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Transnational space and the 'network society'

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The issue that this paper addresses is whether we live in a network society and what spatial implications networking has for society. A network is the inner structure of a self-organising system comprised of parts, their relationships/interactions and the patterns that emerge from the interactions. Space is made by all internal structures of a system that are delimited by a system border from an environment; it is the area of activity and interaction of a system. Each social system has its own space, i.e. it is based on transformed parts of nature, created artefacts and human bodies that are related to each other at a certain (variable and changing) distance. Society creates space, space creates society, people modify and (re)create the spaces they live in and in turn are modified by them. The term 'network society' obscures the continuity of domination and capitalism and stresses the discontinuity brought about by the increasing importance of computer networks, knowledge and transnationalism. It is suggested that 'global network capitalism' is a more suitable term. Global network capitalism is based on a transnational organisational model, organisations cross national boundaries, the novel aspect is that organisations and social networks are increasingly globally distributed, that actors and substructures are located globally and change dynamically (new nodes can be continuously added and removed), and that the flows of capital, power, money, commodities, people and information are processed globally at high-speed. Cyberspace allows the global flexibilisation and global extension of social systems in space, and the overcoming of temporal limits, it supports the transnationalisation of capitalism. Global network capitalism is based on structural inequalities; it is made up of segmented (economic, political, cultural) spaces in which central hubs (transnational corporations, certain political actors, regions, and countries, western lifestyles and worldviews) centralise the production, control and flows of economic, political and cultural capital (property, power, skills). Global network capitalism is an antagonistic system; transnational networks are both spaces of domination and spaces of potential liberation from domination. Network commons challenge network capitalism, networked control is challenged by networked participation, and networked manipulation by networked wisdom.

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Introduction

There is much talk about networks in science and society. Some claim that we live in a network society that is structured around information, communication and network logic. One of the questions that this paper addresses is the question of whether we really do live in a network society, and is this term suitable for describing contemporary society? What is the network society? Does it exist or is it an ideology?

Obviously computer-based information and communication networks play an important role in society today because they enable communication that transcends certain spatial and temporal borders and limits. Another problem that this paper addresses is the role of space in contemporary society. On the one hand, some say that new information and communication technologies that transcend borders have caused a crisis of the space concept in sociology. On the other hand, spatial descriptions such as 'global village', 'cyberspace', 'digital city', 'space of flows' or 'virtual community' indicate a desire of scientists and stakeholders to describe cyberspace as a new type of space. What is social space? How has space been transformed by the rise of networking? How is space structured in the 'network society'?

In order to contribute possible answers to these questions, the paper has been structured as follows. First, I clarify what networks and spaces are, and to do so I employ the notion of self-organisation as theoretical context because it has proved to be a fruitful epistemology in prior works (e.g. Fuchs, 2002, 2003a–d, 2004, 2005, 2006a–d; Fuchs & Hofkirchner, 2005). Next, I discuss the notion of social space and link it to the notion of cyberspace. In the following section I discuss whether the term 'network society' makes sense for explaining contemporary society, and I link network theory to globalisation theory. The subsequent sections discuss how the networked spaces in economy, polity and culture are structured in contemporary society. The final section draws some conclusions.

Self-organisation and networked spaces

In a self-organising system new order emerges from the interactions of agents, it cannot be reduced to the system's parts, but stems from active interactions that create synergies (Fuchs, 2003a, 2006b). Self-organising systems are inherently complex and dynamic, they can be found in nature (stemming from the atomic to the molecular to the cellular and organic level) and society (from the individual to the group to the social to the societal to the global level). In what respect are self-organising systems networks? In mathematics (graph theory), network theory and network analysis, a network is generally defined as a structure where nodes are interrelated by ties, ties are seen as channels for the transfer or flow of resources, and the network is considered as constraining individual agents (Wasserman & Faust, 1997).

In the Internet the nodes are computer networks, in a genetic network the nodes are genes, in the brain the nodes are neurons, in an organ the nodes are cells, in a human body the nodes are organs, in a local area network the nodes are singular

computers, in a business network the nodes are corporations, in a networked enterprise the nodes are production units, in a social network the nodes are human beings or groups, etc.

Network analysis 'is based on the assumption of the importance of relationships among interacting units' (Wasserman & Faust, 1997, p. 4). Albert-László Barabási (1999, 2003, 2005; Barabási *et al.*, 2000, 2003) has combined network- and self-organisation theory in order to arrive at the concept of scale-free networks. Earlier approaches by Gordon Pask, Heinz von Foerster (Pask & Von Foerster, 1961), Louis H. Kauffman (1977), Francisco Varela (Goguen & Varela, 1979), and Stuart Kauffman (1993a) also linked systems thinking to the network concept. In 1999 Barabási developed the concept of scale-free networks where he modified the random network theory of Erdös & Rényi (1959). He found out that in phase transitions that are a unique feature of self-organising systems, power laws characterise the development of networks in all realms of the real world. The distribution characterising the probability P(k) that a randomly selected node has exactly k edges follows a Poisson distribution wit a peak at k in a scale-free network. For Barabási, the self-organising dynamics of networks means that systems 'constantly evolve by the addition and removal of new nodes and links' (Barabási *et al.*, 2003, p. 1), i.e. scale-free networks are open (Barabási *et al.*, 2000, p. 73). Examples for scale-free networks that Barabási has studied are the World Wide Web, metabolic and protein networks, language, scientific literature, business networks and sexual networks. Barabási argues that in scale-free networks there is preferential attachment, i.e. 'there is a higher probability to link to a node with a large number of connection' (Barabási *et al.*, 2003, p. 3). This can result in the emergence of hubs and hierarchical systems. In the 1960s such clustering effects in the science system were described by Robert Merton (1968) (the Matthew effect). Well-established and recognised scientists are much more likely to be cited by others and to have their papers accepted for publication in order to further increase their reputation, whereas for newcomers it is much harder to gain a reputation, although their work might be of high quality. The problem in Barbási's account of hierarchy, clustering and preferential attachment is that he presents these concepts as natural characteristics of networks, but in social systems they are the result of the asymmetrical distribution of power and of stratification processes.

Stuart Kauffman (1993b) developed the NK Boolean network model for describing genetic networks. 'A random Boolean network is a system of N on-off nodes, each representing a gene that can be active or inactive. One global parameter that can be varied is K, the number of regulatory inputs to each gene', (p. 2). Kauffman distinguishes three types of Boolean networks, the ordered, the chaotic and the complex regime. In the latter fluctuations push the system constantly to the edge of chaos, order emerges from chaos, the system evolves. Recently Kauffman (2000) has coined the term 'autonomous agents' (agents that co-create the worlds they inhabit) for such complex networks.

Both the accounts of Barabási and Kauffman show that the network concept refers to the inner dynamics of self-organising systems, i.e. to its structure of interactions. A network is the inner structure of a self-organising system comprised of parts, their

relationships/interactions, and the patterns that emerge from the interactions. Interaction and relationship means that the agents connect to each other so that they perform actions together that cause self-change and change in the system they form. A flow is an action of one agent that causes other actions and hence internal structural differentiation of at least one other agent (and maybe also in the overall system), a complex non-linear relationship is established. Flows are information processes of agents that comprise three aspects: internal structuring (cognition), interaction/communication and joint action, resulting in emergent qualities of the overall system (co-operation) (Fuchs & Hofkirchner, 2005). A network can be considered to be the internal structure of a complex system that is the medium and outcome of the threefold information processes of cognition, communication and co-operation. Networks are the foundation as well as the structural result of self-organisation. In self-organisation processes networks are maintained and changed, all self-organising systems are evolving networks. Peter Dicken *et al.* stress the relationship of the idea of emergence (which is a key concept of self-organisation theory) and networks by arguing that the sum of network relationships 'is much greater than that of individual actors. The configurations of these emergent network relationships provide another central dynamic to drive networks' (Dicken *et al.*, 2001, p. 93sq).

