ORGANIZATIONAL SEMIOTICS

Round Table Workshop 'An organizational semiotic view on interculturality and globalization' at the IASS 2004 Conference

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INTRODUCTION

Organizational semiotics can deliver fruitful perspectives to study interculturality and globalization. Organizational semiotics deals with all kinds of semiotic aspects in organizations, like behaviour of people, behaviour of departments and behaviour of information systems. In order to explain the relevance of semiotics in the study of organizations, an introduction into organizational semiotics is given in this paper. Organizational semiotics knows system-oriented approaches, behaviour-oriented approaches, and knowledge-oriented approaches.

1. WHAT IS ORGANIZATIONAL SEMIOTICS?

Organizational semiotics tries to understand organizations based on the use of all kinds of signs, texts, documents, sign-based artefacts and communication, thereby using the results of for instance psychology, sociology, economics, and information systems science as basic disciplines. One of the aims of organizational semiotics is showing what you are doing when you are trying to understand, design or change organizations in terms of the use of for instance models and metaphors. This is done in order to prevent people being trapped in the unconscious use of a specific metaphor or model type, and to make visible design space.

Organizational semiotics is a branch of semiotics. *Semiotics*, as seen from the viewpoint of organizational semiotics, studies signs, symbols, texts, documents, sign-based artefacts or memes as relatively autonomous and persistent phenomena. These texts, signs and documents are studied in their relation to their author, their reader, the world they represent, and other texts. How does semiotics relate to evolutionary biology and to cognitive psychology? It seems that you go too far when you see semiotics as part of cognitive psychology by saying that 'semiotics is an inquiry into the working of the mind'. Semiotics is certainly no rival for cognitive psychology in explaining the working of the human mind. It would be acceptable to say that semiotics should be based on, or use, the findings of cognitive psychology and evolutionary biology, but semiotics has its own topic. *Psychology* studies the mind as a cognitive system that interacts with the task environment (including other actors) and uses and produces signs or texts or documents. The focus is on cognitive architectures, behaviour, and performing tasks. *Evolutionary biology* studies animal and plant populations as part of ecological systems (or ecological niches), and their dynamics based on the transfer and selection of genes and memes. There seems to be a triadic system (Peirce would be pleased to hear that) consisting of living creature, ecological system and sign. Psychology focuses on the living creature as a system having a mind, evolutionary biology focuses on the ecological system as a whole, and semiotics focuses on the sign.

There are three fundamentally different approaches to the elementary unit of communication in semiotics, and all three have found their way now into organizational semiotics. These three approaches are based on the text, the sign and the meme as fundamental units, respectively. The choice of one of these approaches will have consequences for the type of empirical work that is done and can be done. *Text-based semiotics* has its empirical foundation in reading and analyzing texts, because texts are seen as relating to other texts. In *sign-based semiotics*, signs relate to the world (as object) and to human cognition (as interpretant). Empirical work will have to investigate the relation of signs to human (or animal) cognition, and to the world referred to, using

the results of for instance cognitive psychology, biology, or physics, but not trying to be a better cognitive psychology, biology, or physics. In *meme-based semiotics*, memes are primarily seen from the viewpoint of transfer and selection. Memes relate to their carriers (living beings) that form populations. The empirical work in meme-based semiotics will focus on the study of the dynamics of populations of memes and of their carriers, and on the mechanisms of transfer and selection. This brings along much quantitative and statistical work.

Organizational semiotics has found its place based on its practical applications in the field of analyzing and designing organizations, economic transactions and information systems using approaches, frameworks and methods that have been developed as alternatives to mainstream information systems (IS) methods. Well-known methods are, for instance, linguistic analysis of communication during work, actor interaction analysis, actor task analysis, semantic analysis, task knowledge analysis, norm analysis, and simulation model building. These approaches, frameworks and methods, however, define only part of the area covered by organizational semiotics.

