The *differentia specifica* of the social information process

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Dezember 2001

Paper for presentation at the

Symposium on The Foundations Of Information Science (FIS)
Sixteenth European Meeting on Cybernetics and Systems Research
April 2-5, 2002
University Vienna, Austria

In: Robert Trappl (Ed.) (2002) Cybernetics and Systems 2002. Vol. 1. Vienna. Austrian Society for Cybernetic Studies. pp. 185-188

Abstract

This paper deals with evolutionary modes of information processing at its different levels of organisation, highlighting the *diferentia specifica* which distinguishes the social level from others, namely from the biotic one. The differences refer particulary to different degrees of freedom achieved in processes of social variation and selection, where communication replaces mecanic and biotic information processes.

The main argument states that while physical and biotic systems evolve in a given environment, social systems evolve to a point where they are able to create their environment themselfes, based on uncertain expectations, giving place to communication as the very fundamental social construction process. This enables them to achieve almost infinite variety. As a consequence of the evolution of this primary difference, also some other *diferentia* related to the operational mode of the social information process change, as communication processes take over the lead in contemporary society: while in traditional societies the information process is built upon past events and experience, in communication society it is built upon expectations, which appoint to the future.

General assumptions

Based on general assumptions of a theory of selforganized and autopoietic systems [Krohn/Kueppers, 1990; Maturana/Varela, 1987; Luhmann, 1984], this kind of systems have in common that they are expected to processs information in a reflexive mode, using re-entries and feedback-loops linked to their environment. Regulating and deregulating circuits are selected and established, which sustain the information flow and the vital functions of the

information system related to it, following the principle of „order from noise“. These basic cybernetic aspects are supposed to be non-evolutionary.

The question of how the information process in social systems differs from systems at other („lower“) levels implies some cybernetic specifics which emerge in the evolution of the social regulation/deregulation circuits. As already approached in prior works [Stockinger 1998], social systems are able to work far from equilibrium, and, when so, they devellop a variety of subsystems which give way to new social qualities. Therefore, when mecanical and tecnical information models, which work with metaphers like „information exchange, emission and reception“ are applied to society, they reveal themselfes to be insufficient to explain social complexity, variety and mutability. At this basic levels, information is processed in form of orders or commands, and emittors 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]. Even the most advanced models of biotic information processing, although they deal with a fairly complex evolution, do not provide a coherent picture when applied to society. The principal reason consists in the reference of bioinformation to an actually given, established environment which only changes slowly within some generations. Therefore, their autopoieses depends on a constant energy flow from the environment, using merely casuistic mecanisms of mutation and selection for their evolutionary moves.

The basic diferentia of social information circuits

In distinction, social systems are not only selfregulated and selfproduced (autopoietic), but new forms of information processing emerges, which may be resumed by the notion of autocreativity, which appoints to their ability to create not only themselfes but also their own environment. Observing social systems, one notes that even their physical and biological environment is processed in form of social signs a signals. They process their world in termos of „sense“ [Luhmann, 1984]. Their information process represents, therefore, sensegiving interactions and cooperations expressed in a unique and particular mode: communications. Thus, communication has to be presumed to be the exclusive and specific information process which constitutes society and social systems in general.

Therefore, when searching for the *diferentia specifica* of social communication in comparison with other forms of information processing, one has to observe the specifities of social information circuits that underly the societarian constructions. Beyond that, one has to take into account that communication refers to the sociological environment of any kind of individual psycological system, providing a supraindividual framework for the explanation of their reality as a "lifeworld" (Lebenswelt) which Habermas [1982] defined as a natural, unquestioned framework for personal and social systems. At the personal level, this framework, this social network, is taken as „real“ by the participants of communication processes. For them, there exists no other reality, neither internally nor externally, than that of senseopearing information processing. Their ethics and human values are all involved in the construction of individual „worlds“ produced by human communication, within the functions and operations of social communication circuits. Their external reality is created internally and their environment is a part of the system. We argue that this is the farout most important *diferentia specifica* of social communication circuits, which distinguishes them from any other kind of information processing systems, and which devellops in plenty only in the construction of contemporary global communication society.

