Chapter 4
Information Sociology

4.1. "Information Society" and "Knowledge Society"

The focus of this and the following two chapters is the environment of the information market, which we will regard from what is a mixture of an information-scientific and a sociological/politological (Chapter 4), legal (Chapter 5) and ethical perspective (Chapter 6), respectively.

Initially, we will turn to the specifics of the information and knowledge society, which leads us to the area of information sociology and politology. Publications on information sociology are particularly numerous, as this area has been researched for decades (the standard German-language work, Gernot Wersig's "Informationssoziologie", is from the year 1973). Today, information has assumed a predominant position in our globalized and networked world, and is thus at the center of political life (Lyon, 2005, 233). According to David Lyon (2005, 233), information sociology deals both with the social effects of the streams of digital information and with the information itself:

> Reference to the internet … serves as a reminder that today information cannot be conceived separately from communication. The social repercussions of flows of information through networks–the internet, cell phones and so on–present one of sociology's most stimulating challenges (…). But information itself requires sociological analysis if we are to grasp its connection with crucial issues from identity and inequality to matter and meaning.

Information and knowledge have become pillars of our society (and of its subsystems, such as economy, education and culture), so it is with good reason that we speak of an information society and a knowledge society. At this point, we would like to distinguish between these two forms of society: an information society is grounded by information and communication *technology* (ICT) (Sassen, 2002); a knowledge society has information *content*, i.e. knowledge itself, as an additional basis. Knowledge societies of today are invariably also information societies, as

the transmission of the information contents is generally performed with ICT. Such an emphasis on knowledge has the advantage that a society is not defined by its technological basis alone (Heidenreich, 2003, 25), in which it remains an open question what exactly to do with this basis. We can thus avoid "tunnel vision", a short-sighted, purely information-technology-centric point of view (Brown & Duguid, 2002).

In order to clarify the two terms "information society" and "knowledge society", we would like to draw on the theory of the **fifth Kondratieff** (Stock, 2000, 1 et seq.). The underlying theory is that of long waves, which goes back to Nikolai D. Kondratieff (1926). Via empirical material, Kondratieff shows evidence of the existence of long cycles in capitalist economy, spanning around fifty years. In these cycles, economic and technological innovations play a central role (Kondratieff, 1926, 591):

> While the long waves decrease, a significant numbers of important discoveries and inventions are being made in production and transport technology, which are, however, generally only applied to economic practice at the beginning of the new long rise.

Changes in science and technology indisputably have a great influence on the course of the capitalist dynamic, but they are not an external effect for economic development (Kondratieff, 1926, 593):

> However, from the scientific aspect it would be a… mistake to think that the direction and intensity of these discoveries and inventions are entirely up to chance; it is far more probable that this direction and this intensity are a function of the requirements of practical reality and the previous development of science and technology.

Kondratieff's conclusion is (Kondratieff, 1926, 594 and 599):

> (It is not enough) for really changing production technology to have scientific-technological inventions; these can stay ineffective, as long as the economic preconditions for their use are lacking… In claiming the existence of long waves and denying that their emergence is due to chance, we claim at the same time that the long waves are due to causes that are in the nature of capitalist economy.

Joseph A. Schumpeter (1961) modifies Kondratieff's approach. Here the technological innovations become driving forces of economic development (Schumpeter, 1961, 181 and 176):

> All cyclical movements can be explained via terms from the process of economic development. Innovations, their immediate and more remote effects as well as the system's reaction are the common root of all …
>
> Innovations (are) the actual source of cyclical fluctuation.

Leo A. Nefiodow (1991) follows Schumpeter and interprets innovations as the cause of capitalist economy's long waves (Nefiodow, 1991, 47):

> Innovations that break extensive new economic ground and cause a swarm of follow-up innovations ('bandwagon effect') are called basic innovations. They have been and are the fundamental innovations for long phases of the economy. The steam engine, the train, electrification and the automobile are some examples for basic innovations. Each of these inventions has generated a long period of prosperity and led to a far-reaching reorganization of society.

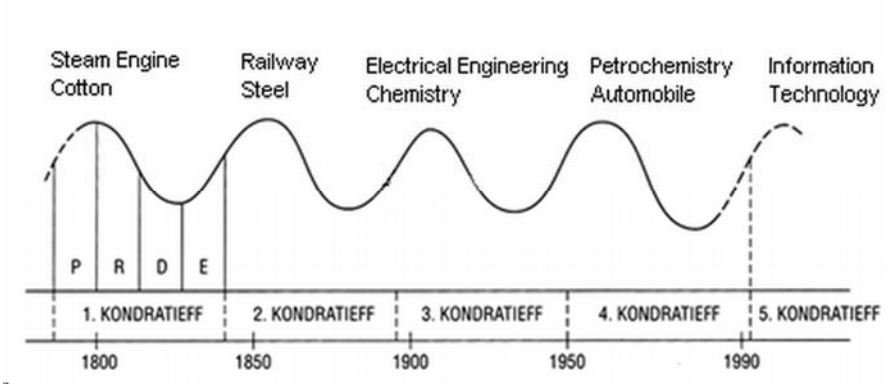

Figure 4.1: Kondratieff Cycles According to Nefiodow. Source: Nefiodow, 1994. P: Prosperity, R: Recession, D: Depression, R: Recovery. Typical Networks of the Single Cycles: 1. Shipping, 2. Rails, 3: Lines (Electricity, Gas), 4. Roads, 5. Internet.

From the beginning of capitalism, four long waves can be observed: a first cycle with the steam engine as its basic innovation, a second cycle based on the train, the third on chemistry and electricity and finally the fourth cycle, based on petrochemistry and automatization. The fifth Kondratieff wave is already emerging (Nefiodow, 1991, 39):

> It is being carried by the innovation potential of the resource information, and it will bring about the conclusive establishment of the information society.

Each Kondratieff cycle gives rise to typical networks, such as railway lines in the second cycle, gas and electricity networks in the third and road networks/freeways in the fourth cycle. The networks of the fifth Kondratieff wave are telecommunication networks, led by the internet.

If we heavily simplify Kondratieff's and Nefiodow's (and Schumpeter's) positions, then Kondratieff sees the economy as the cause of change; the effect is, among others, the respective basic innovation. Nefiodow and Schumpeter regard the basic innovation as the cause, and a typically long economic wave as its effect. In one scenario, the economy of the information society is the cause of innovations in the area of information, communication and telematics, in the other, the named innovations are the causes of the information society. A mediating position between the two seemingly opposed cause-and-effect chains is posited by Gerhard Mensch's Metamorphosis model (1975, 15):

> Schumpeter's concession: 'innovations carry economies' and cause economic upturns, we will elaborate here. We ask where the innovations come from–after all, they don't just fall from the sky ('exogeneous variable'). Rather, they come about within the evolutionary interplay of stagnation and innovation.

According to this, the basic innovation is the cause of the upturn phase of a Kondratieff cycle, whereas the cause of the previous cycle's downturn is the economic system (Mensch, 1975, 85):

> The entire evolutionary goings-on in the socioeconomic whole are tied into a regulatory circuit: stagnation in parts of the system and in the system as a whole facilitates single innovations in structurally suitable spots, and the innovation lets many an established part look like dead wood. Innovation and stagnation induce each other.

Mensch's Regulatory Circuit model thus claims the existence of reciprocal dependencies between the economic system and its respective underlying basic innovations.

So, for the record: according to the theory of the fifth Kondratieff, the resource information is the cause and the bearer of a long economic wave, where the economy of the fifth Kondratieff is closely tied to research and development in the area of information.

What distinguishes the technology of the fifth Kondratieff? The resource information, which carries the information society, requires corresponding information and communication-technological, i.e. **telematic devices and services**: computers, networks, software etc. Additionally, companies, administrations and citizens must be willing to and capable of adequately using these devices. This leads to massive usage of telematic devices, of information and communication technology, in public as in private.

What regularities are inherent to the resource information? The movement of information rests, according to Manfred Bonitz (1986a, 1986b), on the basis of two simple underlying principles: the holography principle and the tempo principle. The **Holography Principle** describes the area of information (Bonitz, 1986b, 192):

> The entirety of human knowledge is one gigantic hologram, which consists of all the stores, databases etc. that mankind has.

The entirety of information is virtually available everywhere (Bonitz, 1986a, 7):

> Any given… information is retrievable from any given location.

The information society–and as its consequence, the information economy–is thus globally defined as a matter of principle.

The **Tempo Principle** contains the movement of information in time (Bonitz 1986b, 192):

> Accordingly, every information has the tendency to move so as to reach its addressee in the shortest possible time.

The tempo principle holds for the entire history of human communication, but the speed has increased from every stage to the next. Every introduction of a new communication channel (e.g. books, magazines, abstracts, professional online databases, internet) has saved society time. Electronic information transmission in international networks such as the internet has reached the tempo limit. Information can be sent at the moment of its inception and received in real time. The object of both principles is knowledge stored and set in motion, so that a society that has realized both the holography and the tempo principle is the first that can be called a "knowledge society". This also means that members of the society collaborate in communicating and creating new knowledge, as David and Foray (2002, 14) emphasize:

> Knowledge-based economies emerge when people, with the help of information and communication technologies, group together in an intense effort to co-produce (i.e., produce and exchange) new knowledge.

> This boils down to three main components: a significant number of a community's members combine to produce and reproduce new knowledge (diffuse sources of innovation); the community creates a "public" space for exchanging and circulating the knowledge; new information and communication technologies are intensively used to codify and transmit the new knowledge.

The knowledge society is concerned with all kinds of knowledge, but scientific and technical knowledge reaches a particular significance (Böhme, 1997), as production is heavily driven by scientific-technological results (we need only think of biotechnological or environmentally friendly products, which would be nearly impossible to produce without a scientific basis) and the population's opportunities in life are dependent on the levels of science and technology reached by society (directly–measured by age–on medicine and the health services and indirectly–measured by status and income–on the level of education, which can at least partly be traced back to scientific and technological experiences).

This leads us to another aspect of the discussion, to learning. For Martin Heidenreich (2002, 338), the significance of knowledge-based activity increases in a knowledge society, leading to a change in the status of education, and thus of learning. For every member of a knowledge society, life-long learning becomes essential. Also, a knowledge society as a whole must produce the right institutions to foster this learning. According to Joseph Stiglitz (2000), an infrastructure can only ever be built locally and never imported, as the local institutions have to learn to successfully implement "their" knowledge in "their" country. "Environmental aids" toward building a knowledge society can only work–according to Stiglitz–if the country receiving this aid learns to adequately use its own knowledge capacities and is aware of the fact that a knowledge society, with the continually dynamic stores of knowledge on which it is built, is always changing as a matter of principle. The goal of every knowledge society is thus to learn how to learn in order to become a **learning society**. Stiglitz (2000, 38) stresses:

> Thus if a global knowledge-based institution wants a country to learn a 'truth' about development, then it should help the local knowledge institutes and policy makers to carry out the requisite research, experimentation and social dialogue to learn it themselves–to make it a 'local social discovery'. Creating this local knowledge infrastructure and practice entails 'learning how to learn', that is, creating the capacity to close the knowledge gap, an essential part of a successful strategy.