2. History of organizational semiotics

Organizational semiotics started around 1973 with Ronald Stamper's seminal book 'Information'[1], a book that was intended to be the first chapter of a book on information systems design called 'organizational semiotics'. After this book, Ronald Stamper went on developing methods for analyzing organizations and specifying requirements for information systems. This suite of methods called MEASUR originated in the years 1984-1996, was defended by Ronald Stamper in the IFIP FRISCO group as can be seen in the FRISCO report of 1996, and has been excellently documented by Kecheng Liu in his book 'Semiotics in information systems engineering'[2]. A parallel development in this field took place in the form of the work of Peter Bøgh Andersen, amongst others resulting in the first book on computer semiotics[3]. A first workshop on organizational semiotics took place in 1995 at Twente University, Enschede (The Netherlands). From 1999 on, there has been a yearly workshop (1999: Almelo, The Netherlands; 2000: Stafford, United Kingdom; 2001: Montreal, Canada; 2002: Groningen/ Delft, The Netherlands; 2003: Reading, United Kingdom; 2004: Setubal, Portugal. These workshops have resulted in a series of reviewed and edited post-workshop books, published with Kluwer Academic Publishers. A website is in development at http://www.orgsem.org.

3. Approaches within organizational semiotics

An *organization*, as discussed in organizational semiotics, can be characterized as a community of people that share knowledge of desirable behaviour, and participate in the social construction of this knowledge. In the discussion about what it does mean that an organization changes, what the causes of these changes are, and how we can describe the dynamics of organizations, a variety of answers can be given, namely:

1. Propagation of adaptive patterns of behaviour in evolutionary time.
2. Communication by the exchange of signs, leading to evolutionary change in self-organizing cognitive systems and social systems.
3. Creation and annihilation of social affordances (social constructs) and the social norms attached to them.

[1] Stamper (1973)
[2] Liu (2000)
[3] Andersen (1990)

4. Actions, for instance (1) communicative actions, and (2) the design/ creation / change of information systems and other artefacts.
5. Functioning of the human cognitive system in (1) problem solving within the context of bounded rationality, (2) learning and (3) communicative actions, leading to the creation, change, conversion and transfer of knowledge.

Based on these answers, three major approaches can be discerned within organizational semiotics: (I) system-oriented approaches (corresponding to answers 1 and 2), (II) behaviour-oriented approaches (corresponding to answers 3 and 4), and (III) knowledge-oriented approaches (corresponding to answer 5). These three approaches partly correspond to Andersen's (1991) distinction between signs as systems: a psychological view of signs as *knowledge*, a sociological view of signs as *behaviour*, and an aesthetic view of signs as *artefacts*.

4. INTERCULTURALITY AND GLOBALIZATION

Interculturality and globalization are social constructs implemented in organizational and societal forms, but essentially existing in the representations and artefacts people use. Globalization can be seen as the emergence of new (global) cultural communities, especially those connected to multinational organizations and enterprises. People that belong to these new global communities also belong to several local cultural communities. Globalization, as it is often presented, can also be seen as an organizational form based on assumptions of the market structure and neo-liberalism; as such, it can be seen as an expression of an ideology.

Taking the answers mentioned in Section 3, interculturality can for instance be seen as:

1. The exchange of adaptive patterns of behaviour between cultural systems in evolutionary time.
2. Communication between people belonging to different socio-cultural systems by the exchange of signs, leading to evolutionary change in the cognitive systems of these people and the self-organizing socio-cultural systems to which they belong.
3. An exchange between different cultural communities that takes place based on the activities of people that form a linking pin between these communities, and leading to a gradual development of the social affordances and social norms in the connected communities. (Different cultural communities are defined as communities having different information fields. People can belong to several cultural communities or organizations.)
4. A sphere of actions (for instance (1) communicative actions, and (2) the design/ creation/ change of information systems and other artefacts) between people belonging to different cultural communities.
5. Problem solving, communication, and learning by people belonging to different cultural communities, leading to the creation, change, conversion and transfer of knowledge.

In order to make it possible to investigate these viewpoints on interculturality further, an explanation of the main approaches within organizational semiotics (system-, behaviour- and knowledge-oriented) is given in the remainder of this paper.

5. SYSTEM-ORIENTED APPROACHES

System-oriented approaches include sign system oriented approaches, evolutionary approaches and systems-theoretical approaches.