Specifities at the micro level

To get a more detailed picture of the *diferentia specifica* of the selfcreation of social information, we reccur to a genuine explanation at the microlevel. As social systems are built on „sense“, they operate with virtual expectations and not with hard facts. In social systems, even hard and countable facts like money or positions are treated in forms of expectations. As already Parsons & Shils [1951] showed, the processing of information in forms of expectations ocurrs in a situation of double contingency, which connects both, the triggers and the results of communication. Luhmann [1984], in addition, demonstrated that because of this contingency, mutual expectations are not necessarily based on a shared symbolic system or on a common culture, but are emergent constructions based on a fundamental uncertainty. This uncertainty is the base of social creativity, which operates an autocathalitic circuit, based on every kind of coincident events. There is not really an exchange of information between the system and its environment or between systems. Luhmann showed, reinterpreting Parsons, that while double (or even multiple) contingency is at work when communications starts, the parts involved dont apply directly to a common equilibrium, but to values created by their own, often instantly. Instant switches in attitudes and values get common as communication evolves and separates societarian information processing from the natural one. On from a certain point of social evoluiton, there is no more external reality to believe in and to hold on to, which could be taken for granted as a common reference. Not in daily life systems and still more less in science. Therefore one has to postulate that in societies based on communication, every social situation is built upon uncertainty or that, at least, even the most „stable“ situation is expected to destabilize, often faster than could be expected. This does not mean, however, that social systems are expected to exhibit caotic behaviour. Even when starting from uncertainty (or from decomposed certainty), a "certain" communication system emerges using whatever is communicated in the situation of contingency, and surprises turn out to become common events. The result is the emergence of unlimited social variety, where different lifeworlds arouse and sustain themselves mutually, serving constantly as noise for social communication in its autopoiesis. Only temporary order shows up to give way to new noise.

Material and virtual information processing

As communication works its way to mediate social realtions, the results of social information processing (communication) are more and more distributed [Leydesdorff, 2001]. Their distribution is classified in terms of „to win and to lose“, of „good and bad“, of „true and false“ or in terms of any other kind of dicotomic social values. As th eir distribution is virtully uncertain and unpredictable, communication turns out to be a very unlikely process [Luhmann, 1986]. The likelyhood of a communication circuit to be complete, depends on a three level selection: that signs (gestures, signals, data) are emitted, that the emitted signs are received, and that the received signs are understood (whatever this understanding may mean). The „regulating circuit“ of social communication includes therefore three aspects: information, message and comprehension, each one of them based on independent selection criteria. Thus, the participants in social information processes do not have direct access to each ones „world“. They are exposed to selecting filters which function as a font of unlimited creativity, organized by communication.

The comparison of different levels of information processing in termos of material/ virtual, more interesting details of their *diferentia specifica* may be focussed. While material systems like physical, biological and even neuronal ones, are driven, in each one of their "information acts", to a measureable material output, social systems and their vital information circuits do not depend on material output to evolve. As they deal with a virtual matter of signs and significations, mostly in form of written language or images, they do form virtual objects like love, truth or money. But these "objects" are very special ones, different from physical things and mere biological beings: they are carriers of the ‚genetic code" of social communication, which turns out to be fareout more complex than even the most sensible biotic information process. Its increasing differentiation and complexity is due to the social systems capacity to observe its own autopoiesis and to incorporate the results of this observation, almost immediatly, as the boundaries between the system and the environment are selfcreated. Different from the biological information level, the social genetics contains both, the exterior and the interior, the environment and the system.

