STUDIES IN ORGANISATIONAL SEMIOTICS: AN INTRODUCTION

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ORIENTATION TO SEMIOTICS

The broad application of semiotic approaches to organisations has been considered by a number of information systems academics to be a necessary advance in information systems theory (see for examples Land 1985, Rzevski 1985, and Tully 1985). Along with psychology and sociology, semiotics is considered to be a foundation discipline for information systems within the IFIP WG 8.1 FRISCO Framework (Falkenberg, et al eds/ 2000). Semiotics examines the processes of production and consumption of meanings in organisations, institutions and society, and their underlying mechanisms by means of what Pap (1991, 47) refers to as a "...systematic analysis of patterns of interpretive behaviour". Although often unacknowledged, meaning is central to any definition of an information system. While the concept of meaning and meaning making is difficult to define, semiotic theory can assist by emphasising the distinctions between 'information', 'meaning', 'sense' and 'reference' for example (see Nöth 1990, 92-102). Eco (1976, 8), provides a broad definition of semiotics as the study of "...all cultural processes as processes of communication". Cultural processes are interpreted to include organisational contexts and processes thereby providing a link between systems and organisations.

Most applied semiotic studies start by identifying or defining one or more models of the *sign* as the basic unit of analysis. Signs are usually glossed as 'something that stands for something else in some capacity or another'. Depending on the model of the sign, mention may be made to an entity for whom the 'stands for' relationship applies. For a discipline often defined as the 'study of signs', there are a plethora of distinct sign models from which to choose. The reader is directed to Winfried Nöth's *Handbook of Semiotics* for a detailed description of different sign typologies, sign models and disciplinary history (Nöth 1990, 79-91). The period of modern semiotics starts at the beginning of the 20th Century with the emergence of two independent traditions. The work of Ferdinand de Saussure represents one of these traditions. Considered to be the founder of modern linguistics, he is also a pivotal figure in semiotics by distinguishing the former from the later in *Cours de linguistique générale* (1916)- a volume assembled from lecture notes edited by colleagues and published three years after his death (currently available as Bally, Sechehaye and Riedlinger eds/ 1993). The other tradition is represented by the work of Charles Sanders Peirce, a founder of symbolic logic as well as an expert in philosophy, mathematics, and many other fields. Peirce developed a pansemiotic view so all-inclusive and elaborate that the definitive, chronological collection of his work called the *Peirce Edition Project* remains unfinished, only six of an estimated twenty volumes of have been published to date (see for example Houser et al eds/ 1999). Other semiotic traditions exist. There are semiotic forms of linguistics - referred to here as semio-linguistics - which adopt a semiotic theorisation of *text* rather than using an explicit sign model during analysis. Examples include text semiotics, systemic functional linguistics (Halliday 1978, 1985; Martin 1992) and systemic semiotics (Fawcett 1986). There is also at least one influential form of semio-linguistics that does uses an explicit sign model (Hjelmslev 1943/1963), while Social Semiotics (Kress 1985; Hodge and Kress 1988) develops concepts of discourse, text and social subjectivity based on the 'social sign' of Bakhtin (see Todorov 1984).

Despite the obvious applicability to information systems of a discipline that concerns itself with the study of 'patterns of interpretive behaviour', there have been impediments to more vigorous interchange between semiotics and informatics. There are several contributory reasons for this situation. A major contributory reason is that Western semiotics likes to trace its lineage back to the Stoics (approximately 300 BC to 200 BC) and the Epicureans (300 BC to 0) through to the Enlightenment and onto the 19th and 20th Centuries. Faced with this daunting history, and a diversity of researchers, theories, and terminology to rival the most entrenched of modern disciplines, it is not surprising that a casual 'dip' into the literature might prove unproductive. Moreover, as semiotics is centrally involved with understanding communication, it becomes obvious that many commonsense notions of what constitutes communication would need to be reconsidered. As a consequence, semiotics unusually needs to employ meta-theory of one form or another, which leave it open to charges of obscurantism and elitism (Sless 1986, 2). However, it is unreasonable to assume that the constructs used to explain and examine such complex and taken-for granted cultural phenomena must necessarily be simple. Another major contributory reason is the difficulty of locating semiotics within any single discipline- semiotics is inherently trans-disciplinary. Broad application domains have included, but are not limited to, the cultural constitution of subjectivity, criticism and knowledge, communication and perception. A sample of subjects using semiotic theory of one form or another would include cultural and literary studies, film criticism, feminism, political science, legal studies, town planning and architecture, anthropology, biology and genetics. Moreover, there is considerable debate about what constitutes the core criteria that defines semiotics (Pap 1991).

