Librarians, advocacy and the research enterprise

Todaro's perspective on advocacy, to "influence and persuade" entities external to the library to expand opportunities and "critical support for library value, worth and initiatives," relates not only to legislative environments, but to areas within the academy. [Todaro 2006] Obvious examples may be seen in advocacy involving campus information technology or administrative units not otherwise integrated within reporting relationships, such as physical facilities or development. But one area which may not be so obvious is advocacy with the research enterprise—identifying and pursuing collaborations to partner and engage in (as opposed to supporting) research. Opportunities are opening up to create and promote new roles for librarians, identifying and building new services, and ultimately increasing funding and visibility for the academic library, especially given the evolving nature of research in a data intensive environment.

The goal of the academic research enterprise is to produce new knowledge, as well as new educators and researchers. Research may be expressed as "pure," or as the "search for solutions to the most complex professional issues to everyday problems," and it may or may not involve collaboration with industry or international partners. But increasingly, delivery is key. As noted recently, even land grant institutions (predicated on a service role) have begun to redefine themselves to become greater collaborators with industry and local economic partners, partly related to solving problems and partly related to selling answers. [Tornatzky 2005] One thing is certain, academic research is growing—in complexity, time to delivery and interdisciplinarity. [Sadlak 1997] And the university looks to everyone to help it grow.

Typically, a research university strategic plan is likely to list research (or "discovery") as its first goal. It may even list as a key strategy creating incentives for faculty production in research and related scholarship. For many such universities, the goal is "to take on the biggest challenges and solve the greatest problems." [Purdue 2007] And yet, as is likely evidenced in its metrics, it is extramural funding for research that is critical—annual reports are more likely to list levels of research dollars gained than number of societal problems solved. Research in academia can be a money making enterprise, sometimes referred to as the "business of research."

As research, reflecting the needs of society and economy, has become more knowledge and information based, the importance of data and information have become more central. [NAS 1992] And understanding how data and information is organized, navigated and archived becomes critical. McLuhan's assertion that "the medium is the message" [McLuhan 1994] may be no more relevant than with research in the new millennium, where computation, Cyberinfrastructure and data merge and blend as the medium by which new knowledge is found, created, and disseminated. But understanding that medium is not an endeavor that can be done in a vacuum—researchers need to know more about organization and navigation of information and data to leverage their research, and librarians, who can help them, must know more about their research processes, products and practices to do so.

Supporting vs. engaging in research

It is important to emphasize the distinction between supporting research and engaging in research. For some, supporting research (e-Research, e-Science, etc.) means to support creation of research products, connecting communities and curating data. [Luce 2008] For others, supporting research means to "integrate discovery/management/creation/sharing tools into the

workflow of scientists." [Marcus, et al, 2007] And for others, the importance is to focus on the development of infrastructure "to support the processes of research and the full life cycle of research assets." [ARL 2007] The Purdue University Libraries formed an approach by a slightly different course of action, engaging in interdisciplinary research endeavors, where investigators who can address a piece of the problem are invited to participate as collaborators. [Brandt 2007] For librarians, such participation was seen as a natural extension of exploring service needs, in that collaborating on research funded projects showed how library skills, knowledge and expertise were applied to solve problems, and thus from several individual projects general information could be collected on what services might be developed for the campus as a whole.

In institutions with tenure track library faculty, such an approach asserts that by leveraging an already mature base of library science research skills and knowledge among library faculty, a model for research engagement might lead to new avenues of interaction, in addition to developing new library services. This is the point where one opportunity for advocacy becomes apparent—librarians can learn more about the research enterprise and how to leverage interactions by collaborating in research. Interactions could explore new models for determining what researchers need. This could help to build services based on researcher perspectives. For instance, building a data repository might be overkill if only metadata services are needed.

