

## II.4. Social Systems

### **The Autocreation of Communication and the Re-creation of Actions in Social Systems**

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We look at a creative social process from two angles: from the point of view of communication and from the point of view of social action. From the perspective of communication, social self-organisation denotes the permanent creation of reality through concatenation of communication units in a self-referential mode (auto-creativity). From the perspective of the individual actor, social self-organisation denotes a permanent interaction process related and coupled to the communication structures (re-creativity). Depending on which level of analysis one focuses, one can either stress communicative self-referentiality (e.g. Niklas Luhmann) or the interrelations of actors (e.g. Anthony Giddens and Pierre Bourdieu).

For the purpose of explaining the whole process of social creativity, we try to unify the different approaches, as if they were part of a major collective and co-operating intelligence.

The main argument is that the creativity of social systems is based on autopoietic or self-reproducing processes on both the level of communications and the level of actors and that on both levels creativity is an important feature.

Trying a dialectic synthesis between these two major approaches, we look at auto-creativity as dialectically (that means: in terms of complementary opposites) coupled to individual re-creative action processes. Vice versa, we look at re-creativity as based on auto-creative relationships of actors. In order to co-ordinate their interactions, actors self-produce in a social process and use symbols in communicative processes. The notion of communication covers a social reality of its own, where individual action is a necessary condition, but can't be reduced to the individuals. Communication takes place, wherever and however two or more actors are related practically.

Communication is based on action, social action is based on communication. In social reality, we find that the evolution of society is based on communicative action. Jürgen Habermas defined communicative action as referring "to the interaction of at least two subjects capable of speech and action who establish interpersonal relations (whether by verbal or extra-verbal means). The actors seek to reach an understanding about the action situation and their plans of action in order to coordinate their actions by way of agreement. The central concept of

*interpretation* refers in the first instance to negotiating definitions of the situation which admit of consensus“ (Habermas 1984: 86). In communicative action, actors try to co-ordinate plans of action and to achieve mutual understanding by their symbolic interactions. The personal encounter can also be an indirect one, e.g. mediated by communication technologies such as letter, telephone or a computer network. Therefore, communicative action is based on direct or indirect personal encounter mediated by a shared symbolic system. In order to achieve a common understanding, certain claims to validity must be fulfilled (comprehensibility, truth, truthfulness, rightness). The technological mediation of communication certainly makes such a fulfillment more difficult, but not impossible.

As shown in figure 1, global social structures result from the practical communicative relationships of actors and subsystems and these structures enable the permanent reproduction process of communications and actions. In this paper we discuss how structures are coupled with communications on the one hand and with actions on the other hand. By “deconstructing” the real world processes into two analytical levels, we show that both the action and the communication level have their internal “autopoiesis”<sup>1</sup>. In figure 1 we use two spirals instead of arrows in order to show that the relationships between communicative actions and global structures can be characterised by non-linearity, complexity and emergence. Due to the creativity of social systems, these systems are always non-linear and there is a certain degree of contingency in their behaviour.

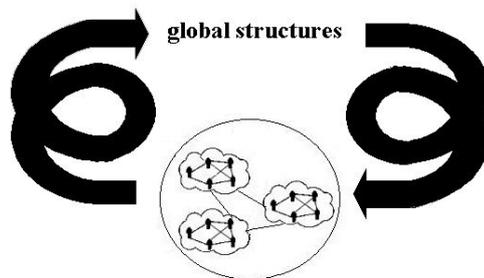


Fig. 1.: The self-reproduction of communicative action systems

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<sup>1</sup> We use the term „autopoiesis“ in a metaphorical sense. Autopoiesis refers to the biological self-organisation of living systems. Social systems are more than just autopoietically self-reproducing, they are auto-creative and re-creative.

### **1. The Quality of Communication: The Auto-Creativity of Social Communication Systems**

We argue, that the difference of the social information process, which distinguishes it namely from the biotic one, refers particularly to the capabilities of human communication and social relationships, like productivity, mutuality and creativity. In their combination, these capabilities allow higher degrees of freedom in the self-organisation of social systems, resulting in processes of social variation and selection. In society, communication goes beyond the mechanic and biotic information processes. While physical and biotic systems evolve in a given environment, social systems, based on signs and symbols, evolve to a point where they are able to create their environment themselves. The dialectic opposition between society and nature gets a new perspective in communicative environments, where the socio-ecological structures are maintained by expectations which point to the future. Communication takes places as a collective effort to compensate the uncertainty of the social process to which the individuals are exposed. In this effort, endless circuits of reflection give the social information process degrees of freedom not limited by a given environment, but self-sustained.