Sign system oriented approaches study media (spoken language, texts, instruments, computer interfaces) as sign systems, and see the use of these media by

people as based on systems of narration and interpretation. User interaction with media (texts, computer interfaces, instruments) is observed, as well as communication between people at work. The used media are analyzed using linguistic tools and organizational viewpoints like work practices. Communications and media are analyzed semiotically as structures consisting of smaller components and operations.

5.1. Systemic semiotics

One of the branches of sign system oriented approaches, namely systemic semiotics, uses systemic functional linguistics and elements from social semiotics and organization theory. A medium or text is analyzed in terms of genres, registers, themes and information units, leading to network-like structures[4].

5.2. Dynamic Semiotics

Another branch of sign system oriented approaches which might be called dynamic semiotics focuses on the analysis of the communication of people during work in a way that shows the steps in the deliberation about what is going on or what should be done[5]. In the communication between people sentences are uttered. Each sentence is a step in a process aimed at creating a common image of the situation and the actions to perform. The function of each sentence in this process can be made clear by pointing at the role or case of the words in the sentence. Models can be developed of such a process of narration, deliberation and interpretation by sign users using, for instance, conceptual spaces, case theory, and object-oriented modelling.

5.3. Evolutionary and systems-theoretical approaches

Evolutionary approaches and systems-theoretical approaches focus on the dynamics of the social system, for instance society, the web, an organization, or a network of organizations, as a whole. Evolutionary approaches choose strategies for survival and selection in evolutionary time as basic mechanism, while systems-theoretical approaches focus on the mutual influence of interacting systems by sign exchange.

6. BEHAVIOUR-ORIENTED APPROACHES

A basic assumption in behaviour-oriented approaches in organizational semiotics is that there is no knowledge without a knowing actor, and that there is no knowledge without action. Everything we know about the world is dependent on the judgment of actors. This means that instead of an "objective" world we must speak of the world views of actors. Behaviour-oriented approaches have been the most influential approaches within organizational semiotics until now (based on the number of publications and researchers). Within the behaviour-oriented approaches, information field based organizational semiotics can be distinguished from interaction structure based organizational semiotics.

6.1. Information field based organizational semiotics

Organization, information field and social norms

Information field based organizational semiotics (the Stamper school of organizational semiotics) is based on the idea of an information field[6]. An *information*

[4] MEHLER & CLARKE (2002)
[5] See for instance ANDERSEN (2004)
[6] STAMPER (1973, 2001); LIU (2000)

field is a set of shared social norms that express knowledge about desirable, acceptable and exemplary behaviour in a community. This shared knowledge generally has been accumulated during many generations. An *organization* is such a community in which the information field enables people to behave in an organised fashion[7]. The shared social norms in an information field can be seen as generating forces that make the members of a community tend to behave or think in a certain way. Organizations, especially bureaucratic organizations, can be described in terms of cultural and legal norms that regulate people's behaviour. For instance, a shelf of legislation defines everything the social security bureaucracy should do. Social norms are dependent on the consensus formed in a community. Therefore, social norms are thus valid in this community only. The concept of information field expresses this community-dependent character of social norms.

In the process of developing shared norms, forming a consensus in a community is important. Norms are thus socially constructed, and every socially constructed part of the world has a beginning and an end. The information field (based on social norms) is an alternative for the information systems concept (generally based on information flows). Although the concept of 'information field' was developed independently of the concept of 'semiotic Umwelt', you could say that an information field is the form that the semiotic Umwelt takes for a person living in a community. Because each person generally lives in several communities (family, work, religious community, club, country, and so on), the semiotic Umwelt for a person is composed of all the information fields bound to the communities he or she participates in.

Further analysis of social norms and affordances

Social norms can be described in a precise way so that they can be used in the development of (computer-based) information systems. For each norm, a condition, a triggering state, a responsible agent that has eventually to take (or avoid) action, a deontic operator, and the action to be taken (or avoided) can be specified[8]. The deontic operator specifies whether the action MAY, MUST, or MAY NOT be taken. Furthermore, for each norm the start time, the starting authority, the finish time, and the finishing authority can be specified. This focuses the attention on the fact that social norms are only valid during a limited period of time and in a specific community, and are created by the people that have the authority to do so.