The difference of biotic and social transformation

While in biological systems genetic information is uncertain in terms of unexpected or unexpectable mutations, in socio-genetic systems the information is uncertain in terms of expected or expectable ‚mutations". In biosystems, changes in the genetic code are considered as ‚blind" coincidences relying on errors in the replication of the information code. In social systems, the ‚errors" in information replication are not accepted to be ‚blind" any more. The assumption of an ‚invisible hand" that guides the economy, for instance, is collapsing. As changes in the direction of information processing, interaction, cooperation and, abstracly spoken: communication, are all based on expectations, their quality lies in their ability to deal with what is expected or not expected to come. While biological mutations refer to past events in a species´ evolution, social "mutations" are not directed to the past. They appoint to the future. There may be, however, expectations linked to the experience of past events and conditioned by them. But, even so, they represent expectations of future events and produce actual behaviour based on them. In biological systems, this "future" is represented by the selecting environment, while in social systems, the environment is created by the system himself, at every moment.

Therefore, different from other kinds of systems, which are bound to a given environment and its changes, social systems allow degrees of freedom which, in principle, are infinite. This *diferentia specifica* of information processing in social systems, compared with information processing at lower levels like mecanics, biotics and even social traditions, means a big evolutionary leap, which allows social systems to travel in time instantanously, to walk into the "future", to reconsider the ‚past", and live in environments created by themselfes, foreseeable by science fiction.

Operational differences

This *diferentia specifica* of social information processes generates another one, that appears to be located at the operational level. While trivial systems (even a biosystem is trivial if one knows how to handle the genetic code) start to build at the lowest level (mecanics), complex social systems start their construction at the highest level possible (cooperation based on expectations which refer to the future). Their creations are based on plans and simulations.

They move from top to bottom in their information processing and incorporate all other possible levels. They invert the direction in which the "levels" in the "step model of information processing" [Hofkirchner, 2001] operate internally. While natural science deals with systems which are composed by elements, social science works now with communication systems attributed and decomposed to human acts [Luhmann, 1984]. This difference in the method of operation turns out to be "superior". In social systems, the „inferior" information processes based on „trial and error" or on previous experience in general, are replaced, in the evolutionary process, by reflexive communication acts. It is communication that has to occur to get the system running to some „ideal" point, to „achieve goals" and to „succede". Without communication, interaction and cooperation would be completely undirected. Any casual kind of system would be expected to emerge and end in chaos, in infinite complexity.

The differentia specifica and its role in communication society

This was not always so. Communication, in the sense we know it today, is a very recent conquest of social life. The *diferentia specifica* pointed out above does really unfold only in actual global society. Humans who lived in societies based on tradition or on other modes of production in relative equilibrium, had almost no need to be guided by communication and to process information in form of uncertain expectations, neither at the psycological, individual level, nor at the sociological, collective level. They had not even the means to do so, as they were bound to face-to-face situations or to the social horizons of small groups.

It was the increasing capacity of communication and information processing which produced social non-linearity and destabilization of human lifeworlds, exposing them to social uncertainty. While industrial society was still comparable to an organic beeing, communication enhances the potential *diferentia specifica* of the social information processing also at the macrolevel, and not only within in microsocial „cells", to continue to use the bio/social analogy. That means that the potential ability of communication to allow the social units practically unlimited degrees of freedom, only bound by selfcontrol 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 commandatory structures, this was not the case. When derepression and democratization unfolded worldwide in the last decades, new degrees of social freedom were added, and communication added to the social systems the capacity to produce their own environments. Only nowadays this overall reflexive process created and used by humans, turns really out to style and produce their lifes. It was only recently, that societies converged to a one and only global humanity. There are no more sectors of human life left, where communication would not lead or influence the social actions.

limitations of his evolutionary paradigm, which might
help to cross bridges to non-evalutionary communication concepts.

Concluding, we state that it was the very recent shift from the evolutionary role of material means to virtual means that made arouse a new societarian construction: communication society. It is based on new media that allows information to be distributed worldide as an abundant and therefore almost free good [Stockinger 2001]. Therefore, even the so called information society is about to be overpassed as the *diferentia specifica* works its way out. As

to the problem of the so called digital divide, it seems about to be solved like it was the case of the divide in access to radio and TV. 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.

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