What role does space play in a self-organising network? Space is the material environment and area of interaction, it is produced in communication processes, and is the distance between things and bodies that communication processes traverse. Communication takes place within system boundaries that define which agents and objects belong to the system (i.e. who communicates in it with others and uses certain objects in this process) and who does not. Space is made up by all internal structures of a system that are delimited by a system border from an environment; it is the area of activity and interaction of a system. Space is the territory of a system, the field that is produced by and enables interactions. The space of the interactions of two friends comprises their bodies, the physical surroundings (building, room, furniture), and the interaction medium (such as language and sound waves). If communication does not take place face-to-face, but is organised with the help of a technical medium such as the Internet, then the space of interaction is comprised by bodies and a technical environment (computers, computer network) that enables spatially distanced communication. Hence space does not imply proximity, with the help of communication technologies space can stretch across distances, the distance between interacting bodies can be enlarged, space then extend itself across geographical distances. Hence the fundamental aspects of space are bodies, actors, physical surroundings of actors, distance between bodies, borders that create a system/environment-difference, and communication processes that are enabled by space and produce and recreate space. The network concept refers more to the communication processes and the results of communication processes in systems, the space concept more refers to the distance between actors, to the physical media that they require for communication, and to system borders. There is a network-space-dialectic within each system: By networking processes (i.e. the establishment and permanent continuation of communication of agents) the space of a

system is permanently created and recreated, the space of a system is a condition for the continuous networking of a system. Space is medium and outcome of networking processes in self-organising systems.

In order to discuss space in the 'network society', we first have to explain the role of space in society in social systems in general.

Social spaces

Natural spaces are dissipative and autopoietic systems in nature that have a certain extension on the earth's or the cosmos' surface, e.g. the Milky Way, a forest, the Pacific Ocean, the Black Forest, the Danube, etc. Social spaces are created by human activities in social processes; they incorporate and transform natural spaces. Humans enter into metabolic processes with certain parts/regions of nature that become part of society in the form of the ecosphere. Each social system has its own space, i.e. it is based on transformed parts of nature, created artefacts and human bodies that are related to each other at a certain (variable and changing) distance. As there are different types of systems such as economic, political and cultural systems, different types of social spaces such as economic space, political space and cultural space can also be distinguished. This means that different social processes concentrating on the production of property (economy), decision power (polity) and meaning (culture) form distinct systems that are spatially organised.

In classical physics scientists like Kopernikus, Keppler and Newton conceived space as an absolute unchanging container of physical activity. Since Einstein's theory of relativity, the idea that matter in its development produces spatial structures has become more prominent. Space here is the result of the relative location of things; it is the relational structure between bodies that are in permanent movement. Hence space constitutes itself in time.

Anthony Giddens (1984) has developed an important locale-oriented concept of social space (cf. Fuchs, 2003d). He sees space and time as important dimensions of social activity. His concept of space is based on the works of Törsten Hägerstrand, Erwing Goffman and Martin Heidegger. Giddens distinguishes between structures and systems:

> Structure, as recursively organised sets of rules and resources, is out of time and space . . . The social systems in which structure is recursively implicated, on the contrary, comprise the situated activities of human agents, reproduced across time and space. (Giddens, 1984, p. 25)

Social integration for Giddens means reciprocity between actors in contexts of co-presence, system integration reciprocity between actors across extended time-space (Giddens, 1984, p. 28). A locale for Giddens is a use of space in social activity so that a certain fixity of interaction can be achieved.

> Locales refer to the use of space to provide the settings of interaction, the settings of interaction in turn being essential to specifying its contextuality. . . . locales provide for a good deal of the 'fixity' underlying institutions. . . . Locales may range from a room in the

> house, a street corner, towns, cities to the territorially demarcated areas occupied by nation-states. (Giddens, 1984, p. 118)

For Giddens locales are internally regionalised, they have a:

> zoning of time-space in relation to routinised social practices. ... Houses in contemporary societies are regionalised into floors, halls and rooms. But the various rooms of the house are zoned differently in time as well as space. The rooms downstairs are characteristically used most in daylight hours, while bedrooms are where individuals'retire to' at night. (Giddens, 1984, p. 119)

With his concept of locale Giddens associates space with regionality, locality and co-presence, the dualistic separation of system integration and social integration implies that encounters of humans without co-presence and physical proximity exist out of space. In order to avoid such a localisation of the space-concept so that globalisation can be described as spatialisation process, I prefer to interpret the concept of locale not as confined to co-present interactions, but to co-present and spatio-temporally extended/stretched interactions. Paraphrasing Giddens (1984, p. 375), I therefore define a locale as the space involved as part of the setting of co-present or spatio-temporally extended/stretched interactions, having definite boundaries which help to concentrate interaction in one way or another. A social system is any set of continuous reproduced relations between human actors, no matter if they are physically co-present or not.

Based on such a concept of locale as social space, it can be argued that space is an integral feature of society and all social systems. Space is a given pre-condition of all social activity and is modified continuously by social activity. At the same time it is a container and a creation, it is a variable container of social activity that is the medium and outcome of social activity and is continuously transformed by humans (i.e. the distance between bodies and artefacts is continuously changed in processes of separation and approximation). Society creates space, space creates society, people modify and (re)create the spaces they live in and in turn are modified by them. This is what Edward W. Soja has termed the 'socio-spatial dialectic'. By this concept he means that 'social relations (forms and processes) shape and are simultaneously shaped by spatial relations (forms and processes). All this develops over time, creating ever more complex and problem-filled intertwining of the spatial, social, and historical aspects of our lives' (Soja, 2001, p. 5). For Soja 'social and spatial relations are dialectically inter-reactive, interdependent; ... social relations of production are both space-forming and space-contingent' (Soja, 1989, p. 81). Soja's concept of space is based on the theory of Henri Lefèbvre (1991) who stressed that space is socially produced.

Giddens argues that structural properties can be organised across time-space distances (cf. Fuchs, 2003d). Historically, the continuous extension of time-space distanciation would have been enabled by the rise of new technologies and organisation forms such as writing, notation, cities, lists, timetables, money, nation-states, communication and transportation technologies in general, rapid-transit transportation and electronic communication technologies (including the electromagnetic telegraph, telephone and computer-mediated communication). Giddens has defined time-space distanciation as the 'stretching of social systems across time-space' (1984, p. 377) and

has identified an important connection between space, communication and technology. The history of technology is a history of time-space-distanciation, the rise of new technology has often resulted in transformations of the organisation of space and time by society, it has increasingly become possible to organise social relationships across large spatial and temporal distances, i.e. the advancement of communication technologies has enabled communication between humans that are located far away from each other and do not necessarily have to use the technology synchronously (as e.g. in the case of email).

The concept of time-space distanciation is of particular importance for computer-based communication technologies (which are frequently also termed 'new information and communication technologies', 'new media', 'cyberspace' or 'virtual reality technologies'). What is cyberspace? Traditionally it has been defined in a technicist manner as a network of computer networks that operates based on the TCP/IP protocol. Such concepts ignore that cyberspace is useless and meaningless without human activity and communication, the information that is technologically stored in cyberspace is produced and used by humans in dynamic processes, hence cyberspace is not a technical system, but a social system that makes use of a global technological network of computer networks as medium of cognition, communication, and co-operation (Fuchs, 2005). Therefore, cyberspace is a global socio-technological system that is based on a technological structures consisting of networked computer networks that work with the help of the TCP/IP protocol and store objectified human knowledge. Human actors permanently re-create this global knowledge storage mechanism by producing new informational content, communicating in the system and consuming existing informational content in the system; the technological infrastructure enables and constrains human communication. The Internet consists of both a technological infrastructure and communicating human actors. Together these two parts form a socio-technological system, the technological structure functions as a structural mass medium that produces and reproduces networked communicative actions and is produced and reproduced by communicative actions. The technical structure is a medium and outcome of human agency, it enables and constrains human activity and thinking and is the result of productive social communication processes. Important qualities of cyberspace are a decentralised organisational structure, interactivity, multimedia, digital convergence, hypertextuality, many-to-many-communication, co-operative production processes, relative anonymity, high-speed communication and globalised communication (Fuchs, 2005). Cyberspace advances the time-space distanciation of human communication, it allows the global transmission of ever-more data flows and global communication at high-speed; it marks an unprecedented high volume, velocity, intensity and extensity of communication. The rise of cyberspace hence marks the beginning of another historical phase of time-space-distanciation, social systems increasingly have a global scale.