We can now put together our working definitions of "information society" and "knowledge society". "Information society" refers to a society

- whose basic innovations are carried by the resource information (theory of the fifth Kondratieff) and

- whose members preferably use telematic devices for information and communication purposes.

A "knowledge society", on the other hand, is a society

- that has all the aspects of an information society,
- in which information content of all kinds is available everywhere and anytime in its entirety (holography and tempo principle), and is also used intensively,
- in which lifelong learning (and consequently, learning how to learn) becomes necessary.

No widely prevalent definitions of "information" and "knowledge society" have emerged in the literature, so that both terms are often used synonymously.

Frank Webster (1995, 6) describes the knowledge society (he calls it the "information society") via five criteria:

- technological: the knowledge society uses information and communication technology to process, store and transmit information,
- economic: in the knowledge society, there is an expanding information market (as described by Machlup and Porat),
- occupational: information work (in accord with Bell and Porat) is predominant in the knowledge society,
- spatial: information networks and information streams ("space of flows" in the sense of Castells, see below!) create a second space apart from the one that is geographically defined,
- cultural: due to the ever-present information streams, the knowledge society is dependent on media, so that Webster (1995, 21) characterizes it as a "media-laden society".

It is definitely possible to represent the knowledge society as an "era" of human development. In this sense, the knowledge society replaces the industrial society (Stehr, 1994).

4.2 Information and Knowledge Infrastructure

In statistics on the information society (e.g. of the International Telecommunications Union ITU), we mostly find (reasonably) well-measurable indicators being used, which essentially rest on telephony, broadband networking and internet and the usage of these technologies in private households as well as governmental institutions. Many of these indicators display the number of technological devices or services (e.g. the number of computers or cell phone contracts) in a certain area (mainly per country) as well as the penetration of these devices and services (designated as relative values per resident, sometimes per household) in the regional unit. **Telephony** is described via landline (indicator: telephone lines per 100 residents), cellular network and VoIP (Voice over Internet Protocol). In **broadband networking**, the object is fast data networks such as the currently dominant DSL (Digital Subscriber Line with data rates of up to 2 Mbit/s) or the VDSL (very high speed DSL with data rates of 10 Mbit/s and more). The indicator bundle of the **in-**

ternet registers internet hosts, computer density (number and penetration of computers, respectively), internet connections (households and companies with internet access, respectively) as well as internet users (persons who have used the internet over the last three months–no matter where: at home, at work, in an internet café).

Much harder to operationalize are the parameters of the knowledge society; here we are called upon to demarcate the levels of education, research and development and librarianship of a country as indicators. **Education** can be roughly packed into parameters via the rate of alphabetization and the ratio of high school or university graduates per year group, among other factors. The level of **scientific research** can to some extent be expressed via publication and citation numbers of scientific articles in large multidisciplinary databases (such as Web of Science or Scopus), the level of **technological research and development** via the number of granted patents. (Little suited, but frequently used are the numbers of patent applications. An invention submitted for a patent can be deemed not new and thus rejected as irrelevant. Often, patent applicants do not even apply for an examination of its content.) For **librarianship**, we can think of parameters such as the Library Index developed for German Libraries (BIX), which expresses the offer, use, efficiency and development potential of public and scientific libraries quantitatively (Xalter, 2006).

There exist several established indicators on the country level, which cover the level of development of the country in question. A complete overview of the societal development is available in form of the **Human Development Index** (HDI) (Anand & Sen, 1992), which is calculated by the United Nations' Development Program (UNDP, 2007). The HDI has a value range from 0 (worst value) to 1 (best value) and takes into account four indicators:

- Residents' expected lifespan at time of birth,
- Adults' rate of alphabetization,
- Ratio of pupils and students in their respective age groups,
- Gross Domestic Product per person (in PPP Dollars).

Compound indicators such as the HDI have the methodical problem that they have no clearly delineated real object that can be registered (Kelly, 1991; McGillivray, 1991; Sagar & Najam, 1998). In spite of this, the HDI has asserted itself–at least as a vague parameter–for the registering of the level of development of entire nations. In 2005, the best-developed countries, according to the HDI, were Iceland and Norway (with a value of 0.968), followed by Australia, Canada and Ireland (Germany is in 22nd place with an HDI of 0.935).

The **ICT Development Index** (IDI) of the International Telecommunications Union (ITU) covers the influence of information and communication technologies on a country's development (Figure 4.2). It is made up of three partial indicators:

- ICT Infrastructure and Access: Landline telephony, mobile telephony, internet bandwidth per internet user, number of households with computer and those with internet access,
- ICT Use: Internet users per residents, broadband users via landline and mobile accesses,

- ICT Capability: Rate of alphabetization in adults, number of pupils and students in their age group (only secondary and tertiary education here, as opposed to the HDI).

The countries with the highest ICT influence are–according to the IDI for the year 2007–Sweden, in front of Korea, Denmark, the Netherlands, Iceland, Norway and Luxemburg (all countries with an IDI greater than 7); Germany follows in 13th place at some distance (IDI = 6.61) (ITU, 2009, 22).

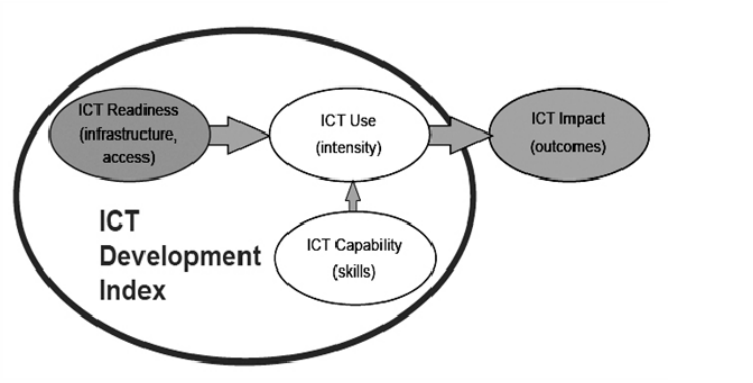

Figure 4.2: Partial Indicators of the ICT Development Index (IDI). Source: ITU, 2009, 14.

The HDI and the IDI have a few aspects in common (alphabetization and number of students), but the high correlation of R = +0.90 (Pearson) of both sets of parameters still surprises: the higher a country's level of development (according to the HDI), the higher the level of development of its information and communication technology (Figure 4.3)–and vice versa.

The (according to Pearson: two-sided) correlation between the Human Development Index and the Network Readiness Index for the year 2005 is +0.75 for all countries for which both values are available. This is, as in the HDI-IDI comparison, a relatively large value, which states: the more developed a country (operationalized according to the HDI), the higher the level of development of its information society (operationalized according to the NRI)–and vice versa (Peña-López, 2006). A similar conclusion is drawn by Graumann and Speich (2009, 41):

> For almost all of these countries (the top countries according to the NRI, A/N), a high level of education, particular technological performance and adjustment capabilities as well as a significant power of innovation are typical.

The two indicators of the information society, the IDI and the NRI (recorded via the value sets of the HDI for 2005 and the IDI for 2007), are strongly correlative

with a value of +0.89. Which of the aspects (HDI, IDI, NRI) is the cause of the respective other cannot be gleaned from the correlation; it is to be assumed, however, that the level of development of a country and the level of development of its information society influence and fertilize each other.

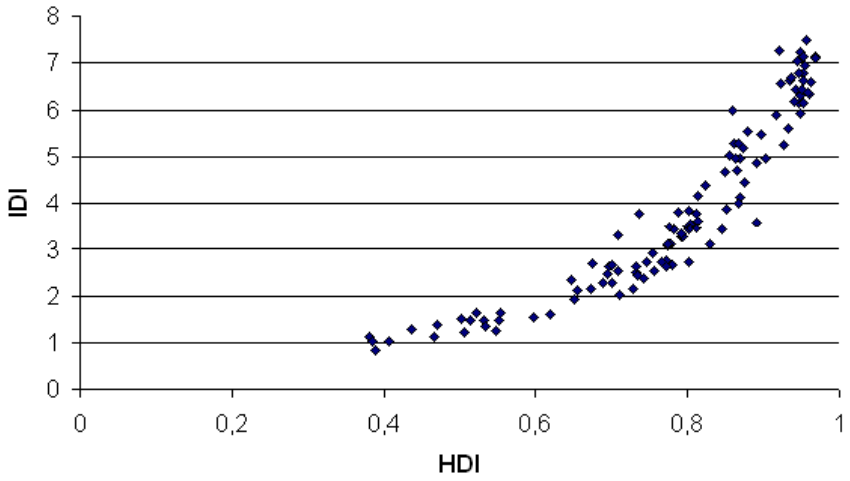

Figure 4.3: Correlation Between the Human Development Index (HDI) and the ICT Development Index (IDI) for 112 Countries. Raw Data: HDI: UNDP, 2007 (Year Under Review: 2005); IDI: ITU, 2009 (Year Under Review: 2007); the Calculations Are Our Own.

Apart from the NRI and the IDI, there are other parameters that attempt to record the level of development of countries' respective information and knowledge infrastructure; the "ICT Diffusion Index" of the United Nations (United Nations, 2006) and the "Knowledge Economy Index" of the World Bank (World Bank, 2009) are worth being mentioned.

As yet unsolved is the open problem of how to explain why some countries get good results in all indicators and others bad ones, respectively. Scandinavian countries are always represented at the top, alongside the large Anglophone countries Canada, Australia and the U.S.A. as well as city-states like Singapore or Hong Kong. It is remarkable that in most of the top countries the catholic church plays only a minor role at best (Bredemeier & Stock, 2000, 238). Does the tendency toward knowledge monopolies of the powerful (including the church) in catholic-dominated countries, observed throughout previous centuries, which simultaneously sought to prevent the spreading of information to all "lower" members of society, really have an influence on the distribution of the information and knowledge society? The most developed information societies are coastal states with a centuries-old maritime tradition, or with important seaports (Henrichs, personal

communication 2009). Does such a culture provoke an openness toward foreign countries and economic forms and–connected to this–to a variety of information, which finds expression in today's level of development of these countries' knowledge society?

