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# Social Information and Self-Organisation<sup>1</sup>

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### Abstract

The re-creation of society involves the bottom-up-emergence of social information and the top-down-emergence of individual information. Social self-organisation in a broad sense refers to the re-creation of society, in a narrower sense it takes aspects of participation in the processes of constituting social information into account.

#### 1 Introduction

Traditionally, information has been conceived as a thing that is transmitted from a sender to a receiver. It has been fetishized and reduced to technological aspects [Fuchs and Hofkirchner, 1999]. By combining the notions of information and self-organisation and establishing a Unified Theory of Information [Fuchs and Hofkirchner, 2001], such shortcomings could be avoided. Such a theory makes use of a dialectic of generality and speciality, i.e. general aspects of information are defined that can be found in all types of systems and emergent aspects of information that are specific for each special type of system. Such an approach sees information as a category that can be found in various types of systems- in physical, chemical, biological, social, ecological, technological etc. ones. Each time a system organises itself, information is produced; hence all self-organising systems are information-generating systems.

Some work has been done in researching the relationship of information and self-organisation [Ebeling and Feistel, 1992; Ebeling, 1993; Ebeling, Freund, Schweitzer 1998; Goonatilake, 1991; Haken, 1988; Küppers, 1986; Mainzer, 1998], but although some of these approaches consider information as an emergent and evolutionary quality of complex, evolutionary systems, neither one has described the transformations information undergoes as well as the new qualities information shows when evolutionary steps from organisational levels to higher levels are considered. The existing approaches are very scattered and only cover aspects that refer to single types of systems. A unified concept does not yet exist. In this paper I want to point out some aspects of information and self-organisation in social systems which constitute the upper level of

an evolutionary hierarchy of self-organising systems and are the most complex systems we know today. Robert Artigiani [1999] argues that society stores information about itself, the world and the individuals. He sees information in analogy to Shannon as a measure of the reduction of uncertainty in the world. "Social information measures the degree to which uncertainty about the environment in which a society is embedded is reduced. Social information is stored in all sorts of forms, but rituals, roles, customs, and myths are, perhaps, the most obvious. [...] Rituals, roles, customs, and myths reduce collective uncertainity about the external environment by storing information about solutions to past environmental situations" [Artigiani, 1999: 484]. Artigiani says that information is stored in VEMs (values, ethics, morals) that code information qualitatively in the sense of "good" and "bad". Shannon's measure of information is a technological category. If such a category is simply transferred to the social sciences, false inferences, shortcomings and a mechanistic view of society must be the outcome. Artigiani argues that society is becoming more and more predictable and stabile during the course of evolution. But the theories of complexity show us, that society is a complex and antagonistic system and that only some very limited aspects can be predicted. Artigiani does not critically assess existing types of social information and their repressive and exclusive character [Fuchs, 2001], in an idealistic manner he does not cover aspects of material production. Nonetheless Artigiani's work is important because he points out cultural aspects of social informa-

# 2 Individual and Social Information

In social systems individual values, norms, conclusions, rules, opinions, ideas and believes can be seen as individual information. Individual information does not have a static character, it changes dynamically. E.g. individual opinions and values change permanently because of new experiences. This does not mean that individual information is necessarily always unstable and that e.g. the reflection of ideologies in individual information does not exist. Instead, new experiences enhance and consolidate already existing opinions, but can also radically change them. Hence it

can be said that individual information as a lower level of information in social systems has an unstable character. When we come to higher levels (as we will see with social information that is constituted in social relationships) the complexity as well as the stability of information increases. The constitution and differentiation of individual information has been described somewhere else [Fuchs and Hofkirchner, 1999, 2001; Fuchs, 2001; Fuchs et al., 2001].

