

Strategies and Forms of Capital Accumulation in Transnational Informational Capitalism

Christian Fuchs

Assistant Professor for Internet & Society

ICT&S Center: Advanced Studies and Research in Information and Communication

Technologies & Society

University of Salzburg

Sigmund Haffner Gasse 18

5020 Salzburg

Austria

<http://www.icts.uni-salzburg.at>

christian.fuchs@sbg.ac.at

Abstract

Concepts such as knowledge society, information society, postmodern society, postindustrial society, internet society, network society, etc. fail to grasp the dialectic of continuity and discontinuity of society, they see the changes connected to new media as radical novelties and ignore the continuing dominance of capitalist structures. In order to stress that capital accumulation is transformed by the rise of knowledge and information technologies and to stress the transnational spatial model connected to the flexible regime of accumulation, it is suggested to use notions such as transnational network capitalism, transnational informational capitalism, or transnational knowledge capitalism as key concepts for describing contemporary society. One important principle of gaining profit from information commodities is that such goods are sold at prices that are much higher than the commodity-values.

Informational networks are at the core of the productive forces of informational capitalism. Due to the characteristics of information and networks (global diffusion, intangibility, connectivity) the classical Marxian antagonism of the productive forces and the relations of production takes on a new form: Information in the internet economy is on the one hand a commodity that is controlled with the help of intellectual property rights, on the other hand the informational productive forces point towards the alternative economic model of a gift economy because information is an open, societal good. Hence the informational productive forces collide with the capitalist relations of information production which results in class struggles in which the open or proprietary character of information is contested.

The logic of networking has transformed corporations which are increasingly organized on the transnational level and decentralize and flexibilize their internal structures. This is a new strategy that allows accumulation by integration, identification, and a new spirit of corporate 'participation' and 'co-operation'. The new strategies of accumulation are connected to the rise of new scientific models and concepts such as virtual teams, virtual organizations, virtual corporations, knowledge management, or organizational learning, which create the impressions that Postfordist corporations are democratic institutions, but in fact have a very limited notion of participation.

Keywords: capitalism, information, knowledge, accumulation, informational capitalism, globalization

1. Introduction

Many social scientists agree that contemporary society has been undergoing important changes. However, there is not so much agreement which concept best describes and grasps

these changes. Although topics such as globalization and the role of the media and computer networks in society can be found in many contemporary social theories, there is much difference concerning the selection of the key concept. Although social theories are complex as such, choosing one key concept means to put a stress on certain factors that one considers as particularly important and to describe these factors as the fundamental influences that shape and change society. Hence the question which key concept best describes contemporary society is not trivial, but of high importance.

This paper discusses changes of modern society and especially the modern economy that are connected to the rise of networked, computerized information and communication technologies (ICTs). The key questions that are posed and discussed are:

1. Which key concept is adequate for describing contemporary society? (Section 2)
2. What is the societal context under which changes of contemporary society have been taking place? (Section 3)
3. How does economic production change in contemporary society? (Section 4)
4. How are the productive forces shaped in the internet economy? (Section 5)
5. How do corporations change in contemporary society? (Section 6)

Hence the main task of this paper is to discuss micro- and macro-aspects of economic change that are related to ICTs. The approach that is chosen is one that is close to the Marxian critique of political economy. The reason why I consider this approach superior to others is that it allows describing and analyzing contemporary society based on a dialectic of change and continuity that avoids the one-sided pitfalls of assuming radical novelty or radical conservation in social theory.

2. Conceptualizing Contemporary Society

Concepts that have been utilized for describing contemporary society include the knowledge/information economy, post-industrial society, post-modern society, the information society, the knowledge society, the network society. In this section I will discuss some of these concepts.

Fritz Machlup (1962) has introduced the concept of the knowledge industry. He has distinguished five sectors of the knowledge sector: education, research and development, mass media, information technologies, information services. Based on this categorization he calculated that in 1959 29% per cent of the GNP in the USA had been produced in knowledge industries. Peter Drucker (1969) has argued that there is a transition from an economy based on material goods to one based on knowledge. Marc Porat (1977) distinguishes a primary (information goods and services that are directly used in the production, distribution or processing of information) and a secondary sector (information services produced for internal consumption by government and non-information firms) of the information economy. Porrat uses the total value added by the primary and secondary information sector to the GNP as an indicator for the information economy. The OECD has employed Porat's definition for calculating the share of the information economy in the total economy (e.g. OECD 1981, 1986). Based on such indicators the information society has been defined as a society where more than half of the GNP is produced and more than half of the employees are active in the information economy (Deutsch 1983).

For Daniel Bell the number of employees producing services and information is an indicator for the informational character of a society. "A post-industrial society is based on services. (...) What counts is not raw muscle power, or energy, but information. (...) A post industrial

society is one in which the majority of those employed are not involved in the production of tangible goods“ (Bell 1976: 127, 348). Alain Touraine already spoke in 1971 of the post-industrial society. “The passage to postindustrial society takes place when investment results in the production of symbolic goods that modify values, needs, representations, far more than in the production of material goods or even of ‘services’. Industrial society had transformed the means of production: post-industrial society changes the ends of production, that is, culture. (...) The decisive point here is that in postindustrial society all of the economic system is the object of intervention of society upon itself. That is why we can call it the programmed society, because this phrase captures its capacity to create models of management, production, organization, distribution, and consumption, so that such a society appears, at all its functional levels, as the product of an action exercised by the society itself, and not as the outcome of natural laws or cultural specificities” (Touraine 1988: 104). In the programmed society also the area of cultural reproduction including aspects such as information, consumption, health, research, education would be industrialized. That modern society is increasing its capacity to act upon itself means for Touraine that society is reinvesting ever larger parts of production and so produces and transforms itself. This idea is an early formulation of the notion of capitalism as self-referential economy (Fuchs 2004).

Jean-Francois Lyotard (1984: 5) has argued that “knowledge has become the principle force of production over the last few decades“. Knowledge would be transformed into a commodity. Lyotard says that postindustrial society makes knowledge accessible to the layman because knowledge and information technologies would diffuse into society and break up Grand Narratives of centralized structures and groups. Lyotard denotes these changing circumstances as postmodern condition or postmodern society.

Similarly to Bell Peter Otto and Philipp Sonntag (1985) say that an information society is a society where the majority of employees work in information jobs, i.e. they have to deal more with information, signals, symbols, and images than with energy and matter. Radovan Richta (1977) argues that society has been transformed into a scientific civilization based on services, education, and creative activities. This transformation would be the result of a scientific-technological transformation based on technological progress and the increasing importance of computer technology. Science and technology would become immediate forces of production.

Nico Stehr (1994, 2002a, b) says that in the knowledge society a majority of jobs involves working with knowledge. “Contemporary society may be described as a knowledge society based on the extensive penetration of all its spheres of life and institutions by scientific and technological knowledge” (Stehr 2002b: 18). For Stehr knowledge is a capacity for social action. Science would become an immediate productive force, knowledge would no longer be primarily embodied in machines, but already appropriated nature that represents knowledge would be rearranged according to certain designs and programs (Ibid.: 41-46). For Stehr the economy of a knowledge society is largely driven not by material inputs, but by symbolic or knowledge-based inputs (Ibid.: 67), there would be a large number of professions that involve working with knowledge, and a declining number of jobs that demand low cognitive skills as well as in manufacturing (Stehr 2002a).

Also Alvin Toffler argues that knowledge is the central resource in the economy of the information society: “In a Third Wave economy, the central resource – a single word broadly encompassing data, information, images, symbols, culture, ideology, and values – is actionable knowledge“ (Dyson/Gilder/Keyworth/Toffler 1994).

The problem with concepts such as knowledge society, knowledge economy, postindustrial society, postmodern society, etc. is that they create the impression that we have entered a new type of society. “If there is just more information then it is hard to understand why anyone should suggest that we have before us something radically new” (Webster 2002a: 259). They stress discontinuity, as if contemporary society had nothing in common with society as it was 100 or 150 years ago. Such assumptions have ideological character because they fit with the view that we can do nothing about change and have to adopt to existing political realities (Webster 2002b: 267). Contemporary society first of all is still a capitalist society oriented on accumulating economic, political, and cultural capital. But these analyses are right in stressing that some new qualities of society have emerged, but they fail to show that these are attributes of overall capitalist structures. There is a dialectic of continuity and discontinuity, capitalist development has entered a new phase of development.