Cyberspace obviously changes space and time: When we communicate by email, we do not need to be in the same place with our communication partners, and the process works asynchronously. In a chat we need temporal co-presence but no spatial

co-presence. The traditional sociological concept of space has been associated with borders and fixity. The fact that new information and communication technologies transcend borders has caused a crisis of the space concept in sociology (Löw, 2001; Funken & Löw, 2003). On the other hand, spatial descriptions such as 'global village' (McLuhan, 1962), 'cyberspace' (Gibson, 1984), 'digital city' (Iglhaut *et al.*, 1996), 'space of flows' (Castells, 2000a), or 'virtual community' (Rheingold, 1993) indicate a desire of scientists and stakeholders to describe cyberspace as a new type of space. Cyberspace is a type of social space where communication is technologically mediated and that is organised on a global time-space scale. Its subsystems are virtual communities, i.e. topic- and interest-oriented social systems that make use of specific Internet applications (such as newsgroups, chats, mailing lists, ICQ, peer-to-peer-technologies, etc.) in order to establish communication that is globally stretched in time-space. A virtual community is not a space that is constituted by shared values, identities or traditions (as in the traditional sociological concept of community/Gemeinschaft by Max Weber and Ferdinand Tönnies). What connects people in a virtual community is a shared interest in certain issues and communication oriented on these topics.

Cyberspace does not mark the end of space, but the acceleration of communication and the extension of some social systems to a global scale. It is a global space. The next section discusses the notion of the 'network society'.

The rise of the network society?

Society is transforming, many scientists have introduced notions such as cybersociety (Jones, 1995, 1998), Internet society (Bakardjieva, 2005), knowledge society (Stehr, 1994), virtual society (Bühl, 1997), post-industrial society (Bell, 1973), information society (Masuda, 1980), postmodern society (Lyotard, 1984), or Post-Fordism (Lipietz, 1987) in order to describe the increasing importance of computer technologies, knowledge, and mental labour in society. The notion of the 'network society' (Castells, 2000a, 2000b, 2001, 2004; Shaviro, 2003; Barney, 2004; Van Dijk, 2006) is yet another new concept for characterising contemporary society.

For Manuel Castells, besides information pervasiveness, flexibility and convergence, network logic is a central feature of the information technology paradigm (2000a, p. 69ff). 'One of the key features of informational society is the networking logic of its basic structure, which explains the use of the concept of "network society" (Castells, 2000a, p. 21).

> As an historical trend, dominant functions and processes in the Information Age are increasingly organised around networks. Networks constitute the new social morphology of our societies, and the diffusion of networking logic substantially modifies the operation and outcomes in processes of production, experience, power, and culture. (Castells, 2002a, p. 500)

For Castells the network society is the result of informationalism, a new technological paradigm organised around information technology that has originated and diffused

in a historical period of the global restructuring of capitalism. Jan Van Dijk (2006) defines the network society as a

> social formation with an infrastructure of social and media networks enabling its prime mode of organisation at all levels (individual, group/organisational and societal). Increasingly, these networks link all units or parts of this formation (individuals, groups and organisations). (Van Dijk, 2006, p. 20)

For Van Dijk networks have become the nervous system of society. Whereas Castells links the concept of the network society to capitalist transformation, Van Dijk sees it as the logical result of the increasing widening and thickening of networks in nature and society. Darin Barney (2004) uses the term for characterising societies that exhibit two fundamental characteristics:

> The first is the presence in those societies of sophisticated—almost exclusively digital—technologies of networked communication and information management/distribution, technologies which form the basic infrastructure mediating an increasing array of social, political and economic practices. ... The second, arguably more intriguing, characteristic of network societies is the reproduction and institutionalisation throughout (and between) those societies of networks as the basic form of human organisation and relationship across a wide range of social, political and economic configurations and associations. (Barney, 2004, p. 25sq)

On the one hand, the notion of the network society points towards important changes of capitalism: capital accumulation (in the sense of the accumulation of economic, political and cultural capital as put forward by Pierre Bourdieu, cf. Fuchs, 2003c) is globalising and we witness the rise of a flexible regime of accumulation (Harvey, 1989). On the other hand, the concept is an ideology that obscures domination because phenomena such as structural unemployment, rising poverty, social exclusion, the deregulation of the welfare state and of labour rights, the lowering of wages in order to maximise profits can easily be legitimised in a society where networks are seen as natural organisation patterns and where hence the problems of contemporary 'network society' can be presented as inevitable and as something to which people have to adapt to and not as a situation which is open to fundamental criticism and that requires political intervention and change (Barney, 2004, p. 180). In this context Steven Shaviro speaks of 'soft fascism' (Shaviro, 2003, p. 4). The term 'network society' also obscures that first of all we live in a capitalist society that is restructuring and changing its organisational form. Networks are characteristic for all systems; hence they are not only specific for contemporary western society. The historically novel quality is that in more and more systems such as the economy, polity and the Internet we find transnational actors that operate on a global scale, they are transnational/global networks. Hence it is more appropriate to speak of global capitalism, global network capitalism or global informational capitalism in order to stress the dialectic of continuity and discontinuity and the role of information and new information and communication technologies in society.

In order to explain the increasing importance of transnational networks, we have to take a closer look at the restructuration of capitalism during the last decades. For doing so it makes sense to make use of two concepts of French regulation theory.

In regulation theory (Alain Lipietz, Michael Aglietta, Bob Jessop, Joachim Hirsch and others) societal development is conceived of as the transition from one mode of development of society to another (cf. Fuchs, 2002, 2004). A capitalist mode of development consists of two subsystems: the accumulation regime and the mode of regulation (I have suggested adding a third system, the disciplinary regime, in order to stress the specific importance of ideological aspects of capitalism, cf. Fuchs, 2002, 2004). The regime of accumulation describes the conditions of economic production, consumption and distribution of commodities and the organisational form of capital-labour-relationships and the wage-labour-nexus. The mode of regulation describes the institutional settings that enable and constrain capital accumulation.

The mode of development that dominated western societies from the time after World War II until the mid-1970s was Fordist capitalism. The accumulation regime of Fordism, a system of standardised mass production and mass consumption, was based on Taylorism. In the early 1970s, the Fordist mode of development of capitalism entered crisis. One of the reasons was that the hierarchical Taylorist model of organising work reached its limits and promoted refusal of work and class struggle because the workforce could not stand the permanent and extraordinary psychological and physical burdens. Other reasons were the technological and organisational limits the centralist Taylorist methods had reached. As a result, the growth rate of productivity decreased and wages (variable capital) and constant capital (costs of means of production) relatively increased. The centralised and hierarchic forms of economic organisation increasingly proved to be inflexible and rigid. The costs of wage labour had increased relatively fast during the 1960s due to the power of the organised interest of the working class.

The growth of productivity was relatively slow during the 1960s, the growth of wages relatively fast. These two factors negatively influenced profit rates. The upward pressure on variable capital caused by labour organisation and the downward pressure on constant capital by the limits of Taylorism resulted in falling profit rates. The economic hegemony of the USA was questioned during the 1960s by the fast economic development of European countries and Japan.

This competition, together with expenditures of the US state for financing the Vietnam War, resulted in a large budget deficit and in deficits of the balance of trade. The role of the US dollar as 'world money' was increasingly questioned and finally the system of Bretton Woods broke down in the early 1970s. Stagflation appeared as a new economic phenomenon.

The Keynesian policy of deficit spending was based on the assumption that the crises of capitalism could be overcome, but once the crisis of Fordism began and the profits fell, the state also entered crisis because it heavily depended on taxes stemming from the production process (taxation of wages and profits). The increasing international character of production came into conflict with the nationally organised policies of regulation. The anti-war movement, the students' protests and the emergence of new social movements questioned the Fordist way of life. Taken together, all these tendencies produced an overall economic, political and ideological crisis of world society. Fordism reached its end during the first half decade of the 1970s.