Issues related to the evolving nature of research and its impact on libraries has been discussed in various settings. Gold's cyberinfrastructure biased overview highlights many pertinent issues: high performance computing, grid science, e-Science, data archiving , preservation, curation, access, interoperability, policies, services, tools, and business models, [Gold 2007] Lynch's commentary in Nature brings home the point with a focus on data as the manifestation of

research to which scientist must tend, noting the key role librarians play. [Lynch 2008] The importance of data was identified earlier by the National Science Foundation's (NSF) Report of the Blue-Ribbon Advisory Panel on Cyberinfrastructure [Atkins 2003], which sounded the alarm that research involved not only computing, but the prerequisite and subsequent data that fed into and out of sensors, instruments, modeling and analysis. The ARL/NSF Workshop "To Stand the Test of Time" [ARL 2006] proved to be a real turning point for libraries to demonstrate a national level of interest and interaction. And the NSF's Cyberinfrastructure Vision for 21st Century Discovery [NSF 2007] devoted a chapter to data and virtual organizations, and along with the ARL workshop, set the stage for the NSF's DataNet solicitation, which encapsulates in its call not only many of the issues noted above, but specifically pointed out that librarians should work with scientists to find answers to these immensely important questions about the role of data in research computing. [DataNet 2007]

Engagement in collaborative research for Purdue University Libraries grew out of the investigation of the needs of interdisciplinary research at Purdue, based on the goal of the Libraries becoming a more integral partner in the research of Purdue University and aligning with the institution's strategic directions and priorities. For the Purdue Libraries, advocacy in the research enterprise necessarily implied interaction in a predominantly agriculture, engineering and science setting, although it was not meant to exclude other research disciplines and cultures. Through many interactions with leading research faculty, centers and department heads, librarians demonstrated expertise in organization and access to information to contribute to research problems, especially in e-Science areas. Researchers were not sure how or whether to share data, complained they lacked time to organize data sets, said they needed help describing

data for discovery, wanted to find new ways to manage data, and needed someone to archive their data sets/collections. [Brandt 2007]

Building collaborations

Advocating the research enterprise means working with researchers on problems, and often on proposals for grants to pay for the work. But foremost it means making introductions, building rapport, being able to follow up and follow through on communication, developing relationships and forging partnerships.

Researchers' "buying in" to working with librarians does not seem to be a hard sell. For one thing, they are motivated by tenure, promotion, peer recognition and acclaim—thus, anything that makes their work or proposal better is definitely in their best interest. They are pragmatic, understand the need for funding to do work, and recognize useful help when they see it. They tend to respond well to activities which expose their work, if they are interested in dissemination, or which helps them comply to funding requirements to make their work accessible. Activities could include exploring new ways to use digital object identifiers (DOI) for persistence or automating OAI-PMH metadata to facilitate harvesting, and thus accomplishing wider discovery.

So it is useful to engage researchers who "get it" that collecting, organizing and providing access to data and information are not only important activities, but critical, and that librarians need to be involved. Researchers are more likely to see that library science expertise can help them understand or solve data management related problems and similar issues of organization, dissemination and archiving. Librarians can build interest by digging deeply into what researchers are doing—traditional service might also apply, such as reference, collection

management, and instruction discussions. Librarians should be prepared to be problem solvers, which is at the heart of research—what problem can be solved?—but where appropriate, insist on being a co-investigator. Researchers understand clearly the need to be on grants and the need to bring in money to fund research assistance, travel or other resources.

Of course, for libraries to engage, they need to get librarian buy-in. This is a type of collaboration that can be overlooked. As Judy Stokker, of Queensland University of Technology notes, "There is a difference between cooperation and collaboration." She argues that cooperation means that people are willing to participate, but collaboration means that people are committed to producing results. [Stokker 2008]

 Librarians also want to know what's in it for them—including recognition, reward or promotion. Sometimes a top-down strategy is needed, identifying new roles and finding ways to put gentle pressure on to comply. It helps when projects are directly related to work, and makes something easier; if it's an extension of their "everyday role" (e.g., a natural segue from liaison work). It also helps when a project is something new and exciting to do, breaking new ground. Sometimes participation can be facilitated organizationally through strategic planning. Librarians will also want to know how others work will get done, and thus may need help in prioritizing or deciding what not to do. And unless they've done this kind of work before, they will want to increase knowledge/skills so they can succeed, and want to know how to write grants in addition to getting guidance on how to implement and manage the projects.

Library administration's involvement is critical to pave the way. Administrators can promote campus awareness of what librarians can do and verify what the library will support. For instance, Purdue Libraries' dean visited all college deans, department and major center heads to

discuss both interdisciplinary research and what librarians could do. In terms of providing incentives and rewards, Purdue created a dean's award to recognize contribution to strategic directions such as interdisciplinary research, and provided travel for faculty to present on leading edge research projects.

