The Continuous Reconstruction of a Pluralistic Society as an Order of Expectations

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In response to the interesting comments of **Kate Distin** and **Roger Harnden**, let me focus on the relationship between the biological (and evolutionary) systems view and the socio-cultural perspective. Perhaps more than any other question, a core issue of sociology (political theory, etc.) has been "how is social order possible?" I argued in this issue that Luhmann (1984, 1995a) made an important contribution by changing the answer to this question into a communication-theoretical one. In his *œuvre*, however, the main operationalization remained focused on historical instances (e.g., Luhmann, 1980, 1981, 1989, 1995b). In my opinion, the challenge is to elaborate the theoretical steps into designs that can be tested in empirical communication research.

I shall argue in response to **Distin** that for this purpose I need Luhmann's (1997) distinction between symbolically generalized codes of communication and diffusion media. One can consider this as a distinction within the domain of "artefactual languages" that **Distin** distinguishes from natural language. In response to **Harden,** I argue that, from this cultural perspective, the non-verbal when perceived as vital and "rooted" remains codified although the interpersonal encounter may not require articulation in a natural or artefactual language. **Harnden**'s ethically motivated stance thus exemplifies my answer to **Distin** that one needs to assume symbolically generalized expectations about codes of communication—in this case, love and affection—that provide interhuman communications with a specific feedback and perspective.

In **Harnden**'s contribution, this symbolic coding is constructed in terms of Maturana's (e.g., 1978) theory and philosophy (the so-called "biology of cognition"). However, the "interobjectivity" (Maturana, 2000) or transcendental "intersubjectivity" (Husserl, 1929) was transformed by Luhmann in two different studies (Luhmann, 1986a and 1986b, respectively) into contingencies that are, in principle, amenable to empirical research *because* these domains are now considered as mediated (McLuhan, 1964). Mediation implies communication in terms of distributions among agents and therefore the possibility to use various statistics for the specification of uncertainty (Leydesdorff, 1995).

The Self-organization of the Coordination Mechanisms of Society

The intellectual history of the problem of social order in modern times begins with Hobbes' *Leviathan* of 1651. In the midst of the English Revolution and shortly after the execution of Charles II (1649), Hobbes argued in favor of the installment of a sovereign with absolute power because, in his opinion, such a submission provides the only solution for "the war of all against all" ("*bellum omnium contra omnes*"). This latter "state of nature" would otherwise prevail in a society that was no longer integrated religiously and cosmologically.

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As against the religious solution of the Middle Ages in which one's individual soul could be rescued from Nature by God's Grace, Hobbes addressed solving the problem of order at the level of society. Whereas the individual solution was religiously sanctioned, the social solution is not "given." Ever since the decapitation of the king of France, the killing of the father in each of us (Freud, 1930), and Derrida's (2004) consequent decapitalization of the word, hierarchical order is no longer inherited and the question of social order can be formulated as one about the different and possibly conflicting coordination mechanisms operating in society.

I mentioned Montesquieu in this context and the constitutional system of checks and balances since the 1780s. In what can be read as essentially a critique of Marx who emphasized the development of *Capital* as a unique coordination mechanism prevailing in history, Weber (e.g., 1904) considered cultural history as a battlefield of values. In his opinion, the values can be considered as secularized versions of the Greek Gods (e.g., 1919:604). Perhaps Parsons (1968), but certainly Luhmann (1971) made the move to consider these transcendental values as functions of communication based on different codes (cf. Merton, 1957).

I agree with **Distin** that the wording "symbolically generalized media of communication" can be considered as a misnomer since, in my opinion, the expression—introduced by Parsons (1963a and b; 1968)—is elliptic. The codes are generated from and operate within interhuman communications as eigenvectors of a network, and they cannot operate without mediation. Not the media, but the codes are latent and can therefore be generalized symbolically. Functional differentiation among the codes enables the communications to process more complexity than in a hierarchically organized configuration. The differently coded coordination mechanisms span different (and potentially orthogonal) horizons of meaning. One can operationalize the latent dimensions as eigenvectors using a factor model of the networks under study. In other words, the eigenvectors (or factors) span dimensions that can function as different horizons of meaning at the systems level.

