

Shifting Sands—The Jurisdiction of Librarians in Scholarly Communication

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This paper offers a glimpse at a qualitative research-based inquiry into such issues as:

- What future role(s) are librarians preparing themselves for?
- What other occupations seek to develop similar capabilities, and what does that mean for the professional jurisdiction of librarians?
- What happens to the task jurisdictions of support staff when librarians cast off traditional duties in order to take on new opportunities?

I. Observing Librarians at Work

The work we do may be one of the most meaningful sources of personal identity. So it should come as no surprise that when asked “what work do you do?” that it is a matter of consequence what the answer is. A response that says “I am a Librarian” signifies differences in tasks and services (as well as gender and social status) from the response that says “I am a Publisher,” or “I am an Information Technology Specialist.”

What happens then, if Librarians begin to take on tasks that involve publishing and providing information technol-

ogy expertise? Who benefits and who loses when tasks such as cataloging and some types of reference and material selection work are relegated to other occupational groups as professional librarians retool themselves for the age of the electronic library? In this article I report on field research which suggests we look at the interaction among occupations over task and service jurisdictions for an answer.

In March of 1997, I joined the human resources service team at the library studied for this report. I was “loaned” by my boss, an administrator in the Provost’s office, to the main library in order to develop for them a team-based compensation and merit framework. By May of that year I was also completing my course work for a Ph.D. in Higher Education Administration. I was crafting a dissertation topic and looking for a way to conduct research while continuing to work full-time. When I arrived at the library it was as if the Universe opened up to me. Answers to the frustrating questions of research design and the support needed to accomplish it quickly began to be answered.

Within months of my arrival several key events occurred within the library. The Technical Services Team

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reorganized. This team contains occupational skills related to ordering and making “shelf-ready” the books, journals and other materials purchased by the library. The reorganization outsourced tasks that could be done with less expense by vendors. As more and more of the work of this section became subject to automation, it became possible for books to arrive at the library ready to go on the shelf. One result? Cataloging librarians were moved out of cataloging duties into reference and instruction work. Some cataloging was outsourced to vendors, and other aspects of cataloging were turned over to non-professional staff.

Parallel to developments in the Technical Services Team, a digital library initiative was started. A set of new titles was developed, and hiring began for a “Knowledge Management” librarian and a “Metadata” librarian. Just before I arrived a part-time “Copyright” librarian position was developed and filled. These new titles reflected a new set of tasks needed to publish both special collections and journal articles on the Web. These few new positions were not the only efforts to secure new task jurisdictions. Another change is brewing that in language is captured by the difference between “bibliographic instruction” and “information literacy.” Before I came to the library, reference librarians were beginning to develop instructional “partnerships” with faculty. These “partnerships” were a self-conscious effort to engage faculty in the instruction of students regarding their ability to use electronic information resources. Librarians were aware that they were setting out to build an electronic infrastructure that faculty were not yet prepared to use in the classroom. The educational effort would require as much instruction of faculty as of students in some cases.

The library’s effort to forge partnerships with faculty was furthered with financial support from the state. University administrators assisted in organizing a variety of support service groups, called the Faculty Development Partnership of which the library was a part, to enroll faculty in curriculum development that would put courses on the web. The idea was to develop a distributed education capacity in which students could use e-mail and the web to access faculty and course materials. For others the purpose went beyond new information distribution capabilities to what is known as “distance learning”—the ability of faculty to teach classes across the state or beyond.

At the same time, a several year effort to improve the quality of undergraduate education was in play. It resulted in the design and building of a undergraduate First-Year

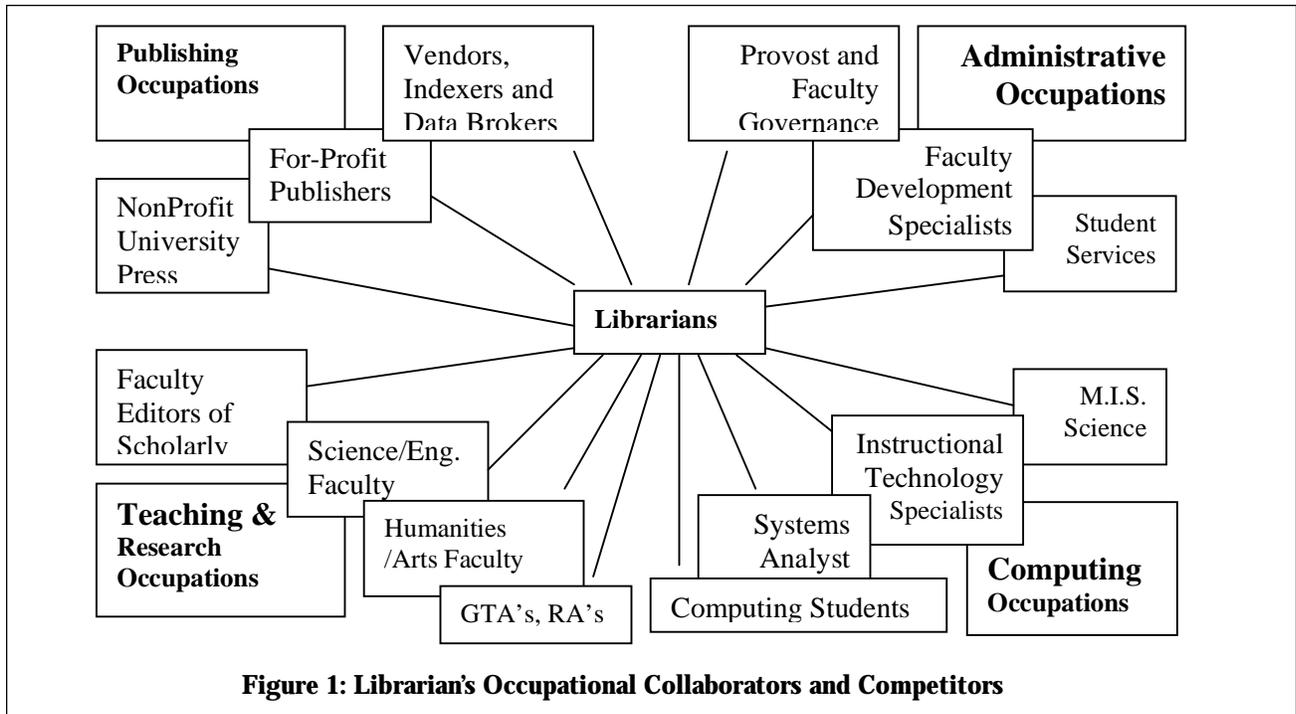
Center (known as the Integrate Learning Center or ILC) attached to the library and featuring an Information Commons as well as classrooms equipped with the capability to use digital tools. This commons would be a concrete realization of the digital library future. Librarians exerted a major influence in the conceptual development of this facility, scheduled to open in 2001.

Taken together, these changes and initiatives represented a rapid and in some ways shocking reconfiguration of professional jurisdiction. By “jurisdiction” I mean the limits of control exercised by occupational groups within which they exercise legal, social and technical control over tasks and capabilities. The action librarians take to learn and exercise control over tasks involves taking power over work that other occupations may also see as theirs. The resulting conflicts, if successfully negotiated, may result in significant changes in the task jurisdiction and public role of librarians, rather than their disappearance.

When I arrived at the library, I saw that librarians exercised influence and control through a strategic planning process at both the university and library level. Much of the leadership was provided by groups of librarians and staff charged with plan development and project management. The dean played an important, but not always central role.

The serendipity in my arrival and these events provided the opening in which I could use my doctoral research program preparation. I was more than willing to seize the opportunity. I negotiated with the dean and team leaders in the organization to combine my professional role as an internal consultant with my research role as a participant observer (Strauss & Corbin, 1990). The participant observation method of study combined on-site observations, interviews and document review. In all, 26 formal interviews were conducted and coded for this study. Informants were offered an opportunity to read and correct transcribed notes. Hundreds of internal documents were gathered and analyzed, some going back in time as many as ten years. As a participant observer I had my office on site and was able to observe countless meetings and informal discussions. I captured my observations in field notebooks.

Four occupations appear most involved in jurisdictional tension with librarians in this study: administrators, faculty, publishers, and computing professionals. All are stakeholders in the business of scholarly communication (See figure 1).



Three task and knowledge jurisdictions defined Librarianship for the greater part of the twentieth century:

1) Knowledge and skill regarding selection of materials relevant to specific needs and interests of library users. This is what Shera describes as “knowledge of the characteristics of readers.”

2) Knowledge and skill regarding cataloging of materials, their maintenance and preservation. This is referred to by Shera as “knowledge of characteristics of recorded information.”