Other roles that administration can play in helping librarians are to identify "hot" research areas; help prioritize liaison focus; determine a percentage of effort that can be dedicated to investigation or research; identify journal articles which fit with current or future research endeavors and discuss them (i.e., a "journal club" or brown bag sessions); help with research grant solicitations, both brainstorming ideas and drafting proposal sections; and promote research updates and achievement.

Helping scientists do new things

Another big difference between supporting research and engaging in it is that the latter attempts to apply library science knowledge, principles, expertise and skills to solve a problem in a new or different way, as opposed to helping somebody use or access available resources or services. While for disciplinary problems that could mean applying library science to solve a library problem (e.g., measuring usability of an information resource to design more efficient or effective ways of using that resource); for interdisciplinary problems, it would mean applying library science to other disciplines or domains to solve larger or more complicated problems (e.g., identifying what metadata is generated at creation of a data set and how to enhance the process for wider applications). For many libraries or librarians interdisciplinary research may seem like new ground, but such collaborations simply utilize familiar skills and expertise in new ways.

Users of cyber-enabled sensors and instruments generate research data and need to manage, disseminate and preserve it at some point. It is not clear when researchers will ask for data repository support. For instance, it depends on the culture of the discipline (e.g., geneticists may be more willing to share raw data than chemical engineers). However, if a funding agency requires that a data repository solution should be developed as part of a research solicitation, it is possible that a proposal could include a library science member on the team to help address this issue. This could allow a library to get paid to explore the design of repository services without committing other resources. For instance, a librarian could help design tools to provide standardized metadata to enable interoperability and long term preservation of data sets.

Participating on grant proposals could also allow librarians to explore not only whether a group of researchers would share data, but what various services could help to do so. There may be a difference between so called "large science" (e.g., particle physics, astronomy) needs, and those of small science. In the latter case, it is more likely that research group would not catalog or preserve data or do much in the way of archiving, although they may want to increase accessibility of the datasets they create to share or reuse. Librarians could help create a functional proof-of-concept system for automating the generation of descriptive metadata that could help provide greater discoverability, even if only via website spidering.

Other exploratory projects pursued through collaboration on grants might include:

- Constructing a hybrid controlled vocabulary to lower barriers of participation for tagging resources/objects in subject specific portal

- Preserving and increasing the accessibility of "small science" datasets by automating metadata and ingesting them into a repository

- Developing an OAI-PMH interface to expose metadata from a web enabled database to Internet metadata harvesters

- Investigating the use of persistent identifier system (e.g. D.O.I.) for citing resources and preserving linkages that will not break over time

The "business of research"

Most academic institutions have an organizational structure to ensure effective communication and policy administration for research which centers on relationships between colleges/schools and university offices for research and sponsored programs activity. This may be coordinated via associate dean for research positions. Such positions serve as liaisons for major research funding (i.e., extramural) activity, ensuring that local and external policies and regulatory compliance are followed. It might be very useful for libraries determine how best to interface with this structure. At Purdue, after discussions between the dean of Libraries and the Provost, it was determined that the solution to assure participation was to mirror the university's organization. The Libraries organization of a dean, associate dean for public services, and directors for IT/technical services and administrative services was restructured to create five associate deans with respective areas of responsibilities. The single associate dean position was split to accommodate two areas, learning, and information resources scholarly communications. The director positions were changed to associate deans for IT and administration/planning, and a new position, associate dean for research, was created. [Mullins 2007]

For example, an associate dean for research in an academic library can oversee the "business of research" by ensuring the library can participate in funding opportunities and related collaborations at the university, with other universities, and with funding agencies. This includes interacting with the university's office of research (perhaps the VP or chancellor of research), a unit that oversee sponsored programs (i.e., extramural) services, strategic research initiatives groups if there are any, as well as liaison with program managers, such as at NSF, IMLS, etc. Responsibilities include providing leadership in fostering productive partnerships and sustained relationships between the library and other faculty; working with other associate deans and faculty to increase participation in collaborative, research and discovery; providing linkages between university research and programs within the university and the library; identifying and contributing to the success of opportunities in intramural and extramural research development; and raising and leveraging new resources from multiple sources that the library can strategically apply towards its research agenda.