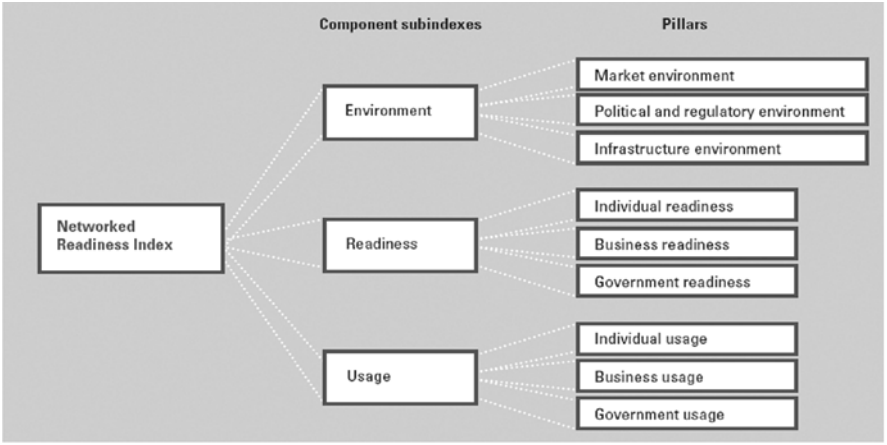

Figure 4.4: Partial Indicators of the Networked Readiness Index (NRI). Source: Mia, Dutta, & Geiger, 2009, 6.

4.3 The Informational City and "Glocality"

The information economy acts in two spaces simultaneously: in geographical space and in digital space. That being said, it strongly affects not only digital, but also geographical space. At this point, we want to discuss two aspects of the meeting of digitalization and geographical spaces: the position of the technological centers of the information market and the role of cities in the age of information (Castells; 1996, 1997, 1998). The informational city, being aligned to streams of information, capital and power ("space of flow"), fundamentally changes the character of the city, previously aligned to spaces ("space of place"). Manuel Castells (1993, 136) thus defines the information city:

> The new spatial logic, characteristic of the Informational City, is determined by the preeminence of the space of flows over the space of places. By space of flow I refer to the system of exchanges of information, capital, and power that structures the basic processes of societies, economies and states between different localities, regardless of localization.

Technological centers of the internet do not occur randomly in space, but are distinguished by two fundamental characteristics:

- dense spatial concentration (often at the periphery of agglomerations),
- digital connectedness with other centers (Castells, 2001, 227).

Examples for technological centers are Silicon Valley outside San Francisco (with Google, Yahoo! and eBay) and Seattle's environs (with Microsoft and Amazon). For Castells (1996), the spatial and digital interlinking of companies in the information economy corresponds with the theory of "small worlds". There are both locally linked companies and short paths (either literally, defined by spatial proximity, or via digital connections).

Although the internet potentially links all regions on earth–cities as well as rural areas–the world's population is concentrated in (large) cities in the internet age. Manuel Castells (1996) explains this via the spatial concentration of jobs, income-generating activities, services and the possibilities of human development in the large agglomerations. The fact that the technological centers are also in the agglomerations reinforces the trend toward urbanization, especially in the age of the information economy. Telework, company-independent and accomplished on one's home PC, is rare, according to Castells. **Mobile telework**, on the other hand, will increase due to the spreading of wireless internet (Castells, 1996):

Informatization is accompanied by the automatization of large economic sectors. This has massive repercussions on jobs, termed **job polarization** (Goos & Manning 2007; Spitz-Oener, 2006). Routine tasks are increasingly accomplished by (information) machines; the corresponding jobs (e.g. accounting or machine operation) become redundant. The working population is left with the non-routine tasks. These are, in turn, split up into the more manual jobs (e.g. domestic aid or pizza delivery) and the more analytic (e.g. research and development) and interactive tasks (e.g. management). The labor market in developed information societies is thus split into well-paid (and trained) workers and (very) badly paid workers with few qualifications–workers in the average education and income bracket tend to disappear due to the increasing automatization of their previous tasks.

The digital connectedness creates a second space besides geographical space. Companies in agglomerations interlink with each other, but also with the rest of the world, via digital networks. According to Castells (1996), such "global knots" are specific areas, all over the planet, that are connected with equivalent areas in any given location, but are only loosely connected to the area directly surrounding it, if at all.

Glocality connects–in language as in the world–globality with locality.

The **informational city** (or "information city") is the ideal-typical city of the fifth Kondratieff cycle (Hall, 1985), and of Machlup and Porat's information economy and Bell's post-industrial society, respectively. Such cities are metropoles and fixate on "spaces of flow" and the information and communication technologies facilitating these (Hepworth, 1987, 253):

> Metropolitan cities are the principal loci of the 'information revolution'. In order to differentiate the urban development process by the life span of new information and communication technologies, I propose to use the term 'information city'. For definitional purposes, this type of city has a two-dimensional characterization: it is a metropolitan economy which specializes mainly in the production, processing and distribution of information, *and*, its dominant infrastructure is comprised of the converging technologies of computers and telecommunications.

Glocal cities are found both in former industrial countries (as for example in the City of London–with branches in the West End and the Docklands) and in (former) newly industrialized countries (e.g. in Singapore or Dubai). From the perspective of infrastructure, such cities have two faces: as dual cities, they have an infrastructure for geographical space (such as traffic, power or water), and secondly, an infrastructure for digital space (telecommunication). Dual cities also embody the meeting of informational and non-information professions (following Machlup and Porat, see Chapter 1), Castells (1989, 225-226) describes it:

> The new dual city can also be seen as the urban expression of the process of increasing differentiation of labor in two equally dynamic sectors within the growing economy: the information-based formal economy, and the down-graded labor-based informal economy. … (T)wo equally dynamic sectors, interconnected by a number of symbiotic relationships, define specific labor markets and labor processes in such a way that the majority of workers are unlikely to move upwardly between them. The economy, and thus society, becomes functionally articulated but organizationally and socially segmented.

Two areas are characteristic of the information city (Gospodini, 2005, 1472):

1. they are the seat of internationally active financial service providers as well as technology and knowledge-intensive companies and institutions, and thus also house their employees–many information cities are thus also "world cities" in Friedmann's (1995) definition;
2. they have extensive cultural establishments, a great offer of leisure activities and enticing shopping facilities.

For Frank Webster (1995, 210), the informational city as Castells sees it (Susser, 2002) has an interesting social (and not necessarily positive) component with regard to the employees of the informationally oriented companies and institutions. In urban areas that either house these companies' seats or their employees, the poor cannot go and the rich are protected by security services. Webster's example is London's Docklands. The former port facilities in East London have been demolished and replaced by modern apartment and office buildings (Webster, 1995, 209 et seq.):

> The Canary Wharf project, aiming to provide 71 acres and 50,000 jobs, was the most ambitious attempt to use the former docks for offices, expensive accommodation (close to the office, but unsuitable for children, hence ideal for yuppies), state-of-the-art rail links to the City, high-class restaurants, and an appealing ambience designed with the informational professionals uppermost in mind. … Those living and working in the area beforehand, the London working class, had been pushed aside … Moreover, changes taking place increasingly *exclude the poor* by, for example, a marked expansion of housing and specialist estates which are gated and guarded to keep out the 'dangerous classes'.

The more globally a city acts, the more dependent it will be on international streams of information, capital and power and the less it will depend on national politics and its power dynamics. John Friedmann (1995, 25) emphasizes:

> The more the economy becomes interdependent on the global scale, the less can regional and local government, as they exist today, act upon the basic mechanisms that condition the daily life of their citizens. The traditional structures of social and political control over development, work and distribution have been subverted by the placeless logic of an internationalized economy enacted by means of information flows among powerful actors beyond the sphere of state regulations.

World cities are always "information-rich localities" (Flint &Taylor, 2007, 270). With the advent of informational world cities, accordingly, comes a continual denationalization (Brenner, 1998, 12). Both world cities and the multinational enterprises that inhabit them increasingly act uninfluenced by governments. Flint and Taylor (2007, 270) emphasize, however:

> This is not to say that territorial states are about to disappear; rather, world cities are becoming new loci of power, which will interact with states in new ways.

Formerly industrially-oriented cities that have not managed to make the transition toward the informational city and cities on the periphery of the global economy, including nearly all cities in developing countries, fall by the wayside (as "economic deadlands") (Brenner, 1998, 7). The impulse behind these developments, according to Neil Brenner (1998, 29), is probably globalized capitalism.

Another characteristic of information cities is their development toward a "consumer landscape". Apart from the mixing of cultural forms (in an information city like London, one can be an Arsenal fan while regularly visiting the British Library, go to the opera one week and a rock concert the next) and the emphasis on

leisure and pleasure, the central aspect of consumership is "shopping", according to Webster (1995, 212):

> At the heart of all this is consumption, and perhaps most notable, *shopping*, which in the postmodern city takes on a primary cultural role. … Here we are referring to shopping as *an end in itself*, as a pleasurable experience … There is a slogan which captures this well (and in appropriate parodic form). 'I shop therefore I am'.

Both the number and the offer of shopping malls in advanced information and knowledge societies, such as Singapore or Dubai, confirm this hypothesis. Please note: we are talking about physical "event shopping", and not online shopping.

The leisure and entertainment offer of glocal cities reminds one of an urban amusement park–as the giant wheels at the center of London or Singapore symbolize–and lets Swyngedouw and Kaïka (2003, 11) speak of a "staged archaeological theme park".

The status of **science parks** is redefined in the informational city. Science parks in the information society comprise the entire process, from basic research via applied research up to product and process innovation, and not–as before–merely the latter stages of the innovation process. It is necessary for the early phases of innovations in particular that universities be integrated into the science parks (Hansson, Husted, & Vestergaard, 2005, 1048):

> A first step in this direction would be to place future science park initiatives firmly within the institutional framework of existing higher education institutions. More generally, when it comes to promoting the commercialisation of research it is highly recommendable to make a clear and consistent choice of base models. In this respect, the present study strongly indicates, that a model without intermediary institutions is preferable to a model in which intermediary institutions play a key role.

If one wants to model the significance of a city, trade or industrial production parameters will be of no avail for glocal informational cities. Rather, one must work out their position in the global information economy. Here, too, one cannot orient oneself on administrative borders, as important companies often do not settle in the city itself but shift their activities (or at least some of them) to the periphery. For New York, it can be observed that central services have been shifted from Manhattan into the direction of suburban areas in Connecticut and New Jersey (Hall, 1997, 319). Peter Hall proposes access to information (both face-to-face and via ICT) as key indicators for the informational city, to be joined by values representing labor costs or rent. The goal is to find alternative ways of measuring the attractiveness of different kinds of information activities in the city (Hall, 1997, 320):

> The outcome should be a new urban hierarchy of centres and sub-centres, based on position within a set of global information flows.