Based on their capacity to operate virtual information (symbols, ideas), social systems develop a variety of subsystems not produced by nature. This gives way to a new quality of interaction: communication (see Stockinger 1998, 2001). Through communication social systems are able to deal with all kinds of elementary, intermediary and systemic capabilities of the psychic systems coupled to them, like reflectivity, adaptability and creativity. They allow to differentiate and combine these faculties at the collective level, which makes them able to change their forms and contents of expectations almost immediately. Therefore, mechanical and technical information models, which work with metaphors like "information exchange, emission and reception", may not be applied to social systems. At the stage of social interaction, they reveal themselves insufficient to explain social complexity, variety and mutability. At the basic levels, signals are processed in form of orders or commands, and emitters and receptors do not pass trivial stages, even if their information is assumed to be disturbed by the noise of a channel (Shannon/Weaver 1949). At the biological level, the channel is part of the environment, and mutations occur by coincidence, guiding the autopoietic process. In distinction, the social system's autopoiesis and re-creativity does not depend on external conditions of a given social environment. It is auto-creative. Social systems do not only create themselves but also their own environment. Even their physical and biological environment is processed in form of a social code of signs, symbols and signals. Immersed in a social environment, totally produced by it, social systems (communication + action systems) process their world in terms of

sense and meaning which is not repeatedly the same, but changes when creativity is required.

By auto-creation the “autopoiesis” of a communication system is realised and self-referential production circles of communication emerge which are mediated by global structures (see fig. 2). “Social systems use communications as their particular mode of autopoietic reproduction. Their elements are communication which are recursively produced and reproduced by a network of communications and which cannot exist outside such a network” (Luhmann 1988: 174).

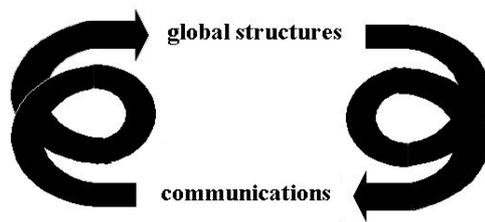


Fig. 2: The auto-creation of communication systems

Social structures are based on communication circuits, whose stability is permanently challenged by the principle of “order from noise”, where noise is “internally” produced (“improbability of communication”, selection of information, message and comprehension) or comes from “outside”, from interactions of individuals. This affects social comprehension through a “shared symbolic system” (culture, Talcott Parsons): under conditions of social creativity (structural change) in communication society, the participants lack direct access to each ones “world“, as it was the case in traditional society. This is a logic result of a secular megatrend called “individuation”. Identity is not only the difference to the other one, but is based on the difference between Identity and Difference. A next-order observation-level shows up.

At this level, the relation to the other, is already a mediated one. It is open. It is neither completely determined, nor completely indetermined. There is a possible “Butterfly-effect” between cause and effect. Actio non est reactio. That’s why the human being is able to change his views hence social information relationships result in a faster differentiation, leading to constructive reflection (konstruktive Widerspiegelung). A new quality shows up: we call it *self-creation*. It is based on interaction, communication and expectations. Due to the constant possibility that expectation will not be fulfilled, additional abilities to deal with an uncertain future

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develop: collective intelligence and co-operation. Co-operation requires action, and a whole action theory is available, as we will show later. Communications stays in the realm of collective intelligence. It is the base, but not the result, of intelligent co-operation.

As Stockinger/Fenzl (1992) pointed out, collective intelligence only profits, when certain conditions are fulfilled: the basic ones are peace (construction, not destruction), truth (non-alienation), love (cohesion) and news (information). These conditions lead to freedom (out of necessity, Marx), and to individuals responsible for the conscious production of their lives. The practical use of almost infinite degrees of freedom is only possible when self-organisation, based on interactivity and mutuality, and not heteropoiesis, based on command and imposition, is the hegemonic form of regulation. The increasing capacity of interactive communication and information processing produces the destabilisation of human life worlds, exposing them to social uncertainty. While industrial society was still comparable to an organic being, communication enhances the potential of the social information process at the micro social level. That means that the potential ability of communication to allow the social units practically unlimited degrees of freedom, only bound by self-control of omnipresent humanity, increases as they do not depend any more on given or prefabricated social environments. As long as the social information process was repressed by traditional and commendatory structures, this was not the case. When de-repression and democratisation unfolded worldwide in the last decades, new degrees of social mutuality were added, and communication began to reveal itself as the social system's capacity to produce its own environment. Only nowadays this overall reflexive process created and used by humans, results in the foundations for the conscious production of their lives. There are no more sectors of human life left, where communication would not lead or influence social actions. Luhmann argues that "the theory of selfproducing, autopoietic systems can only be transferred into the range of action systems, if one assumes that the elements, of which the system consists, exist only temporarily and therefore have to be reproduced again and again by the elements of the system itself" (Luhmann 1984: 28).