3) Knowledge and skill regarding retrieval of information and materials once selected and cataloged. Shera describes this as “knowledge of methods of bringing graphic records and readers together.”

This Tripartite Role (Shera 1970) is embodied in three task jurisdictions and specialized roles within the library profession:

1) bibliographers—who select books or other materials to broaden and deepen collections.

2) reference Librarians—who match patron interests to material or data.

3) cataloging Librarians—who maintain the card catalog or electronic equivalent and see that materials are properly placed and cared for.

When Shera wrote this functional description of purpose for librarians, the role he describes resonated with the

history and tradition of the occupation, while pointing to a future of increasingly complex sources of information. Shera's focus on materials placed his conception of Librarianship firmly in the world as he knew it. However, this mediator role is under stress, if not outright attack. Shera's conception fails to comfort the cataloging librarian whose work is outsourced, or the reference librarian whose access to a database is disrupted when the vendor who provides it decides to no longer serve academic libraries. The bibliographer who now selects from vendor-managed lists, juggling decisions about print versus electronic editions, has a different relationship to material than was once the case. And librarians pressed into digital production services face a learning curve regarding electronic publication techniques that might terrify lesser souls. Other changes in delivery of information lie unseen over the horizon. In the logic of capitalism, now adopted as a source of measurement by the many states and increasingly felt in state-supported higher education, the question is whether or not state-funded libraries should be a public expense or left to private enterprise. The actions of state-funded library professionals to address their task jurisdiction in a competitive environment are of utmost interest and consequence.

Through the questions that follow, I search for the truth about the relationship among professions contending for

jurisdiction over public access to information and the deployment of information technologies for this use. How do librarians in this case study act to forward their professional project, among other occupational groups contending or collaborating for the tasks established by the organization and technology? In a dynamic environment, how will people counting themselves as employees of libraries fare among other occupations involved in scholarly communication, as all are participants in an emerging digital delivery system? How are librarians contending with the pressure to engage other occupational groups for jurisdiction over “knowledge about knowledge” and its application in a time when some types of knowledge are increasingly subject to copyright and licensing control? What part does gender play in the occupational interactions, and the acquisition of skills needed to support movement into more technical computer-mediated work?

To answer such questions, I first turned to the research literature. Case studies of library work are not prominent in the literature on Librarianship. Empirical studies linked to functional mode (as contrasted with occupational interaction mode) are common. There is a growing interest in the future role of librarians, but it typically views the production of new roles as linked to technology. Other forces are absent. Library educators and academic librarians together are responsible for over half of the literature (Winter, 1988). In this largely role-bound (and usually past oriented) literature on librarianship, I found no studies that clearly posed questions related to the interaction of occupations that surround library work and its future.

The limitations of the existing case study literature on librarianship required use of sources outside the library field. I sought out literature that would inform my approach in three dimensions:

- macro-level theories of global capitalism and feminist theories of the patriarchal establishment of gender roles;
- meso-level sociological and economic theories of industry structure, professionalization and occupational control; and
- micro-level participant observation, document analysis and interviews.

At the macro and meso level I found the work of Andrew Abbott to be most helpful, specifically his book titled *The System of Professions* (Abbott, 1988). Abbott provides the foundation for this study, demonstrating how occupational control is achieved through claims for expertise reinforced legally, through public opinion and through the

organization of workplaces. Abbott views change in the professions as occurring in three contexts: (1) the context of larger social and cultural forces, (2) the context of other professions, and (3) the context of other ways of providing expertise. In the context of technological change, he predicts the current division of labor will be maintained. It is a division of labor in which librarian’s expertise in massaging databases supports their role as broker between users and data. Competing sources of expertise, such as proprietary database suppliers, increase the dependence of librarians on outside vendors. Abbott suggests that the decisions to engage in these dependent relationships, and the conflict between commercialism and professionalism depend for the most part on the stance of the organizations that employ librarians.

The multiple strategies that Abbott recognizes as ways to settle jurisdictional claims can all be said to be organizational strategies, be they the result of professional association action or institutional action. Abbott emphasizes the impact that both technology and forms of service and production organization have on the development of professional jurisdiction. But there are some limits on jurisdictional contests. “A profession is not prevented from founding a national association because another has one. It can create schools, journals, ethics codes at will. But it cannot occupy a jurisdiction without either finding it vacant or fighting for it” (Abbott, 1988, 86). Abbott proposes that the implication of exclusivity in the professionalization project is that an interdependency among occupations exists – a system of professions. In this system there are two constraints on jurisdiction: limits on the tenancy of multiple jurisdictions, and multiple tenancy of single jurisdictions. Abbott views the existence of a vacancy, or the possibility that a professional group has a weak hold on their position as “sufficient and necessary conditions of events” (Abbott, 1998, 88).

Anne Witz further elaborates Abbott’s ideas about jurisdiction in the other primary work informing this study *Professions and Patriarchy* (Witz, 1992). Together, Abbott and Witz lay out a conceptual framework through which the competition of occupations for jurisdiction over knowledge and skill and its application to societal problems can be analyzed, with Witz providing insight into the strategies that subordinated occupational groups use to respond to their subordination by dominant groups. Witz employs a conflict perspective based on her study of gendered professional conflicts in British medicine. Witz suggests that gender, unlike class, has been undeveloped by those study-

ing professional projects. Like class, gender has a central place in the understanding of middle-class, occupational formation. "Professional projects are defined as 'projects of professional closure' which take place in the specific structural context of patriarchal capitalism" (Charles, 1993). Witz identifies four closure strategies—exclusionary and demarcationary strategies used by men against women, and inclusionary and dual closure strategies employed by the groups subjected to either of the first two.

Exclusionary strategies, as defined by Parkin (1974), involve the downward exercise of power by a social group as it seeks to secure, maintain or enhance privileged access to rewards and opportunities. This definition can apply to any professional project, but gendered forms of exclusion secure for men privileged access to rewards and opportunities in the labor market. This is a factor underlying salary inequities, as well as one which creates women as a class of "ineligibles" by discouraging them from gaining the education, vocational skills, entry credentials or technical competence needed to practice within an occupation (Witz 1992).

"Demarcationary strategies are concerned with the creation and control of boundaries between occupations" (Witz 1992). In many cases, this is a negotiated understanding, but represents a dominance/subordination relationship when it involves ceding lower status, automated, less complex work to another occupational group, as has been the case with librarians ceding cataloging work to career staff. Witz suggests that demarcationary strategies "turn not upon the exclusion, but upon the encirclement of women within a related but distinct sphere of competence in an occupational division of labour and, in addition, their possible (indeed probable) subordination to male-dominated occupations. The concept of a gendered strategy of demarcationary closure directs attention to the possibility that the creation and control of occupational boundaries and inter-occupational relations may be crucially mediated by patriarchal power relations" (Witz 1992). In the case studied here, the demarcation of librarians as a non-faculty category called "academic professionals" with faculty-like, but differently described conditions of service such as "continuing status" rather than "tenure" represents the subtle but undeniable manner in which demarcation is managed within the organization.

Social groups hit with exclusionary or demarcationary strategies respond with gendered strategies of inclusion and dual closure (Witz, 1992, 48). Inclusion involves the efforts of excluded groups to gain entrance to the struc-

ture of positions from which they are excluded. Librarians who seek partnerships with faculty in which they are significantly involved in curriculum development and class instruction are involved in such a strategy. Dual closure strategies are a complex response to demarcation, in which the subordinate group resists demarcation by the dominant group, exercising power in an oppositional form and involving the countervailing use of power in an upwards direction. This is known as "usurpation." The dual nature of the closure comes from the simultaneous exclusionary strategy employed by one segment of the subordinate class against another subordinate group (Witz 1992). Thus, among librarians, there is a usurpatory dimension to attempts to organize against large publishing firms by sponsoring digital publication capabilities in-house. At the same time, computing professionals without a library science degree may be excluded from leadership roles in the creation of the digital library.

Steven Brint's book *In an Age of Experts* chronicles the emergence of expertise for sale and the loss of inhibitions to expediency in professions. His work casts a light on the way in which professionalism masks class privilege in service to organizational authorities or market forces (Brint, 1994). Most importantly, Brint chronicles the stratification among professions with "social trustee" identities (i.e., social work, education) as they are subordinated to "expertise" professions (i.e., law and engineering) in the context of the market value of their knowledge.

