communication means have been invented and introduced to cope with this complexity. ICT is just the latest of these means, though a much more powerful means for the coordination of modern life than those offered before. Not only mobile and fixed communication means are used for that purpose but also all kinds of information agent software. They range from search engines, price comparison sites and online dating profiles to self-therapy for mental and relational problems. But it must ne noted that library assistants, consumer guides, marriage counsellors and therapists have performed similar functions.

The time compression and speed-up of modern living discussed before cause a further trend that was already visible before the advent of ICT: the intensification of daily life appearing in ever more busy daily schedules and the rise of an experience economy in culture. ICT supports this trend with all kinds of electronic calendars, contact lists and lists of favourites. Though they make daily life outside work more businesslike their use seems to be inevitable for most people. ICT further enables the trend of intensification with multimedia and virtual reality experiences. Computer games have become one of the most popular new media applications. They add to much older massive music, dance and theatre events, (sport) games, cinemas and individual media games introduced in the last century.

The most basic material trend is the abundance of products and services of mass consumption of increasingly prosperous developed societies. Mass consumption has two sides to it that are both supported by ICT. They are the differentiation and the standardization of products on large-scale markets. Long before the rise of ICT mass markets already contained a rising number of products and services. This variety could be supplied because production processes and product forms were standardized in mass production. With the introduction of ICT both differentiation and standardization could be supported. Most contemporary products and services to be chosen in online supply are just variants of the same basic product. The favourite choices of consumers are first marketed with techniques of segmentation and subsequently by personalization.

The rise of self-service in consumption was already prevalent in the twentieth century economy before, for example in supermarkets and hobby practices such as sewing and knitting at home. With e-commerce, online public services and online distance education self-service has multiplied. This has stimulated another, more active kind of consumer that is

[69] See J. van Dijk (1999-2006). *The Network Society* for a complete list of capacities of ICT

sometimes called 'prosumer'. Co-creation of products and services in networks is not an entirely new phenomenon but it certainly is proliferated in the (peer-to-peer) networks of ICT.

4.11 General conclusions

In this section it has been argued that the social impact of ICT has no revolutionary but an evolutionary nature. From a technical point of view ICT may be revolutionary, but her societal impact is not of that nature. This does not rule out that ICT contributes to important societal transformations. With ten contemporary trends it was observed that they are reinforced by ICT. Without ICT they would also have occurred, though to a lesser extent. This would have led to major problems in a number of societal domains such as a congestion of social and economic exchange and all kinds of organizational processes. These problems will be identified in the domain reports that come after this conceptual framework.

The non-revolutionary impact of ICT on society follows a historical pattern that has been observed many times before. Brian Winston speaks about the 'law of the suppression of radical potential' in the history from the telegraph, the telephone, radio and television through the Internet [70]. On every occasion the anticipated revolutionary potential of a new communication technology is incorporated in existing societal relations after having become mature. Isn't that what happened with the Internet after the utopian prospects that came forward in the 1990s and the days of the Internet hype?

Again, this does not rule out important societal transformations on account of ICT. Only, they are still largely unknown. Currently, we can observe a number of tendencies that will be extensively analysed in this report. Often these tendencies are opposed, such as with each technology of freedom and control, or every technology that requires compromises, such as between privacy and security in this case. The advantage of this state of affairs and a dialectical view of technology is that important choices can still be made and that many policy options are still open for us to choose.

5 Common Themes and Questions

To find the potential long-term transformations on account of ICT we have to dig deeper. We will have to identify a number of common themes that will be discussed in all ensuing domain reports. These common themes are very basic social (infra)structural characteristics and goals of contemporary European societies. They are the themes to look at when we describe the impacts of ICT in the societal domains. We have identified five common themes:

5.1 Rationalization (effectiveness, efficiency, innovation)

This goes for the organizational aspect in all domains. It does not only concern production systems and the economy, but also consumption patterns and everyday life. For instance, partly on account of ICTs everyday life has been found to become more business-like as well. Think about the effects of electronic calendars and explicit choice or preference lists in profile sites and online dating.

Rationalization as a theme enables the domain report to look for the objectives in a particular domain, already present before ICT arrived but subsequently more or less supported by this technology. Further, it forces us to look at the costs the use of ICT requires as a means. Are the costs of this means worthy of the achievements?

[70] B. Winston (1998). *Media Technology and Society: a History from the Telegraph to the Internet*, London: Routledge.

Finally, ICT is some kind of innovation. What is the innovative capacity of ICT as compared to old activities and techniques?

This inspires the following questions each of the domain reports will try to answer:

- What are the traditional goals in term of effectiveness in the domain under consideration? Has the introduction of ICT brought these goals closer?
- What ICT expenditure has been made in the domain? Did it bring the expected returns yet in terms of efficiency, or are the main results still to come?
- Have the ICT applications in the domain only brought forward technological innovation or also social and organizational innovation?
- When the domain is non-economic in its nature – because it is in the social, political, cultural, education or health field- has the introduction of ICT reinforced businesslike approaches of calculation, registration, economic measurement and management control?

5.2 Networking

In all domains the (social) infrastructure of activities is changing on account of the networked character of present-day ICTs. A physical classroom produces different social networks than online education. Policy formation in meeting rooms is different from online forums. Telemedicine hospital treatment engages other doctor-patient exchanges than physical doctor, nurse and patient interaction. The specific properties of networks (such as network externalities), in combination with the particularities of (digital) information goods when compared to tangible goods, imply that network creation is one of the main underlying principles for transformative "impacts" of ICT. We argue that most transformative change of ICTs will be in the relations and the resources we derive from them in the information and network society. This also contributes to changes in social capital (see below).

