The Evolution of Organisational Semiotics

- A Brief Review of the Contribution of Ronald Stamper

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Abstract. Organisational Semiotics is a young discipline which emerged from the late 1980’s, for which Ronald Stamper’s contribution is significant and essential. This paper is to mark his role and contribution to this field of study. The paper is based on an interview with Ronald Stamper and research of relevant papers. It reviews briefly the history of the evolution of Organisational Semiotics; summaries key contributions from Ronald Stamper; and reports his personal thoughts and guidance on the research directions and important issues in the further development of the field.

1 The Emergence of Organisational Semiotics

Ronald Stamper’s service in the army gave him the first real experience in an organisation. His conclusion was that an authoritarian organisation such as the army would not allow the proper use of individual’s talent, though the organisation could be efficient. After the military service, he went to read mathematics and graduated from the University College of Oxford University, followed by a postgraduate study in statistics in the same college.

Ronald Stamper joined the Oxford Regional Hospital Board 1958 as an Assistant Statistician, where he was a pioneer in the use of computing and operational research. He worked for the steel industry in Ashorne Hill from 1960 as a project team member, the project leader, and a member and then a senior member of the Directing Staff. To remedy the industry’s desperate shortage of specialists, he created the first UK course in systems analysis (for information technology based information

1 This paper is based on an interview with Ronald Stamper on the 22nd December 2003, and research of relevant papers.
systems) geared to improving organisational performance rather than for computer sales. This course became the foundation of the national programme of Systems Analysis training. He developed a business game called the Fluted and Square, teaching people about the nature and characteristics of information. The players of the game were required to interact with each other using information for communication and coordination to conduct business. This helped the participants to understand how information is used in a business context and to generate value for organisations. This training package of business game was then adopted by the National Computer Centre for public and professional courses for a long time and is still in use at several universities.

During the extensive contact with industry and his involvement in the training courses, Ronald Stamper observed the important questions raised by industrial users, and started to see the need for an effective theory for information systems, which has motivated him to write about information as a resource. His notes covered a wide range of topics from many aspects of information, its role and function. In the course of the development of his ideas, he has been inspired by several schools of thoughts. Semiotics, represented by Charles Sanders Peirce, has offered him inspiration to his work. A student of Peirce, Charles Morris (e.g. [6, 7]) had further influences on the development of Ronald Stamper’s ideas. In his view, signs enable one to perform actions. Operations one performs in relation to the sign define the meaning of the sign, as that links the sign and the reality which is socially constructed and constantly altered through the use of signs.

This is perhaps an early form of his theory of affordance. As his work evolved over the years, the foundation of a semiotic approach to information in an organisational context gradually built.

Ronald Stamper joined London School of Economics and Political Science in 1969. He was instrumental in creating a research and teaching programme in information management. He was motivated to leave his intended career as an industrial manager because he was concerned about the emphasis on information technology without a corresponding concern for the information resources it manipulates. He has aimed to establish a better balance in both teaching and research concerning information resources, methodology of analysis and design, the semantics of data, and computers and law. In support of the teaching he decided to write a book on the semiotics of organisations. The title of the book he first conceived was “Organisational Semiotics”, but after some discussions with colleagues he decided to choose a title that would be more recognisable by the intended readers. His book of 1973 is the first in examining the nature of information from a semiotic perspective.

Built from the contribution of several schools of thoughts, his book has been recognised for the remarkable contribution in that he has developed the semiotics much further by introducing three additional aspects (physical, empirical and social aspects) to the original Peircean semiotics (syntactics, semantics and pragmatics). In his book, he explains the contribution of Shannon in relation to other semiotic aspects by explicating the use of the information theory in the study of syntactic functions and
properties of the signs. However, his ground-breaking contribution in the book is his in-depth discussion in pragmatics and completely new addition of social dimension. His behaviourism position is apparent in the book, which determines his later adoption of Gibson’s affordance theory, with expansion from ecology to social and business contexts. The great value of this book, in view of many readers, is that he has given a new life to Semiotics, a long established discipline, and has revealed its relevance to our current work and life in the information society that we live in.

2 The Development into a Scientific Discipline

In London School of Economics and Political Science, Stamper established a major research programme in the analysis of organisations as information systems, which has delivered a series of research outcomes with great impact. Supported by the two national research councils, his work pioneered the fields of computers and law (as deontic systems) and of data semantics. The methodology which has been developed under this research placed the control of information technology firmly in hand of management. As a by-product of this research, he created one of the first expert systems shells. This expert system was used in testing the releases of the first relational database system at Palo Alto.

Stamper and his colleagues published a Legal Oriented Language (LEGOL) at the ALTORG Conference in Gothenburg in 1974, which is probably before the publication of PROLOG. LEGOL, as a language and formalism, enables to express complex rules and regulations. It was first developed for application of statute law and preparation of legislation and the development of associated administrative systems, with the primary aim of providing techniques of information analysis.

