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The Domain Analytic Approach to Scholars' Information Practices

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The term *domain analysis* was introduced by Hjørland and Albrechtsen (1995) who argued that it is more fruitful to view domains (specialties, disciplines, or discourse communities) as basic units of analysis rather than focus on “users” in a generalized and context-independent manner. The domain analytic approach is not new, however; the history of social science research on scholars' information practices in various fields goes back to the 1930s, culminating in the many classic papers presented in the 1958 International Conference on Scientific Information (Bates, 1971). Thus, from the very beginning, studies on scholars' information practices have represented a more sociologically and contextually oriented line of research in comparison to, for instance, information search behavior studies.

The work of Diana Crane (1972), Herbert Menzel (1959), Thomas Allen (1977), William Paisley (1968; Parker & Paisley, 1966), William Garvey (1979), and others are classics of “domain analytic” research because they embed scholars' information practices within the overarching context of disciplinary differences, with the goal of forming holistic understandings of scholarly communities' work and communication practices.

However, as noted by Palmer (1999), Bates (2002), and Hjørland (2002), the development of a more systematic domain analytic approach for explaining scholars' information practices is still in its infancy. While numerous studies have shown that there are major field differences in scholars' work and information practices, and that these differences are likely to persist in the electronic era, (Kling & Covi, 1997; Kling & McKim, 2000) few studies have attempted to develop a comprehensive understanding of the epistemic and other factors that underlie these differences.

Hjørland (2002) argues that epistemic schools are the most generalizable explanatory models of information practices. He distinguishes between four epistemic schools (empiricism, rationalism, historicism, and pragmatism) and outlines what kind of knowledge is considered relevant in each school. In the school of historicism, for instance, background knowledge about preunderstandings, theories, historical developments and evolutionary perspectives are considered to be relevant, whereas “low priority is given to decontextualized data,” and “intersubjectively controlled data are often seen as trivia.” (p. 269). Although Hjørland does not link the epistemic schools with specific fields, his categorization aptly informs about differences in the nature of research within the schools, and about the general context of information seeking. However, in addition to epistemic positions, scholars’ information practices are affected by factors such as degree of inter- and multidisciplinary (Bates, 1996; Palmer, 1999), and field size (Bates, 2002).

In a study of the adoption and use of e-journals and databases across four domains (history, nursing science, environmental biology, and literature and cultural studies), Talja and Maula (2003) explain the variation in scholars’ information-seeking practices by the following interrelated domain factors:

- Field size (density of the universe of relevant documents)
- Degree of scatter
- Primary relevance criteria (topical/paradigmatic)
- Book versus article orientation

The hypothesis that variation in scholars’ search methods is directly related to field size was developed by Bates (2002). According to Bates,

- Research areas with high numbers of topically relevant materials are best searched by browsing.
- Research areas with middling numbers of topically relevant materials are best searched by directed subject searches.
- Research areas with very sparse (“needle in a haystack”) numbers of relevant items are best searched by linking (chaining from seed documents).

Bates thus suggests that both the oversupply and scarcity of topically relevant materials makes directed searching—conducting descriptor-based subject searches in databases whose materials have been indexed, catalogued, and classified—an unproductive search technique, and that scholars in densely and sparsely populated research areas will rely more on browsing and linking techniques.

The distinction between low-scatter domains and high-scatter domains was originally made by Mote (1962). According to Mote, low scatter domains are those in which the underlying principles are well-developed, the literature is well organized, and the width of the subject area is relatively limited and clearly defined. In high scatter domains, the subject area is wider, the number of different research topics is greater, and the literature is less clearly organized or unhelpfully organized in the light of scholars’ research interests and problems. Scholars in low-scatter fields are served by a small number of highly specialized journals, whereas in high-scatter fields, relevant materials are distributed across several disciplines and published in a large number of different journals (Packer & Soergel, 1979). Inter- and multidisciplinary fields are typically high scatter domains in the sense that the researcher must typically cross several disciplines to locate all relevant materials (Bates, 1996).

The well-known fact that humanities scholars often prefer to use browsing and chaining as techniques for identifying relevant literature is also related to relevance criteria and the nature of the research object. Talja and Maula (2003) distinguish between topical and paradigmatic relevance as primary relevance criteria. In fields where research objects and problems can be constructed differently from diverse viewpoints, information seekers commonly attach their search strategies to particular *conversations* or paradigms. The choice of theories or methodological approaches may limit or widen the range of materials considered as relevant independently of the topic or phenomenon studied. In natural sciences, research objects are usually more stable and standardized, and searches are more commonly focused on the phenomenon or substance being studied.

Previous research (Kling & Covi, 1997) also shows that scholars’ search techniques differ in fields where books carry the most prestige and are regarded as the most important sources, as compared to fields where peer-reviewed articles are considered as the most important

sources. Scholars in fields where articles are the main publication channel will rely more on formal scanning, that is, directed searching, whereas scholars in fields where books carry the most prestige are often "author-filterers" in search of like-minded colleagues (Walsh & Bayma, 1996).

Although most scholars will use a mix of different search strategies such as directed searching, browsing, and chaining, there are clear differences in the relative importance of these methods across fields. Humanities scholars can discover essential theoretical ideas from literatures previously alien to them, but serendipitous findings for natural scientists are of a different nature, because they rarely conduct searches outside their own specialties.

Talja and Maula's study was a small-scale comparative qualitative study, providing a basis on which to conduct further research on the predictive power of factors such as field size, scatter, primary relevance criteria, and book vs. article orientation. Talja's and Maula's empirical findings support the overall hypothesis that these factors have clear impacts on the patterns of use of e-journals and databases. Contrary to the Bates hypothesis, however, Talja and Maula found that humanities scholars working in sparsely populated research areas (such as Finnish literature) used manual and Web browsing and information encountering as their primary search methods. Humanities scholars working in densely populated research areas (such as media and cultural studies) chose some cognitive authorities (books or authors) and proceeded by linking to identify relevant works by using theoretical suitability or similarity as their primary selection criterion.

The domain analytic approach that identifies and explains significant field differences in scholars' information practices differs considerably from—and therefore complements—Ellis' well-known research phases model that identifies similarities in patterns of information seeking across fields. Domain analytic studies can significantly help in endeavors to support scholarly communities and improve their access to scientific literature.

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