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## Implications of Self-Reference: Niklas Luhmann's Autopoiesis and Organization Theory

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### Abstract

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This article reviews the potential of Niklas Luhmann's autopoiesis as a contribution to organization theory. We consider organization theory to consist of three epistemological foundations, which we label equilibrium-based theory, process-based theory and recursivity-based theory. We review critically Luhmann's autopoietic theory in relation to each of these three foundations. We suggest that whereas it deviates radically from equilibrium-based theory and deviates significantly from process-based theory, it holds potential in its complementarity with Giddens's structuration theory in providing a promising basis for recursivity-based organization theory.

**Keywords:** organization theory, autopoiesis, systems theory, Luhmann

Niklas Luhmann (1927–98) has emerged as one of the most controversial and influential social scientists of recent times. His autopoietic systems theory spans a wide range of social theory, among which is organization theory. In a book published posthumously (Luhmann 2000), he works explicitly from the perspective of organizations as systems of decisions, and in which the decision forms the basic unit of analysis. However, his more general autopoietic theory, the main body of which is outlined in his book *Social Systems* (Luhmann 1995), provides a broader backdrop of insights and ideas that are useful to the study of organization. This is reflected in the wider application of his work in organization studies, for example, by Ortmann (1995), Thyssen (2000), Baecker (1999) and Mingers (2003). Studies of more focused areas of organization have also been carried out that are to varying degrees derived from Luhmann's framework, such as on communication (Vanderstraeten 2000), trust (Gefen 2000), knowledge (von Krogh and Roos 1995), time (Holmer-Nadesan 1997) and decisions (Åkerstrøm Andersen 2003). In addition, his theory is being applied in empirical studies such as in the history of institutions (Harste 2003) and in institutional reform (Høilund and LaCour 2003).

While others have related Luhmann's theory of autopoietic social systems (hereafter, referred to as 'Luhmann's autopoiesis') to selected topics in organization theory, this article discusses its relationship with what we see as the broader epistemological foundations of organization research. We work from his autopoietic theory as a backdrop of insights and ideas from which

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we derive implications for organization studies, which means that we are not restricted to his more specific organization theory as outlined in Luhmann (2000). There are two main reasons why we attempt this. First, it is a way to come to grips with salient aspects of Luhmann's work, which is otherwise viewed as a relatively inaccessible and complex set of terms and relationships. Relating his autopoiesis to some basic assumptions in organization studies hopefully enables us to uncover the contours of his theories and, hence, make them more accessible for critique. Second, we think it is important to identify areas in organization research in which his work has a contribution to make. Luhmann's autopoiesis is first and foremost a correction of Parsonian structural functionalist theory, which we will refer to as equilibrium-based theory. Our argument, however, is that it also deserves to be discussed in relation to other epistemological bases of organization theory, what we refer to as process-based theory and recursivity-based theory respectively.

Our point of departure is to consider the epistemological foundations of organization studies as three distinct categories. The distinction is inspired by Reed's (1997) discussion of organizational epistemologies, although our framework differs from Reed's in substance. We refer to the first category as *equilibrium-based* theory, which is based on assumptions about stable entities and reflects the foundations of traditional systems theory and functionalism. We argue that in relation to an equilibrium-based view, Luhmann's autopoiesis represents a radical break. Second, a *process-based* view is based on assumptions about the centrality of the subject and the importance of action, communication and context. Process-based theories have gained ground, particularly in Europe during the past few decades. We argue that Luhmann's autopoiesis corresponds to process-based theory in its focus upon process, but that it deviates significantly by insisting on the importance of structure. Third, a *recursivity-based* view assumes that structure and process interact, and, furthermore, that they both change through mutual interaction. This perspective attempts to avoid weaknesses of the two other perspectives by capturing the interaction between structure and process, and explores the conditions for system stability and change. In relating Luhmann's autopoiesis to Giddens's structuration theory, we argue that it is in relation to the latter perspective that the chances are greatest for achieving mutual benefits between Luhmann's autopoiesis and organization theory.

### **Niklas Luhmann, Autopoiesis and Social Systems**

Autopoiesis ('auto' meaning 'self' and 'poiesis' meaning 'create') was coined by the Chilean biologists Humberto Maturana and Francisco Varela (1980; Varela et al. 1974), whose point of departure was the formulation of biological theory as an alternative to Darwinian ecology theory. A key element of autopoiesis was that systems are not subject to environmental selection in a linear process of selection, as prescribed by classic biological models derived from Darwinism. Systems, argue Maturana and Varela, interact with themselves as they produce and reproduce themselves in a recursive fashion:

‘Consider for example the case of a cell: it is a network of reactions which produce molecules such that (i) through their interactions [they] generate and participate recursively in the same network of reactions which produced them, and (ii) realize the cell as a material unity.’ (Varela et al. 1974: 188)

For example, applied to communication, an autopoietic perspective suggests that communication should not be understood as mere information transmitted from a sender to a receiver, in the sense that the information is seen as parcels of information that move from one to the other. Instead, information is seen as being *created* with the receiver through interaction with his/her existing cognitive framework (Maturana 1980: 32). This means that communication happens essentially through a process in which a system (the ‘receiver’ in this case) interacts recursively with itself, as new information only makes sense in relation to the structures created by previous information gathering. The effects of such thinking are far-reaching in that it replaces dichotomous relationships between stable entities with recursive processes within the entities themselves.

While Maturana and Varela meant autopoiesis as a biological concept, the social systems theorist Stafford Beer (1980) commented that autopoiesis has considerable potential for the study of social systems. At around the same time, Giddens (1979: 75) arrived at a similar observation: that the ‘most relevant sources of connection between biological and social theory do not involve the functional analogies so strongly represented in the history of sociology, but rather concern recursive or *self-producing* systems’. The point about functional analogies applies arguably to organization theory, where analogies with organic and mechanistic systems have been influential for a long time (Burrell and Morgan 1979; Reed 1996).