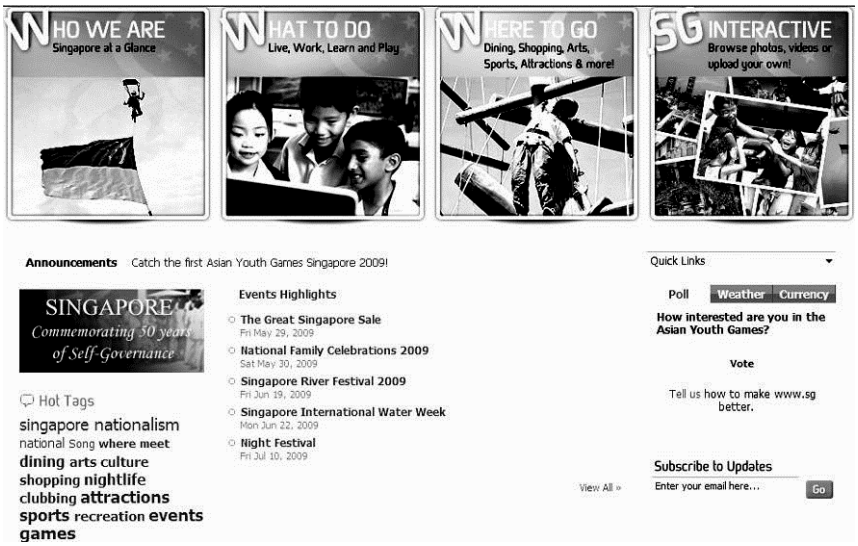

Figure 4.5: Start Page of the Digital City of Singapore. Source: www.sg.

Purely **virtual cities** (sometimes called "information cities" in the literature) are strictly to be differentiated from information cities. These former represent either a virtual counterpart of a real city (e.g. www.sg for tourist information and www.gov.sg for government information on Singapore) or a location-independent "city" (e.g. Facebook or eBay, with millions of users that come and go, buy and sell, or socialize by giving other "citizens" ratings, for instance). Virtual cities are characterized by strong interactive and collaborative components that invite one to stay. Sairamash, Lee and Anania (2004, 31) write:

> All this means we can expect a new kind of virtual urbanization, where people spend more and more of their lives socializing and engaging in economic and political activities. We expect them to take many flavors, forms, and specializations, while offering services involving social interaction, business transaction, municipal services, and daily commerce.

4.4 The Digital Divide

Social inequality is a fundamental characteristic of human societies, material (e.g. income and wealth) and immaterial resources (e.g. education and health service) are unequally distributed–single groups in society have more (sometimes much more) resources than other. Social inequality is also a feature of the resource information, so that we can roughly distinguish, at this point, between the information-rich and the information-poor (Warschauer, 2003). What separates these groups is the "**digital divide**" (Britz, 2004; Britz, 2008). On the one side are those that have access to information and communication technology (particularly to the internet; Guillén & Suárez, 2005), who use ICT or the internet and also know how to adequately apply the knowledge acquired there (privately and professionally) (OECD, 2005, 69 et seq.). On the other side are those people

- with (a) no access to ICT, or the internet,
- who (b) have physical access to the networks but cannot use them (e.g. because they do not understand the language of the WWW documents, which are mostly in English),
- who (c) use the networks but are unable to usefully apply the knowledge (e.g. because they are totally fixated on online games).

Aspects (a) to (c) are the expression of "information poverty" (Lumiérs & Schimmel, 2002, 51):

> Information-poor people do not possess sufficient information or they lack opportunities to apply the right information. Therefore they are disabled in their personal development and don't have enough support in their process of decision making.

Chen and Kidd (2008, 130) provide the following handy definition of the digital divide:

> The "digital divide" is the phrase commonly used to describe the gap between those who benefit from new technologies and those who do not–or the digital "haves" and the digital "have-nots".

In the first few years of the internet, the digital divide had been predominantly defined via ICT access, whereas the question today is whether someone has access to knowledge and uses it. According to Vehovar et al. (2006, 281), these two aspects of the digital divide should be kept separate at all times:

> The first digital divide–which refers to differences in access and usage–will inevitably disappear when the Internet becomes universally accessible. However, the digital divide relating to experience and advanced usage will exist after this takes place.

Factors that play a role in deciding on what side of the divide a person is situated are the presence of ICT in the region and the entire country, the motivation to deal with ICT, the internet as well as the services and documents available there in the first place, social status, degree of education, information literacy (dealing with the internet, its services, its tools etc.), age and place of residence (in the country or in agglomerations). Without the realization of important factors–first and foremost information literacy (Hunt & Birks, 2008)–the process of lifelong learning inherent to the information society would hardly be possible. Jan van Dijk (1999; van Dijk & Hacker 2003, 315 et seq.) systematizes the gaps that together make up the digital divide:

- "mental access": the lack of elementary experiences in dealing with digital media,
- "material access": no access to computers and network connections,
- "skills access": the lack of information literacy, caused by inadequate-systems or a lack of experience on the users' side,
- "usage access": the lack of significant usage possibilities.

If we disregard material access, all other gaps named by van Dijk are to do with an inadequate state of knowledge on the part of the information-poor. It thus makes sense to transfer the **knowledge gap hypothesis** to the digital divide. This hypothesis has generally been formulated with regard to the relation of social groups toward mass media usage (Tichenor, Donohue, & Olien, 1970, 159-160):

> As the infusion of mass media information into a social system increases, segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than the lower status segments, so that the gap in knowledge between these segments tends to increase rather than decrease.

When the stream of information increases–more diverse television channels, but also more varied web offers–social groups with a higher status and thus, tendentially, higher education, profit more from the information on offer than lower-status and less-educated groups. Hence, as information grows and grows, so will the knowledge gap between the social groups. The knowledge gap hypothesis is an example for the success-breeds-success principle, which has been formulated by as early a thinker as Matthew (13.12)–with explicit reference to knowledge:

> For whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath.

The reference point in Matthew 13.10 through 13 is perception, i.e. knowledge. He who knows, will be given even more knowledge; he who knows little will lose that little in time. This lesson from the Bible appears to apply to the knowledge society as well. One of the decisive factors for participating in the knowledge so-

ciety is one's respective knowledge base; it must be large enough to find further relevant knowledge, process it and thus usefully apply it to one's professional and private activities.

The original knowledge gap hypothesis, which obviously could not refer to the internet and its services, as these did not exist then, can also be observed in the digital divide, as an "internet gap" (Bonfadelli, 2002, 73 et seq.). Heinz Bonfadelli (2002, 75 and 79) reports on the results of his empirical studies:

> (E)ducation seems to be the crucial factor (when accessing the internet, A/N), followed by income; differences based on age and sex are less strong.
>
> People with higher education use the Internet for informational and service-oriented purposes; people with lower education use the Internet significantly more for entertainment reasons.

The following remark by Bonfadelli (2002, 81) strikes us as extremely important:

> Internet access alone obviously does not automatically guarantee an informed and knowledgeable public.

Participation in the knowledge society does not hinge on education alone. To put it very simplistically: one has to *want* to participate. Motivation changes the tendencies of the knowledge gap. Individuals and groups with a high motivation for using media but a low level of education are similar to better-educated groups in their media behavior–they thus surmount the knowledge gap at least partly. Nojin Kwak (1999, 403) analyzed empirical data on two motivation variables (interest and participation in an election campaign, respectively) and found out that education and motivation influence the knowledge acquisition process independently of each other.

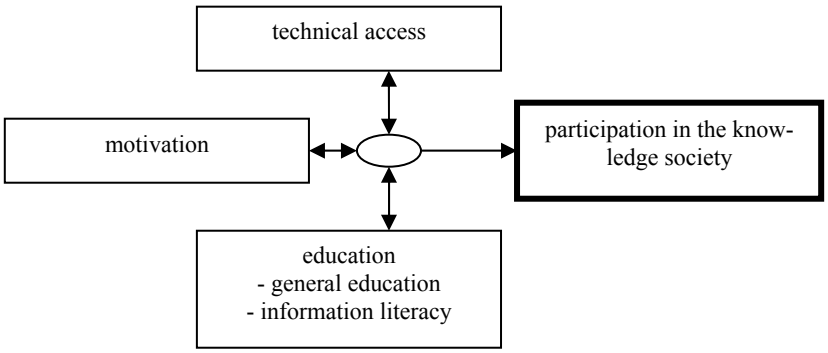

Figure 4.6: Participation Factors of the Knowledge Society.

Figure 4.6 summarizes the main aspects that decide on participation or non-participation in the knowledge society. Access to ICT and the internet (as well as the possibility of financing this in the first place) is a necessary condition, but it only becomes a sufficient condition when it is joined by the motivation for dealing with the particularities of the knowledge society, and when a level of education is reached that facilitates an adequate usage of digital media.

4.5 Deviant Information Behavior

In sociology, psychology and pedagogy, deviant behavior is understood as behavior that does not conform to socially accepted values, or that breaches norms regarded as valid. If someone breaches a moral norm, we speak of "deviance"; if someone breaches codified legal norms, this turns into "delinquency". "Deviant information behavior" refers to deviance and delinquency in dealing with digital information, particularly on the internet (Phillips, 2006). Here we would like to highlight some important forms of deviant information behavior.

4.5.1 Problematic Internet Usage

The first area summarizes problematic internet usage (PIU). This refers to internet use that affects one's mental, emotional and physical health right up to internet addiction. As such a dependence can at best be classified as "behavioral addiction" (Shapira et al., 2003, 209), and is thus an example of pathological conditioning, which is why several authors (such as Shapiro et al.) reject the term "addiction" and speak instead of PIU. It is not clear yet whether PIU is a new psychiatric cluster of symptoms, or whether symptoms previously in existence have merely resulted in a new behavioral pattern in connection with the internet (Yellowlees & Marks, 2007). We can distinguish the following forms of PIU:

- communication-oriented PIU (excessive use of chat, e-mail, message boards, blogs, social networks),
- knowledge-oriented PIU (excessive participation in Wikis or science-oriented blogs),
- game-oriented PIU (excessive use of online games; particularly MMOGs ("massively multiplayer online games") like WoW ("World of Warcraft")),
- sex-oriented PIU (excessive consumption of pornography on the internet).

Common to all forms is that the patients spend a significant amount of time performing non-professional internet activities and, correspondingly, neglect other social relationships (Liu & Potenza, 2007). In surveys of users with PIU it turned out that many suffer from a feeling of loneliness, where cause and effect, however, are not yet clearly distinguishable (Ceyhan & Ceyhan, 2008, 700):

> (I)t is difficult to determine whether loneliness is a symptom of excessive Internet use or whether heavy Internet use is a symptom of loneliness.

