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Ellis's Model of Information-Seeking Behavior

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The approach to modeling information-seeking behavior described here has its origin in a perceived absence of empirically based models of information-seeking behavior in information retrieval research (Ellis, 1984a, 1984b). The intention was to derive an empirically based model of the information-seeking behavior of academic social scientists that could inform the development of information retrieval systems and which might be of more general interest for the information studies field (Ellis, 1987, 1989a, 1989b, 1990). The principal theoretical premise of the study was that behavior offered a more tractable focus of study than cognition and that a behavioral approach to user modeling would be more feasible than the prevailing cognitive approaches in information retrieval research. The propositions of the theory were that underlying the complex patterns of information-seeking behavior were a relatively small number of different types of activity characterized as:

- *Starting* – activities characteristic of the initial search for information
- *Chaining* – following chains of citations or other forms of referential connection between material
- *Browsing* – semi-directed searching in an area of potential interest
- *Differentiating* – using differences between sources as a filter on the nature and quality of material examined
- *Monitoring* – maintaining awareness of developments in a field through the monitoring of particular sources
- *Extracting* – systematically working through a particular source to locate material of interest

The behavioral model itself consists of the relation between these characteristics or components. These can interact in various ways in different information-seeking patterns. It does not represent a set of stages or phases that any or all researchers follow when seeking information. The relation between the different characteristics can only be described in the most abstract and general terms unless there is reference to a particular information-seeking pattern at a particular time.

The original model has been extended and developed in studies of the information-seeking behavior of other groups of researchers, including English literature researchers (Smith, 1988), physicists and chemists (Ellis, Cox, & Hall, 1993), and engineers and research scientists in an industrial environment (Ellis & Haugan, 1997). In each case, the derivation of the categories and properties was inductive and followed the grounded theory approach (Ellis, 1993). Despite the differing disciplinary backgrounds of the different groups of researchers studied, there was considerable similarity in general and detail between them. In the study of English literature researchers Smith (1988) identified activities consistent with starting, chaining, and monitoring as well as other activities characteristic of surveying (familiarization with the literature of the area), selection and sifting (deciding which references to follow up and which to cite), and assembly and dissemination (drawing together material for publication and dissemination).

The study of the chemists identified activities consistent with starting, chaining, browsing, differentiating, monitoring, and extracting, as well as two other characteristics not highlighted in the study of the social scientists: verifying (checking that information is correct) and ending (characteristics of information seeking at the end of a project).

The study of the physicists employed different terminology to that of the social scientists but it was clear that the activities themselves could be closely mapped to the characteristics of the original model: initial familiarization (activities undertaken at the earliest stages of information seeking), chasing (following up citation links between material), source prioritization (ranking sources based on perceptions of their relative importance), maintaining awareness (activities

involved in keeping up-to-date), and locating (activities engaged in to actually find the information).

Finally, the study of the engineers and researchers identified activities consistent with surveying, chaining, monitoring, browsing, extracting, and ending, as well as distinguishing (activities undertaken when information sources are ranked according to their perceived relative importance) and filtering (characterized by the use of criteria or mechanisms to make the information as relevant and precise as possible).

The methodological basis of all the studies was the grounded theory approach as originally developed by Glaser and Strauss (1967). The approach informed the choice of researchers to interview and the form of analysis employed. The methodological basis of the studies was the constant comparative method, employing theoretical sampling, and inductive analysis to develop the properties and categories of the models (Ellis, 1993). The basic research design and methodology can be replicated for studies of other groups without presupposition as to the outcome.

The model has been widely cited in the information-behavior literature, perhaps particularly, and most pertinently, in papers in the Information Seeking in Context Conferences (ISIC) in Sheffield, UK (1998) and Goteborg, Sweden (2000). More recently through an international research collaboration between the University of Sheffield, UK and the University of North Texas, USA (Spink et al., 2002a), the uncertainty in information seeking project has addressed behavioral, cognitive, and affective issues within the same research design, including studies in relation to the behavioral model into such questions as uncertainty and its correlates (Wilson et al., 2002), successive searching (Spink et al., 2002b), cognitive styles in information seeking (Ford et al., 2002), and user-intermediary interaction (Ellis et al., 2002).

The behavioral approach to user modeling outlined here does not address cognitive or affective aspects of information seeking. However, the range of different groups studied and the employment of a consistent methodological approach across the different studies, indicate that the approach represents a broadly based, robust, and widely applicable way of modeling the information-seeking behavior of researchers in both academic and industrial research environments.

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Everyday Life Information Seeking

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The model of information seeking in the context of way of life (ELIS model) was developed in the mid-1990s by Reijo Savolainen (see Savolainen, 1995). The development of the model was primarily motivated by the need to elaborate the role of social and cultural factors that affect people's way of preferring and using information sources in everyday settings. It was hypothetised that even though individuals select and use various sources to solve problems or make sense of their everyday world, the source preferences and use patterns are ultimately socially conditioned. Thus, an attempt was made to approach the phenomena of ELIS as a combination of social and psychological factors.

The development of the ELIS model was also motivated by the elaboration of terminological issues of information-seeking studies and the need to specify the nature of ELIS, as compared to job-related information seeking. Although the model emphasizes the legitimate nature of the nonwork contexts, this was not interpreted as an attempt to create a dichotomy between the processes of job-related and "other" information seeking because job-related information seeking and ELIS complement each other.

The central point of departure of the model is *way of life*, which provides a broad context for investigation of individual and social factors affecting ELIS. Way of life is approached by drawing on the idea of *habitus* developed by Bourdieu (1984). Habitus can be defined as a socially and culturally determined system of thinking, perception, and evaluation, internalized by the individual. Habitus is a relatively stable system of dispositions by which individuals integrate their experiences and evaluate the importance of different choices, for example, the preference of information sources and channels. Savolainen (1995) defined the concept of way of life as "order of things," which is based on the choices that