While Maturana and Varela expressed skepticism about whether autopoiesis is applicable to social systems, it is to social systems that Luhmann worked for many years to apply autopoiesis. With Maturana and Varela’s work as a starting point, Luhmann has drawn on sources in widely different fields to construct carefully an almost uniquely extensive theory on autopoiesis in social systems. Influential works include Spencer-Brown’s (1969) mathematical treatment of laws of form, Whitehead’s (1929) philosophical work on process and reality, and von Foerster’s (1991, 1993) work on the application of recursivity in social research. Luhmann has applied autopoiesis in a number of areas, including philosophy, law, psychology, economics and political science. The book *Social Systems* outlines Luhmann’s general social systems theory from an autopoietic perspective. Whereas *Social Systems* appeared in English in 1995, other works of his that deal explicitly with organizations (Luhmann 1964, 1992a, 2000) have not yet been translated into English.

The impact of Luhmann’s work on organization studies appears, as yet, small compared to other sociological theories that have appeared in past decades, such as developed by Habermas, Foucault, Bourdieu and Latour. Some writings have appeared which have been inspired by Luhmann’s work and have been directed toward selected phenomena. However, its broader implications for studying organizations have not to our knowledge been subjected to analysis. So far, organization writers have suggested that

autopoietic theory holds considerable potential, but without pursuing the issue in depth. Morgan (1986), referring to Maturana and Varela, suggests that the idea of self-reference has considerable potential for understanding organizations from a flux perspective. Hatch (1997: 373) suggests that '[autopoiesis] has powerful implications not only for our understanding of systems, but our relationship to ourselves, our organizations, and our theorizing efforts'. Morgan and Hatch suggest that autopoiesis merits further development in organization theory. However, apart from select applications of Luhmann's autopoiesis to organizational phenomena and general suggestions about its applicability, Luhmann's autopoiesis has found little resonance in mainstream organization theory. We find this somewhat surprising, given that the idea of recursivity may force us to ask some new and provoking questions about our interpretations of organizations.

### **Luhmann's Autopoiesis: Central Concepts**

Luhmann's project is essentially to develop the concept of autopoiesis as Maturana and Varela used it and employ it in new sets of terminologies adapted to the study of social systems. It is clearly not an attempt at drawing an analogy between organic and social systems, but rather a way of trying to come to grips with the complexity and the evolution of social systems. Autopoiesis, as Luhmann develops it, is first and foremost a way of seeing social systems, and not a way of categorizing them. Of importance is what we may call his 're-specification' of concepts, of which we will briefly describe the most central ones.

#### **Communication**

The basic building block of social systems is communication. Communication consists of information, utterance and understanding, and is that which allows for a system's self-constitution. Although communication is the *prima facie* building block, it cannot be observed directly. On the other hand, it does present itself in the form of actions. Thus, in order to be observed, a system of communication must appear as a system of actions. The main difference between communication and action is that whereas communication allows for self-constitution, action allows for self-observation and self-description (Luhmann 1995). Luhmann also operates with the notion of 'psychic systems'. In contrast to social systems, psychic systems consist of consciousness, with thoughts as the elements of reproduction. Social and psychic systems co-evolve, but they are separate and form distinct environments to one another.

#### **Emergence**

Social systems are forever emergent phenomena in the sense that they reproduce themselves recursively. There is no beginning of a social system, nor is it to be seen as a pre-existing and permanent entity. Luhmann upholds

this as a fundamental difference with both Weber and Parsons. Weber's conception of the system, according to Luhmann, is that of a pre-given, whereas Parsons's conception is that of an analytical construct. Autopoiesis, however, supersedes the former two by showing how a system binds itself together and reproduces itself. The emergence of a system takes place through distinctions that the system makes, both between itself and the environment and between before and after. To draw a difference implies the creation of reality through distinction, and thus management of the system presupposes the management of difference. Hence, such a system may be understood as a result of recursive processes of production and reproduction. When self-definition provides the conditions for further production, the system is labeled autopoietic. Without recursion systems cannot exist because it is only through interaction with their own state over time that they can uphold themselves. For example, an organization defines itself as such, and interacts with itself as an organization.

### Events

A major aspect in Luhmann's autopoiesis is the idea of temporality. Events take place in time and they mark the difference between 'before' and 'after'. Events exist in time, but have by themselves no extension in time. Decisions, for example, take place at a point in time that marks the difference between before and after the decision. Events exist as markers that allow us to explain the continuity as well as discontinuity of social systems. In Luhmann's (2000) organization theory, for example, decisions act as events marking the difference between before and after. The main feature of events is that they mark selections of some alternatives over others. These selections may be explained in the light of previous selections and the opportunities at hand, but they are not amenable to deterministic analysis. Because evolution is not deterministic according to some higher order *episteme*, but contingent, it is useful to study those conditions under which both continuity and discontinuity take place. For example, in the case of trust, it is important not only to study the continuation of trust, but also the change from trust to mistrust, as non-selection is implicit in selection. Because evolution is contingent, it does not move toward a pre-given state, which means that many other evolutions would have been possible.

### Operational Closure

The concept of autopoiesis presupposes that systems are operationally closed. Traditional systems theory based on the laws of thermodynamics, which have also had considerable influence on organization theory, assumes that social systems work on an input-output basis. Systems such as organizations may be located somewhere on a scale ranging from closed to open. In Luhmann's autopoiesis, the problem is circumvented by saying that systems are both open and closed, and that openness and closure refer to different processes. Systems interact with their environments, which consist of other systems (that is, they

are open interactively). On the other hand, they are closed by the boundaries of meaning as the meaning creation takes place through the system's auto-referencing. The system can only make sense of the outside world through the observation of its own experiences. In other words, the social system operates in the medium of meaning, and this operation is a closed one.