Even in online games this loneliness can be found, particularly in newcomers ("alone together"; Ducheneault et al., 2006), but it is reduced the longer one plays (and participates in "guilds" in WoW). The common social activities predominantly take place in digital space, but they have effects on the offline world, epitomised by WoW guild members often meeting in person (Nardi & Harris, 2006).

4.5.2 Online Harassment

In online or cyber harassment, we distinguish between "cyberstalking" and "cyberbullying", either in the workplace or (as "dissing") at school (Miller, 2006; Shanmuganathan, 2010). **Cyberstalking** means using the internet and its services to stalk other people, thus massively disturbing them (Hoffmann, 2006, 197). Cyberstalking may occur on its own, but can also happen in addition to traditional behaviors (telephone calls, physical approaches). Frequently, e-mail, Instant Messenger and chat are used to build up a sort of "hyper-intimacy" (sending of "love" mails); these cyber-approaches are then transferred into the real world (after online contact come physical threats or approaches) and threats are made (Spitzberg & Hoobler, 2002, 80).

In **cyberbullying**, the offender intends to harm his victim via internet (Kowalski, Limber, & Agatston, 2008). Online mobbing gained great attention when the media reported the suicide of a thirteen-year-old MySpace user in consequence of receiving malicious posts. Megan, plagued by depression from the start, had befriended a certain Josh on MySpace (Ruedy, 2008). "His" tone, friendly at first, took a turn for the worse when he started saying things like "the world would be a better place without you", which led Megan to kill herself. "Josh" was actually the mother of one of Megan's friends from school, who wanted to use this ploy to find out what Megan thought of her daughter. Josh's account was also being used by the daughter and one of her mother's colleagues, with the latter writing the fatal comment. None of the parties involved has been convicted of a crime. Cyberbullying primarily takes place via e-mail and chat, but it can also manifest itself in the publishing of discriminating reports, videos or photos (possibly even malicious photo montages) in social networks (e.g. Facebook), filesharing services (e.g. YouTube and Flickr) or on the WWW. Cyberbullying seems to have established itself firmly among adolescents. Li (2007) reports that around 15% of those surveyed stated that they had digitally terrorized others, and 25% admitted to having been the victims of such attacks. While there are no gender-specific differences to be observed among the victims, the perpetrators are more commonly male than female. 22.3% of all male junior high school students surveyed have experience in active cyberbullying, compared to 11.6% of girls (Li, 2006, 163).

Figure 4. 7: Seller Profile on eBay. Source: www.ebay.de.

4.5.3 Online Fraud

The internet gives fraudsters many new ways to play their trade. **Fraud on auction portals** (such as eBay), for instance, is widely spread (Gavish & Lucci, 2008). This form of fraud has several manifestations (Gregg & Scott, 2006, 98):

- the product is paid for by the customer but not delivered by the seller,
- the seller deceives the customer about the product's value (and thus exploits the known information asymmetries in the information economy with criminal intent),
- the seller demands additional "fees" after the auction ends,
- black-market products (e.g. illegally copied CDs or DVDs) are offered,
- the seller bids on his own products (under several aliases) in order to increase their prices.

In order to counteract auction fraud, one may use the reputation systems that evaluate buyers and sellers via a simple and self-evident star scale (calculated via the number of ratings and the share of positive ratings) (Figure 4.7) or bills processed by a trustee.

Nigerian Letter Fraud (or "419 fraud", after the relevant paragraph in Nigerian law) plays on the gullibility of mail recipients. The fraudster addresses his victim under some pretext and promises great financial gain (see Figure 4.8). If the victim agrees, certain "fees" will fall due, then others, and so on (Cukier, Nesselroth, & Cody, 2007, 2)

> For the funds to be released, the victim must provide further fees and payments, usually by wire transfer, for various taxes and expenses to consummate the transaction. The victim must pay these fees (attorney fees, duty, taxes, etc.) to process the transaction, and the sender claims

> that "just one more" fee/stamp/duty/form, etc. must be processed before the millions can be released.

The more a victim has already gotten involved with the "business", the smaller the probability that he will back out.

Providers of context-sensitive online ads for search engines (e.g. Google with the products AdWords–ads on the Google search page–and AdSense–ads on Google's partner websites) are doubly vulnerable to fraud. **Click fraud** occurs both as competitor click fraud (in AdWords) and as publisher click fraud (in AdSense) (Soubusta, 2008). Competitor Click Fraud regards the multiple clicking of a competitor's ad in order to financially damage him or (after reaching the maximum daily budget) remove his ad from the list of ads on Google. Publisher Click Fraud sees the advertising partner massively click on ads for his website in order to increase his revenue. Click fraud is either done manually or with the help of botnets (see below!).

Phishing ("Password Fishing") means the fraudulent spying of user names, passwords etc. in order to use the information thus acquired for online banking fraud or the unlawful usage of credit cards (Jakobsson & Myers, 2007). The fraudsters create a (more or less exact) copy of a trustworthy website, to which they point via e-mail, or send an equally trustworthy e-mail. The victim is then asked to surrender secret information about accounts, passwords etc. In a variation on this procedure, the fraudster works with malware that enters the communication lines between the customer and his bank, for example, thus "redirecting" the victim's access data. The goal of phishing is always identity theft leading to financial losses for the victims.

Dear Friend,
FROM THE DESK
OF MR IBRAHIM MOUSTAPHA
My name is mr Ibrahim Moustapha. I am a banker with the Bank of africa, Burkina Faso.I am still working with the Bank , but am about to retire from active Bank service to start a new life but I am sceptical to reveal this particular secret to a stranger .You must assure me that everything will be handled confidentially because we are not going to suffer again in life.
It has been 10 years now that most of the greedy African Politicians used our bank to Launder money to overseas through the help of their Political advisers. Most of the funds which they transferred out of the shores of Africa was gold and oil money that was supposed to have been used to develop the continent. Their Political advisers always inflated the amounts before transfer to foreign accounts so I also used the opportunity to divert part of the money hence I am aware that there is no official trace of how much was transferred as all the accounts used for such transfers were being closed after transfer.
I acted as the Bank Officer to most of the politicians and when I discovered that they were using me to succeed in their greedy act, I also cleaned some of their banking records from the Bank files and no one cared to ask me because the money was too much for them to control. They laundered over $150m dollars, during the process .As I am sending this message to you, I was able to divert more than ($20m) to an escrow account belonging to no one in the bank. The bank is anxious now to know who is the beneficiary to the funds because they have made a lot of profits with the funds.It is more than ten years now and most of the politicians are no longer using our bank to transfer funds overseas.
The $20M has been lying waste but I don't want to retire from the bank without transferring the funds to a foreign account to enable me share the proceeds with the receiver. The money will be shared 60% for me and 40% for you .
There is no one coming to ask you about the funds because I secured everything.I only want you to assist me by providing available bank account where the funds can be transferred. You are not to face any difficulties or legal implications as I am going to handle the transfer personally. If you are capable of receiving the funds, do let me know by replying me immediately to enable me give you detailed information on what to do.
For me, I have not stolen the money from anyone because the other people that took the whole money did not face any problems. This is my chance also to grab my own but you must keep the details of the funds secret to avoid leakages as no one in the bank knows about the funds.
Please supply me the following:
Your current contact address and Telephone Numbers. Whether you will be able to come down to my country to meet me before the commencement of the transfer.
I shall intimate you on what to do when I get your confirmation and acceptance. If you are capable of being my trusted associate, do declare your consent to me. Waiting for your urgent response.
Yours Faithfully,
Mr Ibrahim

Figure 4.8: Preliminaries to Nigerian Letter Fraud. Source: E-Mail by "Mr Ibrahim".

4.5.4 Criminal Internet Usage

In computer criminality, the computer plays a special role; it can be the target of an attack, the instrument of a criminal act or a piece of evidence (Vacca, 2005, 6). It is evidence insofar as information about criminal acts is stored on it (e.g. if a hacker stores a file illegally copied from another computer on his own computer). If a third party copies unwanted programs that cannot be controlled by the user on a computer, these are termed "malicious software", or malware (Kaspersky, 2008). Malware refers to either viruses (self-replicating program components that attach themselves to other programs, are transmitted alongside them and cause changes in the target computer that cannot be controlled by the user), Trojan horses (independent, non-self-replicating programs) or computer worms (independent programs that self-distribute via networks, e.g. via "infected" e-mails). The motivation for creating and distributing malware lies in the perpetrators' need for self-affirmation or for belonging to an information subculture and in general criminal designs. Thus malware can be used to store keystrokes or copy data from the target computer.

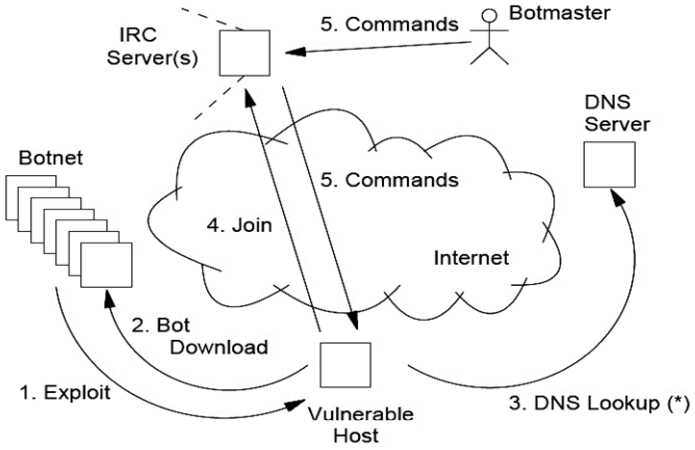

Figure 4.9: Functionality of a Botnet. Source: Abu Rajab et al., 2006, 42. IRC: Internet Relay Chat; DNS: Domain Name System (Optional for Botnets).

A particular type of computer criminality is the running of a **botnet**. A "botmaster" uses malware to "take over" a computer (as "bot") without its user's knowledge, and then interconnects it with other bots to form a network via the Internet Relay Chat protocol. The botmaster can use "Command and Control" (C&C)

channels to exploit the entire network to serve his purposes (Figure 4.9). Cases of application include:

- sending spam mails,
- performing click fraud,
- falsifying online surveys,
- performing diversified Denial of Service (DoS) attacks in order to cause a system crash by overloading the target system (Freiling, Holz, & Wicherski, 2005).