This inspires the following questions each of the domain reports will try to answer:

- To what extent is the domain under consideration already networked? Or does it still largely consist of separate entities that are either not online or that still work offline most of the time?
- Has networking changed the organizational structures in the domain? Has it lead to new roles, functions, jobs or organizational positions of people working in the domain?
- Can particular network externalities be observed in the domain? For example: has a critical mass of online connectivity already been reached? Is there a call for common standards or protocols for the networks used in the domain? Are power laws observed such as strong actors becoming even stronger by means of networking or are so-called 'long tails' occurring: the availability of a great diversity of choice in small numbers?

5.3 Empowerment and participation

The common scientific and public opinion expectation is that ICT will change power relations in many, if not all domains in society. Some think that centralization will occur, but most think decentralization will happen. The most popular expectation is that ICT is empowering users of all kinds: citizens, consumers, workers, patients, students and audiences. Here the main question is: Do/will ICTs substantially change the relations between governments and citizens, producers and consumers, doctors and patients, teachers and students etc? Increases in participation and empowerment could be understood as key elements of beneficial, transformative change, but ICTs can potentially also be used to curtail participation and individual freedoms.

This inspires the following questions each of the domain reports will try to answer:

- What has been expected of a change of relationship between the most important actors in the domain and what has actually occurred? Have those in power yet reached more power in their control of design, investment and implementation of ICT or can a bottom-up trend be observed? Is the popular expectation true that users and user-generated content increasingly define what happens in the domain?
- Has the *nature of the relationship* between governments and citizens, producers and consumers, managers and workers/employees, doctors and patients or teachers and students changed on account of ICT?
- Has ICT increased participation of citizens, consumers, workers, patients and students in goal settings and in the ways goals are being persued?
- What is the level of access to ICT (primarily computers and the Internet) in the domain under consideration? This question goes for at least three types of access: 1. physical access to computers, the Internet and other digital media; 2. digital skills and 3 use: the quantity and quality/ kind of applications.

5.4 Social capital

Many expect that ICT will affect the distribution of social capital and the strength of social cohesion in society. Social capital is defined here as "... *the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit*[71]. High stocks of social capital in a particular society, nation state, region or local community are associated with relative ease of the sharing of knowledge and expertise, with community building and social cohesion.

Woolcock[72] has proposed three types of social capital:

- bonding social capital, i.e. strong ties between like people (or organisations) in similar situations;
- bridging social capital, i.e. more distant or "weak ties" of like persons (or organisations);
- linking social capital, i.e. weak ties which reach out to unlike people/ organisations, such as those which are entirely outside of the community or in a different sector.

This inspires the following questions each of the domain reports will try to answer:

- Can a particular growth of social capital be observed in the particular domain? 2. Does social networking contribute to improvements or degradations in the domain according to accepted norms or values?
- What type of social capital presently dominates the domain: bonding capital (strong ties of similar people), bridging capital (weak ties of similar but distant people) or linking capital (weak ties of unlike, mostly distant people)?
- What is the role and what are the achievements of so-called social or participatory media (see trend 4.8 above)?
- Does ICT lead to more or less social cohesion in relevant communities of the domain (e.g. health, education, leisure and resident communities)?

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[71] Nahapiet, J. and Ghoshal, S. (1998) 'Social capital, intellectual capital, and the organizational advantage', Academy of Management Review 23(2): 242-266.

[72] Woolcock, M. (2001) 'The Place of Social Capital in Understanding Social and Economic Outcomes', Canadian Journal of Policy Research, 27(2): 151-208.

5.5 Information and Lifelong learning:

The meaning of the concept information society is that in all human activities and in all domains information intensity is increased. This implies that a growing part of all activities, in work and leisure time, and obviously in education consists of searching, collecting, processing, evaluating and applying information. Among others this means that the number of pure information jobs is growing and that the other jobs contain ever more information processing. This requires lifelong learning both on the job and in special adult education. It is important to know that the growing role of information processing and the information society in general already started long before the coming of ICT. It is linked to the rise of literacy, science and scientific management since the industrial revolution[73]

Obviously, ICT strongly supports the opportunities of lifelong learning, both on the job, in formal education and in leisure time. Referring to leisure time is important as presently people, especially young people learn a lot from using computers, the Internet and other new media outside formal educational environments. Learning is not only aided by the innumerable sources provided in this way by ICT but also by networking, both in professional knowledge networks and in social networking. In all domains knowledge networks, more in general information exchanges via digital media are growing. This enables new ways of learning by cooperation and association. Again, it is important to argue that so-called 'new learning' in schools, departing from classical classroom education is not only related to the new opportunities brought by ICT but has much broader cultural roots in processes of individualization, cultural differentiation and emancipation.

This inspires the following questions each of the domain reports will try to answer:

- To what extent have information jobs and information activities grown in the domain under consideration? What are the typical ways of information processing and exchange before and after the introduction of ICT?
- What is the relationship between professional and lay information processing or learning in the domain? For example, how do teachers and students, doctors and patients, civil servants and citizens, managers and employees learn and exchange the results of learning. Do applications of ICT support these ways of learning?
- What are the opportunities of learning with the aid of ICT in the domain? What is the role of peer-to-peer networking at all levels? What are the opportunities of computer interfaces in interactive learning for students, workers, consumers, citizens, patients etc.?
- Does ICT only support so-called 'new learning' by individual and network interaction and association or also more traditional modes of knowledge transfer (classroom and unidirectional learning)?

[73] J. Beniger (1986). *The Control Revolution*. See note 41.