We will, in the following, trace the implications of these points in relation to three epistemological bases for organization research: equilibrium-based theory, process-based theory and, lastly, recursivity-based theory. We hasten to acknowledge that the three-tier distinction is coarse and does not do justice to many works, whether cited or uncited. Our justification is that the distinction is sufficiently representative of the epistemological contours of organization research to enable correlation to the main aspects of Luhmann's autopoiesis. On this note, we wish to add that the aspects that we discuss from the three epistemological foundations are by no means exhaustive. We think that others might very well choose to focus on different aspects. The aspects we have selected, nevertheless, illustrate important points of convergence and divergence between the theories, and provide a basis for further work involving the discussion of other aspects.

### **Equilibrium-Based Theory**

It is hardly an exaggeration to say that it is politically correct in organization theory to describe correlations between stable entities. Most theories attempt to explain what happens in stable-state organizations, and researchers generally have a penchant for seeking out the regular (Barley and Kunda 1998) and the solvable (Dooley and van de Ven 1999: 369). For example, actions are correlated to members' roles (Katz and Kahn 1978), available information (Simon 1976) or cultural norms (Schein 1985). Other examples correlate organizational forms to the dynamic properties of the environment (Lawrence and Lorsch 1967; Donaldson 1995) or institutionalized ideas of appropriate forms (DiMaggio and Powell 1983). The equilibrium-based school has dominated for more than half a century, and remains highly influential, for instance, within organizational ecology, resource dependency theory and institutional (including new institutional) theory. This is not uniquely tied to organization theory; for example, Chia (1998: 346) argues that 'taxonomic' approaches are inherent in western thought:

'The classical Platonic view of such essences is that they constitute a fixed and unchanging realm of reality, which can be faithfully located, classified and represented through adequate systems of ordering. This "taxonomic" orientation, first inspired by Aristotele and subsequently pursued by Linneaus and Darwin amongst others, has become the definitive feature of modern Western thought.'

Much of the influence in organization theory comes from organic systems theory and assumptions of equilibrium between stable conditions. This assumption hides another assumption about organizations: that they are primarily responding organisms that function in an exchange relationship

with the environment, but where the environment is the acting factor and the organization the responding one (Burrell and Morgan 1979: 64). The organization adapts to forces in the environment, in much the same way that Darwinian thoughts conceptualized biological evolution. Consequently, individuals are analyzed in terms of the functions they perform in helping the system respond. Thus, the individual becomes a placeholder in a system, and does not act (as Parsons defines it), but *functions* (Habermas 1984: 235).

Parsons's intention was to provide a theory that first and foremost enabled generalization. Because functions are more stable than individuals, they can to a much greater extent be used as analytical entities. In this way, the analysis opens up for deterministic approaches, which allow us to compare one state of the system with another or one system with another. This corresponds with Scott's (1998: 9) description of the early stages of forming organization theory, in which the emphasis was on establishing:

'an area defined at a level of *theoretical abstraction* sufficiently general to call attention to similarities in form and function across different arenas of activity'.

Helped by the power of correlation, the idea of equilibrium-based entities has exercised an enormous influence in organization studies, from Barnard, Parsons and Weber to Blau and Scott, to name but a few.

Autopoiesis represents, in many ways, a radical departure from equilibrium-based theory, and it is against equilibrium-based thought in sociology that Luhmann's criticism is aimed in particular. Although some states appear to be more stable than others, this should not be interpreted as being exclusively equilibrium seeking. What is in focus is Whitehead's (1929) formulation of the 'process of becoming', where 'becoming' is not a finality, but the attainment of actuality in the form of events. An 'event' in Luhmann's autopoiesis marks the transition from actuality to potentiality (Whitehead 1929). It may be likened to the use of the term 'enactment' in organization theory, which in Weick's (1979: 130) work can mean *differences* in streams of experiences or actions taken that constrain later actions. In other words, events are potential turning points where differences are created that impact on the further evolution of the system. Such a self-referential explanation of social systems implies a radical break from equilibrium-based explanations, of which we will discuss two aspects: the idea of double contingency and the relationship between organization and environment.

### **The 'Problem' of Double Contingency**

A key issue in sociology has been the question of orders, and more specifically what factors lay the basis for mutually coordinated actions between actors. Equilibrium-based theories tend toward consensual explanations, pointing toward norms and values as the basis for mutual coordination (Parsons and Shils 1951). Interaction between two parties can only take place against a common background of meaning that is abstracted from the particularity of the situation, argues Parsons (1951). This common background of meaning is fundamentally related to the normative orientation governing the interaction.

The normative orientation exists prior to the interaction between the parties and constitutes effectively the (double) contingency that is imposed on them both. Parsons (1960: 36) is explicit on this point in his treatment of organizations, arguing that:

‘The central problem concerns the institutionalized norms which can effectively bind the actions of individuals in their commitments to organizations.’

The idea of common norms has also been influential in organization theory, particularly in culture theory (for example, Schein 1985). It has also been influential in institutional theory, and in particular that which is attributed to Selznick (1957), and not least in organizational ecology (Hannan and Freeman 1989).

Luhmann rejects consensual theories, not so much because they are not relevant, but because they are overvalued. His main criticism is that the sociological tradition oversimplifies the problem by underestimating the *improbability* of creating social order. Consensus is but one possibility for interaction. Luhmann’s concern is that there are no (deterministic) laws of nature dictating the evolution of social systems, and it is essential to bear in mind that things could turn out differently. Herein lies much of the ‘problem’ of double contingency. The contingency lies in the interaction rather than at the abstracted level of norms and, as such, it sets the stage for the emergence of the social system. This point ties in with the rejection of determinism in Luhmann’s autopoiesis. Social order should not be explained transcendentally, but as a circular movement that has neither beginning nor end (Luhmann and Schorr 1990). The explanation lies in the ways that social order (re)produces social order. With a sting to both Parsons and Habermas, Luhmann (1996: 509) suggests that:

‘the main ethical as well as sociological tradition has tried to solve this problem by reference to the existence of norms and values in all human societies, explaining the “oughtness” of norms and values either by nature or by consensus or by some tautological circumscription.’