As an alternative to the basic notions of the mainstream in the FRISCO group, namely perceptions and conceptions, Ronald Stamper has posed affordances and signs. Affordances stress the interaction between a human agent and its environment based on behaviour patterns that have evolved over time in a community. Signs stress the social construction of knowledge expressed in sign structures. Ronald Stamper[9] sees *affordances* as repertoires of behaviour and distinguishes physical affordances and social affordances. An important characteristic of affordances is that they are relatively stable over a longer period of time. *Physical affordances* are repertoires of behaviour attached to the recognition of properties of the physical environment that afford certain behaviour, while *social affordances* are repertoires of behaviour tuned to the social environment, for instance the behaviour afforded by the roles and responsibilities that people have in a community. Because a person's knowledge of physical affordances strongly depends on the knowledge that has been built up and has been handed down from generation to generation in a community, these physical affordances are social in

[7] STAMPER (2001)
[8] LIU (2000), p.105
[9] STAMPER (2001)

nature as well. For instance, a car affords driving by humans and transportation of humans and other species from one place to another. Such a physical affordance often has norms attached to it based on an associated social affordance. For instance, a car generally will be associated with ownership, and ownership has norms attached to it regarding who is allowed to decide about the use of the car.

The information field can now be seen as a set of physical and social affordances that are shared in a community[10]. Social affordances can be seen as social constructs existing as signs that can be created and annihilated by agents having the appropriate authority. Sometimes, these social affordances have the character of contracts between agents. Once they exist, social affordances afford, that is, authorize and stimulate, certain behaviour patterns of the agents concerned. Social norms can be seen as specifications of normative patterns of behaviour attached to social affordance. Special norms are attached to each affordance type governing the creation, annihilation, and use of particular affordances belonging to that type. A social affordance may be the prerequisite for another social affordance.

Methods of information field based organizational semiotics

A successful analysis of organizations that acts as a basis for the development of information systems depends on an adequate understanding of business problems, business processes, and the connected representation of requirements. The analysis and development process undergoes various stages that often overlap and are iterative. Activities at these stages involve different stakeholders, such as users, analysts, designers, programmers and testers. Important stages are business systems analysis, semantic analysis and norm analysis. In business systems analysis, problem articulation focussing on the different stakeholders is central[11]. In semantic analysis, the roles of people, their authority and responsibilities are analysed. Based on this analysis, agent types, affordance types, and their relationships together are drawn in an ontology chart[12]. In norm analysis[13], the responsibilities of agents with respect to affordances are investigated, and the norms governing the behaviour of these responsible agents are specified. In information system design, the ontology chart can be the basis of an object model, while the norm description can be the basis for a behavioural specification, for instance in the form of use cases. The whole development of an information system can be seen as a series of semiological transformations. From a methodological perspective this and also the other approaches in organizational semiotics can be studied empirically, either in case studies or in survey research.

6.2. Interaction structure based organizational semiotics

Interaction structure based organizational semiotics has its roots in the language action perspective and focuses on actions and the actors performing these actions[14]. Humans are actors. Human actors can act on behalf of an organization; in this case the human actor is an agent of the organization, and the organization can be seen as an actor.

An organization is seen as (1) an agreement (a communicative fact) between the principals and other parts of the society, and (2) a pattern of everyday actions that is continuously reproduced through communicative acts of its agents. Organizations are

[10] STAMPER (2001)
[11] LIU (2000), p.38
[12] LIU (2000), p.61
[13] LIU (2000), p.98
[14] GOLDKUHL & RÖSTLINGER (2003)

constituted and maintained through communication. Information systems are organizational sign artefacts with action capabilities. This view on information system transcends a purely representational view of information systems. Information systems can also act as agents of an organization. Information systems are established through design actions. These design actions have a communicative character and also have a regulative force.