The political economy of occupations is revealed by the analysis of Shiela Slaughter, Larry Leslie, and Gary Rhoades. They study the economic and social forces bearing on the structural integrity of higher education, and suggest that the result is a new educational context that Slaughter and Leslie call *Academic Capitalism* in their book by the same title (Slaughter and Leslie, 1997). Rhoades writes in *Managed Professionals* (Rhoades, 1998) about the loss of occupational autonomy experienced by faculty as education is restructured for efficiency along market lines. This view of the increasing pressure to commodify and market the products of academic work is complemented by the work of Michael Porter, who analyzes competitive forces among for-profit firms and suggests in his book *Competitive Advantage*, factors that influence competitive strategy (Porter, 1985). He suggests six factors that influence competitiveness:

1. type of organization (i.e.: public or private);
2. technology expertise (i.e.: technical capabilities);
3. entry costs for new service providers;

4. bargaining power of suppliers;
5. bargaining power of buyers;
6. rivalries among existing competitors.

Porter's analysis is extended into the non-profit sector by William Ryan in his *Harvard Business Review* article, "The New Landscape for Nonprofits." He suggests that for-profit competition for societal services once held exclusively by nonprofit organizations is forcing them to adopt the operational look and practices of their competitors (Ryan, 1999).

Stephen Barley and Stacia Zabusky (Barley and Orr, 1997) complete the review of literature on occupational control in their study of technician's work. They see the increasing 'technization' of work, in which a technical hierarchy exists involving "broker" technicians (who negotiate the selection and installation of technologies) and "buffer" technicians (who maintain technology once installed, and "buffer" users from its complexity). This hierarchy can be clearly seen in library work as a counterpart to the proliferation of computers and software. It was just such a finding that energized this research and informed its conclusions. But first, what did I find as I interviewed, read documents, and observed for three years?

II. Findings

One of the greater challenges of writing a brief paper such as this is to find a way to make explicit the tacit sensibilities that support the conclusions. If I had fifty pages I might do that process justice. What I will do is provide for you a distillation of the categories of information that emerged from the research, so that you can get a sense of what lay behind the conclusions that follow. When all the data was gathered and analyzed there were three primary categories of data:

1. academic librarians' interactions with other occupations
 - A. faculty
 - B. publishers and administrators
 - C. computing professionals
2. academic librarian roles and tasks
3. competitive factors among the occupations involved in scholarly communication.

These are large categories. They break down into sub-categories whose profiles include causal conditions, context, intervening conditions, action/inter-action strategies and consequences. Below I comment on the three primary categories in order to provide the context for the conclusions that follow.

1. Academic librarians interactions with other occupations

A. Faculty (This profile includes data from both faculty and librarian interviews)

This category developed out of my observation of librarians' sustained interactions with faculty regarding the development and use of electronic resources for instruction and research (linked to the increasingly mediated nature of instruction and the emerging digital library). Faculty in this study are generally excited about, willing to use, and aware of the utility of information technology in the current context of classroom instruction. One respondent expressed reservations about the use of information technology for distance education. The cost of access to technology was not problematic among the science and engineering faculty, but was clearly an issue for the humanities faculty.

Humanities faculty were more likely in the case study university to use library information technology support than were the faculty in sciences. Science department respondents were more likely to have sufficient in-house resources, and to use independently accessed databases and sources of electronic information. Collaborations were more active and multifaceted among librarians and faculty in the humanities than in the sciences.

Science faculty were strikingly better equipped for high-speed internet connections than were the faculty in the humanities. Faculty experience and training were not assessed, but there were many more narratives of librarian expertise and training of humanities faculty than for science faculty.

Faculty interviews revealed dissatisfaction with the services available from the campus computing center and teaching center. Keeping in mind that I focused on interviewing faculty who were active in partnerships with librarians, it was apparent that in those partnerships librarians were appreciated as a resource, and seemed to be delivering service sought but not provided by the other agencies. Knowledge of support available to faculty seemed high, and the quality of support, based on several comments, was variable. I could see no clear trend in the use of graduate student or research associate expertise in lieu of librarian expertise in this small sample.

In one-to-one interactions, librarians are given respect as a professional in most cases, though occasional anecdotes of subservient treatment as a clerk are still heard. I heard much more value given the role of librarians in instruction than in research. Faculty comments about re-

search and the role of the library tended to revolve around its declining utility, such as in access to the collection, journal availability, or maps. Keeping in mind the low number of faculty, and science faculty in particular who were interviewed, comments about instruction tended to regard the librarian as both an Information Technology professional, and a conventional librarian, with an apparent tilt by science faculty toward the latter description.

My sense from listening to library faculty assemblies and informal conversations is that most librarians in the case study library accepted as valuable the near-faculty status of their occupation. However, I gathered from the few critical comments offered in both formal and informal settings, that the support was mixed when it resulted in status differences that damaged relationships with career staff. One argument suggested that to allow career staff a part in decision-making about merit (both librarians and career staff used a peer-review application process) would make librarians vulnerable to attack by faculty who would use it as proof that the profession was not academically oriented. The resulting vote by librarians on the issue of career staff representation in merit-allocation committee decision-making was split 50–50.

Of all the intervening conditions, the resource dependency of humanities faculty on institutional sources of technology support was clearest in the interviews. Pre-existing relationships also seemed to be a theme in the formation of partnerships. Funding opportunities for conversion of materials to electronic formats seemed to reside outside the university, in grants from federal or professional society sources. There seemed a general predisposition among all faculty I talked to for collaborative relationships, but not the same degree of resource dependence or sense of potential benefit. One English department faculty I talked to clearly used the library for materials, but talked at length about how most of his research was conducted in distant specialty archives. Librarian's conference or committee participation was a source of contacts, yet there was evidence that some connections were much less formal than that. Some digitization projects contracted to the library were fashioned out of initial conversations that were quite casual.

As an overall impression, when talking to faculty, the expectation is that traditional services and functions of librarianship should be fulfilled, and in some cases strengthened (as in provision of journals). At the same time there is a palpable sense of tension in faculty about getting on the instructional technology bandwagon. Information lit-

eracy and Web search skill services to students are seen as important, and in some cases are skills needed by the faculty. This is expressed either as a reaction to students who demonstrate daily how much farther along they are than the faculty member, or through envy at what another faculty is able to do that the subject interviewed could not find time or skill to do. In this context librarians who offer support for putting course materials on the web are tapping into an under-served community of potential consumers of the technology.

B. Publishers and Administrators (This category is constructed primarily from librarian interviews, listserv newsletters, published reports and one publisher interview.)

In this category I observed librarians' increasingly contentious interactions with publishers and indexing companies as vendors of both print and electronic products and services. In the background was the increasing need for administrators to find alternative funding mechanisms, which sometimes made them appear to some faculty as kin to publishers in their interest in making money. Dramatic increases in cost of publisher product preceded this study. Publishing houses began to offer library services through the Internet, competing directly with library services. Decreased library space for storage of physical materials along with the dependence by faculty on publishers for publication and review services was beginning to be an issue that extended to policies for tenure. The global competitiveness strategies of publishers regarding copyright, trademark and licensing of information and intellectual property was combined with an increased interest by universities in retaining property rights of faculty-produced intellectual property. Meanwhile, large publishers raced to provide content on the Internet, under conditions favorable to their bottom line.

This case study library is clearly enrolled in the association-driven initiatives to build consortia and exercise greater bargaining power over publishers as buyers. National association dues and coalition dues keep rising to support the increase in lobbying related to publisher-sponsored legislation seeking to change copyright and fair use standards. During the time this case study was conducted, SPARC has made progress in creating alternative journals at lower cost. It is not clear that this has yet resulted in cost-savings for the library. If it has, I have detected no general cry of celebration and relief. Meanwhile, the capitalization costs of internal digitization production capabilities is still being felt, as are the increasing workloads

associated with a more-or-less stable number of employees working to create a virtual library inside the physical one, with its ongoing cost structure and demands. In this case study, there is capital investment in creating new space: both a fifth floor addition, compact shelving, and new library space in the undergraduate facility being constructed next-door are evidence of this.

The national initiatives regarding copyright and licensing of faculty scholarship resulted in local initiatives by librarians to forge support from faculty. There is evidence that this resulted in at least some jurisdictional conflict with the institutional office of technology transfer, who had written a policy on intellectual property without involving the faculty or the librarians. They were the sole source of copyright information on campus until a library member got involved in educating faculty about fair use. Creation of the virtual library suggests the possibility of electronic sharing of data and text. Control of the system through which such a virtual library could be fashioned from the holdings of many libraries spawns interest in open-source architectures in which the programming codes are shared freely rather than becoming proprietary, enabling the linking of libraries without the barrier of profit-making costs. This case study library has one librarian who is leading efforts to organize just such an effort, exemplifying the social-trustee side of the profession.