Therefore, we observe a double meaning of the social process. From the point of view of the communication systems, with their own subjectivity (self-reference), individual actions are not subjective but objective data in the sense of a "conditio sine qua non". They rely on individual action whose subjectivity as cognitive systems is built up on information as a difference that makes a difference. Usually, such differences emerge as unexpected, almost casual factors. Therefore, information has a certain degree of uncertainty for the observing actor. This

uncertainty enters the communication process as objective information (data flow, noise patterns).

The objective aspect of information (for individuals) lies in the fact that social relationships reflect their acts in reference to the output of the communication system. When actors communicate, information “catalyses” an objective relationship between them because of the involved co-reflection of the communication level. Because of this dialectic relation between action and communication, this reflection (*Widerspiegelung*) is not a mechanical reproduction of data by a receiver. Communication is therefore not a linear mutual reaction of one communication partner to the symbolic actions of the other partner. They react reflexively, mediated by the communication system. For the actors, the result of these selections, which leads inevitably to action (or to the collapse of the system, if no communicative action follows), appears as objective information.

The information effect of actions, when coupled to a communication system, is subject to an emergent synthesis of three selections (selection of information, uttering and understanding). Its because of the mediation by communication (with its own selections) that the actions are not determined exactly. They are “free” in the sense that they are, to a certain extent, not predictable by and reduceable to the dominating structures, regularities and redundant actions that can be found in the social world. Such reflective reactions are neither completely determined, nor completely undetermined, Luhmann calls this “contingency”. Their causality can be characterised as relative chance and incomplete determinism. Although objective information (secured by a communication structure) reproduces milliards of times per day relatively stable, a small deviation may lead, in certain critical situations (which occur quite frequent nowadays) to a very improbable state (Butterfly effect).

The degrees of uncertainty are due to different degrees of recognition and legitimisation of norms, values, cultural contexts, interpretative schemes, tastes and life-styles. The degree of freedom depends on the revolution of structures of durable and institutionalised behaviour which inhibit creative, deviant, subjective behaviour. On the other hand, communication structures store and fix social knowledge and hence they simplify the orientation of social actions. This may be seen, by an actor who looks for certainty, as a positive quality. But structures can turn out to be counterproductive, when it comes to the question of social change. In phases of quickly changing information, when differences arise massively, the multiple information relationships we enter daily affect the individuals’ knowledge and other experiences. When institutionalised structure orientation is missed or dismissed, the human being is able to change his views hence social information

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relationships result in a faster differentiation, leading to constructive reflection (konstruktive Widerspiegelung). This reflection involves communication where different alternative interpretations and behaviours are possible. It depends on the degree of participation of the actors and of the democratisation of the communication system to which extent interpretation and critical reflection are activated.

### 2. The Quality of Actions: The Re-Creativity of Social Action Systems

Social structures don't exist externally to agency, but only in and through agency, in mutual penetration. Agency means the field of real interaction. By social interaction, new qualities and structures emerge, even if they are not perceptible at their initial stages. They cannot be reduced to the individual level, but they may be attributed to them by the auto-creative communication level. The process of bottom-up emergence is called agency, invention or creation. Emergence in this context means the appearance of at least one new systemic quality that can not be reduced to the elements of the communication system to which the action is coupled. So this quality is irreducible and it is also to a certain extent unpredictable, i.e. time, form and result of the process of emergence cannot be fully forecasted by taking a look at the elements, their history and their actual interactions. Social structures are coupled to and influence actions and thinking, although not linearly. They constrain and enable the practice of social actors, "guiding" them in this way. This is a process of top-down emergence where new properties of actors and groups can emerge. The bottom-up- and the top-down-process together form a cycle that permanently results in emergence on the level of structures and the level of actors. This whole cycle is the basic process of systemic social self-organisation that can also be called re-creation (see fig. 3)<sup>2</sup>. By permanent recurrence to processes of agency, constrained/enabled actions co-evolve within a social system, which therefore can maintain and reproduce itself. Like communication, agency again and again creates its own unity and maintains

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<sup>2</sup> Humans have the ability for self-reflection (Jantsch 1979: 111, 229f). This results in the ability of anticipation which makes the active, creative design of the future possible. Self-reflexive systems can map the outer world onto thoughts, ideas and plans which enables them to manipulate their environment. Jantsch considers social systems also as re-creative ones because they can create new reality (Jantsch 1979: 305), the socio-cultural human being has the ability to create the conditions for his further evolution all by himself (343). The self-reflection that is characteristic for humans means to Jantsch also that they can and must take responsibility for the world they live in.

itself. Social structures enable and constrain the practice of social actors and are a result of social actions.