SEMIOTICS APPLIED TO INFORMATIC DOMAINS

Semiotics has always been implicit within informatic domains including computing science and information systems (Marcus 1996, 1999). The realisation of the semiotic nature of information systems in organisational contexts has been apparent in the earliest work in semiotics applied to the informatic domains. This is particularly evident in Europe and Scandinavia, where recognition of the need to create organisationally appropriate information systems has helped to maintain an interest in applying semiotics to informatic domains in general. While specific schools may have flourished for a time, most schools have failed to reach critical mass and have been subsumed within traditional and accepted information systems theories and practices. Some specific selections of semiotic theory have been utilised within informatic domains. The preeminent Swedish methodologist Börje Langefors (1966) was an example of one of the earliest information systems academics, circa 1967, who developed an interest in semiotics (Nilsson 1995). He proposed the research project that developed into the ISAC methodology (Dahlbom ed/ 1993, 1995) which had as its definition of elementary information the triadic sign developed by Pierce (see Nöth 1990, 39-47 for a readable account of Pierce's semiotics). Fiol (1989) provides a relatively early and excellent example of a semiotic analysis of organisational boundaries.

Despite the apparent applicability of general semiotics within information systems - shown by the examples of limited exchange between them - there was a relatively sparse and episodic utilisation of general semiotic theory within the information systems and organisations domains. However, since the mid-1990s there has been a broad application of semiotic principles across many application areas. These include but are not limited to Human Computer Interaction (Merkle 1997), ergonomics (Köstler 1999), text analysis and computational text semiotics (see for example, Rieger 1981), hypersystems and hypermedia (Andersen 1990, Clarke 2001, Fendt 1999), agent-based systems and associated methodologies (Schmidt 1999, Chong and Liu 2001), organisational analysis (Stamper 2001), knowledge management (van Heusden and Jorna 1999), and systems evolution (Clarke 1996, 2000). There has also been an explosion of activity both in the number of received terms in use to describe and label research in the area of semiotics and informatics, and the number of workshops and conferences that have put these ideas into circulation. For example, in 1999 there were four international workshops and conferences in the field of semio-informatics while prior to 1995 there were none, see Table 1.

RECEIVED TERMS AND EMERGING DEFINITIONS

In February 1995, approximately forty researchers, mostly from Europe but also from Scandinavia and Australasia, attended the First International Conference and Workshop on Organisational Semiotics at Twente University in the Netherlands. The term *Organisational Semiotics* was coined by its chair Ronald Stamper, to refer to the use of any semiotic approach in the study of organisations. The MEASUR Research Group (Method for Eliciting, Analysing and Specifying User Requirements) that Ronald Stamper initiated at the London School of Economics in the United Kingdom, and continued at Twente University in the Netherlands, had since its formation consistently developed and advocated semiotic thinking in informatic domains (Stamper 1973; Kolkman 1993; Liu 1993, 2000). A principle interest at the conference, also evident at a Semiotics and Informatics Dagstuhl Seminar (Andersen, Nadin and Nake 1996) was the application of semiotics to the information systems discipline, referred to as *Semio-informatics*, a term coined and used independently by the author (Clarke 1995) and Mihai Nadin (1998). Related to this is the intersection of linguistics and informatics domains, which has been referred to as *work language studies* (Holmqvist and Andersen 1987). Although there are a number of methodological and substantive intersections between then, it is important to theoretically distinguish organisational semiotic work that utilises semiotic models of language

Peter Bøgh Andersen (1990) has coined the term *computer semiotics* to refer to the application of semiotic principles to computing in its most general sense. The kinds of activities included within the gamut of computer semiotics include amongst other things, program development, interface design, systems description, systems development, work analysis, organisational analysis, and technological assessment (Andersen 1990, 18). However, within Australia and North America there exists a strong institutional demarcation between *computer science, information systems* and *communication technology*, and these distinctions raise some problems in appropriately classifying studies. The use of the term 'computer' in computer semiotics is probably a consequence of the broader meaning of the term 'computer science' within Scandinavia, which has propelled Andersen's work and that of his colleagues involved in the System Development environments and Profession Oriented Languages (SYDPOL) group (Andersen and Bratteteig eds/ 1989). This group spanned many interests ranging from the consideration of computers as symbolic and *semiotic machines*, and the linguistic status of programming languages, to a consideration of work and professionally oriented language in organisations

