

Professional Statement

Research, teaching, and service are inseparable concepts in the academy. Research informs teaching and serves the field; teaching prepares professionals for lifelong learning and service; and service in turn enriches teaching and raises awareness of problems and questions for research. The purpose of this document is to describe ways that my research, teaching, and service inform each other.

Research

Research is driven by questions, and the questions that interest me most concern information needs and uses in the context of work. We spend much of our time at work. That work may be structured and defined by the organizations that employ us or it may be driven by personal hobbies and interests. Our relationships to organizations, colleagues, and even to work itself affect our intellectual growth, our productivity, and even our well being. Communication and information sharing form the glue of these relationships. How well we communicate, manage, and use information is not only important for personal success, but for the success of organizations and the individuals who comprise them. Consequently, knowledge work and knowledge workers have a central role in organizations, and that role is made increasingly complex by the need to support such trends as telecommuting, virtual classrooms, and round-the-clock access to people and resources.

The theoretical foundation for my work has its roots in sociology and education. My research falls at least partly in the socio-cognitive tradition of information needs and use studies, particularly as I try to understand the relationship among the individual, the organization, and information. Because the questions that interest me can best be explored within a social context, I typically employ qualitative methods in my research, but I use other methods when appropriate.

My research is motivated by these broad questions:

1. What information features or characteristics are most salient for people in the context of their work?
2. How can the organizations where we work, and those that support our work, facilitate the identification and use of information?
3. How does information technology support the way we work, and what role does technology play in organizational change? What opportunities do these changes present to information professionals?

These questions, which are addressed in the following sections, are important to organizations struggling to be competitive and to maintain an identity in a global environment where relationships are increasingly virtual and where boundaries are increasingly blurred. If we can understand the salient features of information use in the work place and gain a better understanding of the information behaviors that make

organizations more effective, then perhaps we can develop better information services and employ technologies more effectively.

1. What information features or characteristics are most salient for people in the context of work?

To address this question, it is necessary to understand how people define and characterize their work spaces, the tasks that they perform, and the information that they use. Much of my work has focused on this question, examining personal information management (PIM) behaviors in the workplace. Building on research related to ways that people organize and use information in paper environments, I was one of the first to investigate how people organize and use electronic files (Barreau, 1995). Based on Kwasnik's work with personal documents in offices, I interviewed managers to explore their strategies with digital documents and confirmed that time and use factors are as important as document form and topic in the management of personal information. This research was described briefly at the 1994 HCIL Symposium at the University of Maryland and caught the attention of Bonnie Nardi, who was doing similar research at Apple Computer Corporation. We shared our results and combined our findings in a paper (Barreau & Nardi, 1995). These papers apparently have been influential as they are well cited.

We found in these early studies that situational variables are among the most important factors in the organization of personal documents and we found three broad categories of documents in the workplace – ephemeral, working, and archived. Organizational schemes for personal information tend to be broad and shallow since people are generally reluctant to file things under categories that may be forgotten later. We reported that information retrieval in electronic environments includes a spatial element – that people tend to place things (on electronic and on physical desktops) where they will be reminded of them later or where they may be easily found.

Others have studied different populations of users or specific categories of personal documents (such as email) and they refined the broad information categories and the categories of behavior that we observed. While much of the work has reinforced and built upon our findings, there has been some criticism. Researchers at Yale proposed a temporal rather than a spatial model for the organization of personal documents and they suggest that the spatial model is an artifact of the desktop environment and of the limited technologies available to our subjects. Others have suggested that the solution to PIM is a “find” feature that will search and integrate results from multiple document types. I revisited the managers from the early study to test some of these ideas, and found that their behaviors have changed little over the years despite improvements in technology and desktop search (Barreau, in press). However, rapid growth of information and expanding storage capability for managing it may soon surpass our ability to control it.

PIM problems continue to engage my interest. Concern about the challenges of managing increasing volumes of email and other types of ephemeral information led to one of the questions addressed by my dissertation and to a study of my own email management practices (Barreau, 2005b). In the dissertation, I report that customer service representatives have little difficulty in managing ephemeral information. The volume, variety, and forms of ephemeral information managed by the customer service

representatives are more limited than for managers, and that may help to explain why they reported fewer problems. Research into the relationship between task and PIM behavior is ongoing.