After the second world economic crisis in the mid-1970s there was a transition from the Fordist mode of development to the Post-Fordist mode of capitalist development. In order to increase profits new strategies of accumulation and domination emerged. The main idea was to increase profits by putting pressure on nation states to lower wages and by decentralising and globalising the production process in order to reduce wage costs, and investment and reproduction costs of capital so that variable and constant capital decreases would result in an increased production of surplus value and hence in rising profits.

The regime of accumulation of Post-Fordist capitalism has been termed flexible accumulation regime (Harvey, 1989) or flexible specialisation (Piore & Sabel, 1984). The role of the state in society has changed in Post-Fordist society. When a social system enters crisis, it is determined that a new order will emerge, but it is not predetermined what that order will look like. The outcome depends on social practices and struggles; it is influenced by the prior existing social structures in the sense that they condition a field of possibilities. The capitalist nation state has been transformed from a Keynesian intervention state into a neoliberal competitive state.

In their book *Empire*, Toni Negri and Michael Hardt argue that in Post-Fordism 'sovereignty has taken a new form, composed of a series of national and supranational organisms united under a single logic of rule' (Hardt & Negri, 2000, p. xii). They call this global system Empire and say that it is decentred, deterritorialising, encompasses the spatial totality, rules over the entire 'civilised' world and has no territorial boundaries that limit its reign. It is a 'dynamic and flexible systemic structure that is articulated horizontally' (p. 13).

> In contrast to imperialism, Empire establishes no territorial centre of power and does not rely on fixed boundaries or barriers. It is a decentered and deterritorialising apparatus of rule that progressively incorporates the entire global realm within its open, expanding frontiers. Empire manages hybrid identities, flexible hierarchies, and plural exchanges through modulating networks of command. ... The concept of Empire is characterised fundamentally by a lack of boundaries: Empire's rule has no limits. First and foremost, then, the concept of Empire posits a regime that effectively encompasses the spatial totality, or really that rules over the entire 'civilised' world. No territorial boundaries limit its reign. (Hardt & Negri, 2000, p. xiif)

The increasing importance of computer networks and global network organisations is an instrumental result of capitalist development. Computer technology and the Internet were not invented in economic, but in military contexts and in respect to World War II (computer) and the Cold War (Internet). But the societal diffusion of these technologies is due to the role they have played primarily for the economic restructuration of capitalism. Hence it was the economic subsumtion of computer technology and computer networks that caused their diffusion and the reorganisation of capitalism. Computer networks are the technological foundation that has allowed the emergence of global network capitalism, i.e. regimes of accumulation, regulation and discipline that are helping to increasingly base the accumulation of economic, political and cultural capital on transnational network organisations that make

use of cyberspace and other new technologies for global co-ordination and communication.

Globalisation can generally be defined as the stretching of social relationships, i.e. communication networks, in space-time, a globalising social system enlarges its border in space-time, as a result social relationships can be maintained across larger temporal and spatial distances (Fuchs 2003b). Globalisation is based on a hierarchy of social space that reaches from the individual as starting point to local immediate relationships like family, friendships or colleagues, to local intermediary structural relationships like local city councils, transmediary (national) structural relationships like institutions of the state or national markets, to international structural relationships like international agreements or the European Union, and finally global or transnational structural relationships of worldwide reach like the Internet, the world market or human rights (at least by idea). In modern society these processes of globalisation are based on the logic of accumulation of natural resources, tools, money capital, power, and hegemony.

The main problem that modern society tries to solve is how to accumulate ever more capital. Whenever an existing regime/mode of accumulation reaches its inherent limits and enters crisis, new strategies and areas of accumulation are needed in order to revert to ordered processes of accumulation. Hence in modern society globalisation is inherently driven by the logic of capital accumulation that results in the appropriation and production of new spaces and systems of accumulation. The antagonism between structures and actors characteristic for modern society (social structures are alienated from their producers, i.e. they are controlled by certain groups that exclude others from control) results in a clash of estrangement and self-determination that is characteristic for all subsystems of modern society. The basic conflict is that many people cannot cope with the increased complexity of the world because their lives are increasingly shaped by global alienated structures that are out of their reach and that they cannot participate in.

Global network capitalism is based on a transnational organisational model, organisations cross national boundaries, the novel aspect is that organisations and social networks are increasingly globally distributed, that actors and substructures are located globally and change dynamically (new nodes can be continuously added and removed), and that the flows of capital, power, money, commodities, people and information are processed globally at high-speed. Global network capitalism is a nomadic dynamic system in the sense that it and its parts permanently reorganise by changing their boundaries and including or excluding various systems by either establishing links, unions and alliances or getting rid of or ignoring those actors that do not serve or contribute to the overall aim of capital accumulation.

Human society is organised in space and time; it is organised within a natural environment (physical and biological space) that is socially constructed by human agents in social processes that produce meaning (social space). Networked computer usage has resulted in a real-time globalisation of social relationships (Fuchs, 2003d). Knowledge flows today transcend national borders, they result in the globalisation, intensification, time-space-distanciation of social relationships (Giddens, 1990) and

establish a more intensive and extensive interconnection of humans (Robertson, 1992), they cause a sort of supraterritoriality (Scholte, 1999), time-space compression (Harvey, 1989), action at a distance (Held *et al.*, 1999), and accelerating interdependence. Knowledge today is quite substantially detached from territorial space, it cannot be situated at a fixed and limited territorial location, it operates largely without regard to territorial distance—it transcends territorial space.

New knowledge-based technologies like the computer facilitate the de-localisation and disembedding of communication in the sense of the generation of spatial and temporal distance. One of the main characteristics of knowledge-based technologies is that they increase the speed of delivery of data massively and hence are a medium of the time-space distanciation of communication. They contribute to the disembedding and delocalisation of social systems and relationships and hence reshape society. But they also further the re-embedding and localisation of disembedded social relationships, e.g. users embed the globally available information on the Internet into local cultural contexts of action. Globalisation and localisation are intrinsically coupled. Roland Robertson (1992) has suggested the term 'glocalisation' for this phenomenon.

The 20th century has seen an unprecedented increase in intensity, extensity and velocity of global communication that is closely related to the rise of radio, television, satellite transmission, the microelectronic revolution and digital fibre-optic cable networks/digital data processing. The transatlantic cable of 1866 reduced the time of transmission of information between London and New York by over a week, the telephone increased the velocity of messages by a few minutes. The Internet reduced it not much at all in comparison to the telephone (Keohane & Nye, 2000, p. 80). This does not imply that technological globalisation is a myth, but that we should also stress qualitative aspects such as the reduction of the costs of information transport and new qualities of communication such as many-to-many-communication, interactivity, hyperlinking, digital compression, multimedia, conversion, simulated virtual realities, the decontextualisation and derealisation of communication, the implications of computer mediated communicated for the formation of identities, etc.

The common theme underlying Giddens' concept of disembedding (Giddens, 1990), Castells' concepts of timeless time and the space of flows (Castells, 1989, 2000a, 2000b, 2001, 2004), and Harvey's (1989) concept of time-space compression is that modern technologies such as the computer accelerate and flexiblise social relationships. The history of modern society is a history of globalisation and of the technological acceleration of transportation (of data, capital, commodities, people) that makes the world a smaller place in the sense that it increasingly mediates social relationships more efficiently so that it appears like distances are disappearing. Technological progress has resulted in an increasing separation of the movements of information from those of its carriers, the movement of information gathered speed on a pace much faster than the travel of bodies (Bauman, 1998, p. 14). Particularly transportation and communication technologies (railway, telegraph, broadcasting, automobile, TV, aviation, digital computer-based communication technology and most recently digital network technology) have increased the speed of global flows of

capital, commodities, power, ideologies, communication and information. The Earth has been increasingly transformed into a global communication network that affects all realms of society. Castells has stressed that in the 'network society' a new type of space, the space of flows, emerges that replaces the space of places and is based on timeless time and placeless space. He considers global network capitalism not as existing out of space—an assumption that would have to result in the demise of the space concept—but giving rise to a transformation of space. It should be added that this transformation means the emergence and an increasingly dominant function of transnational/global social spaces in economy, polity and culture. The emerging global space is the spatial form of organisation of global network capitalism, it consists of global technological systems and transnational (economic, political, cultural) organisations and institutions that enable global flows of capital, power and ideology that create and permanently recreate a new transnational regime of domination. Due to the importance of networks, flows and transnationalism in contemporary capitalism, Amin Ash speaks of a 'new spatial ontology that thoroughly disrupts the dominant spatial ontology of territorial units of organisation and scalar regulation that we have become used to' (Ash, 2004, p. 224).