Luhmann’s point is not that norms do not count. On the contrary, norms develop over time. What we should question, however, is that the evolution is treated as being natural and inescapable. In doing so, we miss the opportunity to appreciate the accidental which could have spurred a different trajectory.

By asking the question about how social action becomes possible, Luhmann touches upon the question of the genesis of organization, that is, under which conditions social action becomes possible. In organization theory, the question is a somewhat overlooked and, at the same time, important one, in which recent works in organization studies engage (for example, Czarniawska 2000). By not limiting the analysis to normative factors, Luhmann’s work opens up for alternative explanations, such as the relationship between action and communication. A cooling of the assumption of the importance of common norms may well help us better understand how cooperation forms in less institutionalized organizations such as virtual and temporary organizations, where the assumption about the prevalence of norms particular to the

organization in question is less applicable. The idea that common norms are not a sine qua non for social action enables a broader repertoire of organizational forms to enter into the analysis.

### **Boundaries, Openness and Closure: The Relationship Between the Organization and the Environment**

Organization theory has traditionally operated from the idea of opposition between open and closed systems. Scott's (1998) classification of around 100 years of organization research is inter alia built on the assumption that organizations may be more or less open to their environments. The system is essentially 'boundary maintaining' (Parsons 1951), although the degree of permeability and rigidity of its boundaries may vary. It is by distinguishing itself from its environment (which consists of other systems) by the use of boundaries that allows the system to exist as a distinct system (Katz and Kahn 1978: 31). Influential works in organization theory that have drawn on Parsons use boundaries as a 'means of analytic convenience', as expressed by Pfeffer and Salancik (1978: 30). This has led to boundaries being defined as symmetrical (in the sense that they are applied similarly whether toward the exterior or the interior) and neutral entities. Boundaries are located where the researcher may define the system as functioning in a stable state, and in this state the boundary is a neutral marker of where one system ends and another begins.

Similar to Parsons, Luhmann defines social systems as being principally boundary-maintaining systems. However, autopoietic theory differs starkly from this position on two accounts. First is the assumption that boundaries can only be drawn from inside the system. While Parsons and several of the writers influenced by his work use boundaries as symmetric and neutral, self-reference challenges us to attribute different qualities to the inside and outside of boundaries. Boundaries can only be drawn from inside the system. Self-reference takes place on the basis of the inside of the boundary, and represents, consequently, closure in relation to the environment. In his discussion of enactment processes in organizations, Weick (1977: 273) argues that:

'The "outside" or "external" world cannot be known. ... The outside is a void, there is only the inside.'

Luhmann's autopoiesis, however, takes the term 'enactment' further than Weick. Although the boundary cannot be observed from the outside, the outside might be 'co-interpreted' as an actuality (called second-order observation or reflection). Although the boundary's outside is largely a blind spot to the observer (as Weick sees the outside as a 'void'), what Spencer-Brown (1969) calls 'the unmarked state', the operations of both observation and second-order observation (reflection) take place simultaneously. What we see is that boundary reproduction becomes a demarcation against the environment and, at the same time, allows a co-interpretation of the outside.

This leads to the second account, which is that there is no contradiction between the openness and closure of boundaries. Luhmann (1995: 29) expresses it as follows:

‘Using boundaries, systems can open and close at the same time, separating internal interdependencies from system/environment dependencies and relating both to each other.’

Luhmann not only suggests that shielding and connection (closure and openness) may be coexistent, but that they, in fact, presuppose one another. Whereas in organization theory, closure is associated with inability to act upon the environment, Luhmann’s (1995: 410) point is that closure enables action because closure from the environment is what enables the environment to be observed and, hence, acted upon:

‘Thus the closure of recursive communication relationships does not liberate the system from the environment. It is and remains dependent on sensors that convey environment.’

In relation to organization theory, for example, this serves to add further nuance to Thompson’s influential work on buffering. Thompson (1967: 29) postulates that ‘under norms of rationality, organizations seek to seal off their core technologies from environmental influences’. In other words, a boundary is drawn to shield a system. From the perspective of self-reference and ‘bi-directional’ boundaries, one may add that this closure does not imply inhibition of the system, but rather a strengthening of the connecting operation with the external environment. This is perhaps one of the central points in Luhmann’s autopoiesis, and one which appears paradoxical from an organization theory perspective: a system must be closed in order to be open. We hasten to add, however, that while it appears a paradox in relation to equilibrium-based (organization) theory, it is not novel to social science. In making the point, Luhmann draws upon previous works in the social sciences, such as Morin (1977).

#### **Luhmann’s Autopoiesis and Equilibrium-Based Organization Theory: Incompatibility**

In view of the above observations, Luhmann’s autopoiesis distinguishes itself markedly from equilibrium-based organization theory. The argument is not really unexpected, as Luhmann’s project represents an attempt to provide alternatives to structural functionalist sociology. Luhmann’s perspective is rather that of radical functionalism, which is concerned with functional *equivalents* rather than with functions that have to be fulfilled. What we have done here is to take the line of reasoning into equilibrium-based organization theory, where the differences appear irreconcilable, as the very idea of self-reference as opposed to two interacting entities makes any rapprochement highly problematic.