Recently, I participated in a study of the information behavior of students in a botany field experiment. Our goal was to assess the benefits of certain technologies, information structures, and information sources in completing field experiment tasks and in helping students to acquire the skills and knowledge for scientific inquiry (Bailey et al., 2006). The major research question emerging from this work, from my point of view, is what the PIM behaviors of students may reveal about the role of their levels of knowledge or expertise. I am interested in learning whether designing better PIM tools and improving PIM skills can facilitate acquisition of domain expertise. I am working with three doctoral students to explore this question, as well as related questions, in greater depth. The concept of expertise is central to designing usable information systems and it is a concern for information retrieval research as well. Our work is in the conceptual stage, but the discussions are stimulating and beneficial.

My interest in PIM has also been revitalized by a growing PIM research community, initiated by William Jones and Harry Bruce at the University of Washington, and nourished by colleagues at UNC, including Diane Kelly, Rob Capra, Jane Greenberg, and Kristina Spurgin. I submitted a short paper and poster and participated in the PIM Workshop at the ACM SIGIR conference in August 2006 and I am currently co-editing, with Rob Capra, Sue Dumais, William Jones, and Manuel Perez-Quinones, a special issue on the Finding and Refinding of Personal Information for the ACM *Transactions on Information Systems*. I am also serving on the planning committee for the next PIM Workshop, which is scheduled for the CHI conference in 2008.

2. *How can the organizations where we work, and those organizations that support our work, facilitate the identification and use of information?*

My career has followed a stimulating, crooked path rather than a single, straight trajectory, as I have worked for a variety of organizations in both public and private sectors before joining the academy. In each case, good communication is universally-valued but not always practiced. This became most apparent to me when new systems or technologies were introduced with inadequate needs assessment and training. It struck me that organizations as collectives were not only responsible for much of the frustration experienced by employees, but were missing an opportunity to learn from employees and improve organizational effectiveness. Increased dependence upon computers has made a geographically dispersed work force possible, and, with so much information available through organizational intranets and electronic mail, much of the socialization and orientation process for employees is communicated through information systems. Interface design research has revealed much about how to design usable systems from the user's perspective, and information architects are beginning to look at effective content management from the organization's perspective as well.

My dissertation research addressed organizational contexts for information and information system use. The research included case studies of three publishers who used the same information system to support their customer services, inventory management, and order fulfillment tasks. I was interested primarily in the modifications the

organizations made to fit the information management needs of their businesses. Organizational information processing needs were often in conflict with the default task sequences and data relationships envisioned by the software vendor. While there was agreement concerning the areas of deficiency – limited reports, inflexible task sequencing, and an inadequate inventory data structure – there was no consensus on a solution. Each organization had specific needs that a generic solution could not supply. Therefore the organizations were forced either to pay for costly software customization or to work around the limitations. Procedural work-arounds were developed for special cases and for problems as they were discovered, but keeping track of problems and keeping people apprised of solutions were tasks that were performed outside of the system. Solutions were sometimes developed on the fly, were often collaborative, and frequently required external systems and communication channels for support (Barreau, 2001c). For many reasons, it seemed to me that organizations were not addressing these problems adequately (Barreau, 2001a).

From this work, I started to define what I considered to be important features for organizational interfaces. Not only must information systems be usable, they must be useful within the organizational context where they are employed. A system supporting enterprise tasks should reflect the organization's "brand" of those tasks. To expand on my work, I interviewed collection development specialists in various public libraries to identify the tasks that they perform and to assess the information systems employed to support them (Barreau, 2001b). Once again, procedural work-arounds were observed and librarians were reluctant to request system modifications for fear of over burdening technical staff or adding to the costs of maintaining systems. There were no procedures in place for librarians to do more than communicate hardware or software failures, and few opportunities for technical staff to observe and assess what these librarians needed that might be different from other libraries. The Web offers relief for individuals who take the initiative to post information and links to information, but these grass roots initiatives may not reflect broader organizational concerns.

In addition to companies and libraries, I have explored organizational interface issues in government agencies. I worked with two doctoral students to examine information integration issues between Federal and State agencies (Barreau, Su, & Spurgin, 2004) and more recently looked at how some of this information is used by the public (Barreau & Zhang, technical report, in process).