Some scholars argue that networks are inherently non-hierarchic and inclusive (e.g. Deleuze & Guattari, 1976; Goguen & Varela, 1979), whereas others say that networks are not automatically politically progressive and participatory, but can be segmented, centralised and hierarchic (Castells, 2000a, 2004; Hardt & Negri, 2005; Van Dijk, 2006). In network research a network is generally defined in very broad terms as a system of interlinked nodes that do not imply full connectivity and a symmetric flow of resources. Hence in a network there can be hubs and centres that are of strategic importance because they have many more direct links to and from other nodes, they store and centralise resources, and therefore also control the flow of resources throughout the network. A network is not necessarily a map (as argued by Deleuze & Guattari with regard to their concept of the rhizome), but can also be a tracing. A network can have different degrees of centrality and hierarchy, there can either be a rather polycentric, pluralistic and decentralised structure or there can be central actors that dominate. The degree of decentralisation refers to the distribution or control of resources such as knowledge, activists, money, decision power, infrastructure, technologies and cultural definition power. Geert Lovink (2005) argues that networking is 'notworking' in the sense that it is not automatically progressive, but is today indeed connected to problems and institutionalisation mechanisms that result in new hierarchies and forms of control such as precarious labour conditions of many knowledge workers. Networks would not dissolve power, but transform it. I think that networks do not automatically annihilate domination and hierarchy; under the given conditions they mainly flexibilise and mobilise hierarchy and domination. Lovink uses the term 'organised networks' in order to point out that networks 'are infected by power' (Lovink, 2005, p. 18) and have 'internal power relations' (p. 19).

On the one hand, I understand the term as characterising the fact that networks are used in contemporary society as mechanisms of domination, while on the other hand there is a need for the institutionalisation of certain alternative networks. In order to

progressively transform contemporary society a networked protest movement is in need of money, continuous funding and power, it must go beyond voluntarism, lose relationships and informality and hence must build more durable structures and strategies so that act it can act as a real counter-power. This discussion reminds me of Herbert Marcuse's critique of the anarchism and informality of the New Left and the students' movement in the 1970s. Marcuse argued that the movement is in need of powerful permanent institutions such as media, political and educational organisations in order to really challenge domination. In this context Marcuse has coined the term 'organised spontaneity' (Marcuse, 2004, pp. 109f; cf. Fuchs, 2005, pp. 46, 84–87, 89–93). Self-organising systems need triggers that initiate the dynamic emergence of order, there are ordered patterns as well as intervention. For alternative networks this implies that self-organisation cannot be left to pure chance, but needs to be organised and institutionalised to a certain extent. An appropriate political strategy is not as John Holloway (2002) has argued to 'change the world without taking power', but to organise self-organisation so that processes of self-empowerment can take place (cf. Fuchs, 2005, pp. 84–87).

How are the social spaces of global network capitalism structured? Ajun Appadurai (1990) argues in this context that global flows today occur in and through the growing disjunctures between ethnoscapes (global flows of tourists, immigrants, refugees, exiles, guestworkers), technoscapes (global flows of technology), finanscapes (global flows of capital), mediascapes (global flows of information and images) and ideoscapes (global flows of ideologies). Global flows would occur at great speed, scale and volume and would be unpredictable. These unpredictable flows would be considered as threat to national identities and would result in the rise of separatist movements. The global flows would be absorbed into local political and cultural economies where they would be repatriated as heterogeneous dialogues of national sovereignty, fundamentalism, ethnocide, riots, mutual cannibalisation. Appadurai argues that globalisation produces violent forms of difference and separation. The basic idea of Appadurai that I concur with is that global spaces are unequally and unevenly structured in transnational network capitalism. I suggest that the global spaces that he introduces can be better analytically explained by distinguishing economic space, political space and cultural space. This distinction draws on the well-established differentiation between economy, polity and culture that can, for example, be found in the works of Anthony Giddens (economic, political and symbolic-cultural institutions) and Pierre Bourdieu (economical, political, cultural capital). In the next section I will discuss the transformation of economic, political, and cultural space in contemporary society.

The structuration of the social spaces of global network capitalism

The economic space of global network capitalism

In order to maximise profits by reducing constant and variable capital (i.e. the costs of means of production and labour), an increasing number of corporations are spatially reorganising themselves at the micro and the macro level.

At the internal level of corporations, teamwork and semi-autonomous working groups are gaining increasing importance. Corporations are increasingly organised at a transnational level by breaking the production process down into small units that are organised by sub-firms or subcontracted corporations that can be located and distributed throughout the globe depending on where the best conditions of economic investment (such as low wages, low corporate taxes, political stability, neoliberal policies, weak unions, etc.) are given. Computer networks allow the global co-ordination of activities of transnational corporations from remote places, they make corporate control relatively independent of fixed times and places. Economic globalisation today is shaped by the rise of transnational corporations (TNCs). At the inter-corporate level, corporations are involved in transnational production and innovation networks between firms in order to lower investment costs and increase profits. Strategic alliances and joint ventures especially concern joint R&D, and there has been a sharp rise in such alliances.

A systemic form of centralisation characterises the global economy of network capitalism. The networks that are created at micro- and macro-levels of the economic system have resulted in an asymmetric distribution and centralisation of resources and property. An increasing class of (working- and non-working) poor faces a small elite of rich managers, owners and new economy employees. The Third World is excluded from the global geography of economic space, its position is only marginal and its social problems aggravate due to the closure of global society. A small elite of transnational corporations that determine consumption, political decisions and living conditions of the world population dominates the economy. Many people feel the effects of this rigid, economically dominated type of globalisation and feel estranged because decisions that affect their lives are made by anonymous powers that they do not know and whose actors they will never meet and are physically detached from local contexts. This economic domination could well result in the long persistence of a global informational Empire. If capitalism is indeed organised as a global network economy, then it must be stressed that the spatial geography of this economy is devised in such a way that there is a class of central hubs (corporations, countries, cities, city zones, regions, occupational groups, classes, individuals) that controls the flows of property, money and goods in the network, and therefore creates an asymmetrical, divided, exclusive economic space where the majority of people are marginalised and kept outside of the network and a divided geography is created.

The economy of global network capitalism is based on a network logic that affects both the internal structures (the horizontal corporation, semi-autonomous work groups) and the external relationships/the environment of corporations (inter-firm networking, corporate strategic alliances, global business alliances). However, as Castells (2000a) argues, this does not result in a 'network economy', or as Van Dijk (2006) says, in a 'flow economy' because networks and flows of resources are characteristic for all types of economies. A more accurate signifier is the term 'global capitalist network' economy.

The political space of global network capitalism

Globalisation of political space means the emergence of transnational political organisations that go beyond the nation state. On the one hand, these are global political and military confederations of dominating political and economic groups and states (e.g. G8, UNO, World Security Council, NATO, Worldbank, IMF, WTO, OECD, WHO), while on the other hand, global social networks that are part of civil society. International non-governmental organisations (NGOs) show that world domestic policy is not just simply the aggregate of national foreign policies, it is the globalisation of official decision-making institutions and of civil society that transforms itself into a global network of organisations and informal connections. Military conflict (as well as crime) is also increasingly globally networked, it no longer pre-dominantly means an armed struggle of nation states, but military conflicts between a globally operating intervention army lead by the US and decentralised global networks of autonomous fundamentalist terrorist cells.

Global corporate power puts pressure on nation-states so that a global hegemony of neoliberal policies emerges that puts downward pressure on social standards. TNCs have become important political actors and the state has transformed itself into a competitive nation state.

Political space in global network capitalism is characterised by the transnationalisation of decision power. This has not created a participatory global political space, but a highly segmented one in which power is centralised and a small group of political actors dominates decision making. Many people are dissatisfied and feel alienated because political decisions seem not to be locally controlled, but to be taken by anonymous remote actors in a ruthless manner. Transnational decision-making bodies such as the IMF, the WTO, the OECD and the World Bank lack possibilities for democratic participation of those who are affected by their decisions.