What **motives** lead information specialists to commit "cybercrime"? Neufeld (2010) found out that around two thirds of all internet crimes are committed with the motivation to gain financial advantages, be it via identity theft or fraud. Revenge plays a role in roughly 16% of all cases. Here it is mainly laid-off IT specialists who attack the system of their former employer. In 10% of cases, the hacker seeks to build a reputation in the relevant subculture. 8% are committed with a view to gaining one's own company economic advantages, e.g. via finding out competitors' business secrets. In another 8% of cases, the "thrill" of committing the deed is a leading motive.

4.6 Information Subcultures: Hackers, Crackers, Crashers

Defined by common interests, hackers have formed their own subculture, which has its own set of values and its own style (Thomas, 2002, 141):

> As a subculture, hackers have developed a particular sense of style that has been transformed over time and has been structured as an increasingly fluid and powerful form of resistance. As a youth culture, hackers are continually looking for ways to perturb or disrupt authority and challenge any understanding or representation of who they are.

The typical (American) hacker is white, lives in the suburbs, is a male member of the middle classes and probably goes to High School. As a rule, he is self-motivated, is a great technology enthusiast and has acquired a high level of technical (programming) knowledge (Thomas, 2002, XIII). In a more precise analysis, we can distinguish three separate groups:

- Hackers (defined by the goal of entering other computer systems without altering them–the impetus lies solely in the clearing of access barriers),
- Crackers (defined by the goal of removing copy protection for software or content, e.g. films),
- Crashers (defined by the goal of infecting other computers with malware and eventually running a botnet).

The hacking subculture has its own ethics, which is expressed as follows by the Chaos Computer Club (CCC; motto: "cable salad is good for your health") (CCC, 1998):

> Access to computers and everything that can show you how this world works should be unlimited and exhaustive.
>
> All information must be free.
>
> Mistrust authorities–promote decentralization.
>
> Judge a hacker by what he does, and not by common criteria such as looks, age, race, sex or social status.
>
> A computer can be used to create art and beauty.
>
> Computers can change your life for the better.
>
> Do not corrupt other people's data.
>
> Use public data, protect private data.

The cracking subculture was a result of the advent of copy protection. Depending on the way it deals with copy protection and warez (the pirated copies of the cracked documents), we distinguish between three different groupings (Krömer & Sen, 2006):

- Release scene (defined by the goal of using one's own computer to remove copy protection and provide warez),
- FXP scene (defined by the goal of using other computers–i.e. by using server piracy–to acquire and distribute warez),
- Filesharer scene (defined by the goal of acquiring and distributing warez, particularly music and videos; this encompasses all occasional copiers, who acquire documents cheaply).

With Wikipedia, another groups of hackers entered the game: "Wikipedia trolls" try to falsify information or destroy documents. Additionally, they try to spread dissension in discussions about articles, thus sabotaging the development of Wikipedia. Their behavior is similar to that of hackers (Shachaf & Hara, 2010).

These information subcultures partially venture into criminal terrain. While hackers (in our narrow definition) hardly commit criminal acts, crashers definitely infringe on computer penal law. Crackers are in conflict with copyright law, the FXP scene additionally being subject to criminal law by using server piracy.

4.7 Dark Web: Information Behavior of Terrorist Groups

We use the term "Dark Web" to summarize all activities of terrorist groups (or, from an alternative perspective, of "freedom fighters") on the internet. This includes websites on the surface web (i.e. accessible by search engines; Chen et al., 2005), sites on the Deep Web (not aceessible via common search tools), entries on message boards, postings on weblogs (including podcasts and vodcasts), video and audio files distributed online, e-mails and discussions in chatrooms. We understand "terrorism" to mean (U.S. State Dept., 2002):

> Premediated, politically motivated violence perpetrated against non-combatant targets by subnational groups or clandestine agents, usually to influence an audience.

Figure 4.10: Public Relations via the WWW by the Qassam Brigades. Source: www.alqassam.ps/English (Version Dating from 06/15/2006); Researched via the Wayback Machine (www.archive.org).

A terrorist group is a unit (or subunit of a larger organization) that practises terrorism. The Dark Web encompasses all internet-related activities of terrorist groups and their members. Terrorist groups primarily use the Dark Web to accomplish the following tasks (Thomas, 2003; Weinmann, 2004; Qin et al., 2007, 72):

- psychological warfare,
- public relations,
- fundraising,
- recruiting new members,
- mobilizing existing members,
- networking, exchange of information,
- planning and coordinating activities, "cyberplanning",
- "normal" Web searches (information about possible targets, e-mailing lists etc.).

To do so, they sometimes use methods of steganography (a masked correspondence in cipher in the example below):

> The semester begins in three more weeks. We've obtained 19 confirmations for studies in the faculty of law, the faculty of urban planning, the faculty of fine arts, and the faculty of engineering,

ran the code for the operating time, number of assassins and targets of the activities carried out on September 11, 2001 (Thomas, 2003, 119). For Timothy L. Thomas (2003, 112), it is clear that

> we can say with some certainty, al Qaeda loves the Internet.

Figure 4.10 shows the start page of the web presence of the Qassam Brigades, which form the military arm of Palestine's Hamas and are regarded as a terrorist organization. Some groups (like the Hamas) aim to create international websites in addition to those in their respective native language. Paul Piper (2008, 38) observes:

> These sites are rich in propaganda, alternative scenarios, arguments, philosophies, and often feature donation and/or recruitment options.

4.8 Political Science

The internet has opened up a new communication channel between government institutions and citizens. This becomes particularly clear in elections. However, media have always been crucial elements in **election campaigns**, as Castells, (1997) emphasizes:

> In the context of democratic politics, access to government institutions is dependent on gaining the majority of votes. In current societies, people mainly acquire information via media, television first and foremost, and thus form their opinions.

Although television is still a strong medium in the information society, the internet–particularly the WWW and, in it, the collaborative Web 2.0–is steadily gaining in influence. According to Kuhlen and Bendel (1998), the first German political election campaign conducted on the internet was the Bundestag election of 1998, as it was here that both parties and candidates created Web presences, the population could participate in "trial elections" and message boards discussing the election were used intensively. During the 2008 U.S. presidential election, the successful candidate Barack Obama made massive use of his own websites, but also of campaigns on a social network (Facebook) and a microblogging service (Twitter) (Glenn, 2009). For politically interested citizens, internet services are sometimes very trustworthy, as Johnson and Kaye (2009) have already described for the 2004 U.S. presidential election. According to their study, the people they

surveyed took weblogs for the most credible online source, followed by so-called "problem-oriented" websites. Websites by candidates as well as mailing lists and bulletin boards are deemed moderately credible, whereas chats achieve hardly and credibility at all. Does a politicized internet give way to another way of doing politics? For Philip E. Agre (2002), political activities on the Web are incorporated into more comprehensive social processes, where the Web merely represents a single element of media usage. The Web has, however, the character of an amplifier (Agre, 2002, 317):

> The Internet changes nothing on its own, but it can amplify existing forces, and those amplified forces might change something.

Especially in the example of Obama, it becomes clear that web-related "real-time" politics (Agre, 2002) does not start and end with election campaigns, but also enters every-day politics as "amplifier" (Greengard, 2009, 17):

> While new media has enormous power to help a candidate get elected, it also yields influence as a tool for operating a more efficient and transparent government.

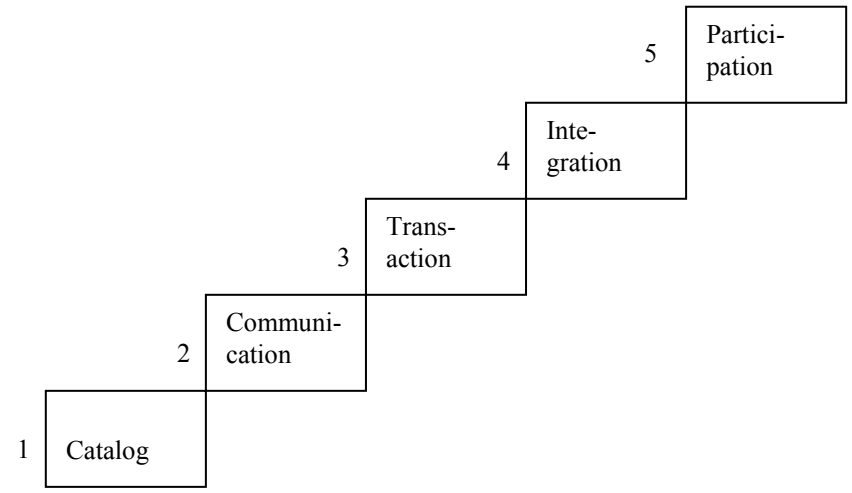

Figure 4.11: Steps of eGovernment.

This leads us to **eGovernment**. Public administrations on all levels work online with the citizens as well as collaborating among each other. The former can be understood in the variants A-to-C (Administration–Consumer/Citizen) and A-to-B (Administration–Business) as a counterpart to Customer Relationship Manage-

ment, the latter in the form A-to-A as the public adversary of Supply Chain Management. Lee, Tan and Trimi (2005, 99-100) describe the tasks of eGovernment:

> E-government is mainly concerned with providing quality public services and value-added information to citizens. It has the potential to build better relationships between government and the public by making interactions between citizens and government agencies smoother, easier, and more efficient.

We can separate the activities of eGovernment into fives steps (Figure 4.11), according to increasing technological and organizational complexity. Our model is a unification of the approaches by Layne and Lee (2001, 124) and Moon (2002, 426). Step 1, called Catalog, shows the interested citizens documents (e.g. minutes of meetings) and offers printable forms (which must be returned in person, however). From Step 2 onward, a direct digital communication between the participants becomes possible. Forms are now filled out by citizens and transmitted to the institution online. Contact persons (administrative staff and politicians) have a mailing address and process their mail. Step 3 admits transactions; taxes and fees are transferred digitally, and in the other direction, citizens receive grants they have applied for. The integration in Step 4 means both vertical integration (the connection of identical or similar administrations on different levels of the governmental administration pyramid: municipality, district, state, nation) as well as horizontal integration (the connection of all administrations within a municipality, district etc.). This allows citizens to orient themselves as to who they can turn to with their concerns where jurisdictions are not clearly defined. If several administrations are working on the solution of a problem, one motion will suffice, as it will be passed on within and among the administrations. The highest step concerns citizens' political participation. Here we can think of formal participation (e.g. in referendums carried out online) as well as informal actions (operating politically motivated blogs, microblogs, message boards or websites). eGovernment can only work when three conditions are met (Layne & Lee, 2001, 134 et seq.):

- internet access for all involved citizens,
- secure privacy and discretion,
- citizen-oriented administrative action (as opposed to savings-oriented action and the like).