Society reproduces human actors as social beings and human actors produce society by socially co-ordinating human actions. Man is creator and created result of society, structures and human actors produce each other mutually. Such a conception of social self-organisation acknowledges the importance of the human being and its actions in social systems. Saying that man is creator and created result of society corresponds to Anthony Giddens' formulation that in and through their activities agents reproduce the conditions that make these activities possible (Giddens 1984: 2).

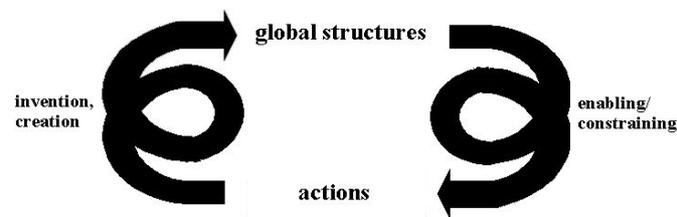


Fig. 3.: *The re-creation of social systems*

Re-creation denotes that actions, as moments of a social system, permanently change their communicative environment. This enables the social system, as a necessary condition for it, to change, maintain, adapt and reproduce itself. The term re-creation refers to the ability of humans to consciously try to shape and create social systems and structures, an ability that is based on self-consciousness and the reflexive monitoring of action. Social action systems are re-creative ones because they can create new reality, not from zero, but by changing the old one. The socio-cultural human being has the ability to create the conditions for his further evolution all by himself. Creativity means the ability to spontaneously, gradually or revolutionary change actual settings, creating something new that seems desirable and helps to achieve defined goals. It is not an isolated human quality, but linked to the co-evolution of other human social qualities.

The human being is a social (= communicatively interacting), self-conscious (= it has awareness of its own), creative (= not repeating), reflective (= self-referenced), cultural (= it depends on media), symbols- and language-using, active natural, labouring, producing, rationally abstracting, objective, corporeal, living, real, sensuous (= sense producing and processing), anticipating (= based on

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expectations), visionary, imaginative (= capable to deal with virtual reality), expecting, designing, co-operative, wishful, hopeful being that makes its own history, with chances to strive towards freedom and autonomy (for details see Fuchs 2002c, d). It can also be the case that it doesn't make use of its possibilities and strives towards competition and co-destruction.

The human being can create images of the future and actively strive to make these images become social reality. Within a collective intelligence of mankind, individuals can anticipate possible future states of the world, society as it could be or as one would like it to become; and they can act according to these anticipations. Each one has its ideals, visions, dreams, hopes and expectations which are based on the ability of imagination which helps the individual to go beyond existing society and to create alternatives for future actions. Based on creativity, individual or social entities design a society. This creation, as a human activity, goes beyond facticity, creates visions of a desirable future and looks for a solution to existing problems.

Design creates new knowledge and findings. Man designs machines, tools, theories, social systems, physical entities, nature, organisations etc. within social processes. Such an understanding of design as a fundamental human capability takes into account man's ability to have visions and utopias and to actively shape society according to these anticipated (possible) states of the world.

Terming the self-organisation of society re-creation (of action systems) acknowledges as outlined by Giddens the importance of the human being as a reasonable and knowledgeable actor in social theory (for a discussion of the relationship between structuration theory and social self-organisation see Fuchs 2002a, Fuchs 2003a). Giddens himself has stressed that the duality of structure has to do with re-creation: "Human social activities, like some self-reproducing items in nature, are recursive. That is to say, they are not brought into being by social actors but continually *recreated* by them via the very means whereby they express themselves as actors" (Giddens 1984: 2).

Saying that society is a re-creative or self-organising action system means that the structural properties of social systems are both medium and outcome of the practices they recursively organise and both enable and constrain actions. Structuration theory holds that the structures drawn upon in the production and reproduction of social action are at the same time the means of system reproduction (Giddens 1984: 19). In this respect, human social activities are recursive because they are continually recreated by the actors whereby the latter express themselves as actors.

Social structures don't exist outside of and are based on actions, they are "rules and resources, or sets of transformation relations, organised as properties of social systems" (Giddens 1984: 25). In and through their activities agents reproduce the conditions that make these activities possible (ibid.: 2). "According to the notion of the duality of structure, the structural properties of social systems are both medium and outcome of the practices they recursively organise" (ibid.: 25) and they both enable and constrain actions (ibid.: 26). Social systems and their reproduction involve conscious, creative, intentional, planned activities as well as unconscious, unintentional and unplanned consequences of activities. Both together are aspects, conditions as well as outcomes of the overall re-creation/self-reproduction of social systems.