With regard to the political system and the public sphere, the question arises how political communities and democracy can be organised in a global society where communication makes use of cyberspace and transcends national borders. In early cyberspace theory optimists like Marshall McLuhan (1966, 1989) argued that cyberspace will strengthen political participation and will result in a global village, pessimists like Neil Postman (1992) argued that new media will result in a totalitarian technopoly, whereas others like Vilém Flusser (1996a, 1996b, 2002) said that new media have various potentials that can result in a democratic telematic society or an undemocratic technopoly. In the contemporary discourse on e-democracy similar arguments can be found. Thus far the participatory potentials of cyberspace have not been realised, it is a segmented space characterised by gaps between groups who have good material access, skills access, motivational access, usage access and capability access to new ICTs (cf. Van Dijk, 2005). Underprivileged groups that are an expression of the structural inequalities of global network capitalism are facing barriers to the access to, usage of, and benefit from cyberspace. Cyberspace is a segmented space divided along economic (income, developed countries vs. developing countries), political (power), cultural (education), social (gender, age, origin, race, handicap),

demographic (urban vs. rural) lines. The results are various digital divides such as the economic divide, the global divide, the political divide, the cultural divide, the social divide and the demographic divide of cyberspace (cf. also Norris, 2001). Cyberspace reflects the unequal and asymmetrical geography of the social spaces of global network capitalism; it is characterised by digital apartheid and exclusion.

The cultural space of global network capitalism

Culture has to do with the ways of life of human beings in which they make sense of the world, give meaning to reality, and form identities. In global network capitalism meaning and identity production are not confined to local, regional or national interactions, but have an increasingly global character, i.e. in global cultural space individuals are confronted with lifestyles and values of other cultures. The increasing global character of culture can be experienced in everyday life. Many of us watch American and French films, eat Chinese, Italian, Mexican, Indian, etc. food, listen to music from all over the world, go to Southern or Caribbean countries to spend their holidays, etc. The increased global character of society results in various forms of contact between different cultures.

Many perceive cultural homogenisation to be a result of the rise of a global consumer culture that is an effect of the transnational regime of capitalism. This idea has sometimes been described as Americanisation (Jameson, 1998), McDonaldization (Ritzer, 1993), CocaColonisation (Wagnleitner, 1994), Disneyfication (Giroux, 1995; Ayres, 2003) or cultural imperialism (Tomlinson, 1991; Jameson, 1998). CNN, Coca Cola, Microsoft and McDonalds are the main symbols of this development for both those who perceive homogenisation as a threat and those who see it as the epitome of freedom, democracy and human rights.

Traditional mass media institutions (especially TV and cinema) make use of network technologies for reaching global audiences and providing globally available stations and programs. There is a fierce competition between a few global players in the mass media market for global audiences and ratings. Contemporary cultural globalisation means homogenisation in the sense that culture has increasingly and on a worldwide level a commercial character and is dominated by a few cultural TNCs. However, the process of homogenisation makes use of difference and plurality, e.g. CNN employs local reporters and knowledge, the cultural industry appeals to feelings of difference by advancing the consumption of individualised products. Individualisation and difference (micro-marketing) have become marketing strategies for homogenising markets.

Monopolisation is an important aspect of the mass media. A few, large transnational corporations (AOL Time Warner, Disney, Viacom, Bertelsmann, News Corporation (Murdoch), AT&T, Sony, Seagram, Polygram, NBC, Phillips, TCI, etc.) own and control the mass media (McChesney, 2003).

The symbolic cultural contents that people are confronted with today (books, films, broadcasts, food, magazines, digital content, etc.) have an increasingly segmented global character in the sense that they reach consumers across the globe, but

mainly stem from western countries. Concentration in the cultural industry moves along a horizontal and a vertical axis, horizontal integration means that cultural TNCs focus on mergers with corporations that offer the same services, whereas in vertical integration they try to acquire both large channels of production and distribution in order to control the consumption process. Hence there is a convergence in ownership of content production and distribution networks.

An increasing number of people worldwide are confronted with distant cultural traditions, symbols and artefacts without direct presence in these cultures. Contemporary cultural globalisation is largely connected to the emergence of global technological networks that allow the cheap and fast transmission of digitised information. That increasingly there are comparable lifestyles in many parts of the world is not due to the spread of new technologies, it is due to 'socially shared experiences' (Friedman, 1990, p. 646), it has social, not technological causes. The Internet allows humans to communicate with a greater number of people from other cultures more easily and cheaply in virtual communities so that no physical co-presence is required.

Some argue that virtual communities enable the formation of plural identities that enhance personalities, and due to the anonymity in cyberspace, subvert the influence of lines of discrimination such as sex, age, race, colour, body shape, handicap, shyness and hence have a liberating potential (e.g. Turkle, 1995) and could result in a new democratic public sphere (Poster, 2001). Others think that such effects are only minority phenomena in cyberspace (Castells, 2001), that such arguments ignore the reality of discrimination in the social world, and that digital networks advance a constant monitoring of activities, networked individualism (Castells, 2001; Van Dijk, 2006, p. 168), depression, flight from reality, loneliness and social isolation. Empirical studies show that cyberspace in its current form both advances individualism (Nie *et al.*, 2002) and new forms of community (Howard *et al.*, 2002; Katz & Rice, 2002). Cyberspace is both a tool for the reinforcement and shrinking of sociability.

Digitisation allows the convergence of traditional media that are based on sound, images, video and text. The Internet is a multi-medium. Fibre-optic cables and satellite transmission allow communication in real time. However, these cultural flows are uneven and mainly stem from the most powerful parts of the world, and this disparate cultural (and economic and political) geography is increasingly being recognised as unjust and as threatening identities. This results in an increase of fragmentation, global conflicts, nationalism and fundamentalism. The production of identity and meaning is increasingly organised in the form of global networks, i.e. there are global cultural flows that influence the worldviews of individuals. The emerging global cultural space is not symmetric, but divided, i.e. western corporations, cultural industries, worldviews and consumer culture dominate the Internet.

Power produces counter-powers. I want to show in the next section that alternative transnational networks challenge the asymmetric distribution of resources in global network capitalism.

Global networked emancipation?

The need to find new strategies for executing corporate and political domination has resulted in a restructuration of capitalism that is characterised by the emergence of transnational, networked spaces in the economic, political and cultural system and has been mediated by cyberspace as a tool of global co-ordination and communication. Economic, political and cultural space have been restructured, they have become more fluid and dynamic, have enlarged their borders to a transnational scale and handle the inclusion and exclusion of nodes in flexible ways. These networks are complex due to the high number of nodes (individuals, enterprises, teams, political actors, etc.) that can be involved and the high speed at which a high number of resources is produced and transported within them. However, as the last section has shown, global network capitalism is based on structural inequalities, it is made up of segmented spaces in which central hubs (transnational corporations, certain political actors, regions and countries, western lifestyles and world views) centralise the production, control and flows of economic, political and cultural capital (property, power, skills).

Networks of corporate power, political domination and cultural homogenisation are the reality of the 'network society'. However, spaces not only have actual realities, they also have potential realities, i.e. each space is also a space of its own possible future state, it is a state of possibilities (a state space with current and possible future trajectories) that is enabled and constrained by the existing network structures. Global network capitalism has created novel methods and qualities of domination, but at the same time it has advanced new opportunities for co-operation and participation that question domination and point towards alternative futures. It is an antagonistic space that by producing new networks of domination also produces potential networks of liberation that undermine the centralisation of wealth and power that has thus far been achieved by networking. Global network capitalism is characterised by an economic antagonism between proprietary and open space, a political antagonism between dominated and participatory space, and a cultural antagonism between one-dimensional and wise space (cf. Fuchs, 2003b). Network logic has effects that advance both the sustainable, co-operative, inclusive and the unsustainable, competitive, exclusive character of society. The central conflicts and struggles of modern society (on property, power and skills) have been transformed in the information age; transnational networks and knowledge have become strategic resources in these struggles. Network commons challenges network capitalism, networked control is challenged by networked participation, and networked manipulation by networked wisdom.

