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The Future of Librarianship in Science and Technology Libraries

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Future of Science Librarianship Contributed Papers

The following papers were presented at the 2010 Special Libraries Association Annual Conference in New Orleans, LA.

The Future of Librarianship in Science and Technology Libraries

Presented by Dana L. Roth
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Librarians, especially subject specialists in academic sci-tech libraries, appear to be facing a very perilous predicament. Two of their major job responsibilities, developing subject collections and providing face-to-face reference service, are in rapid decline. Budget cuts, publisher packages for books and a transition to cost-per-use evaluations for journal subscriptions all clearly diminish the need for active collection development. Meanwhile, because of changes in information-gathering habits, users increasingly approach reference librarians as a last resort.

In addition, there seems to be a growing inclination among library administrators to question the importance of subject librarians in branch libraries. This is due to the well known fact that users have come to rely completely on electronic databases, notably Google and Google Scholar, and electronic journals.

This new mindset was brought home to me by the pronouncement of a biology faculty member that, following a retirement, "a biology librarian is no longer needed." This because "all the journals are available electronically and each research group should be responsible for obtaining any books they need through Amazon." While this may sound like an extreme position, I sense that it could be an omen mainly for libraries where a subject librarian's role has largely been reduced to forwarding problems with web links to the library's IT staff, passing along orders for books and journals to the acquisitions staff, and providing instruction only in basic information resources.

Fortunately, this trend is neither universal nor inevitable. By taking advantage of a number of opportunities -- using both in-house and outreach strategies -- publicservice librarians can ensure a continuing need for subject expertise, especially in new and expanding research areas.

Creating opportunities in-house seems to demand increasing creativity and flexibility. What has not changed are user needs. I recently experienced a déjà vu moment when I re-read a short unpublished essay I wrote in the early 1970s, on the "Needs of Library Users". Surprisingly, many of the observations in this essay remain relevant in today's fully electronic era.

The first observation concerns liaison roles: "Since informal (i.e., personal) sources supply users with at least half of their information requirements, librarians must be aware of their users' specific research projects, while developing skills and common interests that can serve to facilitate interpersonal contacts." Maintaining an interest in their institution's various research projects will enable public service librarians to take advantage of opportunities for information outreach, and to discuss reference questions in an intelligent and collegial manner. In the electronic era, since in-person contact is declining, it needs to be enhanced with e-mail and social networking.

The second observation in this essay had to do with the need for undergraduate instruction: "Studies of users who failed to find what they were looking for, at Birmingham University, revealed that 65% of the undergraduate students and 58% of the graduate students failed to consult catalogs, abstracting-indexing tools or even library staff members." Fortunately in the intervening years, electronic access to a multiplicity of information tools has largely eliminated this nonsensical approach. However, given that many undergraduates substitute Google for the library's subscription databases, it has become an essential component of the library's mission to develop instruction programs for undergraduates in information retrieval.

My third observation had to do with the library's need to be more user-oriented: "Library procedures are too often designed for the convenience of librarians." In the 1960s, many libraries had not even thought of developing a user-orientation. For example, simply providing

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users with a listing of the library's periodical titles, based on the titles used in the various indexing and abstracting services, was almost unheard of. At Caltech, we broke new ground by providing such a list, Serials & Journals in the Caltech Libraries, that provided the direct form of the title, without prepositions and conjunctions, along with library holdings and locations. This allowed users to quickly translate journal abbreviations to their location in the library.

Another way that we can be oriented to our users is to apply a high level of creativity in interpreting institutional policies and guidelines. Faculty and students put a much higher value on positive results than developing a deeper understanding of restrictive policies. This is particularly true for copyright law. Every professional librarian needs to develop a sophisticated understanding of the concept of fair use, and be willing to apply it for the benefit of our users.

These in-house opportunities can be considered examples of Seth Godin's concept of gate-openers, which emphasizes the importance of providing users with initial meaningful experiences (1). I can think back on numerous instances when a simple question, such as "Can I help you find something?" or "Did you find everything you were looking for?" provided an opportunity to introduce a faculty member to a new physical property resource, or help a student locate either an obscure reference or a previously unknown English translation. Each of these experiences obviously left the user with a positive outlook on the value of library services and a strong encouragement to return in the future.