National and international library associations, coalitions and partnerships are in place and growing during this case study. They seek protection for libraries from increasingly market-oriented legislation developed by corporate publishing and information industries. In many cases it is a battle to preserve any fair-use provision for the educational use of information at all. Other national and international issues include censorship as it relates to the screening of Web sites, and funding of the information technology infrastructure as it relates to the wiring of schools and campuses. Librarians in the case study library are engaged in local discussions with faculty about fair-use, but faculty do not seem to share the sense of urgency. Legislation may be seen by some faculty as an administrative or legal function, not a popular function of informed citizens. Where there is consciousness about what is at stake it is expressed by a faculty member as a concern for the cost of articles coming out of the faculty member's personal pocket or a cynicism about administration moving to capture copyrights. One faculty member saw the issue in terms expressed as "what provided the faculty with the most leverage," and saw the current system of copyright as le-

veraging the faculty position vis a vis administrators in that textbook publishing provides faculty with prestige.

The realm of publishing, and library efforts to wrest jurisdiction for scholarly publishing away from commercial publishers, appears to evoke a mixed response among faculty interviewed in the case study university. Faculty could appreciate that the rising cost of serials was consequential: they had directly suffered the loss of library subsidized journal access as a result. There is also a sense that the relationship of publishers to faculty works in the interests of faculty, who benefit from the status that they derive from peer review in the publisher controlled system. Arguments from librarians that faculty should take on the burden of publishing to drive costs down have attracted some takers among the faculty at the case study university: one to be exact. But there are voices of suspicion in the interviews with faculty, suggesting that the changes in copyright control would benefit the administration at the expense of the faculty. I see no responsiveness or thought about this from the librarians I interviewed, who naturally see the battle with the publishers as one in which their own capacity to provide comprehensive holdings is suffering, while new electronic formats threaten to bypass the selection role of librarians all-together.

There was a noticeable lack of comment by librarians on pay-per-article issues. Most seemed to be taking the value of a subscription for granted. The issue of bundling print and electronic versions brought several responses: (1) that publishers were price gouging on the charges for electronic versions, and (2) that librarians weren't ready to unbundle print from electronic because of uncertainties related to archiving copies in electronic formats.

The archival mission of libraries should put pressure on the publishing movement to create archive quality electronic-only materials much as the half-life of atomic materials put pressure on the nuclear industry to account for the cost of containment. But there is not much evidence that this is the case. Instead it seems that librarians, without the budget to address it, are only slowly beginning to deal with the issue by maintaining dual platforms, physical and electronic, while trying to figure out who will archive what and in what form. The costs of archiving electronic materials are not much discussed, but clearly worried about by librarians in the case study.

C. Librarian relationship with Computing Professionals (This category is constructed primarily from librarian interviews, one computing professional interview and documents).

In this category I comment on librarians' sustained interactions with computing professions re: the development, maintenance and use of electronic resources for instruction and research (the emerging digital library). The period of this study is a time of dramatic increases in the investment in and maintenance of complex computer networks supporting e-mail, classroom Internet use and connectivity. There is increased faculty and student demand for bandwidth and up-to-date tools. As the university struggles with tight budgets, there is competition between computing investments and other academic investments, such as salaries.

Information technology (I.T.) professionals are seen by faculty as subordinates, whether department-based or employed by the central computing center. They are assigned to help faculty learn to use the technology, as service technicians. I.T. professionals are discussed in University documents as subordinate to the administrative functions, but are central to strategy as infrastructure support, in roughly the same league with facilities and student services. The manager of a computing center user's group describes I.T. professionals as people who work on the behalf of others. "I.T. is an enabler. It's just a tool. So we are just tools. The best people here really put themselves out on behalf of other's projects."

There seems to be a history of collaboration among peers at the professional level, and a competitive history at the administrative level between the library and the computing center. Informants describe the competition in terms of conflicting personal styles of leaders rather than resource competition or divergent occupational values base. One library informant expressed fear that if the two organizations were ever merged the computing culture would take over. But the computing center manager interviewed for this study saw the library as dominant in the relationship.

In the comments of librarians I see a distinction between technical work types. When a computing professional is involved in brokering activities, such as arranging for the delivery of new I.T. services, they are described in peer terms. When the technical task is daily maintenance of machines—Zabusky's (1997) aptly named buffer role—the role is subordinate. Librarians express concern about this distinction in terms of their involvement with faculty over construction of course websites. The design collaboration with the faculty, with its elements of negotiation and creation, are viewed more favorably as a role than the maintenance of the same site, which is more likely to be handed off to a support

systems analyst or other subordinate support position. However, even the broker technician role is still a technician role, and is not seen as appropriate by some librarians.

Within departments there is insufficient funding and expertise to provide needed instructional-technology support. There is a high faculty to I.T. support ratio (100 to 200 faculty to one support, versus the corporate norm of 80 to 1). The tasking of central computing group to large institutional computing projects made I.T. service to faculty a peripheral activity. The organization of the faculty development partnership and the fluid state of leadership and support within that partnership and from administrators is both a source of concern and an opportunity to take over the support jurisdiction.

The faculty development partnership is said by a librarian in this case study to lack strategic planning and influence with administrators. It appears to the investigator to be largely a structure for allocating \$300 thousand in state monies across occupational groups who function to support faculty. Another \$500 thousand is distributed to faculty in an instructional technology grant program. A small group of agents including one librarian and two computing professionals hold the central decision-making roles absent stable administrative leadership during the period of this study. Continuing state support is not assumed, and the computing professionals are looking at technology transfer possibilities for continued funding, while the librarians see development of electronic products as a possible revenue stream.

2. Academic Librarian Roles and Tasks

This category focused on two distinct areas considered important to the future of the librarians in this case study—instructional partnerships and knowledge management.

This case study library is of particular interest because of the balance of both organizational and technological means used to support change in the jurisdiction of the professionals. At the same time that a reorganization into teams occurred, so did the transition from a physical card catalog to an electronic catalog. Process improvement resulted in savings used to reallocate funds to special projects such as the digital library initiative. This is an organization with unusual synergies in this regard. Nonetheless, not everyone I interviewed liked working in a team environment, and some informants described stress levels as high.

In the case study library, the librarians are organized into integrated services teams (IST) through which each

librarian gets involved in selection, reference and instruction. It is a strategic objective in each IST to develop instructional partnerships with faculty. This objective is driven by a need to engage faculty in issues related to the cost of purchasing, providing fair-use educational access in both a physical and a digital formats as well as providing archival access to the graphic record in both formats.

Personal abilities and preferences among librarians for connection development with faculty vary, as talents selected for in the organization prior to its reorganization sometimes represent a mismatch. Personal relationships that existed prior to the emphasis on partnerships facilitate their development, and reflect the challenge that forging partnerships with faculty represents for some librarians. Pre-existing experience with teaching or in computing may also impact librarian preferences for the type of product or service engagement with faculty and students. Evolution of information technology continues to open up new applications and service possibilities, both destroying and creating tasks.

The librarians in this study describe a divide between what they have been doing and what is newly required of them in the context of faculty development and electronic products and distribution schemes. Most are involved in traditional roles while simultaneously trying to prepare for new roles. The more routine roles such as digital scanning and indexing are already being demarcated to career staff.

There exists a combination of factors influencing this divide: (1) the opportunity to utilize new knowledge or skills to solve problems that old knowledge and skill are insufficient to answer, (2) the importance of the problem, and (3) the financial support, customer interest and infrastructure (i.e.: purchase and maintenance of technology) needed to learn, practice and attain mastery of new knowledge and skill as shown by public acceptance and/or legal sanction.

The most visible successes in engagement appear to come most often through networks of friends or colleagues. Non-relational techniques (cold calls to faculty, newsletters) seem to be most often referenced in team reports, but the real action is in individual contacts developed over time.

3. Competitive factors among the occupations involved in library work.

In this category I gathered evidence of both the Porter and Witz thesis—that librarians would compete in ways that revealed their entry into new service jurisdictions and their history as a subordinate occupation in the scholarly communication process. In particular, I looked for exclu-

sionary or usurpatory dynamics between occupational groups and status differences within the professional worksite.

When a vacancy in task jurisdiction occurs due to the procurement of new technologies, disagreements may arise within a profession over whether to occupy the vacancy. This may also happen when one occupation makes claims to services seen as the province of another.

There is an interesting bifurcation in evidence about status in this case study. On one hand, instructional expertise is the coin of the realm, the one task dimension commonly expected of nearly all librarians. It is no accident that the most highly respected of the librarians are also acknowledged masters of instruction. Instruction is also the task area most aligned with teaching faculty. On the other hand, many informants describe knowledge management tasks as the future of the profession. These are both more technical and more consultative tasks, rather than instructional. They are tasks that are first assigned to a junior librarian whose own professional background is more firmly rooted in science than librarianship. It is a concept around which there is no apparent agreement as to meaning and no scope involving most librarians, as there is with instruction. Does the status value of knowledge management come from its corporate origins and association with strategic access to a firm's intellectual property and both the tacit and explicit knowledge of its workforce? In the case study library the roles associated with knowledge management are still being constructed, and answers to questions like this hard to find in the voices of informants.