The dialectical antagonistic character of networks in contemporary society reflects the idea by Marx that the productive forces of capitalism are at the same time means of exploitation and domination and produce potentials that go beyond actuality, point towards a radically transformed society, and anticipate a societalisation of the means of production. The productive forces of contemporary capitalism are organised around informational networks. It is due to three specific characteristics of such

structures that they contradict the capitalist relations of production and are a germ form (Keimform) of a society that is based on fully co-operative and socialised means of production:

- Information as a strategic economic resource is globally produced and diffused by networks. It is a good that is hard to control in single places or by single owners.
- Information is intangible, it can easily be copied which results in multiple ownerships and hence undermines individual private property.
- The essence of networks is that they strive for establishing connections. In essence networks are a negation of individual ownership and the atomism of capitalism.

It certainly is right that in network capitalism surplus extraction reaches all aspects of society, both production and consumption. However, this is not its central characteristic (as argued by Shaviro, 2003, p. 249) because this leaves out the antagonistic dialectical movement in which informational networks both extend and undermine capital accumulation.

Informational networks aggravate the capitalist contradiction between the collective production and the individual appropriation of goods.

> The contradiction between the general social power into which capital develops, on the one hand, and the private power of the individual capitalists over these social conditions of production, on the other, becomes ever more irreconcilable, and yet contains the solution of the problem, because it implies at the same time the transformation of the conditions of production into general, common, social, conditions. (Marx, 1894, p. 274)

In one of the most well-known, but also most misunderstood passages of Karl Marx' works he says that the 'material conditions for the existence' of 'new superior relations of production' mature 'within the framework of the old society' and that the 'productive forces developing within bourgeois society create also the material conditions for a solution of this antagonism' (Marx, 1857/58, p. 9).[1] The informational networks that form the major productive forces of informational capitalism have turned into fetters of the relations of production. The misinterpretation of Marx is that he argued that the development of the productive forces automatically results in revolution and a free society, but Marx always spoke of material conditions of a new society. If productive forces are tied up by existing relations there is no way of assuring that they can be freed, they can remain enchained and will remain enchained as long as individuals let enchain themselves. Networks are a material condition of a free association, but the co-operative networking of the relations of production is not an automatic result of networked productive forces, a network society, in the sense of a distinctive sublation of network capitalism that constitutes itself as 'associations of free and equal producers' (Marx, 1868, p. 62), an 'association, in which the free development of each is the condition for the free development of all' (and vice versa!) (Marx & Engels, 1848, p. 482). That it is self-organising according to the principle 'From each according to his ability, to each according to his needs' (Marx, 1875, p. 21) is something that people must struggle for and that they can achieve under the given conditions, but that could very well also never emerge if the dominant

regime is successful in continuing its reign. Networks anticipate a society in which 'the antithesis between mental and physical labour has vanished', 'the productive forces have also increased with the all-around-development of the individual', and 'the springs of co-operative wealth flow more abundantly' (Marx, 1875, p. 21). Networks are forms of development as well as fetters of capitalism; paraphrasing Marx, it can be said that informational capitalism is a point where the means of production have become 'incompatible with their capitalist integument' (Marx, 1869, p. 791).

In global network capitalism knowledge is a strategic economic resource; property struggles in the information society take on the form of conflicts on the public or proprietary character of knowledge. Its production is inherently social, co-operative and historical. In many cases knowledge is produced by individuals in a joint effort. New knowledge incorporates earlier forms of knowledge; it is coined by the whole history of knowledge. Hence it is a public good and it is difficult to argue that there is an individual authorship that grounds individual property rights and copyrights.

Global economic networks and cyberspace today function as channels of production and diffusion of knowledge commodities, the accumulation of profit by selling knowledge is legally guaranteed by intellectual property rights. In cyberspace an alternative production model has been developed that sees economic goods not as property that should be individually possessed, but as common goods to which all people should have access and from which all should benefit. This model stresses open knowledge, open access and co-operative production forms, for example, it can be found in virtual communities like the Open Source community that produces the Linux operating system which is freely accessible and to which people can easily contribute due to the free access to the source code of its software applications. The open access principle has resulted in global open source production models where people co-operatively and voluntarily produce digital knowledge that undermines the proprietary character of knowledge (if it is for free and of good quality, why should one want to choose another software that is expensive?). The open source principle has also been applied to other areas such as online encyclopaedias (Wikipedia) and online journalism (Indymedia).

Digitisation allows the easy copying of knowledge such as texts, music, images, software and videos. The Internet enables the fast and free global distribution of knowledge with the help of technologies such as peer-to-peer-networks (Napster, Audiogalaxy, KaZaA, KaZaA Lite, LimeWire, Morpheus, Edonkey, WinMX, iMesh, Bearshare, Blubster, SoulSeek, BitTorrent, Overnet, Toadnode, Grokster, Blubster, etc.). The informational content can be stored on different physical carriers; the possession of digital information by one person does not imply the non-possession of it by others. Information is an intangible good, its characteristics have implications for ownership that are different from those implied by tangible goods. In the case of physical property there can only be one possessor, in the case of information the good can be shared without not being able to use it. If someone takes my house from me, I am deprived of it and can no longer live in it. But if someone takes an idea from me, I can still use it, I am not deprived of it.

Open source communities and peer-to-peer networks are global networked spaces of production that advance principles of open access, free distribution, co-operative production and common ownership of goods. Networking not only produces new models of capital accumulation, but also alternative production models that undermine corporate power and suggest social spaces in which goods are jointly produced and freely distributed.

In the cultural realm, the homogenisation of worldviews and lifestyles by capitalist consumer culture is challenged by increased possibilities for individuals to build global personal networks that influence the formation of their identities. Cyberspace here plays a particular role because it provides the possibility for individuals to engage in global virtual communities where they can meet people with similar interests. Hence there is indeed a potential of cyberspace for enhancing personalities by taking on different identities in chatrooms and MUDs, by making new contacts, friendships or even falling in love with the help of chatrooms or online contact systems, and for enhancing culture and pluralising and opening worldviews by providing different forms of online publishing, online journalism, cyberscience, digital art and e-health. The global network society is dominated by networked manipulation in its cultural realm, but there are (thus far underdeveloped) potentials for networked wisdom.

In the political realm global grassroots networks that want to establish a more just and participatory society challenge global networks that centralise political power. Participatory movements that want to create a global democratic public sphere question the establishment of new hierarchies with the help of networks. Cyberspace is a system that is embedded into the political antagonism between networked control and networked participation, it is organised in a decentralised way and allows many-to-many-communication of people who do not need to be present at the same place at the same time in order to establish a social relationship. Cyberspace enables time-space-distanciation of social relationships; humans are less dependent on physical, geographical space. Some scientists argue that the decentralised organisation of the Internet allows the emergence of direct-democratic grassroots communities that challenge the centralisation of power and that hence a participatory society will be established. Others say that the global networked information space allows the rise of totalitarian forms of surveillance and control. I think that cyberspace has both the potential to strengthen participation and surveillance; these are two tendencies that are at work at the same time and that contradict each other. There are examples that show that cyberspace can strengthen participation as in the case of the networking of global social movements and the emergence of alternative online media (cf. Fuchs, 2006a, 2006c, 2006d) or the circumvention of censorship with the help of the Internet as in the case of the Serbian opposition during the war in Yugoslavia.

There are also examples that show that cyberspace can advance surveillance of individuals as in the case of the filtering and scanning of Internet communication by secret services after the terrorist attacks of 11 September 2001, Internet cookies, profiling of online behaviour for economic purposes, Trojan horses that spy on passwords, etc. If information is power and cyberspace provides a global decentralised infosphere, then the idea of a global networked political community that is deliberative, gives power to

the many, and in which individuals that are affected by decisions take these decisions in consensus-oriented co-operation processes arises from the very essence of cyberspace. I think that cyberspace has an inherent democratic potential and could strengthen the deliberative character of society by providing public forums for communicative action in which people could discuss moral questions in participatory ways as suggested by Hagerman and other representatives of Discourse Ethics, but that this potential has not yet been realised due to the asymmetrical distribution of power and resources in the real world. Cyberspace is not yet a democratic space, but a segmented, divided space (the problem of the digital divide) in which access, skills and benefits are asymmetrically distributed along separating lines such as income, origin, nationality, class, race, gender, age, educational level, language, etc. As long as cyberspace is primarily a sphere of commerce and capital accumulation, the problem of the digital divide will not be solved.