The mutual relationship of actions and structures is mediated by the habitus, a category that describes the totality of behaviour and thoughts of a social group. The habitus is neither a pure objective, nor a pure subjective structure. The habitus means *invention* (Bourdieu 1977: 95, 1990b: 55). In society, creativity and invention always have to do with relative chance and incomplete determinism. Social practices, interactions and relationships are very complex. The complex group behaviour of human beings is another reason why there is a degree of uncertainty of human behaviour (Bourdieu 1977: 9, 1990a: 8). Habitus *both* enables the creativity of actors and constrains ways of acting. The habitus gives orientations and limits (Bourdieu 1977: 95), it neither results in unpredictable novelty nor in a simple mechanical reproduction of initial conditionings (ibid.: 95). The habitus provides conditioned and conditional freedom (ibid.: 95), i.e. it is a condition for freedom, but it also conditions and limits full freedom of action. This is equal to saying that structures are medium and outcome of social actions. Very much like Giddens, Pierre Bourdieu suggests a mutual relationship of structures and actions as the core feature of social systems (for a discussion of the relationships between Bourdieu's theory and social self-organisation see Fuchs 2002b). The habitus is a property "for which and through which there is a social world" (Bourdieu 1990b: 140). This formulation is similar to saying that habitus is medium and outcome of the social world. The habitus has to do with social practices, it not only constrains practices, it is also a result of the creative relationships of human beings. This means that the habitus is both *opus operatum* (result of practices) and *modus operandi* (mode of practices) (Bourdieu 1977: 18, 72ff; 1990b: 52). The concept of the habitus reflects the importance of incomplete determinism and relative chance in social systems. There are certain degrees of freedom of action and communication, social relationships are always non-linear, complex and result in emergent properties.

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In society one can find more global and more local levels, global structures are e.g. state laws, a nation state, the property structure, capital, global networks and institutions etc. One more local levels one will find certain subsystems (economy, politics, culture, media, family, education, art etc.), social organisations and finally individual actors. There might be stability and coherence on a higher level for a long time, but this stability can only be maintained by dynamics and the permanent emergence of new qualities on lower levels. In phases of stability, order on a higher level results from permanent change on a lower level. There is a permanent flux and movement in society. As Pierre Bourdieu has shown, this has to do with social and symbolic struggles.

From time to time, a social systems enters crisis and phases of instability due to social antagonisms. The auto-creation and re-creation of social systems takes place permanently. This is a very general level of analysis. Phases of stabile auto- and re-creation result in phases of instability where the future development of the system is highly undetermined. The objective structures condition a field of possibilities, it is not pre-determined which alternative will be taken. In such phases of crisis and bifurcation, agency and human intervention play an important role in order to increase the possibility that a certain desirable alternative will be taken. Certainty can't be achieved, but agency also is not made impossible by the principles of self-organised social change. The whole movement of social self-organisation is based on a dialectic of chance and necessity.

Ascending from the abstract to the concrete there are three levels of social analysis: 1. society in general, 2. the social formation, 3. modes of development (see Fuchs 2002d, e). On the first level, society is considered as an auto-creative and re-creative system, i.e. global structures and communicative actions are producing each other mutually and develop in space-time. A social formation is a concrete historical and societal epoch that is characterised by a concrete expression of social structures and relationships that remain cohesive from beginning till the end of the formation although they change dynamically on a still more concrete level. There is homogeneity within diversity of social structures and relationships of a formation of society. A formation of society is itself a sequence of different phases. Such phases are our third level of analysis and are also called modes of development, a term which describes a temporal coherent unity of economic, political and cultural aspects within a social formation.

Auto-creation and re-creation take place permanently in all social systems and societies. These processes can be described on level one of social analysis. A phase of instability can result in the reproduction of a social formation, i.e. a new mode of development within the old social formation or a new social formation. Phases

of instability and more concrete social analysis are aspects of the levels two and three.

There are two types of re- and auto-creation: the integrative, reproductive one and the disintegrative, discontinuous ones (see Bourdieu 1986: 165). They don't exist independently because it is determined that each social formation and mode of development enters a phase of instability, but it is uncertain when this will be the case, what the exact reason and the outcome will be. We both find continuity and discontinuity in society. Social systems are historical systems (Wallerstein 1974), they have a beginning and an end, as well as auto- and re-creative dynamics in-between.

### **3. Conclusion: Communication, Social Action and the Role of Co-operative Intelligence**

We look at co-operation as a collective process that makes use of the auto-creativity and re-creativity of social systems in order to achieve defined goals more efficiently. Schmidt/Bannon (1992) argue that mutual dependence is a condition for co-operation: "people engage in co-operative work when they are mutually dependent in their work and therefore are required to co-operate in order to get the work done. [...] Being mutually dependent in work means that A relies positively on the quality and timelines of B's work and vice versa" (Schmidt/Bannon 1992: 13). We argue that interdependence may be a necessary condition, but it is not sufficient for co-operation to emerge. Because even if some tasks might be reached individually, actors engage in co-operative relationships because they can achieve goals more efficiently and more quickly together with others who share similar assumptions and goals. Co-operation can be accomplished across spatial and temporal distances because modern technologies enable the disembedding and reembedding of social relationships. Co-operation involves mutual learning and mutual aid. Co-operation means social situations and processes where human actors co-ordinate their actions and communications in such a way that the social system makes use of its auto- and re-creativity and creates a new reality that represents a shared goal (see also Oberquelle 1991<sup>3</sup>).