### Process-Based Organization Theory

In grammatical terms, equilibrium-based organization theory describes the noun, whether it refers to the individual, the group, the organization or the environment. The verb, or the action, has for the past couple of decades been developed as a counter-reaction to the hegemony of the thinking inspired by biological metaphors. A much-cited illustration of this movement is Weick's (1974, 1979) appeal to shun the noun and to replace it with the verb, to replace 'organization' with 'organizing':

'The word, organization, is a noun and is also a myth. If one looks for an organization one will not find it. What will be found is that there are events, linked together, that transpire within concrete walls and these sequences, their pathways, their timing, are the forms we erroneously make into substances when we talk about an organization.' (Weick 1974: 358)

The appeal resonates with Silverman's (1970) 'action framework', which argues for a perspective of organization as evolving processes of actions and interpretations. Processes are created as actions that lead to interpretations, spurring new actions, leading to new interpretations and so on. Combinations of events and unintended consequences of actions make the processes non-deterministic, as there is no assumption of outcomes converging toward some sort of equilibrium. Although there are significant differences between Silverman and Weick, notably in their use of the term 'action', they may be traced to a similar philosophical lineage: that of Heraclit, which Chia (1998) refers to as 'process theory'. Silverman's and Weick's works in organization theory are forerunners of a process perspective (Knights 1997), which explicitly argues for an alternative to equilibrium-based explanations. The focus on actions rather than structure puts the subject in the center and opens up subjective interpretations of organizational reality. Crossing currents between process theory and European continental sociology have given rise to critical directions in organization theory.

Weick places organizational analysis at the level of actions, seeing 'organizing' as being expressed essentially through the interlocking behaviors of individuals (actors). These interlocking behaviors are intelligible to actors and they form 'grammars' that help people not only to make sense of the conventions and rules of the interlocking, but also to draw causal maps of the past experiences of the people who are organized. His argument is basically that organizational actions are expressed through the actions of individuals. Thus, what we need to understand lies in the proximity of the actors, their sense-making (Weick 1995) and their actions. Notwithstanding this, there are systemic effects, because acting is also a way of selecting, what Weick drawing refers to as 'enactment'. What is external to us is essentially created by ourselves; we select what to see, therefore, we in turn see what we select. This has consequences for later selections of actions and sense-making, which is based on 'retention' from the previous selection. The systemic pattern is thus produced through processes that consist of the elements selection, enactment and retention. This is the process by which actions and sense-making take on systemic qualities.

### **The Term 'Process'**

Process is central to Luhmann's autopoiesis, although Luhmann does not treat process as isolated from structure. Rather, structure and process are regarded as complementary to one another (Luhmann 1995: 345), and they relate to one another through *events* (Whitehead 1929). Contrary to views in process organization theory that argue for the use of 'becoming' over 'being', Whitehead points out that 'being' cannot be dissociated from 'becoming'. Similarly, Luhmann (1995: 44) argues that structure and process presuppose each other. Structuring is a process and processes are structured.

We have pointed out above that events are one of the central elements in Luhmann's autopoiesis. In a similar way to Weick (1974, 1995), Luhmann views processes as consisting of events. However, instead of emphasizing the sense-making side of events as Weick (1995) does, Luhmann defines events from an understanding of the reproduction of social systems. In Luhmann's autopoiesis, events are temporal: they take place over time, although an event has no duration in time. What is interesting to study is what makes it possible for events to connect to later events, as this is what makes it possible for the system to uphold itself. Events not only serve as the means of system reproduction, but also as points of departure for new trajectories of evolution, as other sets of opportunities that become available after the event rather than before it (Luhmann 1995: 355). When events are interpreted as decisions in organizations (Luhmann 2000), for example, they form points in time where selections are made that have consequences for later events. It thus becomes possible to explain why a system evolves as it does, but it also becomes possible to explain why certain evolutions do not take place, as non-selection is also a form of selection.

Whereas events have no duration in time, structures do. In Luhmann's autopoiesis, structures are constituted by expectations, and extend over time. Expectations hold open a repertoire of possibilities which is influenced by events. Structure thus binds events and processes in a mutual relationship. The idea of intertwining structure and process (events), as well as the conceptualization of the relationship between them, is thus a significant difference between most of process-based theory and Luhmann's autopoiesis.

### **Action and Subjectivity**

Whereas subjectivity is central to process-based organization theory, Luhmann's subject is not a 'subject' in the sense that it possesses opinions that may be characterized as right/wrong, or who acts rightly/wrongly or morally/immorally. Nor is the subject construed as a carrier of meaning. Instead of being the carrier of meaning, the subject steps into the system of meaning processing. Similarly, actions are not thought of as a characteristic of a subject with goals and intentions, but as residing in the system. As a result, the system's autopoiesis may be seen as separate from the people involved. If anything, the individual is part of the environment of the system.

Hence, the 'reality' in Luhmann's autopoiesis is not that of the subject and its representations, but the emerging product of system operations. Moreover, the systems are made markedly different by distinguishing analytically between social and psychic systems. Whereas social systems are composed of communication, psychic systems consist of consciousness, with thoughts as the elements of reproduction. Social and psychic systems co-evolve, but they are separate and form distinct environments to one another. Neither of them considers the individuality of the subject.

Such a perspective is strongly in opposition to most process-based theory, in which the acting and interpreting subject has an indisputable place. The reticence of Luhmann to 'subjectify' the subject has not unexpectedly earned him stark criticism in sociology, not the least from Habermas (1984, 1987). Whereas criticism from Habermas and others has an ideological flavor, the de-centering of the subject meets with empirical resistance. For example, as regards management in organizations, Thyssen (2003) argues that Luhmann's autopoietic theory is unable to explain why some managers are successful and others are not.

#### **Luhmann's Autopoiesis and Metanarratives**

Critical perspectives have, by criticizing its normative as well as its epistemological foundations, been effective in uncovering limitations in equilibrium-based theory. As such, critical perspectives, in particular, have emerged as polar opposites to the traditional system's theoretical hegemony in organization studies (Alvesson and Deetz 1996). Not only has the equilibrium-based and, hence, functionalist basis been rejected, but also the positivist epistemology implicit in the assumption of stable states. The latter has strong roots in western thought, something that has given it a place among 'metanarratives', '*meta-récits*' or 'grand theories'. Inspired by French sociologists (Bourdieu, Foucault and Lyotard) and the language philosopher Jacques Derrida in particular, postmodern works have waged attacks on metanarratives (Knights 1997). Although postmodernism is by no means homogeneous, it is fair to say that a center of gravity lies in the vicinity of what Lyotard (1984: xxiv) describes as a main feature of postmodernism, namely, 'incredulity towards metanarratives'. The standpoint is consequential. Harvey (1990) argues in a discussion of the gloomier parts of postmodernism that their pessimism combined with a nihilist stand against metatheory might lead us into a dangerous future.