Witz's thesis is conditioned by the competitive factors facing service providers in the rapidly expanding field of information services. Porter's six factors mentioned earlier apply in this situation. This case study library is situated in a public-sector university (rather than private), where the library professionals are beginning to develop a higher level of technical expertise (as contrasted with their low-tech, high-touch history), while also creating the capacity to enter the new service of digital publication. Their entry into this service realm is made possible by the relatively low-costs of electronic publishing capabilities. In the case of the most popular science journals and the increasingly consolidated publishing firms that provide them, there are conditions in which publisher's enjoy high leverage, especially given the status needs of faculty engaged in promotion and tenure. But in many ways publishers are also burdened by high overhead in increasingly antiquated manufacturing facilities. The several university libraries in

the case study state have begun to purchase as consortia, and so are seeking to build their bargaining power as buyers. As a state subsidized provider of digital publications, the case study library might gain from a lower cost structure than its commercial competitor, but the library lacks a public image and status as a publisher, and is increasingly subject to restrictions on fair use of intellectual property as a library.

The action and interaction strategies engaged in by the case study librarians are necessary for success, but may not be sufficient. The importance placed on inclusion into the faculty ranks, and their efforts to forge partnerships with faculty, do not protect librarians from being seen by some faculty and administrators as clerical or technical support, rather than as equals. The infrastructure for wielding a truly powerful consortial network of providers into a virtual library and scholarly communication network utilizing open-source codes and common conventions and policies is not nearly in place. The competition, namely publishers, are large and getting larger. This size may not benefit publishers if the librarians can prove to be more nimble and faster. In fact, the speed at which this case study library has mounted a campaign involving numerous strategic elements to reposition their professional jurisdiction impresses me, but there is no data to suggest that their peer librarians in other institutions are nearly so far along. Faculty do not wholly align with the strategy. Institutional strategies as reflected in strategic planning documents position librarians in educational strategy in two ways. First as infrastructure support to move faculty to greater use of instructional technologies in the development of distributed (on-campus) and distance (off-campus) learning. Second: the investments made by administrators in the library brings librarians more closely into contact with the undergraduate students, especially the freshmen, as support personnel in the overall student retention strategy as represented by their involvement in the Integrated Learning Center (ILC). Neither position is a step upward in status, and could represent continuation of the gender demarcation of librarians, to the extent that librarians are enrolled in the low-status work of undergraduate instruction. ILC Planning documents in the first drafts demarcated this support role to graduate students, but now demarcate the role to general education instructional faculty supported by teams of "managed" professionals (Rhoades, 1998) from computing, library and student services.

Summary

A graphic summary of the data on librarian jurisdiction is

displayed in Figure 2. It is constructed out of the major categories, their properties and dimensions, and statements of relationships that exist in the data collected.

Working with the profiled data involved developing an understanding of the relationships focused through my research questions:

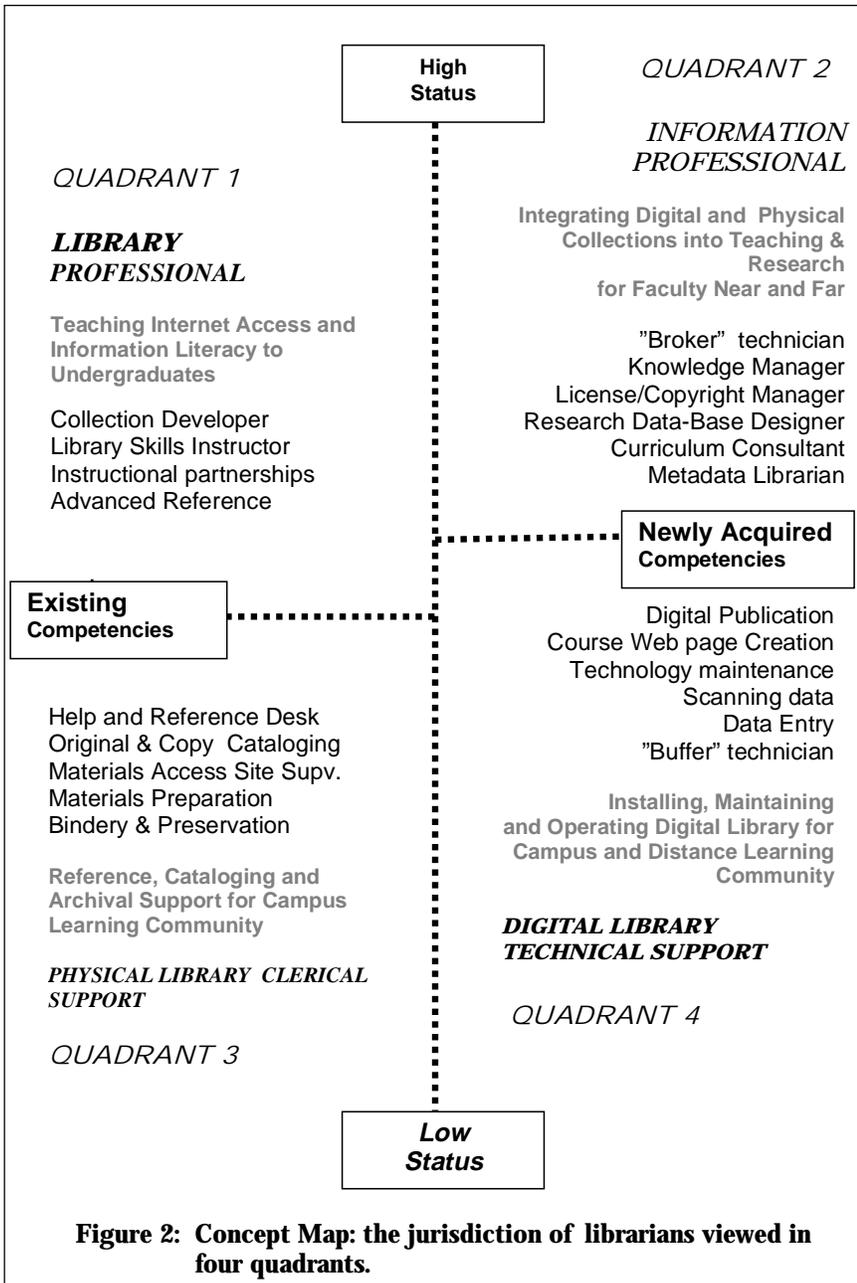
- 1) what are the contextual forces compelling change in librarian jurisdiction, and
- 2) what action do librarians take in developing their jurisdictional options?

I found the intersection of dimensional data regarding role and task expertise and the dimensional data regarding status to be of particular use in organizing the data into the larger picture (See figure 2). I checked the theoretical intersection of knowledge and skill with status against the full range of data captured by the study and found it worked to organize nearly all the data. I then validated it for language and meaning with informants. I further develop the emergent theory to suggest the jurisdictional choices fashioned by and for librarians in this case study.

The categories and dimensions of data gathered from interviews and documents are easily framed within the quadrants suggested by both status and task analysis of the activities presented by informants to this study. The Concept Map takes a workplace view of jurisdiction in the case study university library. Both technology and organizational impacts are implicit in the construction of the map. The vertical axis represents a continuum of task jurisdiction that reflects the status of tasks or roles as described by librarians. The higher on the vertical dimension the greater the assumed status and power. Librarians in this case study aspire to engage in knowledge management activities. Yet they are institutionally compelled to acquire skills in the information literacy instruction of undergraduates, a role with tasks that reflect the noblest of "social trustee" values, but one not well valued by the market economy, where knowledge management is prized.

The professional librarian and information professional roles in this vertical dimension, Quadrant one and two, are the professional, public faces of librarians. Quadrants three and four, the clerical and technical roles of librarians can be understood as task arenas which the profession downplays in public claims for jurisdiction and delegates to subordinate groups.

The horizontal axis represents a continuum from traditional (and sometimes obsolete) skills and knowledge to newly acquired (and not yet mastered) skills and knowledge. The traditional knowledge and tasks are based on



tise. As expertise grows, it becomes more difficult to retain qualified staff. In the case study library, this growth contributed to the upward reclassification of career staff positions and development of a compensation strategy (Career Progression) that recognized the knowledge-capital held by employees as more critical than their job classification—the positional authority vested in an abstract position taxonomy (Lawler, 1990).

As work becomes more technical, administrators find it more difficult to evaluate employee work (Barley and Orr, 1997). One result is that technicians enjoy greater autonomy than their clerical brethren. There are also some gains in status for clerical and technical staff who move into digital work and for librarians who can master the broker role of knowledge management. For these reasons I show the digital library technical positions as gaining status relative to the physical library clerical roles.