Co-operation means that actors communicatively make concerted use of existing rules and resources in order to create new rules and resources (cf. Fuchs 2003b for

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<sup>3</sup> "Unter kooperativer Arbeit sollen Arbeitssituationen verstanden werden, in denen mehrere Personen zusammenarbeiten zwecks Erreichung eines Ergebnisses, welches unter den gegebenen Randbedingungen nur gemeinsam, aber nicht einzeln erzielt werden kann".

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a more detailed discussion of co-operation in complex systems). Rules and resources (structures) are medium and outcome of co-operation in communicative settings with positive “symbiotic” relationships. We call them intelligent relationships, they are based on *collective intelligence* or *wisdom* which describes social situations, processes and states where there is a participatory constitution, design and usage of rules and resources and which are considered fair, just and fulfilling by the involved actors, within the framework of individual participation.

A system and its design can be considered as *participatory* if actions are based on learning: the users’ experiences, values, ideas, wishes and visions are reflected not only individually, but in relation to a communication system in which intelligent actions are elementary. Users are enabled to understand the system and create their role in the system, if the design principles of the coupled communication system aims at creating consensual context among them. Such a design ensures that people will take part more effectively and at a deeper level of commitment in the design process and systemic evolution (see Banathy 1996, Ackoff 1981)

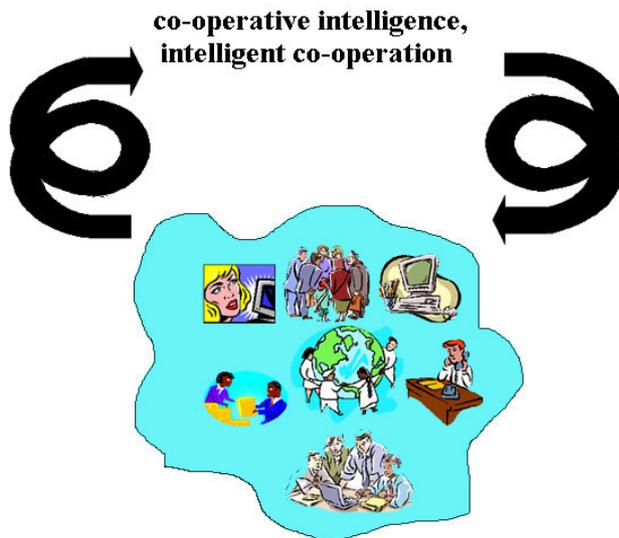
Collective intelligence means the communicative problem solution capacity of social systems and involves self-development and self-determination. “Collective intelligence is a form of universal distributed intelligence, constantly enhanced, co-ordinated in real time, and resulting in the effective mobilisation of skills“ (Lévy 1997: 13). In collective intelligence there’s mutual recognition and enrichment of individuals, skills are effectively mobilised (ibid.: 14ff). CI is constantly enhanced an co-ordinated in real time, individual acts are co-ordinated and evaluated in real time, according to a large number of criteria that are themselves constantly re-evaluated in context (ibid.: 17). In CI there is a collective vision and awareness of how different communication and actions are integrated (ibid.: 16). The actors of a CI are unique and in a permanent metamorphosis, they are nomadic. CI has to do with norms, values and the selection of alternative communications and actions. Computers are mechanistically operating machines, they have almost no degrees of freedom in their programmed behaviour, hence there is no *artificial* CI, only communicative and human CI.

Actors have certain goals and there are different ways of reaching them. Combining certain ways might be symbiotic in such a way that the goals don’t interfere and by co-operation all participating actors can benefit from each other and reach their goals. A social “symbiosis” is a communicative setting where all actors benefit and no-one loses and a positive, intelligent whole emerges by co-operation. By co-operation collective intelligence is reached, hence one can also speak of *co-operative intelligence*. Social systems are problem-solving systems. In order to do so, they are auto- and re-creative, they create new reality and new

environments. These systemic capabilities can be designed in different ways, co-operation is one of them. By communicating and co-operating, desirable social settings and mutual benefits can be reached.