I consider the approach of the Political Economy of Communication and the Media as more suitable for analyzing contemporary society than theories of discontinuous development. Such an approach is characterized by addressing the nature of the relationship of media and communication systems to the broader structure of society; it looks at how capitalist structures, ownership, support mechanisms, and government policies influence media systems, the issues of social class and the concentration of ownership are considered as important (McChesney 1998). Important questions of the political economy of the media are e.g.: “Who owns the media?” (Gomery 1989/1997); and “What economic functions do they serve?” (Smythe 1977/1997: 438). Political economy decentres the media; it avoids communication essentialism by situating media and communication in dominant structures of production and power (Mosco 1996). Generally speaking the political economy of the media aims at “understanding the relations between the institutions of political economy and the processes of communication” (Melody 1993: 80). Most political economists will agree that in the analysis of media the “recognition that the mass media are first and foremost industrial and commercial organizations which produce and distribute commodities” (Murdock/Golding 1974/1997: 35sq) is important and that the media should be analyzed as “economic entities with both a direct economic role as creators of surplus value through commodity production and exchange and an indirect role, through advertising, in the creation of surplus value within other sectors of commodity production” (Garnham 1990/1997: 61). Although not all political economists agree on the importance of the ideological dimension of the mass media (cf. e.g. Garnham 1990/1997), one can nonetheless say that in the political economy of the media the analysis of how mass media “disseminate ideas about economic and political structures” (Ibid.: 4) has been of relevance.

For describing contemporary society Marxist scholars have suggested terms like digital capitalism (Schiller 2000, cf. also Glotz 1999) – for pointing out that “networks are directly generalizing the social and cultural range of the capitalist economy as never before” (Schiller 2000: xiv) –, virtual capitalism – for stressing that the “combination of marketing and the new information technology will enable certain firms to obtain higher profit margins and larger market shares, and will thereby promote greater concentration and centralization of capital” (Dawson/Foster 1998: 63sq), high-tech capitalism (Haug 2003), or informatic capitalism (Fitzpatrick 2002) – to focus on the computer as a guiding technology that has transformed the productive forces of capitalism and has enabled a globalized economy. I prefer such terms to radical discontinuous terms like information society or postmodern society, but they convey the impression that technology (digital, virtual, high-technology) determines society, i.e. that the relations of production are a linear result of the productive forces. Change in contemporary society affects forces and relations, structures and actions. Hence I prefer to speak of knowledge capitalism, informational capitalism, or network capitalism in order to

stress that knowledge work and information technologies shape capital production and accumulation in contemporary society.

Other scholars prefer to speak of information capitalism (Morris-Suzuki 1997) or informational capitalism (Castells 2000a, Fuchs 2005, Schmiede 2006a, b). Manuel Castells sees informationalism as a new technological paradigm (he speaks of a mode of development) characterized by “information generation, processing, and transmission” that have become “the fundamental sources of productivity and power” (Castells 2000a: 21). The “most decisive historical factor accelerating, channelling and shaping the information technology paradigm, and inducing its associated social forms, was/is the process of capitalist restructuring undertaken since the 1980s, so that the new techno-economic system can be adequately characterized as informational capitalism” (Castells 2000a: 18). Castells has added to theories of the information society the idea that in contemporary society dominant functions and processes are increasingly organized around networks that constitute the new social morphology of society (Castells 2000a: 500). I don't agree with Nicholas Garnham (2004) that Castells account is technologically determinist because Castells points out that his approach is based on a dialectic of technology and society in which technology embodies society and society uses technology (Castells 2000a: 5sq). But I find it improper that Castells speaks of a “mode of development”. Although Castells makes clear that the rise of a new “mode of development” is shaped by the dominant forms of capitalist production, he doesn't give reasons why he exactly has chosen this term that can create the impression that technology is the only driving force of society. I find it more appropriate to speak in more conventional Marxian terms of the “productive forces”. Castells also contradicts himself when he argues in another passage that informationalism is the result of “new technological conditions” (Castells 2000a: 21) and not also of a restructuration of capitalism as argued by him in the first place.

For Manuel Castells network logic is besides information, pervasiveness, flexibility, and convergence a central feature of the information technology paradigm (2000a: 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: 21). “As an historical trend, dominant functions and processes in the Information Age are increasingly organized 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 2000a: 500). “The network society, in the simplest terms, is a social structure based on networks operated by information and communication technologies based in microelectronics and digital computer networks that generate, process, and distribute information on the basis of the knowledge accumulated in the nodes of the network” (Castells 2006: 7). For Castells the network society is the result of informationalism. 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 organization at all levels (individual, group/organizational and societal). Increasingly, these networks link all units or parts of this formation (individuals, groups and organizations)” (Van Dijk 2006: 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 characterizing 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 institutionalization throughout (and between) those societies of networks as the basic form of human organization and relationship across a wide range of social, political and economic configurations and associations” (Barney 2004: 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 2003b) is globalizing 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 maximize profits can easily be legitimized in a society where networks are seen as natural organization 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: 180). Steven Shaviro in this context speaks of “soft fascism” (Shaviro 2003: 4). The term “network society” also obscures that first of all we live in a capitalist society that is restructuring and changing its organizational 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 transnational/global capitalism, transnational/global network capitalism, or transnational/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 discuss changes of capitalism it is necessary to analyze the broader societal context of change.

3. The Rise of Transnational Network Capitalism

In order to explain the increasing importance of knowledge and technology in the economy, we have to take a closer look at the restructuring 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 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 to add 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 organizational 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 the Second World War until the mid-1970s was Fordist capitalism. Its mode of regulation can be characterized by qualities such as:

- State intervention into the economy

- Bureaucratization
- The welfare state
- State-planned monetary-, fiscal-, industry-, research-, growth-, employment-policies
- Acknowledgement of labour unions as political forces
- Corporatism
- “Security State“
- The System of Bretton Woods

The accumulation regime of Fordism – a system of standardized mass production and mass consumption – was based on Taylorism, characterized by qualities such as:

- Division of the production process
- Strict command and control
- Separation of manual and mental labour
- Optimization of the production process
- Standardization of tools, components, and goods
- Hierarchic and central control of the corporation by the management
- Centrally organized organizations
- Strict regulation of the working day

In the early 1970s, the Fordist mode of development of capitalism entered crisis. One of the reasons was that the hierarchical Taylorist model of organizing work reached its limits and promoted refusal of work and class struggle because the work force couldn't stand the permanent and extraordinary psychological and physical burdens.

Other reasons were the technological and organizational 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 centralized and hierarchic forms of economic organization increasingly proved to be inflexible and rigid. The costs of wage labour had increased relatively fast during the 1960ies due to the power of the organized interest of the working class.

The growth of productivity was relatively slow during the 1960ies, the growth of wages relatively fast. These two factors negatively influenced profit rates. The upward pressure on variable capital caused by labour organization 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 1960ies by the fast economic development of European countries and Japan.

This competition along 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 1970ies. 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 depends on taxes that stem 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 1970ies.

After the second world economic crisis in the mid 1970ies there was a transition from the Fordist mode of development to the Postfordist mode of capitalist development. In order to increase profits new strategies of accumulation and domination emerged, the main idea is to increase profits by putting pressure on nation states to lower wages and by decentralizing and globalizing the production process in order to reduce wage costs and investment and reproduction costs of capital so that variable and constant capital decrease which results in an increased production of surplus value and hence in rising profits.

The regime of accumulation of Postfordist capitalism has been termed flexible accumulation regime (Harvey 1989) or flexible specialization (Piore/Sabel 1984). The term flexible specialization is vague and is described by Piore and Sable as a form of permanent innovation. It is hence no wonder that they see the effects of this regime only in very positive terms as empowerment and don't discuss risks. Harvey's term is more appropriate because it points out terminologically that capitalist structures for the accumulation of capital are transformed, hence that a new strategy of capital accumulation has emerged. Some aspects of the Postfordist accumulation regime are:

- Customer-oriented production
- Team Work
- Decentralization
- Flat hierarchies in corporations
- Simultaneous Engineering
- Just-in-Time-Production and Outsourcing
- Kanban-System: only those parts that are needed are supplied
- Autonomation
- Networked Units of Production
- The Rise of Transnational Corporations
- The Triadization of World Trade and Capital Investment

The role of the state in society has changed in Postfordist society. When a social system enters crisis, it is determined that a new order will emerge, but it is not predetermined how 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. We have been witnessing the rise of a neoliberal mode of regulation characterized by some important qualities:

- The withdrawal of the state from all areas of social life

- Destruction of the welfare state and collective responsibility
- The preaching of self-help, self-responsibility of the individual for his/her problems, and of the capability of the market to regulate itself without human intervention
- Growth, productivity and competition are presented as the only goals of human actions
- Old ultraliberal ideas are presented as modern and progressive
- Homogenization of the money and finance markets under the dominance of a few nations
- This ideology makes use of a kind of new Social Darwinism that puts across the message that only the strong and remarkable survive in society and on the market;
- Establishment and institutionalization of a permanent insecurity of wage and living conditions (“flexploitation”) and of an individualisation of work contracts
- State-assistance and -subsidies for large corporations
- Neoliberal ideologies claim that the economy is independent from society, that the market is the best means of organizing production and distribution efficiently and equitably and that globalization requires the minimization of state spending especially for social security;
- Such developments are presented as something inescapable, self-evident and being without alternatives.
- The neoliberal state creates the legal framework for flexible wages and flexible working times.
- Collective bargaining systems are increasingly superseded by systems at a sectoral, regional or company level.
- The state tries to facilitate capital investment and technological progress by subsidies, R&D programmes, funds and institutional support.
- The transition to the information society has produced new areas of regulation such as data protection, data security, intellectual property rights, e-commerce, cybercrime.
- The state increasingly tries to activate entrepreneurial thinking of the individual by creating new forms of self-dependence and self-employment, reducing unemployment benefits and welfare, tightening eligibility criteria, installing sanctions and coercive activation programmes (“workfare”, “welfare to work”).
- Pensions are increasingly cut and the retirement age lifted, private pension funds are encouraged.
- Universities are considered as enterprises and co-operation between universities and corporations is encouraged.
- Regulation is increasingly important on and shifted to the supranational, regional and local level and networks/links between cities, regions and federal states are established (also on a cross-border-basis).
- Certain state functions are shifted to civil society (neo-corporatism). Public enterprises and services are increasingly privatized and commercialized. Welfare is shifted from the private to the corporate level.
- TNCs have become important political actors and the state has transformed itself into a competitive nation state (Cerny 1997, Hirsch 1995, 2002, Jessop 2002).

Toni Negri and Michael Hardt argue in their book “Empire” that in Postfordism “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: xii). They call this global system Empire and say that it is decentered, deterritorializing, encompasses the spatial totality, rules over the entire "civilized" world and has no territorial boundaries that limit its reign. It is a “dynamic and flexible systemic structure that is articulated horizontally” (Ibid.: 13). “In contrast to imperialism, Empire establishes no territorial center of power and does not rely on fixed boundaries or barriers. It is a decentered and deterritorializing 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 characterized 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 "civilized" world. No territorial boundaries limit its reign” (Ibid.: xiif).

The increasing importance of computer networks and global network organizations is an instrumental result of capitalist development. Computer technology and the Internet weren't invented in economic, but in military contexts and in respect to Second World War (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 restructuring of capitalism. Hence it was the economic subsumption of computer technology and computer networks that caused their diffusion and the reorganization 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 organizations that make use of cyberspace and other new technologies for global co-ordination and communication.

Globalization can generally be defined as the stretching of social relationships, i.e. communication networks, in space-time, a globalizing social system enlarges its border in space-time, as a result social relationships can be maintained across larger temporal and spatial distances (Fuchs 2003a). The hierarchy of social globality reaches from the individual as starting point to local immediate relationships like family, friendships, or colleagues, to local intermediary structural relationships like local city council, 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 globalization 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 globalization is in modern society 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 can't 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 can't participate in.

Global network capitalism is based on a transnational organizational model, organizations cross national boundaries, the novel aspect is that organizations 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 reorganize by changing their boundaries and including or excluding various systems by establishing links, unions, and alliances or getting rid of or ignoring those actors that don't serve or contribute to the overall aim of capital accumulation.

Human society is organized in space and time, it is organized 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 globalization of social relationships (Fuchs 2003a), knowledge flows today transcend national borders, they result in the globalization, 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/McGrew/Goldblatt/Perraton 1999), and accelerating interdependence. Knowledge is today 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-localization 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 delocalization of social systems and relationships and hence reshape society. But they also further the reembedding and localization of disembedded social relationships, e.g. the globally available information on the Internet is embedded into local cultural contexts of action by users. Globalization and localization are intrinsically coupled, Roland Robertson (1992) has suggested the term glocalization 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: 80). This doesn't imply that technological globalization 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, implications of computer mediated communication 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, b, 2001, 2004), and Harvey's (1989) concept of time-space compression is that modern technologies such as the computer accelerate and flexibilize social relationships. The history of modern society is a history of globalization 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: 14). Especially 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, 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. One should add 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 organization of global network capitalism, it consists of global technological systems and transnational (economic, political, cultural) organizations and institutions that enable global flow 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 organization and scalar regulation that we have become used to” (Ash 2004: 224).

Some scholars argue that networks are inherently non-hierarchical 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, centralized, and hierarchical (Castells 2000a, 2004, Van Dijk 2006, Hardt/Negri 2005). In network research a network is generally defined in very broad terms as a system of interlinked nodes that don't imply full connectivity and a symmetric flow of resources. Hence in a network there can be hubs and centers that are of strategic importance because they have much more direct links from and to other nodes than other nodes, they store and centralize resources, and hence also control the flow of resources throughout the network. A network not necessarily is a map (as argued by Deleuze and Guattari in 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 decentralized structure or there can be central actors that dominate the movement. The degree of decentralization 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 institutionalization mechanisms that result in new hierarchies and forms of control such as precarious labour conditions of many knowledge workers. Networks wouldn't dissolve power, but transform it. I think that networks don't automatically annihilate domination and hierarchy, the flexibilize and mobilize hierarchy and domination. Lovink uses the term “organized networks” in order to point out that networks “are infected by power” (Lovink 2005: 18) and have “internal power relations” (Ibid.: 19). I understand the term as characterizing on the one hand the fact that networks are used in contemporary society as mechanisms of domination and on the other hand the need of a certain institutionalization of alternative networks because 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, loose 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 organizations in order to really challenge domination. Marcuse has coined in this context the term "organized spontaneity" (Marcuse 2004: 109f, cf. Fuchs 2005: 46, 84-87, 89-93). Self-organizing 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-organization can't be left to pure chance, but needs to be organized and institutionalized 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 organize self-organization so that processes of self-empowerment can take place (cf. Fuchs 2005: 84-87).

The economic diffusion of ICT is related to the crisis of global Fordism. As a reaction to the relative fall of profit rates, computerisation and automation have been put forward in order to save labour costs and to increase the rates of profit. ICT are medium and result of the economic globalization of capitalism. On the one hand they make the generation of temporal and spatial distance possible, hence local processes are influenced by global ones and vice versa. ICT make global communication and world trade easier. They push ahead globalization, decentralisation and flexibilization of production, they are a medium of the territorial restructuring of capitalism. The generation of networks of production that are typical for transnational corporations has been made much easier by ICT, the latter are also a result of the economic movements of restructuring that are typical for capital. So ICT are not only medium of globalization processes, they are also a result of them.

ICT make outsourcing, rationalization and de-centralization of production, team work, the flexibilization of jobs and the flattening of organizational hierarchies much easier. They have contributed to the shift of the employment sector from a focus of industrial jobs to service jobs. In most advanced countries the service sector today makes up two thirds of total employment. The Postfordist economy is a flexible regime of accumulation that is enabled by ICT and is based on the outsourcing, decentralisation and "flexibilization" of production, lean management, just-in-time production, the flattening of internal hierarchies in corporations, small organizational units in corporations, delegation of decision-making from upper hierarchical levels to lower ones, decentralisation of organizational structures, team work, strategic alliances, innovation networks, semi-autonomous working groups, network-organizations, tertiarization and informatization of the economy, triadization of international trade and of capital-export, team work, semi-autonomous working groups, participatory management, a new phase of economic globalization, diversified quality production, automation and rationalization mediated by computerized information- and communication-technologies (ICT). Speculative ("fictive") capital that is detached from material production and constitutes fast, self-increasing, unstable ("bubble economy"), global flows of capital is gaining importance. It is due to the fact that ICT dissolve temporal and spatial distances that corporations can flexibly manage production and make use of global interconnected flows of capital, technology, labour, and information. Network organization is a characteristic of the Postfordist global economy: networks of firms, networks of suppliers and distributors, financial networks, strategic alliances, joint ventures, financial markets that are based on fast global flows of increasingly "immaterial" speculative capital that are transmitted and manipulated digitally by making use of network technology.

In the next section some important aspects and principles of economic accumulation in informational capitalism are discussed.

4. Capital Accumulation in Informational Capitalism

The task of this section is to discuss how capital accumulation takes place with the help of information commodities and information technologies.

Kenney (1997) argues that one must distinguish between physical- and knowledge-based production of value. The driving force of the economy would be the production of knowledge today. Hence knowledge that is part of a commodity would be the determining factor of value production. Value would today mainly be produced by mental creations of knowledge workers. Kenney misunderstands that mental and material production cannot simply be treated separately. Today, mental labour quite often manifests itself in physical commodities (like compact discs, videos, computer games etc.). Marx argued in many passages that such a material foundation of the accumulation of capital and the production of surplus value is a necessary stipulation of capitalism.