(Andersen and Holmqvist 1988). The work of Nadin (1998) dating from 1977 and Döben-Henisch (1998) also use the concept of the computer as a *semiotic machine*, itself a term which has a history extending back to its coinage by Pierce. The field of computer semiotics and semio-informatics are considered here to be synonyms for the intersection of semiotics and information technology is general, and therefore a part of the broader program of organisational semiotics. *Semiotic engineering* has also been a term used by de Souza (1998) since 1995 to designate a form of analysis and design which spans the interests of semio-informatics and computer semiotics.

The University of Technology, Dresden recently hosted the 9th International Congress of the German Society for Semiotics Studies (DGS), followed immediately by 7th International Congress of the International Association for Semiotic Studies (IASS/AIS), October 3-6, 1999. The former conference had as its general theme 'Machines and History', where 'machine' was used in two senses referring to a general cultural concept, and also to the physical or conceptual devices describable within a broadly semiotic framework. The latter conference had as its general theme 'Sign Processes in Complex Systems' where 'complex system' was interpreted in a broad interdisciplinary sense. This interest from the mainstream semiotic community is due in part to the novel cases that are provided from Information Systems and Computing Science for testing and further elaborating traditional semiotic theory and developing new semiotic theories in an area now referred to as *Computational Semiotics*. A conference with this theme was organised in 1997 by Claude Vogel, Suzanne Bertrand-Gastaldy, and Jean-Claude Heudin at the Pôle Universitaire Leonard de Vinci in Paris, France (Vogel et al 1997). The 1999 DGS and IASS/AIS represented an opportunity to hold the first Computational Semiotics session in a mainstream semiotic conference. The session was entitled *Computational Semiotic Systems: Theories and Applications* and was chaired by Gerd Döben-Henisch, in response to discussions between Prof. Burghard Rieger, Alexander Mehler, Ricardo Gudwin, Gerd Döben-Henisch, Lauwrence Erasmus, and the author held at ISAS'98 with the aim of establishing a semiotic theory of computation. While one part of this community has aims similar to computer semiotics, other parts of this community aim to construct autonomous systems with semiotic processing that will provide them with abilities like intelligent behavior, perception, value judgement and behaviour generation (Gudwin and Gomide 1997; Gudwin 1999).

WORK IN THIS ISSUE

The title of this theme has been chosen to introduce the new 'Studies in Organisational Semiotics' books being published within the Information and Organisation Design Series by Kluwer Academic Press. Several of the theme's editors have contributed to this issue. The first volume is entitled "Information, Organisation, and Technology" and is already available (Liu et al 2001). A second volume provisionally entitled "Coordination and Communication Using Signs" will be in press by the time you read this. This issue is timely given the recent institutional debates concerning the centrality of semiotics within informatic domains. In 1995, Ronald Stamper was successful in arguing the case for semiotics to be considered, along with psychology and sociology, as a foundation discipline for information systems within the IFIP WG 8.1 FRISCO framework. In particular, the efforts of Ronald Stamper and Kecheng Liu have led to the forthcoming IFIP WG8.1 Working Conference entitled "Organisational Semiotics: Evolving a science of Information Systems" which will soon be held between during 23rd to the 25th July, Montreal, Canada.

In order to review the papers for this special issue we were ably assisted by a committee consisting of the following scholars including: *Maria Cecilia Calani Baranauskas* Institute of Computing, Universidade Estadual de Campinas (UNICAMP), Brazil; *Joseph Davis* Basser Department of Computer Science, The University of Sydney, Australia; *Ernest A. Edmonds* Department of Computer Science, Loughborough University, United Kingdom; *Henk W. M. Gazendam* Faculty of Management and Organization, University of Groningen, The Netherlands; *Aditya Ghose* Department of Information System, University of Wollongong, Australia; *Goran Goldkuhl* Linkoping University (CMTO), Sweden; *Remigijus Gustas* Department of Information Systems, Karlstad University, Sweden; *Martin Kolkman* Department of Management, Ball State University, USA and Pricewaterhouse/Coopers LLP, USA; *Kecheng Liu* School of Computing, Staffordshire University, United Kingdom; and *Laurent Perrussel* IRIT/CERISS, University of Toulouse 1, France. The authors and I am indebted to the reviewers for their engagement with this work.