In the meantime, Stamper has been explicit in adopting the philosophical position of radical subjectivism. He has totally opposed the stance of a given objective reality; and argued that reality is constantly being constructed and altered by people’s interaction and negotiation through social processes. Consequently, objectivist methodologies that see information systems as based on a simple mapping of the objectively given world to a representation in the information system are bound to fail. Popper’s scientific method of refutationism [9], by which techniques, methods and theories are tested against a series of cases, is an important element in the process of social construction of knowledge. Theories that fail to stand up to the test will be refuted and eliminated, and further hypotheses will be established, subject to further tests. A hypothesis successfully withstood a range of rigorous test will be accepted as scientific knowledge. Another element in the process of social construction of knowledge is the creative act of a person to propose new views, techniques, methods and theories. Once fundamentally new views (and the associated techniques, methods and theories) get accepted in a scientific community, one can speak of what Kuhn [3] called the paradigm shift in the process of scientific evolution. Together, these two elements form a valid approach in the information systems discipline.
The LEGOL project evolved into another research project of NORMA, which stands for Norms and Affordances. Norms are rules derived from social, cultural and business practices, which can be formal, informal, explicit and implicit. Affordances, as first discussed in Gibson’s ecological approach [2], are abilities of an individual or an organisation which enable them to perform actions. Affordances are socially determined and dependent on the social, cultural and business context (more discussion on this notion to be found below in section 3.5.). Stamper in this project places a great deal of emphasis on norms, which he sees as a field of force that governs the behaviour of individuals and organisations. (This is similar to the notion of how gravity controls the behaviour of all objects within the field of gravity). These constructs of norms and affordances opened up an entirely new approach to organisational analysis and information systems development. The information systems analysis becomes identification of agents (or actors), affordances and the governing norms. These constructs have been further expanded to incorporate other essentially important elements that other approaches have ignored or are unable to deal with, such as responsibility, authority and temporality.

In 1987, as the result of consolidation of the research activities in his group and his associates elsewhere, Stamper established the MEASUR research programme. The philosophical departure of the programme was that “information systems are social systems. Telematic systems have essentially the same role to play in social systems as those based on paper and telephone technologies: that is they can assist people in collaborative activities…. Only by correctly embedding the computer-based system in the social system, can the data it contains have any meaning, express knowledge or support intelligent behaviour” [13]. Unlike many technologically motivated projects which focused on CASE (computer assisted software engineering); it regarded the CABE (computer assistance for the business enterprise) as the key concern, by focusing on how IT systems can best support business objectives.

The University of Twente became the centre of organisational semiotics research when Ronald Stamper took up the chair of information management in 1988. He has been a key member of FRISCO, a task group of IFIP WG 8.1 to produce a framework of information systems concepts. The majority of the task group took an objective positivist stance and considered the design and specification of information systems could be based on a set of clearly defined concepts and teams on a scientific ground, as what have happened in other sciences such physics and chemistry. Stamper had to work extremely hard to demonstrate the value of his work; and finally, thought not totally convinced, FRISCO has accepted Organisational Semiotics as one of the pillars on which the field of information systems is built [4, 11].

As the key initiator, Stamper and his colleagues launched the first international workshop on organisational semiotics in 1995 on the campus of the University of Twente. This workshop allowed the participants to form a research community with a commitment to inquiring into the use of information in organisational contexts. Compared with the first meeting, the second workshop in Almelo (The Netherlands) in 1999 and the third workshop in Stafford (UK) were attended by more researchers and work presented there confirmed the importance of the issues that the community has been concerned with. Stamper’s work has been highly regarded in the community.
Two more workshops took place, thereafter one in Delft (the Netherlands, 2002) and the other one in Reading (UK, 2003). One of the important milestones for the organisational semiotics community is the IFIP WG8.1 working conference, “Organisational Semiotics: evolving a science of information systems”, Montreal, 2001; Stamper was the general chair. This conference is the first IFIP working conference in the field of Organisational Semiotics, which is one step closer to a fully-fledged discipline which has been continuously evolving [1].

3 Some Key Concepts in Stamper’s Work

Ronald Stamper has enriched the world by introducing a system of concepts that play an important role in organisational semiotics. These concepts are, in order of historical appearance: the semiotic ladder, social norms, the information field, actualism, the social affordance, and ontological dependency. The development of Ronald Stamper’s concepts must be seen against the background of the development of his philosophical position. Starting around 1967 with a kind of pragmatic operationalism inspired by Peirce and Morris, Ronald Stamper’s philosophical position has since 1985 developed further into the direction of a radical subjectivism called by him ‘actualism’. The concepts of ‘semiotic ladder’, ‘social norm’, and ‘information field’ have been developed in his operationalistic period, while the concepts of ‘actualism’, ‘social affordance’, and ‘ontological dependency’ have been developed in his subjectivistic period.