James Curry (1997) says that knowledge is not a thing, but a social process, a general abstraction outside the nexus of capital, a general pool that is non-proprietary and available for everyone. When it is subsumed under capital, knowledge would become information. Applying Hegel's categories of universality, particularity and individuality, Curry argues that knowledge is a universal determination, information something particular that is related to ideas and meaning and data something individual related to syntactic aspects. All material products of human activity would contain knowledge and as commodities information. The use value of information products would be their information content. All commodities would have a knowledge composition consisting of the technical knowledge embodied in both the design and production of a commodity and an ideational content which is a symbolic aspect created through marketing and advertising. With the rise of informational capitalism, the information content of commodities would have increased. The value of an information commodity would be relatively autonomous from its material form (paper, film, magnetic media etc.) and there would be no value without circulation, the value form would have to be consummated in order to have meaning in capitalism. "The vast majority of the value of a particular knowledge-content commodity comes from the content, i.e., Spielberg's or Lucas' idea" (Curry 1997).

If this means that the surplus value contained in a information commodity is mainly an ideational content that is derived from an innovating idea, one must be careful with such assumptions because this would mean that an idea by Spielberg or Lucas is the source of surplus value and that hence there must be a tendency of exploitation decreasing or vanishing. In fact there is an idea for a book, a piece of software etc., but there are also a number of workers realizing that idea which results in the actual information commodity that has a material reality. They are employed and exploited by a corporation. The actual value of a single piece of an information commodity is relatively low due to the qualities of information that favour capitalist interests. Information is only produced once, but copied millions of times very cheaply. The average value of one piece can be calculated by counting the number of necessary working hours and the number of produced pieces in a certain period and figuring out the average number of working hours needed for the production of one piece. This will be a very low number compared to traditional industrial production. In my view information products don't have a high value due to their symbolic value; they have very low value, but are sold at prices much higher than their value. And for justifying this it is argued that it has a high symbolic value. The surplus value contained in an information commodity is related to the time spent by employees in material and ideational production. Value isn't something subjective that is related to ideas (this would mean that the more important an idea,

the more value the commodity that represents this idea) as sometimes suggested by postmodern theory (e.g. Baudrillard), value is something objective, a relationship in the material world that emanates from human beings' practical existence in the real world. It is true that frequently more time is spent developing marketing strategies and the knowledge contained in an information commodity than is spent in doing the actual reproduction process (software is a very good example for this), but at a whole information commodities don't have more, but much less value than traditional commodities. Nonetheless they are a major source of profit due to the difference between value and price that is justified by the ideological construct of the importance of subjective ideas and symbolic importance. So it is important to say that the ideational content doesn't have subjective value, but objective value in the sense of hours spent in production by employees who are dependent on the wages paid by capitalists. Surplus value can only be created by variable capital; it exists prior to circulation and consumption and is only transformed into profit by its selling on the market. A commodity that doesn't sell, still does have value, but doesn't result in profit.

The work of Kenney and Curry (1997) is an important one that suggests that the advent of the computer and data communication networks has accelerated knowledge creation, but with this has come a more rapid obsolescence in the things that objectify this knowledge. "Production equipment loses market value quickly and simultaneously as factories become more automated there is more capital at risk. Profits must be made before the equipment is superseded by a dramatically superior machine. This gives real meaning to the term "speed-based" competition. The introduction of electronics makes machines more productive, but simultaneously, because it helps accelerate technological change, the machine's productive life decreases making it a wasting asset. In many fields, the factory comes under increased pressure to operate constantly, because physical depreciation no longer bears any relationship to obsolescence". Nonetheless the authors argue in a rather idealistic manner that there is a dematerialization of the economy and commodities, that software is entirely a creation of the mind and that the internet represents an extremely powerful dematerialization. Such formulations don't take into account the material nature of informational capitalism and of value production in the information age.

In order to show how knowledge is related to economic accumulation, I first want to summarize some of its basic characteristics:

- Knowledge is a manifestation of information in the human-social realm. Knowledge doesn't exist in nature as such; it is a human and cultural product.
- Cognition, communication, and co-operation are three aspects of knowledge (Hofkirchner 2002, Fuchs/Hofkirchner 2005).
- Knowledge exists both in the human brain and in social structures and artefacts. It has subjective and objective aspects that are mutually connected. Subjective and objective knowledge is constituted in social practices of active, knowledgeable human beings; knowledge is related to human practice. Hence the main question of the sociology of knowledge is according to Karl Mannheim: "What categories, what systematic conceptions are used by the different groups at a given stage in accounting for one and the same fact uncovered in the course of practical operations? And what are the tensions which arise in the attempt to fit these new facts into those categories and systematic conceptions" (Mannheim 1952: 147).
- Objective knowledge is stored in structures and enables time-space distancing of social relationships. It reduces the complexity of social systems; foundations of human existence don't have to be re-produced permanently due to its storage-function. Such storage mechanism of social knowledge include rules, resources, technologies, property, decision power, norms, values, traditions, myths, world views, codes, routines, guidelines,

databases, organizations, and institutions. Objective knowledge is a supra-individual structural entity (Willke 2001, Argyris/Schön 1996, Etzioni 1971, Sveiby 1997), but is based on human agency, it is medium and outcome of social actions; it constrains and enables human practices.

- Individually acquired knowledge can be put to use efficiently by entering a social co-ordination and co-operation process. Synergetical advantages that could not be achieved on an individual basis can be gained by such a co-ordination of knowledge. Emergent knowledge and qualities show up and are due to the synergies produced by the co-operating efforts of knowledgeable actors. Intelligent organizations are based on the effective use and management of emergent knowledge.
- Knowledge must be permanently enhanced and updated
- Knowing is intrinsically coupled to not knowing: Heinz Von Foerster (1993, cf. also 1999: 62, 2002: 306) has stressed that there can be no absolute knowledge, there is much that we can't and don't know. The unknowable would consist of undeterminables and undecidables. If epistemology is a theory of knowledge or of understanding understanding, then one would also need a theory of the unknowable. Von Foerster calls such a theory lethology. This term is derived from Greek mythology where one assumed that one must cross the river Lethe in order to reach the Elysium and that during this journey one would lose memory. In the knowledge-based society, scientific and technological knowledge produces risks and hence phenomena that we don't know and can't fully predict. Willke (2002) speaks in this context of a crisis of knowledge.
- Knowledge has relevance for a system and is constituted within and part of human experiences (Willke 2001).
- Knowledge is a social, common, public good that has a historical character. Knowledge production is a social process, in order to produce new knowledge one must refer to prior knowledge produced by others. Frequently knowledge production has a highly networked and co-operative character.
- Knowledge is a self-expanding resource, but can be artificially made into a scarce resource (e.g. by Intellectual Property Rights).
- Knowledge production is in many cases a co-operative and networked process.
- Public knowledge gains importance when it is distributed freely in high numbers, proprietary knowledge loses importance when the same happens to it.
- Knowledge is a non-substantial (*nichtstofflich*) good that is generally not used up by its manifold usage.
- Knowledge expands during its usage.
- Knowledge can be compressed.
- Knowledge can replace other economic resources.
- In fast networks knowledge can be transported at the speed of light.
- Purchasers of knowledge only buy copies of the original data.
- The costs of reproducing knowledge are generally very low and are further diminished by technological innovations and progress.
- In contrast to capital, knowledge appreciates with use, its marginal utility increases with use.
- The depreciation of knowledge is purely moral, in contrast to most physical products it isn't used up by usage, non-usage, or the effects of natural forces.
- Knowledge is dynamic and dialectic. Karl Mannheim's sociology of knowledge has stressed the historical character of knowledge. For Mannheim (1952) knowledge doesn't exist metaphysically outside or above history, but is constituted in social processes. New knowledge would incorporate old knowledge, a higher level of knowledge would eliminate, but also preserve the old system. New knowledge sublates old knowledge (Mannheim 1952: 170). "The attainment of new knowledge consists in incorporating new

facts into the old framework of definitions and categories, and ascertaining their place therein“ (Mannheim 1952: 148). Norbert Elias has stressed that knowledge is a process and has the “character of a structured flux“ (Elias 1971: 364).

- Knowledge is a collective cultural heritage of humanity; parts of this heritage are used as the foundation for the production of new knowledge that enters the historical assets of society in order to be used as foundation for the production of further knowledge. Knowledge is a dynamic, self-perpetuating process, it is self-producing and self-organizing.
- Knowledge can't be measured. It emerges as a collective good from the co-operation of many networked individuals and groups that partly don't know each other (cf. Gorz 2000: 177; 2004).
- By digitization knowledge stored on different media such as records, videos, film, paper, or images can be combined in a multimediu.

