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An integrative semiotic methodology for IS research

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ABSTRACT

Semiotics studies the production, transmission and interpretation of meaning represented symbolically in signs and messages, primarily but not exclusively in language. For information systems (IS) the domain of semiosis consists of human and non-human interactions based on technologically-mediated communication in the social, material and personal worlds. The paper argues that semiosis has immense bearing on processes of communication central to the advanced information and communications technologies studied by IS scholars. Its use separately, or in mixed methods approaches, enriches areas of central concern to the IS field, and is particularly apt when researching internet-based development and applications, for example virtual worlds and social media. This paper presents a four step structured methodology, informed by a central theoretical semiotic framework to provide practical guidelines for operationalizing semiotics in IS research. Thus, using illustrative examples, the paper provides a step-by-step semiotics approach to research based on distinctive semiotic concepts and their relationships – *producer*, *consumer*, *medium*, *code*, *message* and *content* – and how, at an integrating level, the personal, social and material worlds relate through sociation, embodiment and socio-materiality.

1. Introduction

Semiotics[1] is the study of how meaning is generated and interpreted through signs and symbols. A sign is something that stands for or represents something other than itself. Human language is the most well developed sign system (de Saussure, 1960), but almost anything that we interact with can become a sign and therefore represent a meaning. Moreover, the form of the representation is not neutral or transparent, but itself has significant effects on the meaning – intended and unintended, recognized and not recognized.

Thus, semiotics seeks to look behind or underneath the manifest appearance of texts[2] (interpreted widely to include all cultural artifacts) to reveal the underlying social and cultural structures that generate them. In this sense it "denaturalizes" them, generating insight into the forms of representation that we tend to take for granted. The more obvious the text appears, the

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[1] The term "semiosis" refers to the actual process of sign usage. "Semiotics" refers to the study of sign systems especially in the Peircean tradition. "Semiology" refers to the study of signs particularly in language following de Saussure (Noth, 1990, p.14). For introductions see: Cobley and Jansz (2010), Chandler (2002), Hall, Evans, and Nixon (2013), Barthes (1967), Eco (1979). For comprehensive reference works see: Sebeok (1994), Noth (1990), Krampen, Oehler, Posner, Sebeok, and von Uexkull (1987), Short (2009).

[2] Within semiotics, the term "text" covers all forms of social signification and representation including writing, speech, technology, visual arts, advertising, dress and behavior.

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more difficult it may be to get beneath the surface and reveal its hidden features. Thus, with semiotics we are focusing attention on the form of representation itself, rather than the message content, and the effects that the representation has on both the production and interpretation of the content.

Within information systems (IS), the most obvious example is the appearance of the screen itself which is redolent with iconic and visual signs (de Souza, 2005; O'Neill, 2008), but information systems more generally structure our experience of reality through their forms of representation (Kallinikos, 2011; Kallinikos, Ekbia, & Nardi, 2015). Both Agerfalk (2010) and Grover and Lyytinen (2015) have recently suggested the importance of semiotics. Technology, particularly information and communications technologies (ICT), is triply involved here. First, the main focus of the paper is using semiotics to analyze and understand communication but, in the modern world, ICT is the main medium through which that communication occurs. Second, the medium is not neutral or transparent but has effects on the meaning and interpretation of the message. Finally, ICT can enable communication to occur in a more or less efficient and effective manner.[3]

In an earlier paper, Mingers and Willcocks (2014) developed a general framework for IS research (Fig. 2). This framework provides the "what" and "why" of semiotic research but, because of its inevitable generality, does not provide the "how". That is the purpose of the current paper – to provide detailed practical guidelines for carrying out research from a semiotic perspective. The step-by-step approach we suggest may be used by itself, but can also be part of a mixed-methods study (Mingers, 2001a; Venkatesh, Brown, & Bala, 2013). We see this paper as following the genre of research guidelines for particular research approaches such as positivist (Dubé & Paré, 2003), interpretive (Myers & Avison, 1997), critical (Myers & Klein, 2011), mixed method (Venkatesh et al., 2013) and critical realist (Wynn & Williams, 2012). Our aim is to enable researchers, both those familiar with semiotics and those not, to conduct semiotic studies in a rigorous manner. An introduction to the basis of semiotics, that is the sign, can be found in Appendix A and a table listing many of the semiotic concepts with empirical examples is in Appendix B.

2. Overall semiotic methodology

The field of semiotics essentially consists of many different concepts and ideas that have been developed and applied in varied situations. There are very few sources that provide a general purpose semiotic methodology that could be usable for IS research. Manning (1987), in his sociological book, covers ethnographic fieldwork; most others are either general introductions to semiotics (Chandler, 2002; Halliday, 1978; Van Leeuwen, 2005), contributions to the theory (Barthes, 1967; Eco, 1979; Kress & Van Leeuwen, 1996), or specific, often rather ad hoc, applications of particular analyses (Barley, 1983; Brannen, 2004). Within the IS literature there are a variety of applications of semiotics which we shall examine below, but no significant text or research guide. There is also literature within disciplines such as management or marketing where semiotics is a more well-known and utilized approach (Barley, 1983; Brannen, 2004; Mick, 1986; Oswald & Mick, 2006; Umiker-Sebeok, 1987) but again no structured methodology.

We have therefore developed our own structured methodology that has two distinct components. The first is a step-by-step approach, following the general retroductive methodology of critical realism, for undertaking a semiotic analysis of a problematic situation or research question. The second is a framework within which to organize the key semiotic concepts. This is based upon the general semiotic research framework developed by Mingers and Willcocks (2014) (Fig. 2) augmented by Jakobson's (1960) model of semiosis (Table 2) as displayed in Fig. 3.

2.1. Step-by-step semiotic approach

Research approaches are not mutually exclusive such that a researcher needs to choose one rather than another. In practice, we see semiotics best used as part of a carefully designed mixed-methods study together with other qualitative and quantitative methods (Mingers, 2001a) customized to the research problem at hand.

Mingers and Brocklesby (1997) proposed a very general set of steps for research that could encompass a wide range of particular research methods (the 4As): *Appreciate* the current research situation; *Analyze* the structures generating and maintaining it; *Assess* alternatives to the current situation; *Act* to bring about change (Table 1). Specific research methods or projects may only enact certain of these stages. For example, an ethnographic study may only intend to describe a particular situation (A_1); an exploratory statistical analysis may collect data and then look for underlying factors (A_1, A_2); the investigation of problems with an information system may also assess and recommend changes (A_1–A_3); and, some action research may aim to actually bring about change (A_1–A_4). Table 1 shows how the general critical realist applied research methodology (Bhaskar, 2013, 2014) and Wynn and Williams' (2012) critical realist (CR) case approach fits into this framework. It also includes the semiotic methodology that will be developed in the paper.

In Fig. 1 we provide a high level view of the proposed semiotic methodology disaggregated into twelve major steps. For the researcher wanting to operationalize the steps, we provide a more detailed 12-step version in Appendix C.

If the overall steps will be familiar to IS researchers, this is because despite the methodological pluralism recorded in IS research (Bernroider, Pilkington, & Cordoba, 2013; Mingers, 2011) there is also, as Lee (1989, 1991); Lee & Hubona, 2009) argues,

[3] In fact, technology is now going beyond merely transmitting already existing content to partially creating that content itself. For example, the app *musical.ly* contributes in the production of professional sounding music videos. This trend actually makes the role of semiotics even more important (thanks to an anonymous referee for this thought).