In a horizontal system, different groups of practitioners jointly contribute their distinctive efforts to the execution of work tasks, and this can threaten the underlying premise of bureaucratic control (Whalley and Barley, 1997). The work of technicians involves managing their low status in a hierarchy in the face of their importance to the work processes they create and maintain. "Specifically, technicians can be either "buffers," substantively involved in the work process, or

clerical skills used in the context of physical materials and historically understood to be part of the professional tool kit of librarians. The digital library skills are newly acquired, non-material (electronic) and only recently understood to be part of the professional tool kit of librarians.

This axis portrays the "technization" of case study library work—the transformation of traditional blue and white-collar work by microelectronic technologies (Barley, 1993). This axis also represents the horizontal organization of work, focused less on power and more on exper-

they can be "brokers," ancillary to that process but critical to maintaining the infrastructure which makes such work possible (Barley, 1993). Brokers are technicians whose work is "not substantively relevant to those who depend on their work"; instead, they are primarily "responsible for creating general conditions necessary for the work of others... [by overseeing] some aspect of the technical infrastructure on which a production system rests" (Barley, 1993). In the concept map, this distinction roughly follows the contour of quadrant two (brokers) to quadrant four (buffers).

Zabusky notes that broker technicians are positioned between the users of an infrastructure in the organization, and toward the developers of the technology in a wider and more diffuse technical community. "This dual orientation requires broker technicians to serve as linguistic interpreters of a sort: brokers are involved in repeated attempts to "translate" technological realities into terms users can understand, and, at the same time, to translate the users' needs into terms that make sense in the technical world" (Zabusky, 1997). Thus brokers play a mediating role in organizations, and this position "generates uncertainties about their membership in a cultural sense—uncertainties which are manifest phenomenologically as problems of belonging" (Zabusky, 1997). Librarians in the case study who took on digital library broker duties found themselves growing apart from the reference and selection tasks of their colleagues.

Technicians are simultaneously servants and experts involved in creating and maintaining critical infrastructure. In the case study library, the librarians who function as brokers are involved in technology-oriented networks spanning the gulf between computing center and library. When a librarian speaks about the importance of metadata conventions as essential infrastructure underlying the ability to share "digital objects" created by faculty they are more than librarians, they are representatives of an emerging and complex technical system which they are helping to create.

This continuum in the horizontal dimension thus represents a collective movement in time from one environmental ground to another, adjacent and to some extent new and vacant ground. Abbott introduced the concept of vacancy models to describe how professions move into or attack (usurp, in Witz's framework) occupational ground that is weakly defended or vacant (Abbott, 1988). In this case the vacancy is best seen as an emerging human need for assistance making meaningful contact with and use of information in an environment of new technology and information possibilities and trivia. It is a human need that is seen as a market by a variety of information brokering agencies such as bookstores, indexing services, and publishing services. The horizontal axis is thus a very competitive dimension where skills such as cataloging and searching are automated and skills such as preparing information for use, creating and improving information (Davenport 1997) are emerging.

Taken together the two dimensions describe four quadrants or conditions in which the case study librarians are

active agents. These quadrants are not always distinctive, in that tasks in one may overlap or find use in another. Quadrant one (existing skill and know-how combined with expanded jurisdiction) consists of those tasks and roles that extend traditional descriptions of library work involving preserving and providing access to the graphic record.

Within the past fifteen years the role of information technology systems librarian and the role of instructional librarian ascend, eclipsing the role of bibliographer/selector.

In Quadrant three (existing skill and know-how combined with diminished jurisdiction), reference desk services are reoriented to Internet access as students use Web-based search engines and on-line indexes. Indicators of the declining status of reference desk, archiving and cataloging skills are seen in the fact that more routine tasks are delegated to non-professional staff or deskilled through automation or outsourcing. The public image of the librarian as a clerk still remains, yet the actual clerical work once attributed to professional librarians is now handled increasingly by non-professional staff. Librarians seek to secure new jurisdictions by enclosing the market for on-line scholarly information services through development of a public image as information literacy instructors and knowledge management consultants. This involves making the library the preferred service provider for faculty and students over competing computing services.

Quadrant two (new skill and know-how combined with higher status jurisdiction) consists of those tasks and roles that integrate the traditional tasks of preservation and access of information into the digital means to manipulate information and manage it. This is the realm of the information professional who prepares information for use, creates and improves information by pruning it, adding context to it, and packaging it for selected audiences. It also involves acting as an agent for proprietary databases with licensing and copyright requirements. Even as this realm is being realized it is also stratifying into professional and non-professional technical tasks. Quadrant four (new skill and know-how combined with low status) involves the delegated duties of Web page development, scanning and digital production work that are now beginning to be seen as the new library specialist work in the case study library. This is the realm of technical support, and is the counterpart to clerical support in the traditional dimension.

Movement from the traditional realm into the non-traditional realm is manufactured through both organizational means (development of teams, outsourcing and reorgani-

zation of technical services) and technological means (online cataloging followed by production of electronic journals and databases). The division of the data from case study librarians into these two realms belies the ties between them. They are not as distinct as presented here. Two examples come to mind: (1) Instructional librarians teaching information literacy as stand-alone classes in the library profile as a traditional service, but it is one that increasingly relies on the development of new software and “front ends” to complex data management tools. Development and maintenance of subject Web sites (quadrant four) is linked to information literacy instruction (quadrant one). Many other linkages could be made.

Implicit in the movement from quadrant one–three to two–four are issues related to Witz’s framework of gendered demarcation and exclusion. Work in quadrant one is stereotypically female and associated with the care and provision of physical materials as conservators. However, this prejudice masks the increasingly technical nature of the profession, which is explicitly involved in creating a digital information infrastructure for faculty use in teaching and research. Teaching faculty, who are still predominantly male, and in whose ranks these academic librarians seek inclusion, demarcate and limit the role of librarians. This occurs to librarians both as instructors and technicians, as faculty control librarian’s access to the classroom and in the extent to which librarians are invited by faculty to add librarian knowledge to the curriculum or materials used in the class.

The biographies of the librarians I interviewed reinforce the lack of math and science backgrounds that make the increasingly technical nature of their work a particular challenge, requiring significant investment in continuing education. And until recently, the profession was clearly segregated, with the fewer in number male professionals occupying a majority of administrative and managerial positions. However, the gendered nature of these interactions strikes many (though not all) of the librarians I interviewed as inconsequential. Few characterize the difficulty they face in expanding their jurisdiction as caused by male domination of adjacent occupations, or male exclusivity in the shaping of skills and knowledge. The lack of concern given such dynamics may reflect the reality within their own institutional site, where women are in positions of authority. Of 54 librarians at the site in 1998, 40 were female (74%) and 14 male (26%). Women held the dean’s position and 7 of 10 team leader positions. By the year 2000, no men remained in positions of formal leadership.

Work in quadrant two is stereotypically more technical and thus more oriented toward historically male controlled occupational skills in computing and management information systems. Quadrant two is associated with the manipulation of information in the service of other occupations, or as primary creators of information products. The movement to work in quadrant two involves issues of creative control and copyright. In this arena librarians contest corporate publishing businesses over the ownership of information, resisting attempts by those businesses to demarcate or limit the fair uses to which librarians (and faculty) may put the collected materials of the library, even as they work with them to honor agreements. In this quadrant, librarians are ceded by faculty a role as the local information technology and copyright experts in the realm of scholarly communication, but also work in an uneasy alliance with publishers and vendors as contractors of their services and signatories to their licensing agreements.

In quadrants three and four, routine technical maintenance tasks are delegated to library specialists or outsourced. Specialists are excluded from professional tasks, such as committees reviewing professional portfolios or instruction, as are temporary professionals. Even in this case study “team-based” organization, librarians practice subtle forms of exclusion toward subordinate groups as they attempt inclusion in or usurpation of task areas outside their historical boundaries. This is the “dual closure” strategy “so called because it involves the simultaneous exercise of power in an upwards direction, that is its usurpatory dimension, and in a downwards direction, which is its exclusionary dimension” (Witz, 1992, 50).

III. Conclusions

Information literacy teacher, information technology broker, or instructional support technicians: which of these occupational jurisdictions is most desired by the librarians in this case study, and to which jurisdictions will they be compelled to travel by forces greater than themselves? This study asked two questions. One is about the economic and social context in which librarians work, and its impact on their tasks. The second question asks what librarians in the case study university are doing in response to the forces asked about in question one.