Modern society is not only based on the domination of human labour by capital, also technology and science as means for increasing productivity and the speed of commodity production are subsumed under capital. Technology is a means that enables labour to produce ever more value in ever less time. As a result there is an antagonism of producer and means of production: “Within the capitalist system all methods for raising the social productiveness of labour are brought about at the cost of the individual labourer; all means for the development of production transform themselves into means of domination over, and exploitation of, the producers; they mutilate the labourer into a fragment of a man, degrade him to the level of an appendage of a machine, destroy every remnant of charm in his work and turn it into a hated toil; they estrange from him the intellectual potentialities of the labour-process in the same proportion as science is incorporated in it as an independent power”¹ (Marx 1867: 674). In a similar passage Marx says: “Every kind of capitalist production, in so far as it is not only a labour-process, but also a process of creating surplus-value, has this in common, that it is not the workman that employs the instruments of labour, but the instruments of labour that employ the workman. But it is only in the factory system that this inversion for the first time acquires technical and palpable reality. By means of its conversion into an automaton, the instrument of labour confronts the labourer, during the labour-process, in the shape of capital, of dead labour, that dominates, and pumps dry, living labour-power“ (Marx 1867: 446).

Substituting living labour by technology is an economic interest of contemporary society, it is necessary for reducing the costs of investment and reproduction of capital and for shortening its turnover time so that an increase of profit can be achieved. The continuous overthrow and revolution of technology by science are conditions of existence and reproduction of capital. Hence during capitalist development the importance of the technological means of production (fixed constant capital c_{fix}) – and hence of knowledge labour – increases and the one of living labour (variable capital v) decreases. Marx argues that the organic composition of capital (the relation $c : v$) grows continuously: “The accumulation of capital, though originally appearing as its quantitative extension only, is effected, as we have seen, under a progressive qualitative change in its composition, under a constant increase of its constant, at the expense of its variable constituent” (Marx 1867: 657). To put it simpler: Technology substitutes labour. The mass of constant and variable capital increases continuously in the accumulation process, but in the long run constant capital grows faster than variable capital. Variable capital decreases relatively to constant one.

¹ The English translation of this and all subsequent quotations by Marx have been obtained from <http://www.marxists.org>. The page numbers refer to the German sources.

By the increase of constant capital (the value of the means of production), the relative mass of total labour oriented on the reproduction of capital and the mass of labour occupied with the reproduction of the means of production that includes machinery (technologies for communication and transport, buildings) rises (Marx 1861-63: 190). Production becomes ever more dependent on knowledge, the “General Intellect” (Marx 1857/58: 602), the “universal labour of the human spirit” (Marx 1894: 114), “the power of knowledge, objectified” that becomes “a direct force of production” (Marx 1857/58: 602). The rise of knowledge in production is based on the inner tendency of capitalism for a rising organic composition of capital that at a certain nodal point results in a turn from quantity to quality, i.e. a qualitatively new phase of capitalist development. We don’t live in a knowledge or information society; rather the dynamics and dialectic of continuity and discontinuity of modern production have resulted in a new capitalist mode of development: informational capitalism/knowledge capitalism.

All human labour is based on a dialectical interconnection of mind and body. Hence all labour is both mental labour and manual labour. But nonetheless a distinction between mental labour and manual labour can be made: the first is mainly based on cognition, reflection, logical operations, etc., the second on the human production of physical energy. All societies are based on human activity that produces subjective and objective knowledge. But nonetheless we don’t characterize all types of societies as “knowledge-based societies” (KBS) or “knowledge societies”. In the current phase of development of capitalism all areas of society are coined by knowledge, i.e. by mental labour, cognition, communication, and co-operation. In knowledge capitalism mental labour, social labour, i.e. the production of social relationships by communicative and co-operative labour, affective labour, and the production and use of information technologies are of crucial importance. There is hegemony of mental over physical labour, knowledge has become a decisive factor of production and in the form of knowledge products a profitable commodity. Computers and internet as new systems of production, information, communication, and co-operation shape all parts of society and accelerate the time-space distancing of social and political relationships as well as of capitalist production and circulation (globalization). Although the current development phase of society is can be distinguished from the industrial society, the knowledge society doesn’t bring an end to industrial production, but its transformation. The knowledge society is not a postcapitalist societal development phase, but capitalism enters an informational mode of development.

Knowledge in the sense of subjective (cognition), intersubjective (communication, co-operation), and objective knowledge (knowledge goods) has just like physical labour, capital and power become a defining characteristic and mechanism of modern society. This manifests itself e.g. in a boom of service and knowledge industries, an increasing importance of innovation, universities, expertise, research, internet- and computer technologies, knowledge work, and knowledge products.

Just as letters, books, television, radio, telephone, fax, telegraph, etc., the computer is a knowledge-based technology or medium. It is not just a medium of cognition and communication, but also a system for production and co-operation. A particular feature of the computer is that it enables the convergence of traditional media in a single digital medium: knowledge-representation in the computer can combine written text, spoken words, audio, video and animations in one medium. This can be achieved by the digitization of the represented knowledge. The computer enables many-to-many communication; it is an interactive medium that allows new forms of co-operation and relationships across spatio-temporal distances. In respect to interactivity the computer differs from traditional media.

Traditional machines as well as the new computer are an objectification of human knowledge; their technological structure is based on human knowledge produced by science. Manual labour and raw materials are the input of traditional machines such as the assembly line; their output, the product of a transformation process, consists of goods that are an objectification of manual labour. The input of a computer is mental labour that is transformed by binary operations; its output consists of knowledge products that are an objectification of mental labour.

Obtaining profit from commodified knowledge is tied to the existence of intellectual property rights that artificially transform knowledge into a scare by creating an artificial monopoly for the diffusion of certain knowledge forms and contents. The idea of Aesthetics that art has form and content (Adorno 1970) can be generalized for knowledge. For the monopolization of knowledge forms and –types patents are used, for the monopolization of knowledge contents copyrights. In the categories of the Marxian labour theory of value the value of a product is the objectified labour time needed for producing the good. In this context Marx formulated the law of value: “We see then that that which determines the magnitude of the value of any article is the amount of labour socially necessary, or the labour time socially necessary for its production. (...) In general, the greater the productiveness of labour, the less is the labour time required for the production of an article, the less is the amount of labour crystallised in that article, and the less is its value; and vice versa, the less the productiveness of labour, the greater is the labour time required for the production of an article, and the greater is its value. The value of a commodity, therefore, varies directly as the quantity, and inversely as the productiveness, of the labour incorporated in it“ (Marx 1867: 54sq).

The value of a commodity is made up of the value of the necessary raw materials (constant capital), the value of the necessary labour (variable capital), and the newly generated value (surplus value): $V = c + v + s$. Knowledge has little value, i.e. not much labour is necessary for producing a copy of knowledge. If knowledge is produced once, it can be copied and transported with the help of media such as CDs, DVDs, and the internet almost at no cost. The copying of a music-CD costs less than one euro, but copies are sold at 15-20 euros. Capital is so interested in commodifying knowledge because the latter has a low value, it doesn't depreciate by consumption, and can be reproduced cheaply. The sale of knowledge at prices far above its economic value is the central value-theoretic mechanism in the process of accumulating capital with knowledge products.

Let's consider an example that shows that capital can make use of the specific characteristics of information in order to yield large profits with information commodities. Imagine the production of a mass-software with a certain turnaround time, the production time of the necessary knowledge is best assigned to the first turnover period of capital. We assume that all copies are sold, that already after the first turnaround a profit is achieved and that there is no interest and rent to be paid. Let the market price of one piece of software be 1190 euros. We have to distinguish the constant and variable capital in the production of knowledge (c_1 and v_1) from the capital involved in the physical reproduction process (c_2 and v_2). Let's also assume that at the first turnover 100.000 pieces of commodity are produced, that $c_1 = 10 \cdot 10^6$ €, $v_1 = 50 \cdot 10^6$ €, $c_2 = 5 \cdot 10^6$ €, $v_2 = 2 \cdot 10^6$ €.