New media allow information to be distributed worldwide as an abundant and therefore almost free good (Stockinger 2001). The problem does not lie any more in the possession or the exchange of information, but in the production of socially significant sense, processed in communication, worldwide and instantly. The restoring of feeling present, produced by the use of interactive media plus the advantage of mass-communication gives the social environment a new quality: mass interactivity. The new dimension reveals how society is constructed virtually by distributed communications, which can lead to the autopoiesis of communities of participants. In such communities there is a participatory, co-operative production and usage of rules and resources. A participatory and co-operative usage of new media within participatory, co-operative social settings can enrich communication and foster collective intelligence in co-evolution with intelligent co-operation.

There are different forms of communication, action and designing society. There are also different ways of co-operating. Participatory co-operation can be Intelligent Co-operation so that all involved communication partners have advantages and can benefit. Intelligent co-operation is a way of creating new reality in auto- and re-creative loops. Auto- and re-creation processes result in new global structures. The relationships between these structures and communicative actions are non-linear and complex ones which result in emergent properties on both sides. By intelligent co-operation structures can emerge that enable a participatory and sustainable design of society and social systems. If this is the case, one can speak of the emergence of Co-operative Intelligence. Fig. 4. illustrates the emergence of Co-Operative Intelligence and Intelligent Co-Operation in auto- and re-creative loops where social actions and communications are co-ordinated intelligently so that a new intelligent whole emerges that enables a participatory and sustainable design by acting and communicating. Table 1 shows the similarities and differences between the concepts of Collective Intelligence and Intelligent Co-operation/Co-operative Intelligence.



*Fig. 4.: Intelligent Co-operation/Co-operative Intelligence*

A comparison shows that collective intelligence is related to the communication quality of a social system, while intelligent co-operation refers to the quality of social actions:

<b>COLLECTIVE INTELLIGENCE (P. Lévy)</b> Communication quality	<b>INTELLIGENT CO-OPERATION, CO-OPERATIVE INTELLIGENCE</b> (Stockinger/Fuchs) Action quality
A form of universal distributed intelligence, constantly enhanced, co-ordinated in real time, and resulting in the effective mobilisation of skills	A form of global co-operation, based on intelligent actions enhanced by communication and resulting in the effective application of mobilised qualities
mutual recognition and enrichment of individuals rather than the cult of fetishized or hypostasized communities	Recognition and enrichment of individuals and their communicative environments, neither fetishized nor hypostasized
Intelligence is constantly enhanced.	Co-operation is constantly enhanced,

Constantly better in getting better	getting constantly better in getting better. The coupled intelligence “learns”
Intelligence is co-ordinated in real time	Co-operation co-ordinates intelligent actions
Skills are effectively mobilised	The whole set of skills as a quality of a social system is effectively mobilised
Collective intelligence must not be confused with totalitarian projects involving the subordination of individuals to transcendent and fetishistic communities	Totalitarian projects may not be confused with intelligent co-operation, as co-operative intelligence is distributed and therefore, by “nature” contrary to any type of involuntarily subordination.
Education based knowledge is a necessary condition for collective intelligence to emerge.	Education is not necessary, but wishful. Even if individuals might be stupid, their action can result in an emergent behaviour that is globally intelligent and enhances their individual skills and abilities.
Individual acts are co-ordinated and evaluated in real time, according to a large number of criteria that are themselves constantly re-evaluated in context.	Social actions realised by individuals in the name of a co-operative (das Kooperativ), are evaluated according to one criteria: do they or do they not avoid social conflict. By avoiding conflict, there is a chance of co-operation to emerge.
We pass from the Cartesian cogito to cogitamus.	We pass from cogitamos to co-agitamos

Tab. 1.: Similarities and differences between the concepts of Collective Intelligence and Intelligent Co-operation/Co-operative Intelligence

**References:**

- Ackoff, Russell L. (1981) *Creating the Corporate Future*. New York. Wiley.
- Banathy, Bela H.(1996) *Designing Social Systems in a Changing World*. New York, NY. Plenum.
- Bourdieu, Pierre (1977) *Outline of a Theory of Practice*. Cambridge. Cambridge University Press.

### The Autocreation of Communication and the Re-Creation of Actions

Bourdieu, Pierre (1990a) *In Other Words. Essays Towards a Reflexive Sociology*. Cambridge/Oxford. Polity Press.

Bourdieu, Pierre (1990b) *The Logic of Practice*. Stanford. Stanford University Press.

Fuchs, Christian (2002a) *Some Implications of Anthony Giddens' Works for a Theory of Social Self-Organisation*. INTAS Project "Human Strategies in Complexity"-Research Paper. In: *Emergence*, Vol. 4, No. 3, pp. 7-35.

Fuchs, Christian (2002b) *Some Implications of Pierre Bourdieu's Works for a Theory of Social Self-Organisation*. INTAS Project "Human Strategies in Complexity"-Research Paper. In: *European Journal of Social Theory*, Vol. 6, No. 4 (forthcoming).