This case study presents the difficulties involved in gaining status, as well as moving into new knowledge and skill domains. Librarians describe the ways in which they are demarcated by faculty to a status “lesser-than” faculty. At the same time, new opportunities for jurisdiction are pre-

sented by faculty experiencing stress in trying to integrate into their classrooms the opportunities presented by new information infrastructures such as the World Wide Web. And the same properties of the Web that erode old librarian roles, such as reference work, also effect publishing and open up new possibilities for librarians to expand their influence in the scholarly communication process as producers and archivists of electronic material.

The answer to the question “what will librarians do” in the face of these forces can be summarized as collective strategies, which I define as purposeful actions by groups to secure desired benefits or outcomes. To clarify the conclusions reached by this study, I add the dimension of adjacent occupational fields and librarian strategies to the Concept Map in figure 3, below. In this study, four primary collective action strategies (Abbott, 1988; Witz, 1992) are clearly in view:

Strategy in quadrant one. This is a strategy to gain the inclusion of librarians into the core academic teaching function by repositioning the library as a teaching library. The intent is to create well developed instructional relationships with faculty that move librarians out of a passive archival and access role at the end of the scholarly communication process (Supports tasks in quadrant one and two).

- develop information literacy instruction partnerships with faculty;

- develop information technology and team teaching partnerships with faculty;
- staff the Instructional Learning Center Information Commons and, through it, provide instruction and reference services to undergraduates.

Strategy in quadrant two: This is a strategy to create and mobilize consortial relationships among libraries to usurp control of the pricing and distribution strategies by corporate publishers through collaboration with each other that result in building bargaining power as buyers. (Supports tasks in quadrant one and two).

- Librarians at the local level organize or support efforts by colleagues to build consortia that can effectively negotiate favorable rates with publishers.
- Case study librarians are leaders who support regional and national initiatives and lobbying efforts in an effort to create countervailing pressures on global corporations and national and international legislative bodies regarding intellectual property laws and their impact on fair use conventions.

Librarians in the case study actively support faculty initiatives to create lower-cost, or nonprofit alternatives to expensive scholarly publications, i.e.: SPARC.

Strategy in quadrant three: This is a strategy of exclusion, largely aimed at non-professional positions, which provides support for each of the three strategies above by reallocating resources through mechanisms such as reorganizing, downsizing, outsourcing and improving internal process efficiencies such that resources (people, time and money) are available to do the new (quadrant one and two) work (impacts tasks in quadrant one, two, three, and four).

- Reorganize into teams so that skills can be combined into cross-functional projects, or acquired from outside and used by all (i.e.: the 1993 librarywide reorganization).
- Reduce the size of teams while maintaining or even improving service through analysis of work, outsourcing and process improvement (i.e.: the reorganization of the Technical Services and Materials Access teams).
- Develop measures of accountability that provide both a defense against charges of inefficiency and intelligence about competitive threats or opportunities (i.e.: the Performance Effectiveness Measures project).

Strategy in quadrant four: This is a strategy to build the capacity (knowledge and skill) to support both of the above strategies while investing in a third, longer-term one: Creating a Digital Library Initiative through which the knowledge and skill will be gained in order to secure exclusive association in clients minds as the primary campus

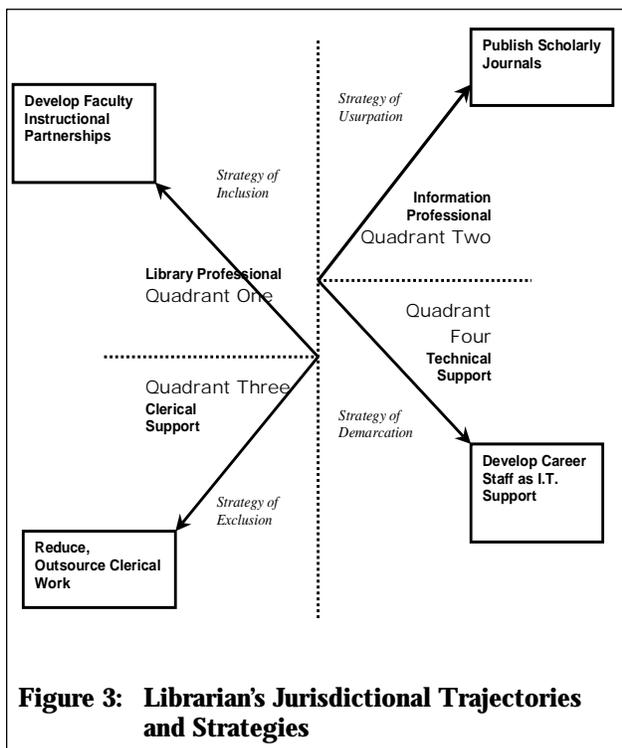


Figure 3: Librarian's Jurisdictional Trajectories and Strategies

information services professionals. (supports tasks in quadrant one, two, and four).

- Invest capital in new professional and technical positions, i.e.: the Digital Library Initiative Group (DLIG), and its professional positions, such as the metadata librarian, programmers, support systems analysts; as well as hardware and software needed for digital production.
- Develop fee for service operation to digitize print and visual materials, such as the back-files of journals.
- Develop knowledge management projects, such as interactive websites.
- Gain or protect fair use privileges for information use in education by establishing information and lobbying capabilities.

The categories of data that concern this study focus on librarian agency in creating new jurisdictions with or at the expense of other occupational groups inside as well as outside of the organization. Librarians are seen as active agents, rather than passive recipients in forging new roles as old roles are outmoded and abandoned. The study suggests an answer to Abbott's question "How do societies structure expertise?" In the course of interviewing and observing librarians at work, and as the result of the coding and analysis of these interviews and observations, several primary patterns of coded concepts related to this question of structuration emerge:

1) The way in which faculty organize (by department and field), and the qualities of their subjects of scholarship, influence what librarians do as instructors or technicians with any given department and its faculty, as do the resources those departments and fields command (quadrant one impacts).

Because science texts are more valued by the commercial culture at large, they are primary candidates for pricing increases by commercial publishers, and are the first texts to be sought by SPARC for development as alternative publications. Agriculture Science is the first outside client to contract for library knowledge management and digitization services. But science faculty are also among those most able to fund independent web support. Librarians report that science students and their faculty are less likely to use central resources. The science sector on campus thus represents a source of tension as both a potential source of fee-for-service contracts, and at the same time a more problematic constituency with whom to forge working relationships based on familiarity and use of current library services.

Fine arts, humanities, and to some extent the faculty of social and behavioral sciences contrast with the hard sciences, in that they are heavier users of current library services configured around physical texts. At the same time they demonstrate more need of, and use of librarian's expertise in teaching faculty how to access Web resources. Their reliance on the peer review of texts that result in monographs (books) makes them a challenging audience to convince regarding a transition to electronic journals. Librarians report more contention among the humanities faculty about the library's digital collection strategy than they do among science faculty. Because of the large quantitative data sets that science faculty use, they appear more comfortable with accessing data in digital formats, which greatly expand the manipulation capabilities important to them. Fields more reliant on a mix of qualitative and quantitative data appear more mixed in their enthusiasm about Web resources.

2) The software and hardware inventions of computing professionals at large, particularly those in corporations, M.I.S. departments and administrative computing, have important long-term implications for librarian occupational opportunities and constraints (quadrant two impacts).

In this case study, the library's first knowledge management librarian benefited from her relationship with faculty in the M.I.S. department when it came to understanding knowledge management concepts. Students from computing-related majors assist in the G.I.S. project and DLIG. The campus computing center competes with the library for a share of the faculty development role, but this tension is managed by differentiating products and services between the two groups. The computing center offers technical instruction and librarians offer information literacy instruction. Several science faculty utilized librarian services for electronic journal-related projects. But the definition and market for such services is still largely undeveloped. It seems likely that publishers will use existing links to faculty, among the many legal assets they hold, to protect their jurisdiction over scholarly journals. Libraries will continue to use their bargaining power as buyers to leverage costs and encourage development of an alternative publication system within higher education.

3) Personal, collaborative relationships created by faculty and librarians are a factor in determining how service roles are constructed on the continuum of peer collaboration to clerical subservience (impacts in all quadrants).

Faculty resistance to collaboration with librarians is related to concerns regarding their control over their own scholarship, the time and stress involved in learning new technologies, and the extent to which they desire to improve their instructional effectiveness in the classroom. Administrative support for librarians is linked to the development of faculty ability to create Web-based courses that build student, public and state perceptions of the institution as an effective and efficient educational provider. Administrators operate in their own field of dreams, in which faculty products may be seen by some as assets to be managed for institutional prestige.

4) The ability and willingness of the library dean and other institutional leaders to negotiate resources and create opportunities for librarians to work outside old roles is a significant variable in the creation of budgets, policies and assignment of work. (impacts in all quadrants).