In a comparison of several different countries, it can be shown that the internet's prevalence in a region correlates strongly with the respective degree of democratization, leading Groshek (2009, 133) to speak of a great "democratic potential of the internet". As we have learned from the discussion about the knowledge gap hypothesis, internet access requires not only the technology, but also education and the motivation for using the internet and its services adequately. Thompson (2008, 96) emphasizes this in his study of the information infrastructure and democracy:

> In democratic nations, it is believed such an infrastructure (telephone, postal, and broadcast services, libraries, schools, and other facilities, and electric and telecommunication installations …) contributes to the realization of the democratic ideals of effective participation and enlightened understanding.

We have seen, in the section on the digital divide, that internet access for all is not nearly a given. Introducing the uninitiated to the new media and simultaneously bridging the digital divide is called **eInclusion** (Kaplan, 2005).

How far will a government go to introduce its citizens to the knowledge society? What services are available to all, either for free or at the very least indiscriminately cheap? Services offered to the public in this way are called **universal services** (Raber, 2004; Stock, 1997). The borders of these services are drawn differently in each respective national information politics. The spectrum goes from voice telephony (Germany) via broadband connection (Switzerland), information services with regard to education, health and public security (U.S.A.) up to unlimited access to scientific-technical databases and magazines (Iceland, van de Stadt, & Thorsteinsdóttir, 2007). If a government merely supports the (purely technologically oriented) information society, a universal service of broadband access should be sufficient; if, however, it wants to advance the knowledge society (defined by content), it will also have to promote the distribution of important content and hence implement the Icelandic model.

What options does a government have in supporting the information and knowledge society? Following Norbert Henrichs (1983), we distinguish between three methods of **information politics**:

- Regulatory Politics: politics restricts itself to drawing up the legal framework for the information and knowledge society, respectively. Some relevant laws are copyright law and industrial property protection, or laws for fighting computer criminality.
- Structural Politics: here politics sets itself targets for developing an information and knowledge society. Two variants can be made out.
    - The government sees it as its duty to expedite certain desired developments by its own actions and financing ("government paradigm"). Thus in Germany in the 1970s, the Information and Documentation (IuD) program was initiated, which was designed to create a comprehensive infrastructure for acquiring scientific-technical information (which however could not be wholly realized due to a lack of coordination and the immense costs of the project).
    - The government sees the market as able to reach the goals ("market paradigm"). It may intervene in order to minimize investment and risk barriers, or to step into the breach in case of temporary market failure in order to compensate for any looming losses (principle of subsidiarity).

- Subsidy Politics: the government subsidizes certain projects either on the institutional level (e.g. financing certain libraries or information providers) or on the project level (by financing individual projects to be applied for and surveyed).

4.9 Conclusion

Only available in the printed version.

4.10 Bibliography

Abu Rajab, M., Zarfoss, J., Monrose, F., & Terzis, A. (2006). A multifaceted approach to understanding the botnet phenomenon. Proceedings of the 6th ACM SIGCOMM Conference on Internet Measurement (pp. 41-52). New York, NY: ACM.

Agre, P.E. (2002). Real-time politics: The internet and the political process. The Information Society, 18, 311-331.

Anand, S., & Sen, A. (1992). Human Development Index: Methodology and Measurement. New York, NY: United Nations Development Programme.– (Human Development Report Office Occasional Paper; 12).

Böhme, G. (1997). The structure and prospects of knowledge society. Social Science Information, 36(3), 447-468.

Bonfadelli, H. (2002). The internet and knowledge gaps. A theoretical and empirical investigation. European Journal of Communication, 17(1), 65-84.

Bonitz, M. (1986a). Wissenschaftliche Information und wissenschaftliches Verhalten. Berlin: ZIID.

Bonitz, M. (1986b). Holographie- und Tempoprinzip: Verhaltensprinzipien im System der wissenschaftlichen Kommunikation. Informatik, 33, 191-193.

Bredemeier, W., & Stock, W.G. (2000). Informationskompetenz europäischer Volkswirtschaften. Knorz, G., & Kuhlen, R. (eds.), Informationskompetenz–Basiskompetenz in der Informationsgesellschaft. Proceedings des 7. Internationalen Symposiums für Informationswissenschaft (pp. 227-243). Konstanz: UVK Universitätsverlag Konstanz.

Brown, J.S., & Duguid, P. (2002). The Social Life of Information. Boston, MA: Harvard Business School Press. 2nd ed.

Brenner, N. (1998). Global cities, glocal states: Global city formation and state territorial restructuring in contemporary Europe. Review of International Political Economy, 5(1), 1-37.

Britz, J.J. (2004). To know or not to know: A moral reflection on information poverty. Journal of Information Science, 30(1), 192-204.

Britz, J.J. (2008). Making the global information society good: A social justice perspective on the ethical dimensions of the global information society. Journal of the American Society for Information Science and Technology, 59(7), 1171-1183.

Castells, M. (1989). The Informational City. Information Technology, Economic Restructuring, and the Urban-Regional Process. Oxford; Cambridge, MA: Basil Blackwell.

Castells, M. (1996). The Rise of the Network Society. Malden, MA: Blackwell.

Castell, M. (1997). The Power of Identity. Malden, MA: Blackwell.

Castells, M. (1998). End of Millenium. Malden, MA: Blackwell.

Castells, M. (2001). The Internet Galaxy. Oxford: Oxford Univ. Pres.

Castells, M. (2006[1993]). Cities, the information society and the global economy. Brenner, N. ; & Keil, R. (eds.). The Global Cities Reader (pp. 135-136). London, New York, NY: Routledge. (Original: 1993).

CCC (1998). Hackerethik / Chaos Computer Club. Online: www.ccc.de/hackerethics.

Ceyhan, A.A., Ceyhan, E. (2008). Loneliness, depression, and computer efficacy as predictors of problematic internet use. CyberPsychology & Behavior, 11(6), 699-701.

Chen, H., Qin, J., Reid, E., Chung, W., Zhou, Y., Xi, W., Lai, G., Bonillas, A.A., & Sagemann, M. (2005). The dark web portal: Collecting and analyzing the presence of domestic and international terrorists groups on the web. Lecture Notes in Computer Science, 3495, 623-624.

Chen, I., & Kidd, T.T. (2008). Digital divide implications and trends. In Quigley, M. (ed.), Encyclopedia of Information Ethics and Security (pp. 130-135). Hershey, PA: Information Science Reference.

Cukier, W.L., Nesselroth, E.J., & Cody, S. (2007). Genre, narrative and the „Nigerian Letter" in electronic mail. In Proceedings of the 40th Annual Hawaii International Conference on System Sciences.

David, P.A., & Foray, D. (2002). An introduction to the economy of the knowledge society. International Social Science Journal, 54(171), 9-23.

Ducheneault, N., Yee, N., Nickell, E., & Moore, R.J. (2006). "Alone together?": Exploring the social dynamics of massively multiplayer online games. In Proceedings of the SIGHCI Conference on Human Factors in Computing Systems (pp. 407-416). New York, NY: ACM.

Dutta, S., & Mia, I. (2009). The Global Information Technology Report 2008-2009. Cologny: World Economic Forum, Fontainebleau: INSEAD.

Flint, C., & Taylor, P. (2007). Political Geography. World-Economy, Nation-State and Locality. 5th ed., Harlow: Pearson / Prentice Hall.

Freiling, F.C., Holz, T., & Wicherski, G. (2005). Botnet tracking: Exploring a root-cause methodology to prevent distributed denial-of-service attacks. Lecture Notes in Computer Science 3679, 319-335.

Friedmann, J. (1995). Where we stand: A decade of world city research. In Knox, P., & Taylor, P. (eds.), World Cities in a World-System (pp. 21-47). New York, NY: Cambridge University Press.

Gavish, B., & Lucci, C.L. (2008). Reducing internet auction fraud. Communications of the ACM, 51(5), 89-97.

Glenn, V.D. (2009). Government and Web 2.0. DttP: A Quarterly Journal of Government Information Practice & Perspective, 37(2), 13-17.

Goos, M., & Manning, A. (2007). Lousy and lovely jobs: The rising polarization of work in Britain. Review of Economics and Statistics, 89(1), 118-133.

Gospodini, A. (2005). Landscape transformations in the postmodern inner city: Clustering flourishing economic activities and 'glocalising' morphologies. WIT Transactions on Ecology and the Environment, 84 (pp. 1469-1485) (Sustainable Development and Planning II, Vol. 2).

Graumann, S., & Speich, A. (2009). Innovationspolitik, Informationsgesellschaft, Telekommunikation. Berlin: Bundesministerium für Wirtschaft und Technologie; München: TNS Infratest.

Greengard, S. (2009). The first internet president. Communications of the ACM, 52(2), 16-18.

Gregg, D.G., & Scott, J.E. (2006). The role of reputation systems in reducing online auction fraud. International Journal of Electronic Commerce, 10(3), 95-120.

Groshek, J. (2009). The democratic effects of the internet, 1994-2003. A cross-national inquiry of 152 countries. The International Communication Gazette, 71(3), 115-136.

Guillén, M.F., & Suárez, S.L. (2005). Explaining the global digital divide: Economic, political and sociological drivers of cross-national internet use. Social Forces, 84(2), 681-708.

Hall, P. (1985). The geography of the fifth Kondratieff. In Hall, P., & Markusen, A. (eds.), Silicon Landscapes (pp. 1-19). Boston, MA, London, Sidney: Allen and Unwin.

Hall, P. (1997). Modelling the post-industrial city. Futures, 29(4/5), 311-322.

Hansson, F., Husted, K., & Vestergaard, J. (2005). Second generation science parks: From structural holes jockeys to social capital catalysts of the knowledge society. Technovation, 25, 1039-1049.

Heidenreich, M. (2002). Merkmale der Wissensgesellschaft. Lernen in der Wissensgesellschaft. Innsbruck: StudienVerlag.

Heidenreich, M. (2003). Die Debatte um die Wissensgesellschaft. Böschen, S., & Schulz-Schaeffer, I. (eds.), Wissenschaft in der Wissensgesellschaft (pp. 25-51). Wiesbaden: Westdeutscher Verlag.

Henrichs, N. (1983). Informationspolitik. Stichworte zu einer Podiumsdiskussion. In Kuhlen, R. (ed.), Koordination von Informationen. Die Bedeutung von Informations- und Kommunikationstechnologien in privaten und öffentlichen Verwaltungen (pp. 348-355). Berlin; Heidelberg: Springer.

Hepworth, M.E. (1987). The information city. Cities, 4(3), 253-262.

Hoffmann, J. (2006). Stalking. Heidelberg: Springer.

Hunt, F., Birks, J. (2008). More Hands-on Information Literacy Activities. New York, NY: Neal-Schuman.