In regard to outreach opportunities, especially in rapidly growing research areas, such as chemistry, the life sciences, and engineering, academic subject librarians must appreciate the importance of working to integrate library services with their faculty's workflow and teaching requirements. Some examples at Caltech include:

1. *Reviewing research publications for possible corrections in Web of Science or Scopus, especially for your institution's author names and grant agency data*. The staff at Thomson-Reuters has developed a very efficient process for correcting Web of Science records. Corrections are necessary because many of the records are based on scanning and OCR, with their predictable problems. Although the error rate is generally small, a scanning error in an individual author's name can obviously be very significant. Our policy at Caltech is to have a clerical staff member print out the front page of each Caltech article indexed for Web of Science. Each subject librarian then compares the author and grant agency data with the Web of Science record. Errors are routinely reported to ISI and are generally corrected within a couple of weeks. This exercise also provides subject librarians with a continuously updated review of their department's current research activities.

2. *Attending departmental seminars as well as auditing classes with the goal of developing course-related web pages in collaboration with faculty*. I think it is important to be seen by faculty and graduate students on a regular basis. Attending seminars is an effective way to do this. It serves to remind them you have a shared interest, while often bringing out library questions they haven't gotten around to asking. Auditing classes, while providing a deeper engagement with the subject matter, can also facilitate the rapid provision of services. For example, several years ago, a new faculty member mentioned that he would be offering an organic synthesis class that would require extensive reading of the published literature. Since this was before the availability of back volumes of electronic journal articles, my initial concern was that 50 to 60 students would all come to the library, at the same time, trying to obtain photocopies of the assigned articles. Seeking to minimize the damage to our bound volumes, and desiring a refresher course in organic synthesis, I requested permission to audit the course and offered to place a set of photocopies on reserve of the assigned articles that were not available electronically. This procedure, which worked out very well, quickly morphed into a course web page, with a listing of all the assigned articles and links to their electronic versions, if available. I also added resources related to the class topic: unusual journal abbreviations used in chemistry databases (i.e., Beilstein & Gmelin); links to databases focused on synthetic techniques and natural products; and a link to the handout for a library workshop on structure searching.

3. *Reaching out to users with library newsletters and listings of new library materials*. I have been sending out an e-mail version of the Caltech Chemistry Library Newsletter since 1998, generally on a quarterly basis. News

items are primarily focused on access to new electronic materials, library-related news about the ACS, RSC and CAS, as well as other general interest information. Another way to maintain contact with users is to send out e-mail listings of new materials, either those added to the library collection (a new books list) or those that appear to be marginal or excessively expensive (a recently published books list). Using the new books list, which is re-formatted from library catalog records to provide the title, author, publisher, date and library call number, users can request check-out and, when appropriate, personal delivery. The recently published books list is taken from publisher blurbs, vendor slip plans, and reviews in various scientific journals, such as *Nature*, *Science*, *JACS*, *Chemistry World*, etc. Listings are limited to one line … title, author, date, publisher and price, and users can recommend library purchase.

4. *Offering library workshops on the use of databases and other subject specific resources*. These are one-hour demonstrations that include distribution of comprehensive user guides. Here are some examples of these workshops focused on specialized resources in chemistry: Beilstein/Gmelin Crossfire; Chemical Compound Data Searching; Chemistry Information Resources at Caltech; Chemical Structure Searching; Crystallography … (offered in collaboration with X-ray Lab staff); Endnote Tutorial; Patent Searching … (offered in collaboration with Technology Transfer staff); Physical Property Data Searching; SciFinder Scholar.

By offering workshops and updating user guides, librarians can maintain their personal expertise in using and teaching these databases. This is very important for maintaining personal expertise in database use and instruction. They also provide important added value to users, many of whom are unaware of special features, such as related records in Web of Science and the ability to combine result sets in both SciFinder and Web of Science.