Wolfgang Hofkirchner [2000] has pointed out that in the process of constitution and differentiation of individual information the signs data, knowledge and individual wisdom can be identified. On the basis of signals, data is gathered (perceiving). This data is the starting point for gaining knowledge (interpreting) which is necessary for acquiring wisdom (evaluation). In a social system, social self-organisation (I) in a very broad sense refers to the re-creation of such a system. Re-creation denotes that individuals that are parts of a social system permanently change their environment. This enables the social system to change, maintain, adapt and reproduce itself. It can re-create itself permanently due to the individual actions that are related and co-ordinated socially. A sign can be seen as the product of an information process. An information process occurs whenever a system organises itself, that is, whenever a novel system emerges or qualitative novelty emerges in the structure, state or behaviour of a given system. In such a case information is produced. It is embodied in the system and may then be

Re-creative, i.e. social systems, reproduce themselves by creating social information: The word "social" in the term social information denotes that such a form of information is constituted in the course of social relationships of several individuals. A social relationship is established if an interrelated reference exists between (at least) two actors. Social acting is orientated on meaningful actions of other actors. Social actions are a necessary condition for a social relationship, but not a sufficient one because social acting does not necessarily require an interrelated reference of actors: One actor can refer to the actions of another one without the latter referring to the first.

We consider the scientific-technological infrastructure (part of the techno-sphere), the system of life-support elements (part of the eco-sphere) in the natural environment and all that in addition makes sense in a society, that is, economic resources, political decisions and the body of cultural norms and values, laws and rules (part of the socio-sphere) as social information [see also Fuchs, 2001; Fuchs et al., 2001; Fuchs and Hofkirchner, 2000, 2001; Fuchs 2002). We have no space to cover information production in the technoand eco-sphere here [for further details see Fuchs et al., 2001], so we will concentrate on the socio-sphere where economical, political and cultural information (which are all subtypes of social information, we do not cover technological and ecological information here) are constituted in the course of social actions.

Such a concept of information covers aspects of mental as well as of material production. The involved individuals must have a common view of reality which is the basis for their social interactions and social actions. They are elements of a social system. As a result of their interactions in social systems, social information emerges as a macroscopic structure. The interactions are mediated by acts of communication, the individuals act in such a way that associations and actions of other individuals are triggered. The individuals coordinate their actions in such a manner that they can commonly produce a social information structure.

In his theory of structuration, Anthony Giddens [1997] terms rules and resources as structures that are medium and result of social actions [Giddens, 1997: 77). He says that social structures are an expression of domination and power and that rules always relate to the constitution of sense and the sanctioning of social actions (p. 70). Giddens further distinguishes between allocative and authoritative resources. The former relate to abilities that make the domination over objects, goods and material phenomena possible. The latter concern the generation of domination over individuals and actors (p. 86). Concerning the institutions of society, Giddens says that symbolic orders, forms of discourse and legal institutions are concerned with the constitution of rules, political institutions deal with authoritative resources and economical institutions are concerned with allocative resources.

Giddens says that domination and power are phenomena that are characteristic for all types of society. He stresses that domination cannot be overcome as is often imagined by socialist theories (p. 84f). Giddens does not give an explicit definition of domination and power and he naturalises relationships of domination and exploitation. His theory affirms capitalist and class society. He does not even consider societies without classes and domination as possibilities of social evolution

Power can be seen as the disposition of means in order to influence processes and decisions in ones own sense. Domination refers to the disposition of means of coercion in order to influence others, processes or decisions. Domination always includes sanctions, repression and threats of violence. So power really is constitutive of all types of societies and the question is not whether one can abolish power, it is how power shall be distributed. Today, power in the areas of economics, politics and culture is distributed asymmetrically, but a wise society that would be socially and ecologically sustainable would have to progress towards a symmetrical distribution of power. Domination in contrast to power can not be distributed, but it can be overcome.

Our own model of society is a general one that does not only cover modern capitalist societies and that tries to avoid a naturalisation of relationships of domination/exploitation/class. Hence we do not speak of rules because they – as Giddens says – always include sanctions and domination, but we have the more general concept of decisions. Decisions are made in each type of society during the course of social relationships and by communicative actions, whereas rules that involve sanctions which are executed if they are not followed

are only characteristic for societies that are constituted by relationships of domination. In our modern societies, decisions take on the form of formal laws and informal habits

Giddens also does not speak of culture as a subsystem of society where social values and norms are being constituted. For Giddens, culture does not seem to be an important category of society. In his main work [The Constitution of Society; Giddens, 1997] which covers more than 450 pages, he only once writes about culture as it is seen by Freud, Marcuse and Elias [Giddens, 1997: 296f].