In this case study the dean is responsible for positioning her librarians to successfully negotiate their role in campus undergraduate education, and to engage in national initiatives such as SPARC. She is active in positioning librarians to act as managerial professionals, presenting them as a resource in the institution willing to be the first to try the kinds of managerial strategies and tactics used with success in the corporate world. This partnership attitude of the library toward administrators pays off in resource allocation, making the library more central to strategy (as in the new Integrated Learning Center). The trade-off is experienced in the perceptions of some faculty who see the library as less relevant to their needs, and more aligned with administrative power. The dean's success with generating administrative support for initiatives that some faculty distrust (like the Faculty Development Partnership) represents the growing power of managerial professionals (librarians and computing professionals) to influence faculty work.

5) The continuing movement to make the education system more like a business, combined with the existence of new modes of information delivery and access is a fundamental source of both disruption and creation of tasks in the restructuring of both librarian work and faculty work (impacts in all quadrants).

Education is now conceived as a competitive industry, one in which the case study university president speaks repeatedly of competitiveness as a central theme. The competition is both with other in-state universities and within higher education at large. Public and private distinctions are still important, but blurring. In concert with the in-

creasing span of corporate influence, the advent of global communication delivery systems based on the World Wide Web fundamentally restructure distribution activities once constrained to text and graphic media, and are well on their way to doing the same for video and audio products. This makes the information delivery system on which libraries have depended, i.e., central book storage buildings and inter-library loan agreements, appear dated and inadequate. Anywhere, anytime delivery of information is the emerging norm. The cost to achieve this could be greater than is being recognized.

The patterns above, particularly item 5, are related to external sources of system disturbance (Abbott, 1988) which include:

- The introduction of the internet and the capacity to exchange information in text, audio and visual formats on the world-wide web changes the context and meaning of the physical collections around which librarian roles have previously been built.

- The popular diffusion of expertise in reference and data search work characteristic of micro-computing on the network replaces, along with cataloging, the librarian's old centrality in the research process, while at the same time creating new problems of information glut, quality, and archival permanence. New roles, knowledge and skills are thus needed for an emerging exchange medium in an electronic rather than physical space.

- At the same time, investments in the physical library space, equipment and software are being made in order to both deal with ever expanding print and physical collections, and to accommodate interest in and use of the electronic medium. Investments in electronic infrastructure direct the future practices of teachers and librarians in ways that can be interpreted both as constraints and opportunities.

- This new electronic and computer aided medium already has captured the interest and even loyalty of faculty in both the sciences and humanities, eroding or re-framing an older interest and loyalty to the library as a place to explore and browse.

- Values held by many but not all librarians regarding the importance of maintaining free and unfettered access to all citizens are subject to conflict in the real-politics of tax-supported public utilities being de-funded in favor of for-profit approaches to the delivery of government services. State support for Universities continues to decline.

- A comparable conflict between librarians and publishers/vendors continues over the pricing of journals and the attempts of publishers to constrain fair use interpreta-

tions of copyright in favor of greater licensing control of electronic products. Costs continue to rise.

- Librarians are thus externally motivated by a clear loss of traditional status. They extend their efforts into untried or nontraditional occupational venues. They attempt ad-hoc or consortia responses to the loss of centrality they once perceived themselves having in the days before widespread electronic and computer-mediated information delivery systems.

Taken together, these patterns of action describe the movement elements (aspirations, conflicts, and resolution) in the stories told by my informants.

IV. Recommendations

The active engagement of the case study librarians in attempting to find a way through their dilemma impressed me. My initial impression of librarians was one of an occupation absorbed in the taxonomic details of their craft. I have learned that this is not at all the case. Most of the librarians I interviewed are very aware of the scholarly communication field and its many occupations. The history of support within this case study library for travel to national association meetings and conferences is clearly visible in the grasp of issues the librarians displayed in our conversations.

What would I recommend to these librarians?

1) Librarians experience tension over their acceptance by faculty in the instructional role. In part this reflects faculty prejudices regarding the terminal nature of the masters of library science degree. It might help a little if there were librarians with a Ph.D. in the case study library. It would help credibility and their inclusion into curriculum development as part of a teaching team. Of course this raises other questions about both the faculty culture and the theoretical knowledge base of library and information science. I did not study the curriculum debates surrounding library and information science curricula, so I am not prepared to say more in those terms. It seemed true of the librarians in this case study that their effectiveness is sometimes limited by the nature of their certification, and their demarcation by faculty to a "not-faculty" status. What I noticed was the ability of faculty to short-circuit scholarly communications initiatives when in conflict with values presented by librarians. Of course, even full faculty status is no guarantee of organizing success in the contentious halls of academy. Given the nature of the problems and opportunities that now present themselves, the demarcation of librarians to not-quite-equal-faculty status in this

case study sets a boundary around their obvious leadership and creative ability at the institutional level. A case is being made in some quarters (though this did not surface in the case study) to leave the faculty aspiration behind and work to become a more unique profession that stands on its own technical base. This would conform to the quadrant two direction.

2) The case for the librarian's information literacy instruction role could be made more positively and comprehensively as a managing or developing information role. The current literacy language invites librarians to be seen in a social welfare role, ministering to illiterates rather than as professionals working with intelligent students and faculty.

I'm not suggesting that efforts to build skills be abandoned. Instead I am counseling that librarian expertise needs to be applied to help students and faculty develop skills to navigate in a complex information domain. I think the development and navigation metaphor is more powerful than the literacy metaphor in this time and place. A more comprehensive case for the importance of library search skills and notions of information quality can be made. I think a better understanding of the search dilemmas faced by faculty and students is needed. This implies using available research about information seeking behavior among students and faculty. This data would build credibility regarding the navigation instruction, and assist in focusing measures for success.

I think it would also build a bridge from instruction to knowledge management, by beginning to construct a model of institutional search requirements and dilemmas that could inform or reform not only the way library services are delivered, but a host of other campus information services as well. Such reform would be based on what faculty and students really need, rather than what corporate vendors want to sell.

3) I see pieces of the knowledge management competency residing in various individuals and occupations, but not yet a vision for what it would mean to inhabit this jurisdiction full time and comprehensively, especially in a public-sector university.

Knowledge management infers computing competencies, library search skills, techniques for organizing data, and systems thinking. I see librarians struggling to give these abilities form as tasks and services in a public-sector setting. Much of the form given this area by special librarians in corporate settings is geared top-down to increase market share and profits. As the academic capitalism de-

scribed by Sheila Slaughter and Larry Leslie (1997) continues to take hold, the question in my mind is “does a public-sector, social trustee form of knowledge management exist. I expect to see “Information Professionals” in this quadrant become an elite who service the core markets where manipulation of knowledge is most profitable to the few. Library professionals work under conditions producing collective goods that benefit many but may be less valued by the powers that be.

4) The dual-closure strategy described here is at best confusing and at worst damaging to the aspirations of the career staff who support the library. The nonprofessional support staff are working out jurisdictions of their own. As librarians demarcate to staff the technical roles, the continuing vacancy in instructional technology support beckons. The career staff who conduct the daily maintenance of the physical collection see and feel the tension between their low-status work and the higher pay of positions requiring education and experience beyond what they can achieve as a specialist.

There is a pact that could be made here by librarians, to help bring along career staff in the technical roles. One implication of such a pact would be the development of library science certificate degree programs for library specialists. Such a certificate program, articulated with the community colleges, would strengthen the base of library and information sciences by providing a way to attract new recruits to the profession. If the library of the future is virtual, it is necessary to create a cadre of technicians who can conceptualize its systems and support its values. This opportunity should not be missed!

At the same time as technical skills in support of digital initiatives are learned, recognition and reward must also be given to the staff who demonstrate interest and innovation in their stewardship of the physical collection, whether it is a special collection or not. The slow-fires of oxidation in the stacks may consume many an important resource if no one is watching and working to suppress them. For the foreseeable future the physical library collection and the virtual library resources will complement each other. There is much valuable work to be done in each domain.

This is a report of case-study research. I made an agreement with my informants not to identify them in any way. I will not refer by name to the case study university or its library. However, I would like to acknowledge the work of national library consultant Shelley Phipps and her support for my research. She, along with the many librarians and staff that gave of their time and insights, pro-

vided me with the fruit of many years of activism and reflection on the evolving role of librarians. Thanks also are due to my dissertation advisor Dr. Sheila Slaughter, whose passion and discipline for the study of higher education fueled my own interest and approach. It is a privilege to both work and conduct research at the same time, thanks in no small part to the “learning organization” culture of the case study library staff and its leadership, to whom I owe a debt of appreciation for encouraging my efforts. I am grateful for the opportunity to view, at a pivotal point in time, the changes that inform this product, the limitations of which are my sole responsibility.

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