Actions can be part of a structured interaction between actors, for instance a business interaction. Such an interaction has a default structure consisting of generic phases based on social convention. Actability is a property of something that enables and contributes to the performance of the action.

In interaction-based organizational semiotics, the analysis of organizations and the related design of information systems typically focus on the charting of actions and language actions (communicative actions) between actors within organizations, and between organizations conceived as actors. This charting of actions generally leads to interaction diagrams. Frameworks that offer basic concepts and typical patterns of interaction are used to sharpen observation and to standardize modelling, for instance the BAT framework[15] and the DEMO framework[16].

7. KNOWLEDGE-ORIENTED APPROACHES

7.1. Cognition, sign structures, and knowledge

Knowledge-oriented approaches to organizational semiotics see knowledge as representations or sign (and symbol) structures in the human mind, enabling adequate behaviour of the human actor[17]. Newell and Simon's[18] symbol system hypothesis of cognition has been a very important step in the development of knowledge-oriented approaches in semiotics. Based on this hypothesis, the cognitive architecture of an actor is distinguished from knowledge. Symbol structures in the actor's mind are processed by or within the cognitive architecture. In the ecological environment or semiotic Umwelt of the actor, actor-made signs express intentions, help remembering and enable communication. These signs can be seen as knowledge moving between actors, and are sometimes called information to distinguish them from knowledge in the actor's mind. In this way a triadic system can be discerned consisting of the actor's cognitive architecture, the signs (and operations on or manipulations of the signs or symbols) in the actor's mind (knowledge), and the signs in the actor's semiotic Umwelt made and perceived by the actor (information).

A further distinction can be made between tacit or sensory knowledge, coded knowledge, and theoretical knowledge[19]. Communication between actors requires the use of signs that exist in their shared semiotic Umwelt.

Sensory (or tacit) knowledge is knowledge that is represented as behaviour patterns in the actor's cognitive system. These behaviour patterns concern perception by the senses and action by the motor system. Sensory knowledge is not necessarily expressed as signs in the semiotic Umwelt of the actor. Coded knowledge is knowledge that is presented in the semiotic Umwelt as signs structured as codes or notations, and therefore can be understood by other actors. These signs can be for instance icons, diagrams, language or mathematical signs. The differences in these sets of codes refer to

[15] GOLDKUHL & RÖSTLINGER (2003)
[16] BARJIS, DIETZ & LIU (2001)
[17] JORNA (1990)
[18] NEWELL & SIMON (1976)
[19] CIJSOUW & JORNA (2003)

a decreasing ambiguity from icons to mathematics. Theoretical knowledge is coded knowledge that is presented with a structure that allows reasoning. Theoretical knowledge allows explanation, that is to say answers to questions "why".

Within organizations, knowledge can be created by processes of construction. Knowledge about something that does not exist yet, but has to be constructed (for instance, a new aeroplane, or new computer program) has to be attained by a process of discourse[20]. In this process, actors take viewpoints based on their specialist knowledge and organizational role. Based on these viewpoints, views are expressed. In a process of negotiation, views are exchanged, compared, criticized, and possibly changed, with the aim to reach a set of compatible views that can be seen as organizationally constructed knowledge.

As a result of processes of knowledge construction, and other communication and learning processes, knowledge transfer and knowledge conversion can occur. Knowledge conversion is the change of knowledge from one type to another, for instance the change between sensory (tacit) knowledge, coded knowledge, and theoretical knowledge. Knowledge conversion is an important perspective for studying the dynamics of organizations.

7.2. Multi-actor simulation models of organization

In *multi-actor simulation models of organization,* artificial actors realized by software on a computer system try to cooperate and coordinate activities. These artificial actors simulate human actors or organizational actors (see also section 6.2.). Important issues are a) the interaction with, and representation of, the environment (space, objects, itself, other actors), b) patterns of communication using language actions and messages, c) learning in a multi-actor system by exploration, imitation, and knowledge transfer, d) the formation of shared knowledge, for instance social constructs and plans, and e) the handling of (networks of) decision situations using social constructs.