All of this shows that models of society should have a dialectical character: On one level they must be general enough in order to explain all possible types of societies, on the other there must be specific levels that help to explain specific formations of society (such as capitalism) and different phases of these formations. The model outlined here is a general one. It is possible to go one step further in order to describe our modern society as a capitalist one. On a third level, concrete modes of development can be distinguished which describe the different phases of capitalism that we have been experiencing. Currently we live in a postfordist, neoliberal and information-societal mode of development of capitalism [see Fuchs, 2001]. Giddens clearly fails to consider this dialectic of generality and speciality. He takes societies that are imprinted by relationships of domination, exploitation and class as a general standard of society. This is a typical western and imperialistic view that naturalises modern capitalistic society and generalises it as the essence of society. Giddens' theory hence can be characterised as essentialistic and sociological imperialism. In order to avoid such shortcomings a dialectical methodology should be followed in constructing sociological theories and models.

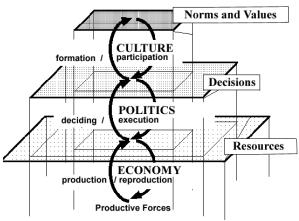


Figure 1: The constitution of social information [see also Fuchs, 2002; Fuchs et al., 2001]

In all social systems and formations of society there are three manifestations of information: resources, decisions and norms/values. They store information about past social actions and simplify future social situations because by referring to social information

the basics of acting socially do not have to be formed in each such situation. Social information can be seen as a durable foundation of social actions which nonetheless changes dynamically.

It can be found in all subsystems of society – the economy, politics and culture. Economic processes have to do with the production, distribution and allocation of use values and resources. The foundation of each economic process is formed by the productive forces. The latter can be seen as a system of living labour force and factors that influence labour. Living labour and its factors form a relationship that changes historically and is dependent on a concrete formation of society (such as capitalism).

The influencing factors can be – as suggested by Marx – summed up as subjective ones (physical ability, qualification, knowledge, abilities, experience), objective ones (technology, science, amount and efficacy of the means of production, co-operation, means of production, forms of the division of labour, methods of organisation) and natural ones. These forces can only be viewed in their relationship to living labour. The system of productive forces can never be reduced to these forces, the system is only possible in combination with human labour. This system is more than the sum of its parts, it is an integrated whole that lies at the foundation of economic processes.

Resources can be seen as social information on the economic level. The economy includes a double process of production and reproduction: Material resources that are necessary for society to exist (e.g. different products) are produced by making use of the system of productive forces on the one side. On the other hand, resources are also applied in order to reproduce the system of productive forces. Reproduction encloses e.g. the reproduction of living labour force (consumption, spare time etc.) and scientific progress.

Production and reproduction can be seen as the material basics of each type of society. Such a Materialistic view is not a reductive and vulgar one, if one considers that the political and economical superstructures depend on economic processes, but nevertheless work in relative autonomous ways and also influence economics in processes of downward causation. They are related in a dialectical way because economic influences on culture and politics can cause the emergence of new cultural and political phenomena and political and cultural influences on economics can cause the emergence of new economical phenomena.

Politics deals with decisions which refer to the way resources are being used and how they are distributed. Politics refers to decisions which influence the ways of life and the habits of the members of society. The latter always relate to material resources because culture and habitus as social phenomena always deal with the usage and distribution of material resources. The decisions which are being reached in a social and communicative way in the area of politics, are also a type of social information. Politics encloses a double process of deciding and executing: In relation to available resources, decisions are being reached in order to organise the functioning of society. These decisions

either take on coded or non-coded forms. Once they are reached, the next step is executing them. And executing decisions always means that resources of society are applied in a specific form.

Culture can be seen as the subsystem of society in which ideas, views, social norms and social values are being formed within the framework of habits, ways of life, traditions and social practices. The emerging social norms and values are a type of social information that comes into existence in the area of culture. Culture encloses a double process of formation and participation. On the one hand, social norms and values are constituted and differentiated in relation to already reached decisions. On the other hand, social norms and values are a foundation for further decisions and the differentiation of already existing ones. The type of participation determines if, how and to which degree individual actors and social groups can influence decisions which effect them.