Hence the total investment costs are $67 \cdot 10^6$ €. We assume a rate of surplus value of 100%. The mass of constant capital is $c = c_1 + c_2 = 15 \cdot 10^6$, the mass of variable capital $v = v_1 + v_2 = 52 \cdot 10^6$. Due to a rate of surplus value of 100%, the mass of surplus value produced is $s = 52 \cdot 10^6$ €. All copies are sold, hence the revenues are $1190 \cdot 100\,000 = 119 \cdot 10^6$ dollars. Subtracting the investment costs from this sum results in a profit of $52 \cdot 10^6$ dollars for the first

year. The average value of a single copy is $v = c_d + v_d + s_d$, where c_d , v_d und s_d describe the average proportions for one commodity of the total constant and variable capital as well as of the total surplus value produced. Hence the average commodity value is

$$v = \frac{15 \times 10^6}{10^5} + \frac{52 \times 10^6}{10^5} + \frac{52 \times 10^6}{10^5} = 1190.$$

Hence in this example the value of the commodity equals its market price. Let's take a look at the second turnover of capital: We assume that the conditions of production, the costs and the total amount of produced commodities remain the same. How does profit develop? The investment costs for knowledge production don't have to be spent by the capitalists this time due to the specific characteristics of information ($c_1 = 0$, $v_1=0$). Hence the average commodity value is reduced to

$$v = \frac{5 \times 10^6}{10^5} + \frac{2 \times 10^6}{10^5} + \frac{2 \times 10^6}{10^5} = 90.$$

This means that the average value of a single piece of software has massively decreased without a change in the conditions of production! This is due to the fact that knowledge only has to be produced once, it only has what Marx called a "moral" devaluation, but doesn't lose value by ageing, use or non-use, it can be reproduced easily and very cheap etc. The software is still sold at 1190 dollars, hence the profit increases from $52 \cdot 10^6$ euros to $112 \cdot 10^6$ dollars. This amounts to an increase of average profit from 520 euros to 1120 dollar per commodity and an increase of the profit rate from 0,78 to 16 (profit rate = profit / (c+v))! This shows that the value of a piece of software is much lower than its market price and that the specific characteristics of knowledge are the mechanism that enables capital accumulation in the software industry.

5. The Antagonism of Knowledge as Gift and Commodity

Networks of corporate power, political domination, and cultural homogenization are the reality of the "network society". But 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 centralization of wealth and power that has thus far been achieved by networking. Global network capitalism is characterized 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. 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 Marx' idea 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 societalization of the means of production. The

productive forces of contemporary capitalism are organized around informational networks. It is due to three specific characteristics of such structures that they come in contradiction with the capitalist relations of production and are a germ form (Keimform) of a society that is based on fully co-operative and socialized 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. Networks are in essence 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. But this is not its central characteristic (as argued by Shaviro 2003: 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”² (Marx 1894: 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: 9)³. 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 assured 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: 62) and an “association, in which the free development of each is the condition for the free development of all” (and vice versa!, Marx/Engels 1848: 482) and that is self-organizing according to the principle “From each according to his ability, to each according to his needs” (Marx 1875: 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 will be successful in continuing its reign. Networks anticipate a society in which “the antithesis between mental and physical labour has vanished”, “the productive

² The English translation of this and all subsequent quotations by Marx have been obtained from <http://www.marxists.org>. The page numbers refer to the German sources.

³ 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: 9).

forces have also increased with the all-around-development of the individual”, and “the springs of co-operative wealth flow more abundantly” (Marx 1875: 21). Networks are forms of development as well as fetters of capitalism; paraphrasing Marx one can say that informational capitalism is a point where the means of production have become “incompatible with their capitalist integument” (Marx 1867: 791).

Manuel Castells (2006: 20) argues that Marx’s insight of the antagonism of the productive forces and the relations of production is important in the network society as rentier capitalism of the Microsoft type blocks in contrast to other models (such as open source) the expansion of innovation. This antagonism would be “the only lasting contribution from the classical Marxist theory” (Castells 2006: 20). It is the most important insight of Marx and it subsumes many important Marxian ideas such as the crisis-ridden nature of capitalism, social relations as class relations and potentially resulting class struggles, potentials of co-operation, the simultaneously productive and destructive role of technology in capitalism, and the material foundations of an alternative society. Hence the antagonism is not the only lasting contribution of Marxian thinking, but an indication for the importance of many Marxian categories for the analysis and practical critique of contemporary society.

All societies are based on human activity that produces subjective and objective knowledge. But nonetheless we don’t characterize all types of societies as “knowledge-based societies“ (KBS). This term is reserved to characterize a social formation that is shaped by a specific type of knowledge, scientific and technological knowledge, in all its realms. The emergence of the knowledge-based society is a multidimensional shift that involves the rise of knowledge as strategic resource in all societal areas. Knowledge has become besides labour, capital, property, and power a defining characteristic and mechanism of modern society. This manifests itself e.g. in a boom of service and knowledge industries, an increasing importance of innovation, universities, expertise, research, knowledge work, knowledge products. I find it more suitable to speak of knowledge capitalism or informational capitalism instead of knowledge-based society because besides important changes certain continuities of dominant structures should be stressed. We today live in knowledge capitalism in the sense that knowledge and knowledge-based technologies have become immediate forces of production that influence and change all subsystems of society that are oriented on accumulation (of money capital, power, hegemony, etc.). The increased knowledge-based character of society is due to the rising importance of expertise, scientific knowledge and knowledge-based technologies.

Social systems knowledge capitalism are characterized by:

- a high degree of flexibility and complexity
- a networked character
- an increasing global character
- dynamic communication
- complex knowledge patterns

In the next section I will discuss how corporations change in informational capitalism. There are both internal (6.1) and external (6.2) aspects.

6. The Network Enterprise: Co-operation as Ideology

6.1. Corporations and Team Work

On the internal level of corporations, team work and semi-autonomous working groups are gaining increasing importance. Relatively autonomous groups of workers are formed that must perform certain tasks until certain deadlines, how they organize the work internally and which means and methods they use is left to themselves. Autonomy can refer to the following areas: the type of commodities, the amount of produced goods, labour time, place of labour, production methods, the division of work and responsibilities within the group, questions of internal management and leadership, selection of group members, internal and external communication. The rise of teamwork is accompanied by the use of computer networks for internal and external communication and work co-ordination and by strategies of “participatory management“ that want to create co-operative relationships between owners, management, and employees, favour the flattening of hierarchies (which means in most cases a decreasing importance of middle management), and propagate work as fun, the blurring of the boundaries between leisure and labour, and the company as a place to feel at home. This reflects the shift from a disciplinary society (Foucault 1979) in which domination operates through hierarchical control, enclosure, and surveillance to a society of control (Deleuze 1995) in which domination operates through self-control, identification, and inclusion. Disciplines are methods that secure the submission to external forces by surveillance and punishment (Foucault 1979). They are inherent in modern institutions such as schools, prisons, families, universities, hospitals, corporations, etc. because these milieus try to enclose the individual. Disciplines were also incorporated into the Fordist apparatuses of mass production, especially into assembly lines. These aspects still exist today to a certain extent, but there is a shift towards the society of control: Employees who feel at home at work, have fun at work, and can to a certain degree influence internal decisions will work more and better, i.e. they will create more surplus value in less time than in earlier times. Hence we witness not the rise of a new economic system, but of a new ideology and a new type of integrative domination. Participation and co-operation are understood in a very limited sense in such ideologies because they leave the asymmetrical, exclusive, non-participatory, non-co-operative distribution of economic property (the means of production) untouched. The shift from hierarchical expert management towards participatory management reflects an ideological shift in modern society that no longer involves a dominance of hierarchical control, but a strategy of integration that is expected to result in a rise of profits.

For Deleuze controls are internalized disciplines, forms of self-discipline that are presented as liberating and operate in a subtle manner. He compares the individual in disciplinary society to a mole and the individual in the society of control to a serpent. The mole as a symbol of disciplinary society is faceless and dumb and monotonously digs his burrows; the snake is flexible and pluralistic.

Controls are internalised disciplines, forms of self-discipline that present themselves as liberating and operate in a more subtle manner: “Enclosures are molds, distinct castings, but controls are a modulation, like a self-deforming cast that will continuously change from one moment to the other, or like a sieve whose mesh will transmute from point to point [...] The old monetary mole is the animal of the space of enclosure, but the serpent is that of the societies of control. We have passed from one animal to the other, from the mole to the serpent, in the system under which we live, but also in our manner of living and in our relations with others. The disciplinary man was a discontinuous producer of energy, but the man of control is undulatory, in orbit, in a continuous network. [...] The coils of a serpent are even more complex than the burrows of a molehill” (Deleuze 1995). The mole as a symbol of disciplinary society is faceless and dumb and monotonously digs his burrows; the snake is flexible and pluralistic. Luc Boltanski and Ève Chiapello (2006) argue that the rise of participatory management means the emergence of a new spirit of capitalism that subsumes

values of the political revolt of 1968 and the subsequently emerging New Left such as autonomy, spontaneity, mobility, creativity, networking, visions, openness, plurality, informality, authenticity, emancipation, etc. under capital. The topics of the movement would now be put into the service of those forces that it wanted to destroy.