5. *Informing faculty about cost/article comparisons for research journals*. As it turned out, this was one of the more important projects I worked on during my career. I began writing and talking about journal pricing issues in the mid-1980s, when the effect of foreign exchange rate variations was beginning to be felt by libraries in the US. At that time, it was common to see the exchange rates expressed as DM/$ (or how many DM were required to purchase a $, rather than $/DM (or how many $ were required to purchase a DM). This very effectively masked the fact that, while a decrease from 3.2 DM/$ to 1.6 DM/$, between 1985-1989, is a 50% decrease in cost for Germans purchasing US$, US libraries were seeing their European subscription costs increase 100%, since the cost of a DM was increasing from 31 cents to 62 cents. This information, in addition to comparisons between commercial publisher subscription rates and society subscription rates, was communicated to faculty members on a regular basis. These activities, along with a very efficient document delivery program, had the effect of making the need for cancellation programs much more understandable and far more easily accepted.

6. *Search results comparisons from competing indexing & abstracting services*. Running comparative searches periodically is extremely important for a librarian's edification, and helps to provide meaningful answers to questions like, "Why didn't I find this article?"

7. *Pro-active assistance in depositing publications in institutional repositories*. Caltech's Online Digital Archives (CODA) was set up by library staff members. It is populated now with a variety of formats, most of which involved their very active assistance:

- *CaltechAuthors*: mainly journal articles with ~13K items published over the last century.
- *CaltechBook*: Caltech is fortunate that a number of professors retained copyright for their out-of-print books and were willing to allow the library to scan and deposit PDF copies.
- *Technical Reports*: Library staff are digitizing a number of Caltech's technical report series.
- *Caltech-hosted Conferences*: Library staff established procedures to accept submitted conference papers and make them globally accessible before, during, and after conferences. The collection currently includes conference papers on neural computation, turbulent mixing and cavitation.
- *CaltechTheses*: Electronic dissertations became a Ph.D. requirement at Caltech beginning in 2002 and the version of record in 2005. Digitization of the older dissertations is now more than 60% completed. CODA

also hosts materials from other groups on campus, such as the Institute's Engineering and Science magazine, and the Caltech Archives' Oral Histories.

Populating CODA has required extensive library assistance. Our experience, which is shared by others, shows that without active assistance deposits are very reluctantly made. Caltech has not, and probably will not, have an institutional mandate. Library staff work on the assumption that there is an unstated 'permission to deposit' on behalf of faculty members.

In conclusion, I would like to leave you with a few pieces of advice:

First is the need to seriously work at making librarianship your profession. This means you need to think about it both on and off the job and do not use it for 'higher' purposes. I first realized this in library school, where I had the good fortune to attend a class given by Lawrence Clark Powell. While he had a very distinguished career as a writer, this came primarily after he retired as UCLA's University Librarian in 1961. One of my fellow students, who was attempting to transition from instructing high school English students to academic librarianship, mentioned to Dr. Powell that he thought that, by working as a librarian, he would finally have time to write the great American novel. As you might have suspected, this almost angered Dr. Powell, who made it very clear, in no uncertain terms, to all within ear shot, that librarianship was a profession and not simply a job. Needless to say, the aspiring writer left at the end of the term, presumably to find a less-demanding occupation.

Second is that quality service will continue to be highly prized. Particularly in this electronic age, where library users have decreased their visits to the library, librarians need to interact with the faculty's administrative assistants so that they will call or e-mail you directly when they have a special need or are having difficulty dealing with library policies. In this regard, I also find it refreshing to occasionally drop off a book or photocopy, especially when it gives me an opportunity to interact with a faculty member and converse about library-related matters.

Third is that you can never have too much knowledge. I make it a point to peruse *Nature*, *Science*, *Chemical & Engineering News*, *Physics Today* and *Chemistry World* for news items, brief reviews of interesting research and book reviews. I believe that this is an essential part of your on-going professional development. I have also been especially fortunate to have been a librarian at a small institution, so that over the years I have had the opportunity to work in all of the science and engineering libraries. Given the rapidly growing interdisciplinary nature of academic research, if you are presented with a similar opportunity, please take it…

Fourth is the need for continuing education in both academic subject areas and technical library skills. This is essential for envisioning, implementing and evaluating both services and tools that will enrich users' experiences.

Finally, please don't forget the importance of one's personal qualities, since they are directly related to your professional success. Compassion, integrity, good humor, friendliness, tolerance, concern for others, energy, creativity and dedication are not qualities that one either has or does not have. Developing these qualities should be an on-going process, since they are fed by reading, reflection, conversation, literature, music, art, recreation, and love of your job (2).

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