Neither culture, nor politics are determined by economic processes. Each subsystem has a relative autonomy, nonetheless in modern capitalist societies economic processes have dominating effects. For the area of culture we follow views that stand in the tradition of the Cultural Materialism of Raymond Williams [1961] that has had tremendous influence on the whole area of Cultural Studies. Williams argues that culture includes the "whole way of life" [Williams, 1961: 122], inclu ding collective ideas, institutions, descriptions by which society reflects experiences and makes sense of them, ways and traditions of acting and thinking and intentions that result from it. Williams further stresses that culture involves the formation of values as social categories. Edward P. Thompson [1961] took up Williams' theory of culture and added the idea that the whole way of life and experience is influenced by class struggles and social conflicts.

All of this shows that culture is neither independent from political and economic processes, nor can it be reduced to these areas, nor is it determined by them. Already Antonio Gramsci stressed that superstructures cannot be reduced to the economic base and that culture involves the "creation of (new) world-outlooks" and morals of life [Gramsci, 1980]. Materialistic theory that deals with culture has always stressed cultural information, its relative autonomy and its relationship to socio-economic processes, only vulgar forms of Materialism reduce culture or politics to economics. Culture as the top level in our hierarchy depends upon economics and politics, it forms an integral whole of social life that includes the areas and ways of life we find in the areas of idealistic and material reproduction [Marcuse, 1937: 62]. Political and economic institutions and relationships have their own form of culture, and culture can only be thought in relationship with political and economic processes, although it has a certain degree of autonomy. The complex interplay of culture and politics is the area where hegemony – as a specific phenomenon of societies that are constituted by relationships of domination – is formed.

Figure 1 shows the processes of constitution and differentiation of social information. These processes form an integrated whole which encompasses the three subsystems of society (economy, politics and culture) and the manifestations of social information in these areas. Resources can also be termed economic information, decisions can be seen as political information and social norms/values as cultural information. Together we refer to them as social information. The productive forces form the base for the emergence of economic information which itself forms the base for the emergence of political and cultural information. The whole social system encompasses three cycles of self-organisation which result in the emergence of social information on an economic, a political as well as a cultural level. On the one hand, economical information influences the emergence of political and cultural information and political information influences the emergence of cultural information in processes of bottom-up-emergence. On the other hand, cultural information influences the emergence of political and economical information and political information influences the emergence of economical information in processes of top-down-emergence. Nonetheless, economics and economical information form the base of each type of society. They dominate, but never determine the various social processes and the formation and differentiation of social information.

Economics, politics and culture are interrelated and influence each other. The causality that applies to these relationships is not a mechanistic and deterministic one. An effect can not be reduced to a single cause. In society, we find a multidimensional and complex type of causality: One cause can have many effects, and one effect an ensemble of many causes. Society is a system with a high degree of complexity, hence causes and effects cannot be related to each other bijectively. One sub-system of the society does not determine the actions, structures and processes in other sub-systems. Society can not be reduced to simple mechanistic models of base and superstructures. But, at least in capitalist society, the economy dominates the other sub-systems; i.e., economics do not determine social actions and development of politics and culture, but it influences these sub-systems in such a manner that the latter are coined by the economical logic of capitalism that depends on the accumulation of capital and the production of commodities. But such influences can never be totally, as suggested by some types of Structuralist Marxism or the definition of Historical Materialism given by Frederick Engels [1884]. Such arguments overestimate social structures and do not leave enough space for alternative types of actions and thinking. This results in mechanistic and static models of society. But society is a complex system, it evolves dynamically and does not depend upon mechanistic causality. Politics and culture influence economics in various types of feedback processes.

# 3 Social Self-Organisation

Social co-operation can be seen as a social relationship in which the mutual references of the involved individuals (these are social interactions) enable all of them to benefit from the situation. By co-operating, individuals can reach goals they would not be able to reach alone. New qualities of a social system can emerge by social co-operation. The elements, i.e. individuals of this system are conscious of these structures which can not be ascribed to single elements, but to the social whole which relates the individuals. Such qualities are constituted in a collective process by all individuals that are effected and they are emergent qualities of social systems.