The individual in Fordist capitalism was expected to carry out monotonous labour; management expects individuals in Postfordist capitalism to be flexible, innovative, motivated, dynamic, modern, young, and agile, and it wants them to identify with the corporation and to have fun at work. Strategies of participatory management aim at the ideological integration of labourers into corporations. This is a new quality of the disciplinary regime that aims at a rise of profits by an increase in productivity and cost reductions achieved by the workers' permanent self-discipline. Bonus systems, team work, share options, corporate identity, attractive design of the work place, construction of a community between management and workers ("we"-identity), advancement of spirit of enterprise within the workforce, etc. are part of this strategy that constitutes new qualities of the disciplinary regime of capitalist society. Studies found that the reality of the network firm is decentralization of production and management combined with centralization of capital and control (Van Dijk 2006: 75). Rudi Schmiede (2006b: 458sq) argues that decentralization concerns only the organizational structure of corporations, but is accompanied by a centralization of capital, financial control, and economic power.

In organisation and management theory, "participation" is understood in a rather narrow sense of the term that excludes overall societal and political issues. Full participation would have to include an inclusive control and ownership of products and the means of production and on the political level overall grassroots democracy in the sense that people affected by decisions take these decisions collectively and all by themselves. "Participatory" management is a method of rationalizing and optimizing the production process in such a way that profit can be achieved effectively. The division of labour inherent in capitalism that requires a class relationship between those owning the means of production and the results of the production process and those depending on the entrance into labour relationships is maintained in informational capitalism. Despite all the changes we are witnessing today, the antagonism between the owners of property and the owners of labour remains an unchanged central characteristic of society. "There is still a division between those who own the valuable resources on which the information economy is dependent and those who merely own their ability to labour in such an economy. [...] In the information economy even if knowledge creators are themselves individuals, the ownership of the bulk of valuable knowledge resources remains with capital" (May 2000). Participatory methods of management help to ideologically forestall social change towards a real participatory society and uphold what has in Critical Theory been termed false consciousnesses

Khandwalla (1977) characterizes elements of participative organisations: superiors have trust and confidence in subordinates, subordinates feel free to discuss any job-related matters with their bosses, reward systems, participatory set goals, improvement programs, evaluation of progress; great deal of upward, downward, and horizontal communication; extensive, friendly interaction between superior and subordinates, great deal of co-operative teamwork, decision-making is done throughout the organisation and is integrated through interlinked groups, awareness of organisational problems throughout the organisation, subordinates are fully involved in decisions related to their work, consensus-oriented team decision-making at the level of top management, decision making is designed to motivate the implementation of decisions, team goals are established by group discussions, participation in control functions, use of human relations in effecting organisational changes and securing better co-operation

from employees, use of techniques such as sensitivity training and managerial grid for organisation development. This is a narrow understanding of economic participation that serves economic interests, a participatory and co-operative ownership of the means of production and the products is avoided as a characteristic here. True economic participation would imply a stronger socialised character of ownership. Khandwalla suggests that “another aspect of the participative mode’s ideology is the notion that cooperation is better than competition, and warm, friendly relations among organizational members are more desirable than mutual hostility and suspicion. This is best achieved by power equalization, in sharp contrast to the power struggles characteristic of the coercive mode” (Khandwalla 1977: 418). Co-operation indeed is better than competition in order to achieve economic democracy, but this requires full economic co-operation, not a selective and opportunistic type of co-operation that bases only those aspects of an organisation and of society on co-operation that help ideological integration and don’t conflict with profit-oriented production.

The increasing importance of knowledge work in corporations and the resulting interest in yielding economic profit from knowledge has resulted in the emergence of new scientific areas such as research on knowledge management (KM) and organizational learning (OL). Mark W. McElroy (2000) points out that first-generation KM was a rather hierarchic and technology-centric approach oriented on capturing, codifying, distributing, and delivering information, whereas second-generation KM would be more oriented on organizational knowledge creation and learning. In this new generation the three formerly separated approaches of knowledge management, organizational learning, and complexity/systems thinking would converge. KM- and OL-approaches frequently use notions such as self-organization, participation, and co-operation in order to stress that knowledge can be created and used most efficiently and democratically if organizations flatten hierarchies and allow certain degrees of autonomy and self-managed decision-making by workers. McElroy points out that complexity thinking and self-organization theory (such as the complex adaptive systems-approach) are particularly suited in this context because they provide models and a theory of how dynamically changing organizations create knowledge.

In KM Ikujiro Nonaka and Hirotaka Takeuchi (Nonaka 1994, Nonaka/Takeuchi 1995) have created the SECI-model of organizational knowledge creation that shows how tacit knowledge and explicit knowledge can be created and mutually converted by processes of socialization, externalisation, combination, and internalization. They link their concept to ideas from complexity thinking such as self-organization, synergetics, or order from noise in order to suggest forms of knowledge management. E.g. Nonaka argues that one “way to implement the management of organizational knowledge creation is to create a ‘field’ or ‘self-organizing team’ in which individual members collaborate to create a new team” (Nonaka 1994: 22). Creative chaos (evoking tension and a sense of crisis by proposing challenging goals), redundancy (promoting trust by sharing extra-information), and requisite variety (giving access to necessary information by information channels) are besides self-organized teams introduced as important methods of KM. In the field of OL Peter Senge (1990) has introduced systems thinking as the fifth discipline that helps to see the world as made up of interconnected systems. Systems thinking would be the theory and practice for bringing together the four other disciplines of personal mastery, mental models, shared vision, and team learning so that learning organizations can emerge. A learning organization would be “an organization that is continually expanding its capacity to create its future” (Senge 1990: 14). Such learning would be generative and not adaptive. Senge stresses team work and dialogue, by dialogue and discussion a commonality of direction, an alignment, could emerge. The emerging commonality would be a shared vision and shared understanding. Senge

presents team learning as a self-organizing system in the terms of Hermann Haken's Synergetics (without explicitly naming Haken or Synergetics, cf. Senge 1990: 234sq).

That management theory now employs concepts such as self-organization, participation, and co-operation that are typical for grassroots thinking is characteristic of an ideology that employs new terms and models for organizing the old model of capital accumulation in corporations more effectively. The advanced ideas and their practical reality remain only partial because they hardly touch the question of the ownership of the means of production and remain on the micro-organizational level of decision-making within teams. The full consequences of thinking in terms of self-organization – which implies the full sublation of heteronomy and alienated structures – are not realized. The idea of management is installing a regime that works with unconscious controls that makes workers produce more surplus value more quickly by engaging in self-exploitation because they feel a sense of fun, duty, commitment, and community in the corporation. It is speculative and probably not-yet decidable if the uptake of grassroots vocabulary by management theory and practice will result in an intellectual and political climate that is more open for ideas of a self-managed society.

The role of computer networks in inner-organizational restructuring is that they act as a medium for information storage and exchange, co-ordination, communication, and co-operation within and between teams/organizational units so that if desired operation over spatio-temporal distancing is enabled. The ability of computer networks to enable organizational information, communication, and co-operation at a distance has resulted in the introduction of concepts such as the virtual corporation (Davidow/Malone 1992), the virtual organization (Mowshowitz 2002), and the virtual team (Lipnack/Stamps 2000). The concept of virtual corporation focuses on the inter-organizational use of computer networks, the notion of virtual teams on intra-organizational use: "The virtual corporation is a temporary network of independent companies, suppliers, customers, even erstwhile rivals – linked by information technology to share skills, costs and access to one another's markets. It will have neither central office nor organization chart. It will have no hierarchy, no vertical integration" (Byrne et al. 1993: 36). "A virtual team is a group of people who work interdependently with a shared purpose across space, time, and organization boundaries using technology" (Lipnack/Stamps 2000: 18).

I see two problems with such concepts:

1. If it is not stressed that the virtual and the real are intertwined, the impression can be created that virtual organizations and teams are only those social systems that exist fully online and where there is no face-to-face contact of human actors. As economic activity requires the formation and continuous reproduction of empathy which can more easily be created offline than online, it is unlikely that the majority of corporations that make heavy use of computer networks will be based on pure online relationships. Hence such a narrow concept of the virtual and of virtual teams/organizations hardly makes sense because it applies only for a small share of cases.
2. To characterize contemporary economic organizations as virtual distracts from the fact that they are first of all still capitalist in nature and hence oriented on profit generation.

6.2. Transnational Corporations

Corporations are increasingly organized on a transnational level by breaking the production process down into small units that are organized 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 globalization is today shaped by the rise of transnational corporations (TNCs). The restructuring of corporations (decentralization, flexibilization, outsourcing, lean management, flattening of hierarchies, just-in-time-production, etc.) is aimed at increasing profits by cutting costs. The model for transnational capitalism is the Japanese Lean-Production-system of Toyota, hence one also speaks of Toyotism. The goals of the existing forms of automation and computerization are the decrease of labour costs in order to increase profits. Transnational corporations (TNC) are an important aspect of the Postfordist economy. Their number has increased from 7,000 in 1970 to an estimated 53,600 in 1998 (French 2000). Transnationalism is different from the export strategy and multinationalism. In a corporation that employs an export strategy a foreign branch of the corporation distributes the corporation's commodities in a specific country and is controlled by the centre of the corporation that resides in one country. Multinational corporations are based on the idea that all establishments should be relatively autonomous and should try to autonomously control certain local, regional and national markets. Transnational corporations break the production process down into small units and make use of outsourcing and sub-contracting in order to produce each unit in parts of world where the conditions of production are attractive. Transnational corporations have a globally distributed and networked character, they produce and diffuse different and diversified products and services all over the world on local, regional, national and international markets. TNCs account for around two-thirds of world trade and a quarter of world output (Held/McGrew/Goldblatt/Perraton 1999: 236, 272).