Organizational needs and uses for information, and the design of organizational interfaces that provide and share context for work, are addressed to some extent in knowledge management research. Inquiry into organizational interfaces overlaps the PIM research as well since there is a relationship between how organizations define and structure information and how individuals use it. Effective organizational information management is as much about tapping into personal knowledge and expertise as it is about creating and disseminating information within organizational boundaries. My thinking has been influenced by Star and Griesener's work on "boundary objects" and their potential as a tool for organizational communication and knowledge management. I have found that organizations invariably create and use documents that fit this role. These boundary objects not only bridge organizations or organizational departments, but they can also be part of an individual's PIM system. In the case of one of the public libraries I visited, the reference department logs all reference questions. The log is used at the end

of the month to compile statistics and assess staffing needs. At the end of the month, the log is no longer needed by the reference department, and the collection development specialist then retrieves it and performs an analysis of questions asked and employs it to evaluate and build the collection. Sometimes she spots trends in the questions, or holes in the collection, and marks these areas for development. The log is both a tool for managing reference and a tool for helping the bibliographer to organize and prioritize her work. As a boundary object, it meets the needs of both groups and indirectly improves the communication between them. Careful design of such tools holds considerable potential for addressing issues in organizational communication.

Some boundary objects are designed for both boundary-spanning and local uses, but others are the result of individual practice and innovation. Star and Griesener identified four types of boundary objects (ideal types, repositories, coincident boundaries, and standardized forms). Boundary objects are useful and manageable because of their familiar form, but they offer opportunities for introducing new information in a routine context. I have taken brief look at one type of boundary object (i.e., listserv as standardized form) in an organizational context (Barreau, 2005b), and I plan to expand this research in the future to identify boundary objects in other contexts, assess their uses and impact, and explore their potential for additional forms of communication and information transfer.

- 3. How does information technology support the way we work and what role does information technology play in organizational change? What opportunities do these changes present to information professionals?*

If organizations are to provide interfaces that communicate their needs and expectations to workers, and if workers are to identify and manage the information needed to accomplish tasks, then appropriate tools are needed to support them. Technological developments have typically meant progress – more efficient ways of working that may provide a competitive edge to the innovator. Technologies usually have secondary effects, too - unanticipated consequences that often have lasting impact. Information professionals have typically embraced technologies that offer a better means to an end – employing them to serve their tasks. However, we are now beginning to experience some of those secondary effects: foot traffic in libraries is down and many corporate libraries have closed because, among other reasons, end users prefer to take their information needs to the Internet; rising costs of journals accompanied by restrictions on use have fueled open archives initiatives; and Web 2.0 may be shifting the focus away from reliance on formal, authoritative sources and experts to our trusted, personal relationships.

Newspapers have been directly affected by increased use of online sources. Circulation is down in most markets, revenue from classified ads has fallen, and organizations face competition from sources that may have their own agenda in sharing the news. Many of these organizations responded initially by closing libraries and research centers to cut costs, suggesting that reporters with Internet access could do their own research. Some information professionals have responded proactively, demonstrating their value to the organization by generating ideas for increasing revenue

(selling posters of page one photos from the sports page, for example) and promoting their services. I studied four news organizations to investigate the relationship between the researchers and journalists and to assess whether these new models and roles for researchers are making a difference (Barreau, 2004; Barreau, 2005a). Proficiency with technology, an interest in identifying and acquiring better technologies, and a willingness to share skills and expertise with others seem to be qualities that help to insure useful roles for information professionals. Although the information professionals say that providing research support is the most important and most valued aspect of their work, there is some evidence that form of support is not enough. Roles of information professionals to provide training, marketing support, knowledge management, and data analysis have expanded in many news organizations. There is some evidence that those who have adopted a different vision for their roles as information professionals have fared better, but it is no guarantee. One of the most proactive, tech-savvy professionals studied in this project worked in an organization where the research center was being whittled away by management's cuts.