Luhmann (1997) shares somewhat the postmodernist skepticism toward metanarratives as they have appeared in the 20th century. He observes, in addition, that there is no longer, as opposed to old European thought, a 'world terminology' (our translation) which 'by the use of conceptions such as nature or creation suggest a basic unity and thereby a rationality continuum in the world' (Luhmann 1992b: 12). Sociology is in a theory crisis (Knodt 1995: xiii), and to the extent that it holds for sociology, it applies also to organization theory. Not the least may we argue that we lack theories that adequately describe the heterogeneity of emergent structures in today's organizations

(Brunsson and Olsen 1998: 23). Luhmann does not, however, share the pessimism expressed in some postmodernist works. On the contrary, his point is that the current powerlessness of the metanarratives creates opportunities to work across the boundaries between social science and natural science, and to form a new paradigm on the basis of autopoietic systems theory. In this respect, his project is similar in aim to that of the philosopher Bhaskar (1978), who also forms his theory of 'critical realism' within a nexus of social and natural sciences.

#### **Luhmann's Autopoiesis and Process-Based Organization Theory: Incompatibility?**

We can see that Luhmann's autopoiesis shares the appreciation of process with process-based organization theory, although there are considerable epistemological differences, of which the most readily discernible is the difference in their views of subjectivity and action. Another fundamental difference is that, in Luhmann's autopoiesis, process is near inconceivable without structure and vice versa. Luhmann refuses to enter into a dichotomy between structure and process, but perceives process as having elements of structure and vice versa. We will return to this point in the discussion about recursivity-based organization below.

#### **Recursivity-Based Organization Theory**

The two previous paradigms are described as a structural versus process perspective, a relationship that has developed into a sort of antagonistic and persistent opposition in organization studies. The distancing of the two poles has been reinforced to the point that polarization has obstructed the search for *epistemes* outside the poles. This is illustrated, for example, in Chia's (1998) critique of complexity in organization theory, in which he contrasts only two possibilities: what he refers to as the 'traditional' and the 'process based'. The contrasting is done between, on the one side, the influence from Aristotle via Linneaus and Darwin and, on the other side, Heraclit, Husserl and Bergson. In doing so, he excludes the possibility of recursivity, which in many ways tries to avoid the structure-process opposition. The dichotomous character of organization studies is dysfunctional, not only because there is a mutual projection between structure-based and process-based works, but also because each of these only tells half the story about what happens in and around organizations. A rejection of structure excludes explanation of the stable states and orders that demonstrably exist. At the same time, structures, although they appear stable and sometimes permanent, are incessantly subject to modification in some form or other. In relation to empirical reality, structure-based analysis appears over-determined, while process-based explanations appear correspondingly under-determined (Clegg 1994). Reed (1997) is critical of directions that are based on one type of explanation to the exclusion of another, and refers to them as 'flat' ontologies. Reed argues

(1996: 51) for developing a more inclusive theory that avoids 'the constrictions of conservatism and the distortions of relativism'. His answer to the problem is to afford more intellectual space to theories that allow for the collapsing of processes into structures and vice versa, such as is made possible in Bhaskar's 'critical realism' (see Tsang and Kwan (1999) for an overview). We shall not pursue Bhaskar's work in this article, but simply note that it has aspects to it that strike chords with Luhmann's work, notably in its treatment of recursivity, which would be worthy of study in relation to organization theory.

The work of Weick, although it is directed explicitly toward processes (his main critique has been directed at the reification of actions and events as 'organization'), has contributed somewhat to a recursive view of organization. This is reflected in the representation of 'enactment, retention and selection' (Weick 1979) as processes of organizing. Beyond alerting organization researchers to recursivity as process, however, Weick has not developed a more elaborate framework for dealing with recursivity.

Recursivity appears to us to be under-theorized in organization studies at present, which, apart from work inspired by Giddens's structuration theory, has not really been developed as a coherent and autonomous direction of research. Recursivity has, nevertheless, an explanatory potential for bringing to light relationships between change and stability, structure and process in ways that are not possible with singular epistemologies. Luhmann's autopoiesis is interesting precisely because it is directed at explaining recursivity, where structure and process do not form a dualism, but a duality (in contrast to dualism, duality implies that we regard an entity as being both constitutive and constituting, such as takes place in the case of recursivity (Giddens 1979)). To enable an appreciation of duality in organization studies, autopoiesis, and in particular Luhmann's autopoiesis, merits study. A common denominator between Luhmann's autopoiesis and Giddens's structuration theory is the explicit focus on recursivity, which Giddens (1979: 5) places between structure and actions:

'By the duality of structure, I mean the essential recursiveness of social life, as constituted in social practices: structure is both medium and outcome of the reproduction of practices.'

In order to explore the potential that Luhmann's autopoiesis holds for recursivity-based theory, we will, in the last part of the article, hold it up against Giddens's structuration theory. Given the limited space in an article, the comparison cannot be but schematic. Nevertheless, it may still suggest the outline of the two sets of theories in relation to organization studies.

### **Some Points of Convergence**

The recursivity-based contribution that has most influenced works in organization theory is arguably Giddens's (1979, 1984) structuration theory. Although it is argued that the theory is not fully developed theoretically for organization studies (Hatch 1997), the past 20 years have witnessed some

empirical applications, for example, Barley (1986), Barley and Tolbert (1997), Manning (1982), Riley (1983), and Bartunek (1984). With Giddens, recursivity occurs in the field of tension between structure and actions. Structure is both constitutive of and constituted by actions, the latter being manifest in encounters (see Manning (1982) for an empirical application). The creation of meaning becomes central as structure makes actions meaningful, which is illustrated by Barley and Tolbert's (1997) use of 'scripts' in a study of structuration in two radiology departments. Hence structure and action become mutual media for one another in recursive processes: 'the structural properties of social systems are both medium and outcome of the practices they recursively organize' (Giddens 1984: 25).