Global trade and global capital investment are increasingly centralizing within the triade of North America, Europe, and South-East Asia (especially Japan). Third-world countries (especially African ones) are frequently not exploited by Western corporations and countries, but economically excluded. Other important economic trends are the increasing importance of information commodities, mental labour, the service sector, and information industries, the liberalization of markets, the privatization of public services, production and delivery on demand, e-commerce, more and more non-standard forms of labour such as precarious and semi-independent freelance workers, homeworkers, part-time workers, temporary workers, and self-employees who constitute a new class of working-poor, increasing unemployment due to technological productivity gains, central control of markets (such as in the culture, computer, and software industries), and global financial markets with flows of fictive capital that are detached from real capital accumulation and create financial speculation bubbles.

ICTs simplify the outsourcing, rationalization, and de-centralization of production, team work, the flexibilization of jobs, and the flattening of organizational hierarchies. They are medium and result of the economic globalization of capitalism. They make the generation of temporal and spatial distance possible, hence local processes are influenced by global ones and vice versa. It is due to the fact that ICTs dissolve temporal and spatial distances that corporations can flexibly manage production and make use of global interconnected flows of capital, technology, labour, and information. ICTs make global communication and world trade easier. They push ahead globalization, decentralization and flexibilization of production, they are a medium of the territorial restructuring of capitalism. The generation of networks of production that are typical for transnational corporations has been made much easier by ICTs. The diffusion of the internet in society was not just a technological innovation, but also driven by the economic interest of capital to create new spheres of accumulation. Hence the rise of

ICTs is also result of the economic movements of Postfordist restructuring that are typical for capital. So ICTs are not only medium of globalization processes, they are also a result of them.

Economic globalization means globe-spanning social relationships of commodity and finance markets and corporations. Large corporations increasingly outsource production to foreign small and medium-sized enterprises (SMEs). On 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 concern especially joint R&D, there is a sharp rise in such alliances. Hence Dunning (1997) speaks of “alliance capitalism”. Strategic alliances are a co-operative effort to develop competitive advantages. Neil M. Coe et al. have in this context coined the term global production networks that they define as “the globally organized nexus of interconnected functions and operations by firms and non-firm institutions through which goods and services are produced and distributed” (Coe et al. 2004: 471). In another paper Coe and Bunnell (2003) have worked out a similar concept of transnational innovation networks.

A systemic form of centralization characterizes the global economy of network capitalism. Peter Dicken et al. (2001: 93) speak in this context of “the exercise of power by actors in networks”. Power wouldn’t only mean the control of key resources by actors in networks, but also the capacity to exercise power and the practice of doing so. “Thus while power is exercised within networks, networks themselves constitute structural power relations in which exclusions and inequalities exist. If the global economy is to be understood as a set of interlocking networks of economic activity, then we must be prepared to ask who is excluded from such networks, and why” (Dicken et al. 2001: 95). The economy is increasingly dominated by a small elite of transnational corporations that can determine consumption, political decisions and living conditions of the world population. Many people feel the effects of this rigid economically dominated type of globalization and feel estranged because decisions that affect their lives are made by anonymous powers that they don’t know and whose actors they will never meet and are physically detached from local contexts. This increased economic dominionism could well result in the long persistence of a global informational Empire.

The networks that are created on micro- and macro-levels of the economic system have resulted in an asymmetric distribution and centralization 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 globalization and feel estranged because decisions that affect their lives are made by anonymous powers that they don’t know and whose actors they will never meet and are physically detached from local contexts. This economic dominionism could well result in the long persistence of a global informational Empire. If capitalism is indeed organized as a global network economy, then one has to stress 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 hence creates an asymmetrical, divided, exclusive economic space where the majority of people is marginalized and kept outside of the network and a divided geography is created. Zygmunt Bauman (1998) argues in this context that

contemporary globalization has resulted into a polarisation between the globalized rich and the localized poor. The globals would be cosmopolitan, extraterritorial elites that traverse space easily and in a self-determined way, they would live in time, space wouldn't matter for them, since spanning every distance would be instantaneous. The locals would be fixed in space and locality (the "locally tied"), they would live in space that ties down time and keeps it beyond their control.

The economy of global network capitalism is based on a network logic that affects 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). But this doesn't result as Castells (2000a) argues 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.

7. Conclusion

At the beginning of this paper I have raised four research questions. Based on the ideas laid out in this paper some preliminary results can be summarized:

- Concepts such as knowledge society, information society, postmodern society, postindustrial society, internet society, network society, etc. fail to grasp the dialectic of continuity and discontinuity of society, they see the changes connected to new media as radical novelties and ignore the continuing dominance of capitalist structures.
- In order to stress that capital accumulation is transformed by the rise of knowledge and information technologies and to stress the transnational spatial model connected to the flexible regime of accumulation, I have suggested using notions such as transnational network capitalism, transnational informational capitalism, or transnational knowledge capitalism as key concepts for describing contemporary society.
- Capital accumulation with the help of knowledge commodities is in knowledge capitalism based on the specific characteristics of information: it is generally not used up by its manifold usage, it expands during its usage, it can be compressed, it can replace other economic resources, can be transported at the speed of light over the global information networks and the costs of reproducing information are generally very low and are further diminished by technological innovations and progress. Hence knowledge as commodity can be produced and diffused very cheaply, the mechanism for gaining profit from information commodities is that such goods are sold at prices that are much higher than the commodity-values.
- The logic of networking has transformed corporations which are increasingly organized on the transnational level and decentralize and flexibilize their internal structures. This is a new strategy that allows accumulation by integration, identification, and a new spirit of corporate 'participation' and 'co-operation'.
- The new strategies of accumulation are connected to the rise of new scientific models and concepts such as virtual teams, virtual organizations, virtual corporations, knowledge management, or organizational learning, which create the impressions that Postfordist corporations are democratic institutions, but in fact have a very limited notion of participation.

Postfordist economic globalization means the creation of new basic conditions for the valorization processes of capital in the form of the deregulation, dismantling and removing of the institutional barriers for these processes as well as the internationalization of capital in the

sense of a polarization and concentration of world trade and capital export and foreign direct investments. This concentration can be described as a triadization (concentration within the three large economic regions Europe, United States and Southeast Asia/Japan), concerning capital export, but not world trade, also Latin America is of some importance. The Third World, especially Africa, is increasingly uninteresting for Western economic interests and is simply neglected and excluded. The newly industrializing Asian countries are the primary focus of Western capital export outside of the OECD.

Networks shape systems in nature and society; they are structures of communication that are organized 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, centralized, 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 organization principle of the transnational reorganization 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 centers for accumulating resources and transmitting flows or are excluded and marginalized.

There is a tendency of globalization in modern society; Postfordist capitalism is a globalized, transnational, knowledge-based type of system. Especially the economy is organized around global networks of capital, production, and knowledge. Business firms are increasingly organized in a decentralized way that allows them the openness, adaptation, and flexibility that is needed for the accumulation of capital. Strategic businesses are a form of networking between different firms, also on an intra-organizational level there is a tendency towards networked forms of organization and management. Postfordist capitalism is based on strategies of capital accumulation that make use of decentralized 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. Postfordist social movements are faced with networked forms of domination, as a reaction to the new logic of domination their logic of organization is frequently based on decentralized 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: 58). A decentralized global protest movement that calls for global participation and global co-operation and suggests a democratic, just, sustainable, participatory form of globalization has challenged the emergence of a decentralized, global Empire. The organization principle of the movement is the one of global networked self-organization. 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 don't determine the behaviour of humans, but humans determine and organize themselves. It opposes globalization from above with self-organized forms of globalization from below. The "anti-globalization movement" that should better be called a movement for an alternative, democratic form of globalization is a transnational decentralized networked form of protest.

Capitalist globalization 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, decentralization, flexibilization, and globalization of capital and power. The emergence of a decentralized, global Empire has been challenged by a decentralized global protest movement that calls for global participation and global co-operation and suggests that the degree of democracy, justice, and sustainability of globalization should be increased. The organization principle of the movement is the one of global networked self-organization. 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 don't determine the behaviour of humans, but humans determine and organize themselves. It opposes globalization from above with self-organized forms of globalization from below.

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