

## Hermeneutics and Representation

Matthew Chalmers

Computing Science, University of Glasgow, United Kingdom

A common topic in CSCW is the fit between an information system and the people whose activity it is intended to support. The static and objectifying abstractions at the heart of mainstream information systems are often contrasted with idealized concepts such as the ‘common information space’ where there is fluid adaptation to suit each user, community and context. While such discussion is common, implementation is rare. This paper points out similarities on this discourse with that of semiology and hermeneutics, and looks toward adaptive system design in accord with such theory.

Such representational adaptation approaches dialogical communication, where breakdowns in meaning and understanding are debated and resolved, each speaker acts toward an explicit audience in a shared context of use, and these actions can be rich in ostensive and indexical reference. This contrast is similar to philosophical hermeneutics’ comparison of speech and writing. Ricoeur characterizes writing with four traits of *distanciation*. The author’s meaning is inscribed in the text, a fixed, finite and external representation. The text is dissociated from the mental intention of the author, can only display non-ostensive references, and, instead of a known audience directly apparent to a speaker, the range of potential readers is unlimited. These four traits taken together constitute the text’s ‘objectivity’.

We see information systems’ formal representations as semiological texts, whose design necessarily involves *distanciation*. This leads to variation in their normative effect, ranging from script-like sequentiality of actions to flexibly interpreted, map-like resources for situated action. According to Gadamer, interpretation is most usefully seen as an interaction between the activity, context and prejudice (the ‘horizon’) of the reader, and the content, context and background of the information i.e. the horizon provided by the text. Every use of a text constitutes an interpretive act; all activity is interpretation. Such interpretation is based on pre-understanding, pre-judgement or prejudice, which includes assumptions implicit in the language that the person uses. That language in turn is learned through experiences of interpretation. The individual and his or her prejudice are changed through the use of language, and the language changes through activity. This endless process of seeing the part in and through the whole is the *hermeneutic circle*.

What kind of representations might be involved here? Hermeneutics builds on structuralist and post-structuralist linguistics, where a relative system of symbols is proposed as the core representational resource for activity and interpretation. Symbols form a configuration, whereby one interprets each symbol through its similarities and differences with regard to combination with other symbols. One understands a symbol the current context of that use and by comparison or correlation with experienced contexts. Relative or configurational representation, with interpretation based on this resource and adapting this resource, is also at the core of contemporary linguistics that grounds language in social interaction, and which suggests that evolutionary processes of interaction, adaptation and selection lead to the formation and adaptation of complex and statistically consistent patterns of use within a community. Both forms of linguistics have a strong fit with the neural Darwinism of contemporary neurophysiology and Wittgenstein’s later philosophy, exemplified by “the meaning of a word is its use in the language.”

Formal constructs are often seen as ‘meta-objects’ that stand apart from the language they describe, but when one tries to formalise aspects of the world and form a metalanguage, one is still making and using symbols, and one finds oneself slipping back down to language again i.e. as soon as people start to use a metalanguage, it becomes language. They use it in their everyday work or activity, and that activity is carried out in natural language. As Ricoeur pointed out, such objectifying or positivist ‘cuts’ through

information are necessary to bring new symbols and associations from the external open system into the configurational, relative, closed system of an individual's language. Information systems' formal constructs are inevitably finite, but generally they are also fixed and closed. In designing a system, a set of symbols is chosen: which objects (including meta-objects) are included and which phenomena are involved in their description. Fixing or inscribing such choices in a system's design inevitably allows distanciation to occur.

We do not criticize information systems' distanciation as such. Information system paradigms each have characteristic strengths and weaknesses stemming from characteristic choices and prejudices. For example, information retrieval engines, such as those at the heart of Alta Vista and Google, gain their power by embracing distanciation. Their positivist approach, deliberately avoiding context, affords automatic indexing of and retrieval from huge volumes of data.

Ethnomethodology can be a good way to inform system designers of a setting and a community. It focuses on the performance or representation of work that reveals work's organization, i.e. on the rules and patterns of social conduct that are an essential and emergent resource in everyday activity, and not external to or distant from it. Giddens criticises Garfinkel, or those immediately influenced by him, for not addressing their "unsophisticated" epistemological stance. We differ in that we feel that it is Garfinkel's anti-positivist epistemological stance that defines ethnomethodology and makes it a practical and powerful tool. Ethnomethodology focuses on the moment-by-moment achievement of interaction in a particular setting, and de-emphasises the structural analysis of society's reproduction e.g. the act of speaking grammatically as reinforcing the rules or patterns of speech used to generate the utterance. Each utterance is influenced by the current context but also by past experiences of interpretive activity, as well as expectations of future activity. No claim is made here for a causally linked account of agency and structure. Instead, correlative and configurational linguistic structure affects interpretation and is changed by interpretation, and affords script-like following of rules or flexible situated interpretation.

While ethnomethodologists work and analyse a setting, the consistent patterns of interaction there form a shared resource that the entire community has at hand. Some ethnomethodologists may believe that they do not have to abstract over or interpret the setting as they study it, i.e. that they understand that world by simply inhabiting it without their experience, education or job having any prejudicial or interpretive effect. Even if that were true, it is impractical for study to continue indefinitely. Distanciation and ontological drift begin when they leave it. This effect is even stronger if the account is used in designing new technology that leads to new ways of work in the setting. An account is finite, most obviously when in the form of a book or a paper. Making it is an act of interpretation or reduction necessary to do a good job. If he or she takes part in a system design process, the finite nature of the interaction with designers also requires interpretation and objectification.

We do not criticize ethnomethodology's distanciation as such, but rather the tendency for some practitioners to underplay its inevitability, claim that it takes no epistemological stance or suggest that is unprejudiced. Ethnomethodology gains its identity, practicality and power from its prejudices.

Button and Dourish suggest that the best way to learn from ethnomethodology is to change system design practice at a fundamental level, and offer as an example open implementations of reflective systems. Open implementations reveal policies of deep system behaviour. In computational reflection, a part of the system operates at a meta-level and is causally connected to the other parts. The meta-level can thus provide an open or continually available account of the system's behaviour, and it adapts system functionality in accordance with ongoing activity. In theory, reflective systems have unbounded adaptability, via self-generated and self-modifying code, but in practice the range of policies is generally small and fixed. The designer writes code that predicts,

prejudges or controls, at all levels of system abstraction, what will be offered to users in the future. When the designer finishes writing and the program is in use, these predictions do not change or adapt.

More flexible adaptation of information systems may involve drawing from hermeneutic approaches to language. Xerox PARC's Placeless used a non-hierarchical 'soup' of name-value pairs to reconstruct traditional hierarchical systems and protocols such as NFS on the fly, so as to instrument, feed into and extend traditional tools. Collaborative filtering systems such as the Amazon recommender, and path systems such as Recer, rely on ongoing analysis of usage patterns within a set of symbols rather than fixed categorizations such as content analysis. They do assume a degree of objectivity in that symbols are persistent i.e. the naming scheme is static. While co-occurrence statistics form categorisations, of course, they are ephemeral, intersubjective and, especially with paths, tailored to the individual user and the context of use. They are configurational in that a system's analysis of a symbol depends on the differences and similarities in its co-occurrence with other symbols in past use. These systems are explicitly dependent on other tools that carry out more automatic but positivist analyses. They need such open systems in order to feed new symbols and co-occurrences into their closed, configurational systems. The analysis of patterns in these configurations can then offer useful symbols to feed back into traditional tools. We thus see 'hermeneutic system design' as combining traditional positivist software components and newer adaptive configurational components such as path systems, with activity in each component potentially feeding into every other in everyday use.