I am continuing to pursue my interest in the professional response to technology and to organizational change as part of the Workforce in Library and Information Science (WILIS) study, a research project to analyze career patterns of the graduates of North Carolina's library schools. This project, under the leadership of Joanne Marshall and Victor Marshall (NC Institute on Aging), is funded by IMLS and includes co-investigators Barbara Moran, Paul Solomon, and me. I am interested in learning more about individuals who took a non-traditional career path. We have data from the pilot study and anticipate more data to analyze this fall.

The Future

My future plans are to continue combining these areas of interest – personal information management, organizational interfaces, the role of technology in organizational change, and the evolution of the information profession. We have received a second award and extension for WILIS to 2010, and the team exploring the potential for the personal workstation to support botany field experiments (the M2 project) will continue to meet, formulate questions, and seek funding. In the latter case, I want to pursue the use of field experiment data and other types of information to develop e-portfolios that encourage students to think critically and reflectively. We are learning more about the types of tools and features needed to support the management of personal data, but we have much to learn about the tools and tasks that help students to think reflectively and about how they may differ between disciplines. The PIM field continues to offer opportunities. I am working with Kristina Spurgin here at UNC, and with two doctoral students at Drexel University, who are beginning their doctoral research related to PIM. It is both exciting and gratifying to help shape their projects.

The notion of trusted-source expertise as opposed to authoritative-source expertise is one worth examining as Web 2.0 functions increase. While this is not an entirely new phenomenon, it may have different characteristics and implications in an

environment of vast social networks. I am hoping that fruitful work will emerge from what are already stimulating discussions with students and colleagues.

Teaching

I have been taught by master teachers and role models who set standards that may be impossible to achieve, but are worth pursuing. My teaching philosophy is simple – to recognize and accept each student as an individual with a stake in his or her education. For me, it is a partnership, and my goal is to help students advance as far beyond where they are as they are willing to go in the time we have together. This requires that I give them challenging assignments, that I provide balanced and meaningful feedback and assessment, and that I provide an engaging and non-threatening climate which invites their participation and stimulates thought. Teaching succeeds when students make connections between instruction and their personal experiences and goals. Assignments must therefore be flexible enough to accommodate diverse abilities and interests. I routinely seek improvements to assignments, new methods for conveying ideas, and reassessment of my expectations for student performance as well as my own.

Since coming to SILS, I have taught three required courses and two electives. The syllabi for these courses can be accessed from my Web page (<http://ils.unc.edu/~barreau>). Since required courses are offered every semester, I am helping to fulfill departmental needs, but I am an enthusiastic advocate for these courses and I enjoy teaching them. The required courses include:

- INLS 285, Information Use for Organizational Effectiveness, a course required for undergraduate majors in Information Science. The focus of this class is knowledge management. I changed the class to a seminar format in spring 2007, with success.
- INLS 500, Human Information Interaction, a course required of all master's students and an elective for undergraduates and doctoral students. This course provides an introduction to theoretical foundations and research in human information behavior.
- INLS 585, Management for Information Professionals, a course that is required of all master's students and available as an elective to other SILS students.

I offered one elective, a special topics course, in spring semester 2006. The course, INLS 210, Information Communication Technologies, Organizational Communication, and Knowledge Management, focused on the social impact of technologies in the work place. The second elective is the two-week SILS Summer Program in Oxford where I served as faculty advisor in the summer of 2006. The course is planned by our Oxford hosts; my duties as faculty advisor included helping students who were taking the course for credit to select and refine their paper topics and evaluating those papers when submitted. Other duties included active participation in the seminar to help students, including those who were not receiving course credit, to get maximum value from the experience.

My teaching is not limited to the classroom, but extends to mentoring, counseling, and advising students. This means providing feedback that is more than a grade, but

recognizes the level of effort expended, that affirms their creative and insightful observations, and that raises questions or offers suggestions that would improve the work or stimulate thought. I particularly enjoy working with students on their undergraduate honor's theses, master's papers, and doctoral dissertations, seeing rough ideas take shape and bloom, and sharing in their learning about the research process. One of the most gratifying experiences I have had as a teacher came when one of my students received an award for her master's paper. Yet, seeing any student through to a finish on these culminating research reports is gratifying and the products themselves have been worthwhile, whether award winning or not. I also work with students on independent study projects and field experiences. Making site visits gives me the opportunity to stay attuned to developments in the field as well as to observe practical applications for what we teach.