Social competition can bee seen as a social relationship in which the social interactions as well as the existing relationships of power and domination enable some individuals or social sub-systems to take advantage of others. The first benefit at the expense of the latter who have to deal with disadvantages that arise from the situation. New qualities of a social system can emerge by social competition. The elements/individuals of this system are conscious of these structures which can not be ascribed to single elements, but to the social whole which relates the individuals. But these qualities are not constituted collectively by all concerned individuals, they are constituted by subsystems of the relevant system that have more power than others, dominate others or can make use of advantages that derive from higher positions in existing social hierarchies. These qualities reflect relations of domination in social systems.

Social information can have a co-operative or a competitive character. This depends on the way of its constitution and the structure of society. If social information is established by interrelated references of all individuals who are effected by its application and if each involved individual has the same possibilities and means of influencing the resulting information structures in his/her own sense and purpose, the resulting macroscopic structure is a form of co-operative social information. This type of information is collectively established by co-operation of the involved actors as an emergent quality of a social system in a process of social self-organisation (II). We call this form of social information inclusive social information. Here social self-organisation (II) denotes that the individuals effected by the emerging structures determine and design the occurrence, form, course and result of this process all by themselves. They establish macroscopic structures by microscopic interrelations.

If social information is not constituted in processes of co-operation by all individuals that are effected, but by a hierarchic subsystem that has more power than other subsystems, dominates others or can make use of advantages that derive from higher positions in existing social hierarchies, the resulting structures are types of qualities that result from social competition – in this case we speak of exclusive social information. Exclusive social information is a new, emergent quality of a social system. It is constituted by social competition and reflects relationships of domination and the asymmetric distribution of power in the relevant social system. We can not say that exclusive social information is established in a process of social self-organisation because not all concerned individuals can

participate in this process and can influence it in the same way using equally distributed resources and means.



Figure 2: The dialectical relationship of individual and social information

Considering the self-organisation (I) (=re-creation) of social systems, it can be said that by relating actions and hence individual consciousness of subjects socially, social information emerges. Social information can be seen as a type of social consciousness that emerges from the social relation of the individual consciousness of participating subjects in a social situation. A social system organises itself permanently in order to maintain itself and it permanently produces and changes social information. As shown in figure 2 this is a dialectical process: Social information emerges from individual information. The subjects of society create and change social systems by relating their actions and hence their consciousness. New patterns emerge from this process. On the other hand we have a process of dominance: Individual consciousness can only exist on the foundation of social processes and social information. Social information restricts and enables individual consciousness and action. In this dialectical relationship of individual and social information, we have the bottom-up-emergence of social information and the top-down-emergence of individual information. On the macroscopic level of the social system, new social information can emerge during the permanent self-organisation/re-creation of the system. On the microscopic level, social information takes its effects in a process of domination and new individual information can emerge. So domination can be seen as a type of top-down-emergence. The endless movement of individual and social information, i.e. the permanent emergence of new information in the system, is a two-fold dialectical process of social self-organisation (I) that makes it possible for a social system to maintain and reproduce itself.

The world system we live in depends on exclusive social information in the areas of economy, politics and culture. So it can be said that it has a very low degree of social self-organisation (II). The exclusive character of social information is related to general antagonisms of society. An alternative would be a social systems-design [see Banathy, 1996] that relies on co-operation instead of competition in all social areas. This would include participative structures that guarantee a high degree of autonomy for the individuals and enable them to fully participate in reaching decisions that effect them. So such a social system relies on social self-organisation (II) of all areas of society: the economy, politics, culture, the workplace, friendships, personal relationships, education etc. Such

an integrative democracy as a self-organising, selfinstitutioning and inclusive society could maybe overcome some of the shortcomings and problems that are produced by modern society. Thus far we have not accomplished getting rid of the diverse manipulations in society that trigger the domination of social competition and exclusive social information in order to become self-determining, autonomous and altruistic individuals that can choose and differentiate their individual and social information all by themselves. "[We are facing] the threat of extinction of our species. Perception of this tendency [...] suggests an imperative of (literal) survival of our species, namely unification of whole humanity, that is, replacing competition by cooperation on all levels of organization. [...] I conceive of a civil society as one in which every "other" is seen a potential cooperator, not a compet itor, nor an exploiter, nor a boss, nor an underling, nor a customer" [Rapoport, 2001: 10+12]. "[All of this] means that the role of competition should be progressively minimized and replaced by cooperation. [...] Frankly, this view goes against the present triumphalist current of market economy orthodoxy" [Rapoport, 1998: 15].

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