The reconstruction and integration is performed historically and locally by reflexive agencies and organizations. The mechanisms are relational (as different from positional; Burt, 1982; Leydesdorff, in press) and these couplings at interfaces need to be further specified (e.g., Luhmann, 2000 and 2002). The historical cases provide us with manifest observables and thus access to the evolutionary dynamics. The latter is complex because composed of a number of different and potentially reflexive subdynamics (Leydesdorff & Zawdie, 2010).

Symbolic codes and artefactual languages
The relations between codes and media in Parsons' and Luhmann's work were extensively discussed by Künzler (1987, 1989). Unlike Parsons' linguistic codes, Luhmann's codes can be considered as meta-biological and therefore turned "on" and "off" in a binary mode as in the case of DNA (Habermas, 1987; Leydesdorff, 2000 and 2006). Künzler (1987: 331) then proposed to understand meaning as *ratio essendi* of language, and language as *ratio cognoscendi* of meaning. That is, language can be considered as the embodiment of meaning, whereas meaning cannot be known outside of language. Meaning, however, can operate among us also when one is silent because meaning not only codifies information; meaning can also be codified recursively into a symbolic order (Deacon, 1997).

The artefactual languages observable in writings and printings—Luhmann's (1997) "Verbreitungsmedien" —provide a sufficient condition for the emergence of a High Culture as a stratified organization of society. Empires can be distinguished empirically in terms of the artefactual languages that mediate their control. Innis (1950), for example, specified how the invention of papyrus changed the modes of communication and control in Egypt when compared with Mesopotamia. More recently, the invention of the printing press (Eisenstein, 1979) and, most recently, the Internet have disorganized prevailing orders.

Artefactual languages, however, cannot explain the longer-term transformation of a pre-modern and cosmologically integrated society into one that can be considered as functionally differentiated in terms of the (symbolically generalized) codes of communication. The symbolic generalization of expectations can operate counterfactually because the codes are latent (as eigenvectors). The manifest observables are instantiations among other possible instances. The system evolves in terms of what happens in relation to what the events mean for what could have happened. What could have happened can only be specified from a systems perspective (by reflexive agency participating in the communication).

One is able to carry the differently coded communications to the extent that one is reflexively and communicatively competent to do so. At the individual level, this order is a psychological and not a biological one. From this perspective, social order is not established by writing a constitution unless such a constitution reflects in writing the civil liberties that prevail in society. Such liberties as political freedom, academic freedom, or the economic pursuit of happiness are grounded in models of coordination and communication that we have reflexively internalized. A symbolically generalized order reconstructs our horizons of meaning as an order of expectations that can operate counterfactually (Grant, 2000).

In the theory and computation of anticipatory systems, in my opinion, new semantics have been developed that may be helpful. Anticipatory systems were first defined by Rosen (1985) as systems that entertain a model of themselves. Entertaining this model, an anticipatory system has an additional degree of freedom for selecting in the present among possible next states; for example, different phenotypes can be manifestations of a single genotype. Dubois (1998) distinguished this operationally as incursion from recursion (with reference to a previous state), and then further introduced hyper-incursion, that is, a system which can use future (as opposed to past) states for making a choice in the present.

A weakly anticipatory system can then be defined as a system that entertains a model for the specification of possible next states; a strongly anticipatory one as a system that uses expectations specified on the basis of a model for its own reconstruction (Dubois, 2003: 112f.). In my opinion, one can read Luhmann's theory as the hypothesis that society communicates meaning and reconstructs itself in terms of communications about possible future states. However, this reconstruction is done in a distributed mode and in different dimensions. Luhmann (1984, 1995a) suggested three dimensions: the communications are distributed spatially, over time, and substantively (cf. Lucio-Arias & Leydesdorff, 2009a). Society as a strongly anticipatory system "structurates" (Giddens, 1979) our individual expectations as weakly anticipatory (since also biologically contingent, that is, embodied) systems (Leydesdorff, 2010).