A social movement is a social system that is characterised by a certain protest identity, i.e. a specific form of giving meaning to the world and its problems and by specific practices. The new forms of global networked domination have produced networked struggles that challenge the established system, express disagreement and stand for alternative identities and models of society (Fuchs, 2006a, 2006c, 2006d). The interactions in New Social Movements (such as the anti-corporate movement) often have a co-operative grassroots character that is different from the traditional centralistic style of organisation in parties, bureaucracies and labour unions. Not all protest movements are organised in a decentralised and direct democratic manner, but many of them are indeed characterised by a flat organisational structure. The fascination that these movements exert on many people is partly due to the fact that they make grassroots democracy vivid, noticeable and sensible within a world of heteronomy and alienation.

A social movement is not a singular group, but a network of protest groups that are communicatively linked. Protest negates certain existing social structures and stands up for the negation of the negation (sublation) of certain social antagonisms that cause social problems. Protest groups such as ATTAC or Amnesty International are forms of critical protest, whereas, for example, al-Qaeda, neo-fascists, and anti-abortionists are non-progressive and non-critical protest groups. Protest as a social form is not automatically progressive and critical, what is decisive is the content of protest. Critical protest is oriented towards the future, it identifies possibilities within existing society that help to improve the situation of mankind and to reach a higher and progressive level of societal organisation. Conservative protest movements are not oriented towards the future, but towards the past or that which actually exists, i.e. they do not want to substitute structures of domination by co-operative and participatory structures, but rather want to conserve, transform or rebuild domination.

The anti-globalisation movement is a new social movement that has emerged at the turn of the millennium and questions neoliberal globalisation (Fuchs, 2006a). It can be considered as a reaction to the frictions and stratifications that have been caused by neoliberal globalisation. Left-wing anti-globalism can be considered in the terminology of Jürgen Habermas as a reaction to the increasing colonisation of the life-world by capital and power. The term 'anti-globalisation movement' is mistakable because

the movement is not purely defensive and reactive, but a proactive movement for global democracy and global justice. Hence it can better be characterised by terms such movement for an alternative globalisation or movement for democratic globalisation. The movement is a transnational protest movement that is global in character and has a decentralised, networked form of organisation that mediates the production of common values, identities, goals and practices that transcend spatial and temporal boundaries. It communicates mainly with the help of the Internet that is used in order to organise worldwide protests and online-protest, discuss strategies, reflect political events and past protests, and to build identities. Internet-based protest forms that can be termed cyberprotest or cyberactivism (Fuchs, 2006c), mailing lists, Web forums, chat rooms, and alternative online media projects such as Indymedia, are characteristic for this movement that has a high degree of openness, accessibility and globality. The term 'cyberprotest' means that for protest movements the Internet is a medium of communication that is used for preparing and co-ordinating global protests, as a discussion medium for exchanging views, strategies and goals, an information- and dissemination-medium for the dispersion of alternative knowledge, as a medium of mobilisation for so-called 'consciousness-raising groups', and as medium of co-operation for virtual protests (Fuchs, 2006c). As a collective actor that is composed of many interconnected non-identical parts the movement can as a whole be considered as striving for global democracy, global justice and the global realisation of human rights. It tries to draw public attention to the lack of democracy of international organisations and puts pressure to support democratisation on dominant institutions. It is a global non-parliamentary opposition that acts and thinks globally. The movement is spontaneous, decentralised, networked, self-organising and is based on grassroots democracy. Its organisational form is an expression of the changing organisational features of society that is increasingly transformed into a flexible, decentralised, transnational, networked system of domination.

Conclusion

At the start of this paper some research questions were posed: do we live in a network society? Is the term suitable for describing contemporary society? What is the role of space in society? How has social space been transformed and how is it structured in contemporary society? I will now summarise the contributions that this paper has made for finding possible answers to these questions.

Networks shape systems in nature and society; they are structures of communication that are organised by producing and recreating spaces as settings and contexts of interaction. Social space is the locale of human communication; it involves a setting of human bodies and artefacts, changing distances between humans and objects, certain borders, and communication technologies that allow the stretching of system boundaries in time-space. The history of communication technologies is a history of the stretching of social systems and their communication networks in time-space. During the last decades capitalism has been restructured in order to develop new methods of accumulating economic, political, and cultural capital. Networking

and cyberspace have been instrumental for establishing a transnational type of capitalism. Economic, political, and cultural spaces transcend national boundaries. They are transnational spaces. These spaces are not inclusive, open and participatory, but segmented, exclusive, centralised and hierarchic. To speak of the network society is an ideological construct that obscures capitalist relations and structural inequalities that shape contemporary society. Nonetheless, networking is an important organisation principle of the transnational reorganisation of capitalism. Hence I find it more adequate to speak of transnational network capitalism. Transnational network capitalism has a segmented geography, it is divided into different regions and spaces that compete and are either centres for accumulating resources and transmitting flows or are excluded and marginalised.

There is a tendency of globalisation in modern society; Post-Fordist capitalism is a globalised, transnational, knowledge-based type of system. Particularly the economy is organised around global networks of capital, production and knowledge. Business firms are increasingly organised in a decentralised way that allows them the openness, adaptation and flexibility that is needed for the accumulation of capital. Strategic business is a form of networking between different firms, also on an intra-organisational level there is a tendency towards networked forms of organisation and management. Post-Fordist capitalism is based on strategies of capital accumulation that make use of decentralised networks and a transnational logic.

Global network capitalism is an antagonistic system; transnational networks are both spaces of domination and spaces of potential liberation from domination. Network commons challenge network capitalism, networked control is challenged by networked participation, and networked manipulation by networked wisdom. Post-Fordist social movements are faced with networked forms of domination, as a reaction to the new logic of domination their logic of organisation is frequently based on decentralised transnational networks, global communication based on the Internet, and virtual forms of protest (cyberprotest, cyberactivism) and of co-ordinating protest. 'It takes a network to fight a network' (Hardt & Negri, 2005, p. 58). A decentralised global protest movement that calls for global participation and global co-operation and suggests a democratic, just, sustainable, participatory form of globalisation has challenged the emergence of a decentralised, global Empire. The organisation principle of the movement is the one of global networked self-organisation. For many of the activists the protests anticipate the form of a future society as a global integrative and participatory democracy. The movement is a yearning for a society in which authorities do not determine the behaviour of humans, but humans determine and organise themselves. It opposes globalisation from above with self-organised forms of globalisation from below. The 'anti-globalisation movement' that would be better called 'a movement for an alternative, democratic form of globalisation' is a transnational decentralised networked form of protest.

Capitalist globalisation has resulted in the constitution of a worldwide system of domination that is strictly shaped by economic interests. In the Empire of global network capitalism there is a global system of capitalistic rule that transforms the

sovereignty of nation states and has resulted in the deregulation of international markets, the emergence of an intervening global police force as well as in the mobility, decentralisation, flexibilisation, and globalisation of capital and power. The emergence of a decentralised, global Empire has been challenged by a decentralised global protest movement that calls for global participation and global co-operation, and suggests that the degree of democracy, justice and sustainability of globalisation should be increased. The organisation principle of the movement is the one of global networked self-organisation. For many of the activists the protests anticipate the form of a future society as a global integrative and participatory democracy. The movement is a yearning for a society in which authorities do not determine the behaviour of humans, but humans determine and organise themselves. It opposes globalisation from above with self-organised forms of globalisation from below.

Note

1. The more famous formulation is: 'At a certain stage of development, the material productive forces of society come into conflict with the existing relations of production or—this merely expresses the same thing in legal terms—with the property relations within the framework of which they have operated hitherto. From forms of development of the productive forces these relations turn into their fetters' (Marx, 1858/59, p. 9).

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