Those are explicit roles. But it is one thing to learn the "business of research," and another to build the skills and momentum to leverage or take advantage of it for garnering partnerships and increased funding—that is, to strengthen more implicit roles. For instance, one can create opportunities by leveraging advocacy with the research enterprise, but it takes the ability to forge collaborations to get on interdisciplinary grant proposals. It takes listening and proactive involvement to identify, explore, build partnerships before one can ever leverage the opportunity to test and assess which services, systems and tools are needed by researchers. Implicit business skills are also needed to leverage understanding, which builds support, which leads to funding, which can help achieve strategic directions.

Entrepreneurial advocacy

So, where does involvement in research get librarians? What is the advocacy advantage? Is it just the funds acquired from successful grantsmanship? After all, there is a familiar, if not common, saying among researchers that "a hundred conversations, lead to twenty discussions, lead to five proposals, and lead to one award," and thus, this does not sound like an efficient strategy.

A typical small, single investigator grant in the university setting usually involves one person writing the proposal, putting the budget together, making sure guidelines are followed, and getting appropriate approval/sign-off within the unit. Usually the grant then goes through a central university check to set up accounts and verify commitments, before being sent off. In a large interdisciplinary grant several people contribute sections, which are usually edited by a grant writer; a large business office (within a college or the central administration) puts a budget together based on each contributor's input; and approval/sign-off is required often not only by all the units, but by the university as well if large commitments are being made (e.g. for the creation of a center). By participating in these larger efforts, libraries not only learn how to engage at a higher and deeper level, but build relationships within, and greater understanding of, the university. This includes not only knowing more about research activities and priorities, but about the strategic priorities of the university. The library is seen as more of a partner in the university as a whole.

And while it is possible that disciplinary (i.e., library science) research by itself can successfully engage the research enterprise (e.g., "win" extramural funds for an Institute for Museum and Library Services grant), it is more likely that through interdisciplinary research librarians will engage a broader spectrum of the research enterprise. The broader spectrum of the research

enterprise that interdisciplinary research engages is likely to include activities to a deeper degree and with different constituents than currently engaged. For those who have participated in intense, lengthy interdisciplinary research proposal development meetings, deep insight can be gained about research areas as well as how scientists interact.

An obvious difference becomes apparent when working with large science research grants. This provides insight into the university's overhead mechanism, which otherwise libraries might not, since many library grants do not allow overhead (i.e., charges associated with the ongoing expense related to operating the buildings, facilities, etc.). Without overhead charges there is little opportunity for libraries to negotiate return of overhead. Whereas with NSF grants, which may allow over 50% extra overhead tacked on, and libraries may successfully lobby the university for a direct return of some of the overhead monies.

This is in addition to the amount of return that comes out of a $10,000 grant versus a $1,000,000 grant—obviously the order of magnitude in large NSF or NIH grant has respectively larger returns in terms of salaries, etc. And there are multiple gains when staff time is paid for by an award. For instance, when a grant pays salary for a librarian, the money that the libraries saves is called "cost savings," and usually becomes discretionary funds for use in variety of ways. Depending on the amount, it could be used to pay for a student (undergraduate or graduate). Or it could be used for travel to disseminate research and reward the grantee. If it is a large amount, or it there are multiple grants, it could be used to pay for part-time or temporary staff, presumably to do work which would be delayed for the research.

If as part of an award one agrees to "cost share" ("donate") staff time as opposed to get funds for the staff time, there may still be advantages. First of all, if cost share is required, cost sharing

time uses implicit, not explicit, costs, thus there is not direct out-of-pocket expense. Second, by cost sharing a librarian, it may be possible to leverage funds for a graduate student from the grant, and thus there is a gain (as long as the work which is delayed does not offset the gain).

It should be worth noting that most of the resources expended are for personnel. There are explicit costs that can be quantified in the budget, but there are implicit costs as well. There are always trade-offs and cost opportunities gained or lost. What does it mean for a project to be "worth it"? For instance, explicit costs are related to how much the library can get other people to pay, based on a certain value of worth (usually salary x time). But implicitly the library must ask what the costs for a specific interaction entail (e.g., what internal work must be shifted?).