ITU (2009). Measuring the Information Society. The ICT Development Index. Geneva: International Telecommunication Union.

Jakobsson, M., & Myers, S., eds. (2007). Phishing and Countermeasures. Understanding the Increasing Problem of Electronic Identity Theft. Hoboken, NJ: Wiley.

Johnson, T.J., & Kaye, B.K. (2009). In blogs we trust? Deciphering credibility of components of the internet among politically interested internet users. Computers in Human Behavior, 25, 175-182.

Kaplan, D. (2005). e-Inclusion: New Challenges and Policy Recommendations. eEurope Advisory Group.

Kaspersky, E. (2008). Malware. Von Viren, Würmern, Hackern und Trojanern und wie man sich vor ihnen schützt. München: Hanser.
Kelley, A.C. (1991). The human development index: "Handle with care". Population and Development Review, 17(2), 315-324.
Kondratieff, N.D. (1926). Die langen Wellen der Konjunktur. Archiv für Sozialwissenschaft und Sozialpolitik, 56, 573-609.
Kowalski, R.M., Limber, S.P., & Agatston, P.W. (2008). Cyber Bullying: Bullying in the Digital Age. Malden, MA: Wiley-Blackwell.
Krömer, J., & Sen, E. (2006). No Copy–Die Welt der digitalen Raubkopie. Berlin: Tropen.
Kuhlen, R., & Bendel, O. (1998). Die Mondlandung des Internet. Die Bundestagswahl 1998 in den elektronischen Kommunikationsforen. Konstanz: Universitätsverlag.
Kwak, N. (1999). Revisiting the knowledge gap hypothesis. Education, motivation, and media use. Communication Research, 26(4), 385-413.
Layne, K., & Lee, J. (2001). Developing fully functional e-government: A four stage model. Government Information Quarterly, 18, 122-136.
Lee, S.M., Tan, X., & Trimi, S. (2005). Current practices of leading e-government countries. Communications of the ACM, 48(10), 99-104.
Li, Q. (2006). Cyberbullying in schools. School Psychology International, 27(2), 157-170.
Li, Q. (2007). New bottle but old wine: A research of cyberbullying in schools. Computers in Human Behavior, 23(4), 1777-1791.
Liu, T., & Potenza, M.N. (2007). Problematic internet use: Clinical implications. CNS Spectrums, 12(6), 453-466.
Lyon, D. (2005). A sociology of information. In Turner, B.S., Rojek, C., & Calhoun, C. (eds.), The Sage Handbook of Sociology (pp. 223-235). London: Sage.
Lumiérs, E.M., & Schimmel, M. (2004). Information poverty. A measurable concept? In Mendina, T., & Britz, J.J. (eds.), Information Ethics in the Electronic Age (pp. 47-61). Jefferson, NC; London: McFarland.
McGillivray, M. (1991). The human development index: Yet another redundant composite development indicator? World Development, 19(10), 1461-1468.
Mensch, G. (1975). Das technologische Patt. Innovationen überwinden die Depression. Frankfurt: Umschau.
Mia, I., Dutta, S., & Geiger, T. (2009). Gauging the networked readiness of nations: Findings from the Networked Readiness Index 2008-2009. In Dutta, S., & Mia, I. (eds.), The Global Information Technology Report 2008-2009 (pp. 3-26). Cologny: World Economic Forum; Fontainebleau: INSEAD.
Miller, C. (2006). Cyber harassment: Its forms and perpetrators. Law Enforcement Technology, 33(4), 26-30.
Moon, M.J. (2002). The evolution of e-government among municipalities: Rhetoric or reality? Public Administration Review, 62(4), 424-433.

Nardy, B., Harris, J. (2006). Strangers and friends: Collaborative play in World of Warcraft. In Proceedings of the 20th Anniversary Conference on Computer Supported Cooperative Work (pp. 149-158). New York, NY: ACM.

Nefiodow, L. (1991). Der Fünfte Kondratieff. Frankfurt: FAZ; Wiesbaden: Gabler.

Nefiodow, L. (1994). Informationsgesellschaft. Arbeitsplatzvernichtung oder Arbeitsplatzgewinne? ifo Schnelldienst, 12, 11-19.

Neufeld, D.J. (2010). Understanding cybercrime. Proceedings of the 43rd Hawaii International Conference on System Sciences. IEEE Computer Society Press.

OECD (2005). Guide to Measuring the Information Society / Working Party on Indicators for the Information Society (DSTI/ICCP/IIS(2005)6/FINAL). Paris: Organisation for Economic Co-operation and Development.

Peña-López, I. (2006). Networked readiness index vs. human development index. ICTlogy, 30.

Phillips, J.G. (2006). The psychology of internet use and misuse. In Anandarajan, M., Teo, T.S.H., & Simmers, C.A. (eds.), The Internet and Workplace Transformations (pp. 41-62). Armonk, NY: Sharpe.

Piper, P. (2008). Nets of terror. Terrorist activity on the internet. Searcher, 16(10), 29-38.

Qin, J., Zhou, Y., Reid, E., Lai, G., & Chen, H. (2007). Analyzing terror campaigns on the internet: Technical sophistication, content richness, and Web interactivity. International Journal of Human-Computer Studies, 65, 71-84.

Raber, D. (2004). Is universal service a universal right? A Rawlsian approach to universal services. In Mendina, T., & Britz, J.J. (eds.), Information Ethics in the Electronic Age (pp. 114-122). Jefferson, NC; London: McFarland.

Ruedy, M.C. (2008). Repercussions of a MySpace teen Suicide: Should anti-cyberbullying law be created? North Carolina Journal of Law & Technology, 9(2), 323-346.

Sagar, A.D., & Najam, A. (1998). The human development index: A critical review. Ecological Economics, 25, 249-264.

Sairamesh, J., Lee, A., & Anania, L. (2004). Information cities. Communications of the ACM, 47(2), 29-31.

Sassen, S. (2002). Towards a sociology of information technology. Current Sociology, 50(3), 365-388.

Schumpeter, J.A. (1961). Konjunkturzyklen. Eine theoretische, historische und statistische Analyse des kapitalistischen Prozesses. Göttingen: Vandenhoek & Ruprecht.

Shachaf, P., & Hara, N. (2010). Beyond vandalism. Wikipedia trolls. Journal of Information Science, 36(3), 357-370.

Shanmuganathan, N. (2010). Cyberstalking: Psychoterror im Web 2.0. Information–Wissenschaft und Praxis, 61(2), 91-95.

Shapira, N.A., Lessig, M.C., Goldsmith, T.D., Szabo, S.T., Lazoritz, M., Gold, M.S., & Stein, D.J. (2003). Problematic internet use: Proposed classification and diagnostic criteria. Depression and Anxiety, 17, 207-216.

Soubusta, S. (2008). On click fraud. Information–Wissenschaft und Praxis, 59(2), 136-141.
Spitz-Oener, A. (2006). Technical change, job tasks, and rising educational demands: Looking outside the wage structure. Journal of Labor Economics, 24(2), 235-270.
Spitzberg, B.H., & Hoobler, G. (2002). Cyberstalking and the technologies of interpersonal terrorism. New Media & Society, 4(1), 71-92.
Stehr, N. (1994). Knowledge Societies. London: Sage.
Stiglitz, J. (2000). Scan globally, reinvent locally. Knowledge infrastructure and the localisation of knowledge. In Stone, D. (ed.), Banking on Knowledge. The Genesis of the Global Development Network (pp. 25-44). London: Routledge.
Stock, W.G. (1997). Universaldienste. Köln: Fachhochschule Köln / Fachbereich Bibliotheks- und Informationswesen. (Kölner Arbeitspapiere zur Bibliotheks- und Informationswissenschaft; 4).
Stock, W.G. (2000). Informationswirtschaft. Management externen Wissens. München, Wien: Oldenbourg.
Susser, I. (2002). Manuel Castells: Conceptualizing the city in the information age. In Susser, I. (ed.), The Castells Reader on Cities and Social Theory (pp. 1-12). Malden, Mass., Oxford: Blackwell.
Swyngedouw, E., & Kaïka, M. (2003). The making of 'glocal' urban modernities. City, 7(1), 5-21.
Thomas, D. (2002). Hacker Culture. Minneapolis: Univ. of Minnesota Press.
Thomas, T.L. (2003). Al Qaeda and the Internet: The danger of „cyberplanning". Parameters, 33(1), 112-123.
Thompson, K.M. (2008). The US information infrastructure and libraries: A case study in democracy. Library Review, 57(2), 96-106.
Tichenor, P.J., Donohue, G.A., & Olien, C.N. (1970). Mass media flow and differential growth in knowledge. Public Opinion Quarterly, 34, 159-170.
UNDP (2007). Human Development Report 2007/2008. New York, NY: United Nations Development Programme.
United Nations (2006). The Digital Divide Report: ICT Diffusion Index 2005. New York; Geneva: United Nations Conference on Trade and Development.
U.S. State Dept. (2002). Patterns of Global Terrorism.
Vacca, J.R. (2005). Computer Forensics. Computer Crime Scene Investigations. 2nd ed. Hingham, MA: Charles River Media.
van de Stadt, I., Solveig Thorsteinsdóttir (2007). Going E-only: All Icelandic citizens are hooked. Library Connect, 5(1), 2.
van Dijk, J. (1999). The Network Society. Social Aspects of New Media. Thousand Oaks, CA: Sage.
van Dijk, J., & Hacker, K. (2003). The digital divide as a complex and dynamic phenomenon. The Information Society, 19, 315-326.
Vehovar, V., Sicherl, P., Hüsing, T., & Dolnicar, V. (2006). Methodological challenges of digital divide measurements. The Information Society, 22, 279-290.
Warschauer, M. (2003). Technology and Social Inclusion. Rethinking the Digital Divide. Cambridge, MA: MIT Press.

Webster, F. (1995). Theories of the Information Society. London, New York, NY: Routlegde.

Weinmann, G. (2004). www.terror.net–How Modern Terrorism Uses the Internet. Washington, DC: United States Institute of Peace. (Special Report; 116).

Wersig, G. (1973). Informationssoziologie. Hinweise zu einem informationswissenschaftlichen Teilbereich. Frankfurt am Main: Fischer Athenäum.

World Bank (2009). Measuring Knowledge in the World's Economies. Washington, DC: World Bank Institute.

Xalter S. (2006). Der „Bibliotheksindex“ (BIX) für wissenschaftliche Bibliotheken–eine kritische Auseinandersetzung (Hausarbeit). München: Bayerische Bibliotheksschule.

Yellowlees, P.M., & Marks, S. (2007). Problematic internet use or internet addiction? Computers in Human Behavior, 23(3), 1447-1453.