3.1 The Semiotic Ladder

The semiotic ladder has emerged from the difficulties that Ronald Stamper has detected while trying to define ‘information’. His opinion is that, in defining something, it is important to specify precisely by what procedure or operations to be measured or performed. This leads to an operational definition. In addition, you have to use ostensive definitions for making clear what you mean. An ostensive definition is a definition by pointing to an example of the thing or quality being defined. In his later work within the FRISCO group, Ronald Stamper asked for an ostensive definition of basic concepts like perception and conception: take me by the hand and show where these perceptions and conceptions are. In the interview with Ronald Stamper, he said he was especially inspired by Ogden & Richards, Morris and Carnap at the time he followed the path to operational and ostensive definitions of information, while the operationalism of Bridgman was unknown to him at that time.

The solution to the difficulties encountered in trying to define ‘information’, according to Ronald Stamper, is to see information as signs and to define the different aspects or levels of these signs based on the different operations you can do upon these signs. In his book about ‘Information’ [10], Ronald Stamper explains that his research into the operational definition of signs has led to three new views on signs from physics, empirics, and the social world, respectively, in addition to the three aspects of signs distinguished by Morris, namely syntactics, semantics, and
pragmatics. This leads to six views on signs that together can be depicted as a semiotic ladder. This semiotic ladder consists of the views on signs from the perspective of physics, empirics, syntactics, semantic, pragmatics, and the social world. The addition of a view on information from the social world stresses that information use is always a part of human behaviour in a social setting, where norms or social conventions govern people’s behaviour [5]. The semiotic ladder shows that there are six views on information that together form a complex conceptual structure. This means that seeing ‘information’ as a primitive or atomic concept is wrong [12].

In the interview with Ronald Stamper, we discussed whether the levels of the semiotic ladder can be seen as levels of description, where each level has its own time scale and presupposes the underlying levels. According to Ronald Stamper, the levels of the semiotic ladder are independent of each other, you look at properties of signs using different operations; furthermore, each level has its own theoretical apparatus.

3.2 Social Norms

The social norm concept as developed by Ronald Stamper helps us in understanding organisations. Organisations 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. In the interview Ronald Stamper said that you can see this legislation as the DNA of a bureaucratic monster.

According to Ronald Stamper, communities of people can only exist because the people in a community share knowledge about desirable, acceptable and exemplary behaviour. This shared knowledge has been accumulated in millennia. It can be expressed and described in the form of social norms. These social norms can be seen as forces that make the members of a community tend to behave or think in a certain way [14]. According to Ronald Stamper, norms also determine what information you need. In a more general sense, all knowledge can be seen as consisting of norms and attitudes. Attitudes are norms without conditions.

“Thus a community builds its knowledge of what to do (behavioural norms), how things should be judged (evaluative norms), how things happen (cognitive norms), but also what exists in our world (perceptual norms).” [12].

Around 1974, Ronald Stamper developed a format to describe social norms in a precise way so that they can be used in the development of information systems. For each norm, a condition, a triggering state, a responsible agent that has eventually to

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2 We call the concept of norms developed by Ronald Stamper, where norms are socially rooted as shared knowledge about behaviour in a community, social norms. This is to distinguish them from a more general concept of norms where norms may be universally valid and may have the meaning of standard quantities, qualities, or shapes to be produced.
take (or avoid) action, a deontic operator, and the action to be taken (or avoided) is specified [5]. 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. In describing organisations or analysing a piece of legislation, you can distinguish a substantive core and rules for how to pass information and how to exercise control. A strong point of Ronald Stamper’s method based on the description of social norms compared to more traditional approaches in information systems development seems to be its ability to model legislation and bureaucratic organisations.

3.3 The Information Field

Social norms are dependent on the consensus formed in a community. Social norms are thus valid in this community only. To express this community-dependent character of social norms the concept of information field had to be introduced. An information field is a set of shared norms that enables people in a community to behave in an organised fashion [12]. 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. According to Ronald Stamper, even the physical world as we know is constructed by social processes. The information field (based on social norms) is an alternative for the information systems concept (generally based on information flows). In the interview, we discussed the relationship between the concept of ‘information field’ and the concept of ‘semiotic Umwelt’. 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.

3.4 Actualism

Around 1985, Ronald Stamper took an important step in his philosophical development. Probably as a reaction to the in his view untenable philosophical positions of some other members of the FRISCO group, he developed a type of radical subjectivism that he later was to call ‘actualism’. Actualism emphasises: 
“(a) that, to all intents and purposes, without an actor no reality exists, (b) to know the world the agent must act, (c) that the reality only exists here-and-now, the actual world and (d) the agent who has to detect the invariants must take responsibility for them” [12]

In this context, actors or agents are only human beings, and perhaps communities of human beings. The world we know is only available through a knowing subject. Radical subjectivism means that everything we know about the world is dependent on
the judgment of agents. Actualism also means that a responsible agent perceives the world as affordances (to be explained below).