Actions represent the dynamics that support the (re)production of structure, which are not exclusively deterministic of further actions, because they become the media of further actions, which may have unintended consequences and offer new possibilities. In other words, structures are attributed enabling properties by offering possibilities for new, and different, actions. This is a central point in Giddens's theory, and where he marks a break with, for example, Parsonian theory. By inference, structures also prepare the ground for their own change. Actors are seen as being knowledgeable about their actions and the evolution of the structure, but they may ignore the consequences of their actions. This is a second central point: a given state of the system may not be traced to the intentions of actors (Giddens 1976: 154).

Luhmann's autopoiesis and Giddens's structuration theory are convergent in several ways. First, they converge on the view of the significance of recursivity. Second, they view recursivity with structure as being both a constitutive and constituting entity. Third, there is the view that constitution happens through self-reference, something that is reflected in Giddens's reproductions and in Luhmann's autopoiesis. Nevertheless, between the two sets of theories there are important points of divergence, three of which we will focus on in the remaining part of the article.

### **Complementarity: Stability, Institution and Change**

A key question that has occupied a number of organization researchers is how we explain the formation and persistence of institutions (Tolbert and Zucker 1996; Barley and Tolbert 1997; Oliver 1992). Luhmann's autopoiesis provides a terminology for explaining institutions, but it does not explain under what conditions institutions arise, maintain themselves or disappear. Some structures are more resistant than others, and Giddens provides us with variables, such as power, which are acquired through access to allocative and authoritative resources. Allocative resources concern aspects such as material features, means of production and produced goods. Authoritative resources, on the other hand, relate more to the coordination of social space, ordering of relations between human beings as well as the organization of self-development and self-expression (Giddens 1984: 258). Giddens's explanation through the use of stable entities is something that Luhmann, being faithful to self-reference and contingency, rejects. The difference between the two theories at this point

is also reflected by the reciprocal critique made by Giddens (1990), who finds that Luhmann's *epistemes* are too contingent and lack 'ontological security'.

A crucial point is how Luhmann and Giddens explain recursivity in the context of stability and change in relation to organizations. Although Giddens gets quite close to explaining institutional formation, he does not really enter into a discussion of actual contexts that favor or work against institutional formation. DiMaggio and Powell (1991: 23) point out that Giddens fails to explain why some routines are more robust than others. The same could be said about his explanations of change, which are largely tied to Merton's (1936, 1949) idea of unintended consequences of social actions. That Giddens does not offer better explanations of change may be explained by the fact that structuration theory primarily aims at recursiveness between the two levels of structure and action. These are, however, two levels that are uneven in terms of the power to change. The possibility of structure changing actions is considerably greater than that of actions influencing structure. Because structure cannot be assumed out of hand to change itself, there is a powerful missing link between structure and action that could have helped explain structural change.

In contrast to Giddens's two-level theory, Luhmann incorporates the levels of events and processes, which allows greater understanding of how structure is changed in recursive operations. Moreover, Luhmann (2000) takes his theory to the organization-institution level. The problems of empirical application notwithstanding, Luhmann's autopoietic theory holds at least a terminological potential to explain structural change to a greater extent than is the case with Giddens's structuration theory.

The difference in their ability to explain change also arises from differences in the use of the term 'action' in relation to recursivity. With Giddens, action is central, and actors are acting subjects operating at three levels of consciousness (discursive consciousness, practical consciousness and unconsciousness). Actors are considered skillful and knowledgeable, both of the evolution leading to events and of the consequences of their actions. This earns him DiMaggio and Powell's approval for not considering people as 'cultural dopes' (1991: 23). Still, Giddens's notion of action has the flavor of 'praxis' in the Aristotelian sense, where actions are seen more as the self-sufficient activity that enables the system to reproduce itself. Luhmann's autopoiesis, on the other hand, is tied to communication:

'Social systems use communications as their particular mode of autopoietic reproduction. Their elements are communications which are recursively produced and reproduced by a network of communications and which cannot exist outside such a network.' (1986: 174)

Luhmann thus drives the question about recursivity further than Giddens, in the sense that he more specifically searches for the conditions of recursivity, whereas Giddens appears more content to observe that recursivity exists. When Luhmann is concerned with the conditions for recursivity, he forces the question of what matters in communication. In contrast to praxis, which is a reflection of the prevailing structure in the daily operations of people, he focuses

on the communication that surrounds differentiating operations. Systems attain autopoiesis through differentiation (distinction). Most system processes do not create the momentum or represent the stimulation required for reproduction, and it becomes important to differentiate that which enables connectivity between events from that which does not. Such operations are what Bateson (1972: 459) refers to as those arising from 'difference that makes a difference': the information that we select which becomes impulses to the system.

### **Complementarity: Spatial System Differentiation**

The spatial aspect of organization is attracting increasing interest among researchers (Hernes 2004), partly due to the time-space compression facilitated by increased use of communication technologies (Castells 1996). If interaction is spatially bound, as Giddens (1984) argues, an interesting question is how new spaces are created, setting the scene for new interaction, and particularly what conditions favor the creation of new systems. Part of the answer is found in the idea of structural change, or morphogenesis (Luhmann 1995: 352), where processes lead to the creation of new structures. In Luhmann's terminology, we would look at spatial differentiation, or in other words, how systems hivel off other systems across space.

The question is relevant to organizations, where projects and groups are established temporarily for taking care of specific functions, and where the operation of such entities may interact with each other as well as with the parent organization. Although spatial differentiation is not a main focus of Luhmann's autopoiesis, it still provides us with a better means to explain the spatial dynamics of organization. Systems enable the creation of new systems, sometimes in order to deal with complexity. Although the new systems may be formed in the image of the original systems, they develop their own lives and become self-referencing in their own ways. Differences from the original system arise through accidents or the unintended consequences of actions. Still, they retain some form of dependence on the original system. The duality of internal operations and the external links is explained by the dual facets of boundaries as closure and openness referred to above.