The Future

Teaching is challenging, but it is also gratifying, and there are few places more appealing to me than a classroom. I have been the fortunate recipient of two teaching awards, one national award and one award from SILS. I am proud of these, but continued success requires flexibility and adaptability since each student, each class, is different – I will never rest on 'laurels'. My goal for the immediate future is to offer the special topics class again with a focus on personal information management tools for work and classroom. I will continue to emphasize activities and assignments that encourage reflection and critical thinking. Undergraduates in SILS have requested more options for electives, and I have started planning an elective on personal information management that may be directed exclusively to that group.

Service

I think we have a duty to support the school, the university, and the profession – not only by participating in functions and affirming policies, but by challenging them when change is needed. My service activities are listed on my CV, but I thought it important to include a commitment to service in my statement. I support the school through work on committees, collaboration with colleagues, advising students, and contributing to a sense of community by attending and participating in both formal and informal functions. I support the school and the University by representing SILS on the Faculty Council and by actively supporting groups such as the Friends of the Library. A sense of community is important to the University as well as the school, so I attend official functions such as University Day, Commencement, and other significant functions, and I have served on ad hoc committees to aid other departments.

My professional service includes active involvement in the PIM research community as well as professional membership in ASIST, ACM, and SLA. I am most active in ASIST, but I have attended conferences, served on committees, and participated in sponsored events of these groups and others. I review papers and panels for conferences and for publication in professional journals and I have reviewed proposals for funding agencies such as IMLS and Israel's National Science Foundation. I have also

spoken to professional groups such as the New York Public Library's Leadership Academy.

These activities enrich my teaching and research. Interacting with others in this way helps to raise new questions, increase awareness of new sources and other work, and encourage better work overall.

Papers Referenced in the Professional Statement

Bailey, E., Baldwin, T., Barreau, D., Crystal, A., Greenberg, J., Sharma, A., Conway, M., Mendez, E., Oberlin, J., Shoffner, M., and Seiberling, S. (2006). Augmenting memory for student learning: Designing a context-aware capture system for biology education. *Proceedings of the American Society for Information Science & Technology*.

Barreau, D. (1995). Context as a factor in personal information management systems. *Journal of the American Society for Information Science*, 46: 327-339.

Barreau, D. & Nardi, B. (1995). Finding and reminding: file organization from the desktop. *ACM SIGCHI Bulletin*, 27 (July), 39-43.

Barreau, D. (2001a). The hidden costs of implementing and maintaining information systems. *The Bottom Line: Managing Library Finances*, 14 (4):207-212.

Barreau, D. (2001b). Information systems and collection development in public libraries. *Library Collections, Acquisitions, and Technical Services*, 25:263-279.

Barreau, D. (2005a). Integration of information professionals in the newsroom: Two organizational models for research services. *Library & Information Science Research*, 27(3):325-345.

Barreau, D. (2005b). Listserv as boundary object: implications for personal information management and organizational learning. Proceedings of the 2005 International Conference on Knowledge Management, Suliman Hawamdeh (Ed.), *Knowledge Management: Nurturing Culture, Innovation and Technology*, Singapore: World Scientific Publishing, 377-383.

Barreau, D. (2001c). "Making do": transaction systems in organizations. *Library & Information Science Research*, 23:27-43.

Barreau, D. (2004). The new information professional: vision and practice [Brief Report]. *Information Outlook*, 8 (4):31-35.

Barreau, D. (in press). The persistence of behavior and form in the organization of personal information. (accepted 8/6/2007, *Journal of the American Society for Information Science & Technology*).

Barreau, D. (2006). Personal Information Management in Context. Short paper, 2006 ACM SIGIR Workshop on Personal Information Management: Now that We're Talking, What are We Learning? Seattle, Washington, August 10-11, 2006.

Barreau, D., Su, C., & Spurgin, K. (2004). Vertical integration in the Statistical Knowledge Network. *Digital Government Conference, 2004* (DG04).

Star, S.L. & Griesener, J.R. (1989). Institutional ecology, 'translations', and boundary objects: amateurs and professionals in Berkeley's Museum of Vertebrate Zoology, 1907-1939. *Social Studies of Science*, 19 (3): 387-420.