The authors have been invited to participate in this issue based on their commitment to the field of Organisational Semiotics. They hail from Australia, Brazil, Canada, Denmark, and Germany- a demonstration of the extent to which this is an international community. Specific topics have been chosen to exemplify the range and diversity of the Organisational Semiotics and to highlight its utility for information systems, organisational studies and related fields. The papers focus on diverse application domains including the analysis of maritime workpractices (Peter Bøgh Andersen), scenario-based design of a workflow system (Clarisse Sieckenius de Souza; Cecilia Kremer Vieira da Cunha, Raquel Oliveira Prates and Simone Diniz Junqueira Barbosa), development of innovative approaches to text mining (Alexander Mehler), the analysis of a small operational

level administrative system (Rodney J. Clarke), and a study into the discourses surrounding concerning knowledge management (Rob Shields and Edwina Taborsky). While exhibiting a variety of theoretical approaches and substantive interests, these papers share one feature. All recognise the centrality of human communication as a way of understanding meaning making in institutional and organisational contexts, whether this be signs in design scenarios, communication and work language, text mining and hypertext generation, systems features and workpractices, and the contestable definitions of information and knowledge.

Table 1:   Recent Organisational Semiotics and Computational Semiotics workshops and conferences. The shaded entries indicate mainstream conferences that have hosted relevant themes. Entries above the thick line have been publicly announced and are forthcoming; those that are below the line have been held.

2001	May28 June 2	**IFIP WG 8.1 Working Conference on Organisational Semiotics** *Host*: Montreal, Canada *Chair*: Ronald Stamper
2000	July 4	**3ʳᵈ International Workshop on Organisational Semiotics** *Host*: Staffordshire University, UK *Committee*: Kecheng Kiu, Peter Andersen, Rodney J. Clarke, Ronald Stamper
1999	Oct 15	**Organisational Engineering Workshop- Challenging the OER- paradigm** *Host*: Delft University of Technology, The Netherlands *Chair*: Jan Dietz
1999	Oct 12-14	**2ⁿᵈ International Workshop on Organisational Semiotics** *Host*: Twente University, The Netherlands *Committee*: Kecheng Liu, Peter Andersen, Rodney J. Clarke, Jan Dietz, Marc Halfkamp, Ronald Stamper, Joaquim Filipe, Anastasia Pagnoni Holt, Robert A. Stegwee, Yasser Ades
1999	Oct 3-6	**7ᵗʰ International Congress- International Association for Semiotic Studies (IASS/AIS) Sign Processes in Complex Systems** *Host*: Technical University, Dresden, Germany *Relevant Chair*: Walter Schmitz
1999	Oct 3-6	**9ᵗʰ International Congress of the German Society for Semiotic Studies (DGS) Machines and History** *Host*: Technical University, Dresden, Germany *Relevant Chair*: Walter Schmitz
1998	Oct 13-15	*Semiotics and the Information Sciences* *Host*: Victoria College, University of Toronto *Chairs*: Jean Umiker-Sebeok, Marcel Denesi
1998	Sept 14-17	**Intelligent Systems and Semiotics (ISAS)** *Host*: National Institute of Standards and Technology, Maryland USA *Relevant Chair*: Alex M. Meystel
1997	July 13-18	**6ᵗʰ International Congress- International Association for Semiotic Studies (IASS-AIS) Semiotics Bridging Nature and Culture** *Host*: Mexican Association for Semiotic Studies *Relevant Chair*: Adrian S. Gimate-Welsh
1997	May 26-27	**1ˢᵗ International Workshop on Computational Semiotics (IWCS97)** *Host*: Pôle Universitaire Leonard de Vinci, Paris, France *Committee*: Claude Vogel, Suzanne Bertrand Gastaldy, Jean-Claude Heudin, Kathleen Carley
1996	Feb 19-23	*Semiotics and Informatics Dagstuhl Seminar* *Host*: Schloss Dagstuhl- Inrenationales Begegnungs-und Forschungs-zentrum für Informatik *Committee*: Peter B. Andersen, Mihai Nadin, Frieder Nake
1995	Feb 10-15	**1ˢᵗ International Conference on Organisational Semiotics** *Host*: Twente University, The Netherlands *Committee*: Ronald Stamper, Duda Nauta, Rodney J. Clarke

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