From Retrieval to Communication: The Development, Use, and Consequences of Digital Documentary Systems

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The traditional themes of information science must be expanded in order to accommodate systematic understandings of ways to design effective documentary systems and anticipate their social consequences. The field of social informatics offers some important concepts, theories, and methods that give this kind of inquiry a sound scientific basis. Social informatics has a large research literature and some research anthologies and review articles which serve as effective entry points.

The traditional themes of information science must be expanded in order to accommodate systematic understanding of ways to design effective documentary systems and anticipate their social consequences. The field of social informatics (SI) offers some important concepts, theories, and methods that give this kind of inquiry a sound scientific basis.

Since the late 19th century, information scientists have focused on the conceptualization of documentary systems. They have examined collections (from archives to zoos), people (conceptualized as users), and basic information processes to organize these collections and extract materials from them. This approach has helped information scientists organize a wide variety of materials, especially as libraries and documentary databases. It has lead to a rich array of research and practical developments in information retrieval.

The growth of the Internet has fueled public and professional interest in developing new kinds of online documentary systems that support and facilitate education, more responsive government, sales and marketing, and scholarly communication. It has also stimulated speculation about the social consequences of digitized documentary systems, as well as interest in conducting empirically anchored research under the rubric of SI.

Social informatics is "the interdisciplinary study of the design, uses, and consequences of information technologies that takes into account their interaction with institutional and cultural contexts." Empirically anchored SI research started in the mid-1970s with a focus on how systems' design and use impact the quality of working life and the structuring of organizations. This research found "paradoxical consequences" wherein similar systems resulted in one kind of change in some organizations and an opposite kind of change in others. Social informaticians responded by moving their theories away from technological determinism and towards theories that explicitly include characterizations of the social contexts in which systems are developed and used.

While much of this research focused on transaction processing systems (e.g., accounting systems), some researchers began to examine the social dynamics of online documentary systems. They found that social contexts affect the way people use these systems. Some recent studies of Lotus Notes help illustrate this idea. Notes is a groupware product that allows people to communicate via e-mail as well as to access and/or share documents via networks. However, organizational reward systems rather than information processing capabilities influence how organizations use Notes. An organization that has an individualistic reward system can deter employees from using Lotus Notes as a means of sharing information with one another (Kling, 1999; Orlikowski, 1993).

Research shows that many other aspects of complex organizations—including job design, reward and incentive schemes, political negotiation, and cultural understanding—combine with technology choices to affect how information technologies are used in practice (Kling & Allen, 1996; Kling, 1999; Lamb, 1996; Markus & Keil, 1994). This body of research has lead to theorizing about the ways that social contexts influence the ways that people design and use online systems. It has also lead to a view of documentary systems as elements in social communication systems. The new documentary systems, especially those that are World Wide Web-based, allow designs and configurations to be locally controlled. Some often support rapid bi-directional communication between authors and readers.

The acceptance of the social in information science has important conceptual consequences. It suggests that we

should relinquish the convenient fiction of "the user." It is common to differentiate users into subgroups, such as novice/expert or casual/frequent. However, these individual characteristics do not satisfactorily represent the relationship between the person and his or her contexts, which SI research finds are central to understanding people's use of information systems. These person–context interactions mean that there is no adequate set of individual characteristics that will effectively explain systems uses.

Some analysts conceptualize "the social context of documentary systems" as a kind of diffuse social vapor that hovers around the systems and the men, women, and children who may use them. Professionals who work in information centers, for example, may see their stream of clients each making inquiries that are driven by "a social context" that they bring with them, and these contexts may seem to change from one client to the next. But this view is much too limited for understanding how people use online systems in their workplaces, homes, and other locations in their lifeworlds.

The special case of refereed electronic scholarly journals is instructive. Despite high enthusiasm by their advocates, few pure-electronic journals are now viewed as strong scholarly publications. Pure-electronic journals might help improve scholarly communication but there are important institutional architectural questions about making them part of the scholarly corpus through indexing, abstracting, archiving, etc. that have yet to be systematically resolved. In addition, only a small fraction of scholars and professionals have entree to high-speed communications networks, large disks, and fast printers at all of the locations where they may want to access these documents. The example of scholarly electronic journals also illustrates the role of social systems in rewarding (or penalizing) people when they contribute to specific corpuses. The best collection of electronic journals in a specific field probably won't improve scholarly communication much, unless good scholars view them in the same light as print peer-reviewed journals. The case of scholarly journals is only one illustration that shows how SI intersects with digital communication systems.

Theorizing on the use of documentary systems in terms of social relations and contexts is not new for information science. Information scientists have been influenced by social studies of scientific and professional communities conducted by scholars such as Diana Crane and Thomas Allen. Social informatics intersects this line of inquiry by examining the role of information technology in scholarly communication (e.g., Peek & Newby, 1996).

We are moving towards more elaborate nationwide networking that brings various documentary systems into a wide range of institutional settings, including workplaces, homes, schools, and hospitals. A corpus-centered view tends to ignore how people's communications lead them to use some sources or systems over others, and the roles of various documentary systems in their web of social relationships. Social informatics provides important "socially rich" theoretical frameworks that help information scientists to move from a corpus-centric view to one which foregrounds the nexus of information technologies and human communications in a social world. Social informatics has a large research literature that is scattered across the journals of several fields. Fortunately there are available some research anthologies and review articles which serve as effective entry points (Bishop & Star, 1996; Huff & Finholt, 1994; Kiesler, 1997; Kling, 1999; Kling & Allen, 1996; Kling & Star, 1998; Kling, Crawford, Rosenbaum, Sawyer, & Weisband, 1999).

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