In the interview, Ronald Stamper said that the notion of truth has to be replaced by the notion of responsibility. Truth has to do with relationship between the “objective” world and a model of that world, while responsibility has to do with the relationship between a responsible agent and the views he or she expresses. Instead of an “objective” world there are world views of agents.

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.

3.5 The Social Affordance

Ronald Stamper’s switch to a radical subjectivism went hand in hand with his adoption of James Jerome Gibson’s perception theory in which impulses lead agents to pick repertoires of behaviour. An affordance is a set of properties of the environment that makes possible or inhibits activity [2]. According to Gibson [2] “The affordances of the environment are what it offers the animal, what it provides or furnishes, either for good or ill. . . . As an affordance of support for the animal. . . they have to be measured relative to the animal. They are unique for that animal. They are not just abstract properties. They have unity relative to the posture and behavior of the animal being considered.” “The affordance of something does not change as the need of the observer changes.” [2]

Ronald Stamper sees affordances as repertoires of behaviour and distinguishes physical affordances and social affordances. Physical affordances are repertoires of behaviour attached to the recognition of Gibson’s affordances (properties of the physical environment), while social affordances are repertoires of behaviour tuned to the social environment. Because a person’s knowledge of physical affordances is heavily dependent 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 nature as well. The information field can now be seen as a set of physical and social affordances that are shared in a community [12]. Social affordances are socially constructed, therefore are valid for a certain community, have a start and finish time, have a start and finish time.

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3 We use the term ‘social affordance’ to denote Ronald Stamper’s affordance concept that has a strong social basis and could be defined as ‘a pattern of behaviour that is shared in a social community’, to be distinguished from Gibson’s affordance concept that is connected with perception and is defined as ‘characteristics of the world that afford a certain pattern of behaviour’.
and a starting and finishing authority. Social norms can be seen as specifications of normative patterns of behaviour attached to social affordances.

### 3.6 Ontological Dependency

Some repertoires of behaviour can only exist during the co-existence of others. If a social affordance A can only exist during the existence of social affordance B, then A is ontologically dependent on B [12]. Ontological dependency allows the construction of ontology charts for a certain community, in which the relevant agents, social affordances, determiners (a kind of descriptors or attributes) and their ontological dependency relationships are depicted [5]. For the development of an ontology chart, the investigation of the norms and behaviour patterns in a community is the starting point. This means that you have to find people representing this community to define the relevant affordances.

The notion of society is often used in ontology charts as the root agent. Asked in the interview why this is the case, Ronald Stamper answered that society is the biological species to which we belong. Beginning with society means stressing responsibility as opposed to individualism. In practice society means one or more communities that are relevant for the problem area at hand.

Social affordances and ontological dependencies are Ronald Stamper’s answer to the entity-relationship model that is predominant in mainstream information systems design. The social affordances more or less replace the entities, while ontological dependencies more or less replace the relationships. Moreover, social norms specify social affordances, and these norms are the basis for the determination of information needs and the specification of processes.

### 4 Conclusion

Despite the fact that Ronald Stamper’s concepts have been developed in two distinct periods, namely of operationalism and subjectivism, these concepts form a systematic

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4 Liu (2000, p.98) sees affordances as patterns of behaviour at the individual level, while norms are collective affordances at the level of the complex agent at the social level.

5 The semi-indexical representation of an affordance and the associated habits of action (repertoires of behaviour that can be specified as norms) can be seen as unit of tacit knowledge (Gazendam, 2001, p.191).

6 Ronald Stamper states that in an ontology chart each item (affordance, etc) only has two items where it is ontologically dependent on. This as a stimulant for thorough analysis (Stamper, 2001, p.155).
The semiotic ladder is compatible with actualism because it defines the aspects of information based on actions (operations). Information fields can be seen as encompassing social norms as well as social affordances that are shared in a community and that have developed in that community over time. Social norms can be seen as specifications of a social affordance (or a group of social affordances), describing the expected behaviour encompassed by a social affordance.

In the interview, we asked Ronald Stamper how his work could contribute to counteracting the negative aspects of our economic system, (sometimes expressed by him as selling more soap without having an eye for the social and environmental consequences). He answered:

“At the moment, our post-industrial society is permeated by metaphors created by media. Semiotics should be taught at schools to enable young people to identify and analyse these metaphors. A lot of economics has to do with the exercise of power through semiological means. For instance, it is assumed that ‘the market’ somehow exists, but this is only a metaphor. There are no distinctions between specific kinds of markets.”

References