At many universities the research enterprise builds increased capability within larger research units, such as a college of engineering or a biomedical center of national stature, and collaborating with them may have advantages. Such capabilities include large business office staffs to ensure that budgets are created (and carried out) correctly, cost sharing capability (possibly funded out of returned overhead), and other dedicated staff, such as grant writers and administrative staff to track down information, schedule meetings, ensure award packages are complete, etc.

Preprint: "Librarians, advocacy and the research enterprise," in eds. William Welburn, Janice Simmons-Welburn, and Beth McNeil, *Advocacy, Outreach, Postsecondary Education and America's Libraries: A Call for Action*. Chicago, ALA/ACRL, 2008 (forthcoming)

REFERENCES

Todaro, J. "The power of persuasion: Grassroots advocacy in the academic library." *College & Research Libraries News* v. 67 no. 4 (April 2006)

Tornatzky, Louis. "Innovation U: New Practices, Enabling Cultures." *Creating Knowledge, Strengthening Nations: The Changing Role of Higher Education*. Ed. by Glen A. Jones, Patricia Louise McCarney, Michael L. Skolnik. Toronto: University of Toronto Press, 2005

Higher Education Research at the Turn of the New Century: Structures, Issues, and Trends. Ed. by Jan Sadlak, Philip G Altbach. NY: Garland Pub, 1997

2007 President's Report. Purdue University.
http://www.purdue.edu/strategic_plan/2001-2006/pages/2007_pdf/2007_strat_plan_report.pdf

Fateful Choices: The Future of the U.S. Academic Research Enterprise. Washington, D.C.: National Academy of Sciences, 1992.

McLuhan, Marshall. *Understanding Media: The Extensions of Man.* Cambridge, MA: MIT Press, 1994.

Richard E. Luce. "A New Value Equation Challenge: The Emergence of eResearch and Roles for Research Libraries." No Brief Candle: Reconceiving Research Libraries for the 21st Century. Washington, D.C., Council on Library and Information Sources, August 2008.

Marcus, Cecily, with Stephanie Ball, Leslie Delserone, Amy Hribar, and Wayne Loftus. Understanding Research Behaviors, Information Resources, and Service Needs of Scientists and Graduate Students: A Study by the University of Minnesota Libraries. University of Minnesota Libraries, June 2007. http://www.lib.umn.edu/about/scieval/Sci%20Report%20Final.pdf

Brandt, D. Scott. "Librarians as partners in e-research." College & Research Libraries News, 68, 6 (June 2007): 365-367, 396.

Gold, Anna. "Cyberinfrastructure, Data, and Libraries, Part 1." D-Lib Magazine. September/October 2007. Volume 13 Number 9/10

Lynch, Clifford. "Big data: How do your data grow?" Nature 455, 28-29 (4 September 2008) doi:10.1038/455028a; Published online 3 September 2008

Atkins, Daniel, et al. Revolutionizing Science and Engineering Through Cyberinfrastructure: Report of the National Science Foundation Blue-Ribbon Advisory Panel on Cyberinfrastructure. January 2003. http://www.nsf.gov/od/oci/reports/atkins.pdf

Preprint: "Librarians, advocacy and the research enterprise," in eds. William Welburn, Janice Simmons-Welburn, and Beth McNeil, *Advocacy, Outreach, Postsecondary Education and America's Libraries: A Call for Action*. Chicago, ALA/ACRL, 2008 (forthcoming)

"To Stand the Test of Time: Long-term Stewardship of Digital Data Sets in Science and Engineering." ARL Workshop on New Collaborative Relationships: The Role of Academic Libraries in the Digital Data Universe. Final Report. September 26-27, 2006. http://www.arl.org/bm~doc/digdatarpt.pdf

Cyberinfrastructure Vision for 21st Century Discovery. NSF Cyberinfrastructure Council. March 2007.

Sustainable Digital Data Preservation and Access Network Partners (DataNet). Program Solicitation (NSF 07-601). 2007. http://www.nsf.gov/pubs/2007/nsf07601/nsf07601.htm

Stokker, Judy. "eResearch: Access and Support to University Researchers." Purdue University Libraries Seminar, Purdue University, August 1, 2008.

Mullins, James L. "Enabling International Access to Scientific Data Sets: Creation of the Distributed Data Curation Center (D2C2)." 28th Annual Conference of the International Association of Technological University Libraries (IATUL) in Stockholm, Sweden. June 2007