A critical factor that influences the formation of new systems beyond the boundaries of the original system lies in the handling of complexity. For example, if a large number of people in the social system make it difficult for the group to function in a sufficiently coordinated way, smaller subgroups may break away and form systems that operate autonomously in some respects, but still retain some dependence on the original group. The 'new' systems may have boundaries that are very different from the original one, because they may face different patterns of complexity. For example, a subgroup may be delegated specific functions, such as production, while the original group may orient itself more toward development activities. In this way, Luhmann's autopoiesis makes it possible to approach the study of organizations consisting of multiple organizing logics.

It is implicit in Giddens's approach, on the other hand, that recursivity refers mainly to processes interacting with one another in the same space.

Actions interact with structures, but without the possibility of actions hiving off structures in new spaces. The lack of explanation also relates to the difference in recursive power between actions and structure alluded to above.

### **Complementarity: The Making of Systems**

A point of departure of Luhmann's autopoiesis is to make the distinction between two basic types of systems: psychic and social systems. Psychic systems are essentially about consciousness, which forms the basis of meaning creation. In the psychic system, thoughts are the basic elements of reproduction. Social systems, on the other hand, operate through the medium of meaning, and their autopoiesis takes place through communication. Psychic and social systems, which are operationally closed to one another, form a structure defining cognitive and normative expectations respectively.

The distinction between cognitive and normative mechanisms is used extensively in social science, and in organization studies such a distinction is used in subject areas as diverse as group theory and institutional theory (see Scott 1995). However, a third type of mechanism applies, which is perhaps by far the most frequently studied aspect of organizations, and that is the use of physical structures. Scott (1995: 33) uses the term 'regulatory structure', which may include the types of formal rules, plans or physical partitioning that regulate human behavior. Regulatory structures are not just instrumental in that they channel human interaction, but their influence is also symbolic. In drawing on the work of Goffman (1959), Giddens (1979, 1984) leaves room for regulatory structures, such as through the term 'locale', which he argues create powerful frames for communicative settings. Luhmann's autopoiesis does not open up for regulatory structures, which is logical, given his reservations about the use of *epistemes*. He could also argue that physical settings cannot interact, and would consequently fail to meet the criteria of autopoietic systems. The absence of room for regulatory structures does, nevertheless, represent a lacuna in relation to the study of organizations. Rules and physical structures are created to make organizations more predictable, and again interact recursively with actions in the organization. There is not really room for structures in the sense of physical space (Hernes 2003) in Luhmann's autopoiesis, such as can be found in Giddens's structuration theory.

### **Luhmann's Autopoiesis and Recursivity-Based Organization Theory: A Basis for Further Work**

The preceding discussion suggests that there are important substantive differences between the two sets of theories, both in their definitions of terms and in the way they approach recursivity. Luhmann's autopoiesis reflects a more intimate and committed relationship to self-reference through its consistent application of contingency. Furthermore, it provides a more fine-grained and richer theoretical means of coming to grips with the inner dynamics of recursivity than does Giddens's structuration theory. On the other

hand, Giddens's structuration theory offers connection points to existing terms and phenomena in organization research, such as power, institutions and formal structure. The differences are complementary more than dysfunctional, and between these two approaches and other recursivity-based perspectives there is potential for developing vigorous research.

Recursivity poses obvious methodological complications, and neither Luhmann nor Giddens really offers any solution to applying recursive theory in empirical research. Luhmann makes methodological demands that could well discourage more than one student of organization (see Mingers 1995 for a critique). His insistence on relentless attention to contingencies demands that the observer always be ready to shift the focus from one connecting system to another. The outcome of such research would be correspondingly uncertain, although the studies would be time consuming. The methodological problems notwithstanding, a recursive approach to the study of organization is not a perspective that organization researchers can afford to ignore, a point which is also argued by Reed (1997) in a discussion of Bhaskar's critical realism. Recursivity-based studies may contribute the depth and dynamics of organization that other approaches do not offer. We think, therefore, that the price to be paid in terms of methodological trial and error will be worth the insights to be derived from a recursive approach.

### Concluding Remarks

We have illustrated Luhmann's autopoiesis in the light of three epistemological foundations of organization theory. We have illustrated how it is inconsistent with equilibrium-based theory and how it deviates significantly from assumptions in process-based theory. We think, though, that it holds potential for the development of recursivity-based theory, although it presents problems in empirical application.

The potential of Luhmann's autopoiesis may also be found at a more transcendental level, in the sense that it stimulates reflection without necessarily being applied to an organizational reality. Our experience with studying Luhmann's works suggests that it stimulates simply by being a uniquely extensive and rigorous (even elegant) set of theories. We therefore agree with Kickert (1993), who points out that much of the power of autopoiesis is as a source of 'creative lateral thinking'. We have hopefully shown in this article that Luhmann's use of autopoiesis challenges us to question the way we think about organizations, in particular how recursiveness may be conceptualized without falling prey to the structure-process dichotomy. Although Luhmann refers to his autopoietic theory as a 'super-theory', he insists that autopoietic systems must not be reduced to some epistemological or semiotic 'point of departure' (Luhmann 1995: 281). In other words, autopoiesis must not hem in our reason and limit our horizons. Instead, it must, contrary to structuralism, give us the freedom to discover what lies *outside* our realm of understanding. The aim of autopoietic systems theory is to provide us with a means of discovery, and not to be an end in

itself. This point seems to have been overlooked by some of the critics of autopoietic systems theory, who attribute assumptions about the making of systems to Luhmann. On the contrary, Luhmann's use of the term 'system' is just that — between inverted commas. It is symptomatic of Luhmann's treatment of the term 'system' that one of his favorite citations comes from Shaftesbury: 'The most ingenious way of becoming foolish, is *by a system*.'

### Note

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