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The Socio-Cognitive Theory of Users Situated in Specific Contexts and Domains

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The domain analytic theory (DA) was introduced in information science by Hjørland and Albrechtsen (1995) and Hjørland (2002a). Although DA emphasizes domains, as opposed to individuals, as units of analysis in information science, it nevertheless also has a view of users' individual cognitive processes. This view is termed *the socio-cognitive view* (cf., Hjørland, 2002b).

A basic assumption in the socio-cognitive view is that small children's cognition is mainly determined by biological principles. When children learn language and symbols the cognitive processes are increasingly mediated by signs, meaning, and symbols, which are internalized in the individual and then reprogram the way cognitive processes work. Such systems of signs and symbols are first developed externally, in a culture. They are culture-specific and partly social- and domain specific.

People's use of information may be partly biologically determined. Some people like music much more than others and therefore they use more information about music. Some people have a flair for mathematics, others try to avoid it. When we speak of people's relevance criteria in relation to IR, they are, however, mainly determined by cultural factors. They may, for example, be determined by trends or "paradigms" in knowledge domains, as demonstrated by Hjørland (2002) in psychology. When searching for literature about a topic, say schizophrenia, the relevance criteria are implied by the theory, tradition, or "paradigm" to which the searcher subscribes or belongs. Psychoanalysts prefer psychoanalytical papers, cognitivists prefer cognitivistic papers, etc. Relevance

criteria are socialized into the individual from the academic tradition in which he has been raised (and to which he may himself add, modify, or change relevance criteria). It should be obvious that people seeking information about, for example, music, are similarly socialized into specific cultures and preferences: people tend to prefer music that other people in the same culture or subculture prefer.

What is the difference between the socio-cognitive view and traditional cognitive views? Gärdenfors (1999, pp. 29–30) wrote:

> The role of culture and society in cognition was marginalized in early cognitive science. These were regarded as problem areas to be addressed when an understanding of individual cognition had been achieved. . . .
>
> However, when the focus of cognitive theories shifted away from symbolic representations, semantic and pragmatic research reappeared on the agenda . . .
>
> . . . a second tradition turns the study programme up-side-down: actions are seen as the most basic entities . . .

The socio-cognitive view thus turns the traditional cognitive program upside down. It emphasizes the internalization of culturally produced signs and symbols and the way cognitive processes are mediated by culturally, historically, and socially constructed meanings. Less priority is given to "hardware" whether in brains or computers.

Domain analysis consequently does not conceive users in general, but sees them as belonging to different cultures, to different social structures, and to different domains of knowledge. Information producers, intermediaries, and users are more or less connected in communities that share common languages, genres, and other typified communication practices. They share meanings to different degrees: There are different *semantic distances* between the agents.

DA and the socio-cognitive view are based in a kind of philosophical realism, termed *pragmatic realism* (cf. Hjørland, 2004a). What are the implications of pragmatic realism for information science? Basically, the implication is that it becomes important to distinguish carefully between objective and subjective knowledge, where studies of users are seen as studies of subjective knowledge.

When users seek information, they always do it on the basis of their subjective knowledge. They may or may not be familiar with the objective possibilities for searching. For example, users may not know about citation indexes and they may thus miss an important search opportunity that exists objectively (cf. Hjørland, 2000a). When studying users' information-seeking behavior (which is, of course, based on the users' subjective knowledge of information sources), information scientists need to interpret such studies based on knowledge about the objective possibilities. One may say, of course, that *nobody* knows the objective possibilities. The argument is, however, that information scientists should know them better than the users that they are investigating. Information scientists, more than the users, should know about possibilities and limitations in search engines, citation indexes, thesauri, controlled vocabularies, etc. They should advise the users on how to exploit those possibilities. Consequently, when studying users' behavior this should be interpreted on the basis of some kind of model of the objective possibilities, e.g., the UNISIST model (see Fjordback Søndergaard, Andersen, & Hjørland, 2003). Such a model is based on the information scientists' subjective view (and could possibly be wrong or unhelpful). Such models must be introduced, discussed, and refined in the scientific literature if information science is going to make progress. A given piece of knowledge is always subjective, but it is supposed that some answers are more correct or fruitful than other, and the only way to find out is to consider the arguments that support a given view.

Pragmatic realism is also important in order to understand relevance in information science. Whether or not a certain substance is relevant as a cure for cancer is ultimately decided in medical research, not by asking patients or users of medical services. It is of course always legitimate to be skeptical about a knowledge claim. This will lead into a discussion about the basis for that claim and ultimately to epistemological discussions. A thing is relevant for a given purpose if it contributes to reaching the goal—whether or not the user thinks so. In a similar way is the validity, and thus the relevance, of a document claiming that a certain substance is relevant as a cure for cancer also ultimately decided in medical research, not by asking users of information services.

In some domains, e.g., rock music, the users may be "experts," at least until this field is properly represented in musicology. In other fields, such

as child psychology, experienced mothers may have adequate competencies for which a degree in developmental psychology cannot be a substitute. This last example is related to different epistemologies, i.e., to different views of how to obtain knowledge. Developmental psychology has mainly been dominated by a "positivist" epistemology, while other epistemologies give a higher status to the kind of experiences that motherhood represents. In both cases the realist view applies: A given document may or may not be relevant to a given purpose, whether or not the user believes this to be so. Of course, a document is not relevant in a situation if the user cannot understand it. In higher education an attempt is typically made to provide students with the knowledge necessary in order to study the documents that are deemed to be relevant. In the sciences one learns mathematics and in theology one learns Greek, Latin, and Hebrew. The underlying philosophy is that the relevant texts presuppose these kinds of learning. Again, different opinions may exist. Different views of what is relevant may exist as different "paradigms" in all subjects. A user's information behavior should be interpreted on the basis of such paradigms.

Domain analysis is thus an approach to information science that has important implications for studies of information behavior. Its strength is that it represents a more correct and fruitful theory about cognitive processes compared to traditional cognitive views. It may contribute to the development of information systems that are specific to different groups of users. Its drawback is that it is more difficult to carry out user studies because they should be interpreted on the basis of a model of the objective search possibilities.

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