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In other words, communicative competence is not just knowing how to write a cheque, but also understanding the meaning of an economic transaction (with or without being able to write a cheque). One acknowledges this understanding in the symbolic communication, for example, by signing the cheque. The meaning of an economic transaction is supra-individually warranted, that is, at the level of society, and no longer valid only within in a specific organization, nation, or empire. In this sense, the meaning is symbolically generalized in a code that operates both in the transaction and at the next-order systems level. The expectation is that one pays a debt; if one fails to pay, the transaction is damaged. The expectations structure the ensuing action, such as the writing, the enforcement of the law, etc.

Society as a Counterfactual Order of Expectations
An order of expectations is well known to us from science: scientific theories specify conditions that can be fulfilled and then events that can be expected to occur. The scientific model describes a set of possible future states of the system under study. Thus, a model is constructed discursively which enables us to specify possible future states. Observations can inform the expectations in the form of observational reports. Unlike a truth that is given *ex ante* (as in religion), scientific knowledge is provisional, emerging discursively, and historically volatile. In other words, scholarly communication instantiates an order of expectations.

The scholarly communication is more reflexively transparent than the operation of other symbolically generalized codes of communication (Luhmann, 1990). The latter can be reflected by science (e.g., in the economic sciences), but are not themselves part of science and therefore not accessible as another text (Ashmore, 1989; Latour, 1988). In the symbolic order, however, prices provide us with expectations of value, art with a reference to enjoyment, and more generally social order remains an order of expectations that is supported and sustained by social institutions.

This reflection on symbolic generalization brings me back to **Harnden**'s ethical argument for the priority of *living* (with a reference to Maturana). It seems to me that Maturana's prime example of "love" as naturally given such as between an infant and its mother is tainted by the cultural metaphor of the Madonna with child. Maturana's argument is about speciation because the mother-child relationship among humans is characterized by longevity, while among chimpanzees it is not. From this perspective, the mother-child unit constitutes a basic organizational format in human society.

I do not wish to deny these biological "givens," but only their usefulness in explaining social phenomena immediately, that is, without sociological reflection. From the perspective of the present, each previous state of the system may seem more "natural" than the cultural constructs currently under reconstruction. However, theorizing is culturally mediated: one entertains models of other possible states. For example, we have access only to the "naturally given" via a reconstruction. Was childhood so happy? Or is the pre-oedipal mother already beset with conflicts? Is love between husband and wife more "natural" than love in same-sex marriages? Since there is no possibility of a "return to nature," one be advised to develop the appropriate instruments for understanding society as an order of expectations.

In my opinion, important steps have been made albeit in terms of decennia: from a sociological perspective, the social is no longer considered as given or transcendental. The communication of meaning allows for operationalization (Leydesdorff, 2011). However, Luhmann (1995a:164) emphasized that "*communication cannot be observed, but only be inferred.*" Instead of observing naturalistically, one can specify hypotheses about the systems of reference and the communications operating. The distributions generated by communication cannot directly be observed without uncertainty, but put to excellent use for measurement and thus for observation-based statistics and hypothesis testing. For example, economic transactions can be described in terms of transaction matrices, or scholarly communication and their lineages in terms of citation statistics (e.g., Lucio-Arias & Leydesdorff, 2008, 2009a and b).

Furthermore , Füllsack (in this issue) proceeds to the simulation. The theory and computation of anticipatory systems provides models that enable us to appreciate instantiations (of expectations) as incursions and hyper-incursions (Dubois, 1998; Füllsack, 2009; Leydesdorff, 2008, 2010, 2011; Rosen, 1985; cf. Giddens, 1979). In other words, a focus on biological or linguistic observables without specification of theoretically informed hypotheses—that is, expectations—does not allow for making inferences about the communication of meaning.

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