Fuchs, Christian (2002c) *Concepts of Social Self-Organisation*. INTAS Project "Human Strategies in Complexity"-Research Paper No. 4. <http://www.self-organisation.org/results/papers/papers/pdf/hsicpaper4.pdf>

Fuchs, Christian (2002d) *The Role of the Individual in the Social Information Process*. In: *Entropy* (<http://www.mdpi.org/entropy>), Vol. 5, No. 1., pp. 34-60.

Fuchs, Christian (2002e) *Krise und Kritik in der Informationsgesellschaft. Arbeiten über Herbert Marcuse, kapitalistische Entwicklung und Selbstorganisation*. Norderstedt/Vienna. Libri BOD.

Fuchs, Christian (2002f) *Modern Society – A Complex, Evolutionary, Self-Organising, Antagonistic System*. INTAS Project "Human Strategies in Complexity" (<http://www.self-organisation.org>) Research Paper. Publication forthcoming.

Fuchs, Christian (2003a) *Structuration Theory and Social Self-Organisation*. In: *Systemic Practice and Action Research*, Vol. 16 (2003), No. 2, pp. 133-167.

Fuchs, Christian (2003b) *Co-operation in Complex, Self-Organising Systems*. In: *Triple C: Cognition, Communication, Co-operation*. Vol. 1 (2003), No. 1 (forthcoming).

Giddens, Anthony (1981) *A Contemporary Critique of Historical Materialism. Vol. 1: Power, Property and the State*. London/Basingstoke. Macmillan

Christian Fuchs and Gottfried Stockinger

- Giddens, Anthony (1984) *The Constitution of Society*. Berkeley. University of California Press.
- Giddens, Anthony (1985) *A Contemporary Critique of Historical Materialism. Vol. 2: The Nation-State and Violence*. Cambridge. Polity Press
- Giddens, Anthony (1993) *Sociology*. Cambridge. Polity Press.
- Habermas, Jurgen (1984) *The Theory of Communicative Action*. Boston. Beacon Press. Vol. 1
- Haralambos, Michael/Holborn, Martin (1991) *Sociology. Themes and Perspectives*. London. CollinsEducational.
- Jantsch, Erich (1979/1992) *Die Selbstorganisation des Universums. Vom Urknall zum menschlichen Geist*. München/Wien. Hanser.
- Lévy, Pierre (1997) *Collective Intelligence. Mankind's Emerging World in Cyberspace*. New York. Plenum.
- Luhmann, Niklas (1984) *Soziale Systeme – Grundriss einer allgemeinen Theorie*. Frankfurt. Suhrkamp.
- Luhmann, Niklas (1986) *Die Unwahrscheinlichkeit der Kommunikation*. Opladen. Westdeutscher Verlag.
- Luhmann, Niklas (1988) *The Autopoiesis of Social Systems*. In: Geyer, Felix/van der Zouwen, Johannes (Eds.) (1988) *Sociocybernetic Paradoxes. Observation, Control and Evolution of Self-steering Systems*. London. Sage. pp 172-192
- Oberquelle, Horst (1991) *Kooperative Arbeit und menschengerechte Groupware als Herausforderung für die Software-Ergonomie*. In: Oberquelle (Ed.) (1991) *Kooperative Arbeit und Computerunterstützung. Stand und Perspektiven*. Göttingen/Stuttgart. Verlag für Angewandte Psychologie. pp. 1-10.
- Schmidt, Kjeld/Bannon, Liam (1992) *Taking CSCW Seriously - Supporting Articulation Work*. In: Computer Supported Cooperative Work (CSCW), Vol. 1 (1992), No. 1-2. pp. 7-40.
- Shannon, Claude E., and Weaver, Warren (1949) *The Mathematical Theory of Communication*. Urbana. University of Illinois Press.

## The Autocreation of Communication and the Re-Creation of Actions

Stockinger, Gottfried/Fenzl, Norbert (1992) *A inversão dos tempos – O movimento inteligente*. Belém.

Stockinger, Gottfried (1998) *The role of variety in the evolution of information society*. In: *World Futures*, 1998, Vol 50, p. 715 – 729. Gordon and Breach. Amsterdam.

Stockinger, Gottfried (2001) *Para uma teoria sociológica da comunicação*. e-published at: [www.facom.ufba.br/Pos/gottfried.pdf](http://www.facom.ufba.br/Pos/gottfried.pdf) Salvador. Universidade Federal da Bahia.

Wallerstein, Immanuel (1974) *The modern world-system. Capitalist agriculture and the origins of the European world-economy in the sixteenth century*. New York. Academic Press.