A first type of multi-actor models is based on simulated actors having a psychologically plausible cognitive architecture and social constructs that express actor commitments[21]. Generally, these social constructs are the result of processes of negotiation between the simulated actors leading to the solution of problems stemming from incompatible views and desires. Examples of such social constructs are plans, contracts, tasks, and norms. These social constructs are important instruments to achieve coordinated actor behaviour. A second type of multi-actor models is based on actors that are logically modelled including axiological, epistemic, and deontic components[22]. These actors can express commitments, propose commitments and negotiate with each other about them, and accept commitments. In this way a process of knowledge construction resulting in social constructs can be simulated. Actor behaviour is based on commitments and other norms. A third type of multi-actor models is based on a special type of Petri-net that can handle signs, and sign processes, leading to a dynamic picture of the use of signs and other behaviour by actors in an organization[23]. These simulation models can be used for the simulated re-engineering of organizations.

Typical methods of knowledge-oriented organizational semiotics are task analysis, analysis and characterization of organizational knowledge, observing and

[20] GALARETTA (2003); CHARREL (2003)
[21] HELMHOUT, GAZENDAM & JORNA (2004)
[22] FILIPE (2004)
[23] GUDWIN (2004)

analyzing processes of knowledge construction, and developing multi-actor models of organizations.

8. CONCLUSION

Despite the variety of approaches in organizational semiotics, there are some common characteristics of the field that require attention, namely (1) the semiotic traditions that function as a source of inspiration, (2) the view of the object of study, namely the organization, and (3) the focus of research.

Organizational semiotics is inspired by (a) the more analytical traditions in semiotics represented by scholars like Peirce, Morris, Carnap, Goodman, Von Uexküll, Sebeok, (b) by language action theory, represented by scholars like Austin, Searle, and Habermas, and to a lesser extent (c) by semioticians like De Saussure, Greimas, Barthes, Eco and Rastier. Other sources of inspiration are, amongst others, philosophy, cognitive psychology, organization theory, logic, and object-oriented modelling. These sources of inspiration are related to the ambition of organizational semiotics to understand what is going on in organizations by looking in an analytical way at the use of language and sign structures, this as a basis for the development of information systems.

The sign structures, language use, and related phenomena that are characteristic for an *organization* can be seen as (a) an *information field* consisting of *social constructs* (for instance agreements) and *social norms*, or (b) *work practices* consisting of *communicative actions* (that are, amongst others, part of *deliberations before taking action*) and *material actions*, or (c) the *knowledge* of *human actors* using *artificial actors (information systems),* also called a multi-actor system. The words italicized in this paragraph refer to concepts that are shared by many researchers in organizational semiotics.

The research in organizational semiotics can differ based on (a) the (time scale related) primary focus of study of sign processes and sign structures, and (b) on the location of the sign structures that are studied: the semiotic Umwelt (information) or the cognitive system of human actors (knowledge).

The primary focus of study of sign structures or sign processes can be:

- the process of deliberation leading to a common understanding of what is going on, should be done, should be constructed (based on a design), or is agreed (for instance a contract);
- the resulting sign structures that often have a network-like structure as media or texts in the semiotic Umwelt, or as common understanding (an information field of social constructs) in a community;
- the evolution of sign structures that express common understanding (common knowledge) in a community or organization.

The location of the sign structures that are studied can be:

- sign structures or texts that exist or are exchanged in the semiotic Umwelt (information);
- sign structures that reside in human cognition enabling behaviour (knowledge).

This leads to the following table (Table 1) that shows the focus of some of the approaches in organizational semiotics (the numbers refer to the section numbers where the approaches are discussed).

primary focus → / location of sign structures↓	sign process	sign structure	sign structure evolution
information	5.2	5.1	5.3
knowledge	5.2, 6.2, 7.1	6.1, 7.2	7.1, 7.2

Table 1: overview of focus and location of sign structures related to the various sections

Seeing interculturality and globalization as social constructs and work practices implemented in organizations can be fruitful. A further analysis using organizational semiotics leads us to see social constructs and work practices as sign structures existing as information and knowledge, and enables the analysis of how these sign structures come into existence, exist through time in a community, and evolve over time.

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