Changing and Expanding Libraries: Exhibitions, Institutional Repositories, and the Future of Academia

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Academic libraries have been, and continue to be, at the vanguard of research, teaching, and learning on university campuses. Libraries continue to develop as multiuse information commons with computer labs, writing centers, coffee shops, and group study rooms to facilitate experiential learning, independent research, and professional development. As Miller eloquently notes in a recent essay, "visitors enter the future university by walking through the front door of its library" (2014, 329). Academic libraries also continue to provide longstanding critical services, such as collecting, organizing, and preserving materials from outside publishers or donors. In recent years, as various scholars have noted, the academic library has taken on the additional role of information disseminator, contributing to the scholarly record the library's own materials and those of its researchers. Digital libraries, institutional repositories (IRs), and both physical and digital exhibitions are just a handful of the means by which academic libraries are leveraging their collections and institutional expertise to participate more actively in the research output of the academy. This essay explores two specific products—exhibitions and IRs—as analogs for broader movements in academic libraries and academic librarianship.[1]

At first, special collections-based exhibitions and IRs may seem to be at opposite ends of the library's contribution to the campus community. Exhibitions contextualize (and recontextualize) rare historical objects from the library's collections, including visual materials and manuscripts, while IRs showcase current scholarly communication from the institution's faculty and, occasionally, from graduate or undergraduate students. The former invites viewers to

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1   This is a broad body of scholarship. For just a few examples in addition to Miller 2014, see Carpenter et al. 2011, Herrington 2013, Lowry and Baughman 2011, MacWhinnie 2003, Ogburn 2013, and Roberts 2012.

consider the materiality of the object, its significance as historical artifact in some cases enhanced by its "oldness," while the latter draws on emerging technologies of digital librarianship. Still, the juxtaposition of these two forms of library practice reveals the richness of the library's transformation: trafficking in rare and unique things, moving from provider to provider-and-contributor. Both exhibitions (particularly the new, dynamic forms that these are taking) and IRs are actually working toward similar goals, including dissemination of knowledge, participatory learning, and collaborative scholarship. All of these efforts are, and will continue to be, of great value to the library of the future. Further, because these efforts tie closely with mission statements and strategic plans of the university as a whole, these new directions may also inspire change in how libraries are staffed and in how not only researchers, but also campus administrators view the value of the library.

New Directions for Old Things: Special Collections Exhibitions

Traditionally, special collections preserved, organized, and provided access to both published and unpublished materials deemed to be rare or unique.[2] But now, the activities of special collections have expanded. Creating exhibitions, previously considered an interpretive activity beyond the scope of repositories or the archivists and librarians who staffed such centers, is now an accepted part of the work that special collections centers perform. This shift in attitude is due largely to the realization that, whether physical or digital, exhibitions generate positive publicity for a repository and can encourage more researchers to visit. They also create opportunities for experiential learning for undergraduates and graduate students and can drive donor support. However, various impediments prevent special collections from developing these projects to their fullest potential. Understaffing, lack of adequate locked or guarded display space, and frequent undervaluing of such projects in tenure and promotion applications—in spite of the fact that library special collections often possess materials of great historical significance—are all barriers. Increasing the number and professional rank of staff members responsible for supervising physical exhibition development and providing opportunities for the hosting of online exhibitions can strengthen the exhibition program so that it will be able to reach more undergraduates, showcase the library's collections to a broad public, and facilitate donor support. All of these have the potential to enhance the academic library's impact both within and outside of its home campus.

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2   The term *special collections*, rather than *archives*, is used as an inclusive term to designate repositories of rare and unique materials. See page 1 of the Association of Research Libraries (ARL) document, "The Unique Role of Special Collections—Special Collections: Statement of Principles, 2003," to find a definition of the variety of materials special collections repositories may contain at ARL libraries.

Exhibitions were seen originally as ancillary to the work of special collections and academic libraries. After all, as one commentator put it in 1949, "books do not lend themselves readily to exhibition, since for proper appreciation they must be read rather than gazed at" (The Library Exhibition 1949, 151). But even then, library exhibitions had their defenders. A report issued by The British Records Association noted that "if documents deposited by private owners are to remain buried in the vaults of a local Repository, they might almost have been left with the owner" (quoted in Casterline 1980, 7). The earliest writing to describe mounting exhibitions in a library environment appeared in the early 1980s, but these pieces primarily summarized important points for curators to keep in mind.[3] It was not until the late 1980s and early 1990s that libraries begin to recognize the pedagogical and public value of displays (Calvert 1992, Saidenberg 1991, Simor 1991).

But those in charge of special collections quickly began to recognize the importance of library exhibitions. A search of articles published in *RBM: A Journal of Rare Books, Manuscripts, and Cultural Heritage* shows that more than 70 articles mentioning the word *exhibition* have been published; the earliest pieces appeared in its first volume in 2000.[4] One year later, Robert L. Byrd commented on the power of special collections exhibitions in the pages of *RBM*, noting:

> Sometimes we in libraries speak of the danger of having special collections become "museums," as though that were a pejorative term. Anyone who has observed hordes of people swarming through a blockbuster exhibition at a major art museum—or, for that matter, the recent exhibition on utopias at The New York Public Library—knows that exhibiting culturally or historically significant objects can be remarkably popular, entertaining, and educational (2001, 166).

Although traditionally special collections staff shy away from museums in order to distinguish their approach—a researcher can access, handle, and work with the materials in a repository directly, rather than having to work through the system of mediation a museum display represents—Byrd reminds his audience that by refusing to engage in exhibition work, special collections centers lose the opportunity to engage in significant public outreach.

Nevertheless, as exhibition development continued to occupy a tenuous position within the variety of activities required of contemporary special collections centers, the Association of Research Libraries (ARL) decided to conduct a survey to determine how many academic libraries mounted exhibitions. In August 2010, having completed the poll, ARL published a SPEC Kit describing the use of exhibitions by special collections repositories. The survey showed that 78 of the 79 responding institutions had created both physical and digital exhibitions based on their resources (Berenbak et al. 2010,

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3   For example, see Casterline 1980 and Hinson 1985.

4   The first volume of this journal includes several pieces that mention exhibitions. See de Hamel 2000.

11). Although these data are now five years old, and the information that they contain reflects only a small subset of ARL libraries that chose to participate in the survey, the SPEC Kit reinforces anecdotal observations that exhibitions indeed have become a standard feature within special collections.

Special collections exhibitions both online and offline are now commonplace because they are perceived as valuable to all levels of the university. For undergraduates, the largest population at most institutions, student-curated digital and physical exhibitions increase the variety of learning experiences in which they can participate on campus. Now that more universities and colleges are focusing on the benefits of inquiry-based and experiential learning (York et al. 2010), special collections are well placed to meet these new pedagogical objectives. Student-curated exhibitions offer a venue for students both to interact with primary sources and to apply their burgeoning writing and research skills. Their original analysis then can be displayed for a wider audience, a prospect that can motivate students to put more effort into their writing.[5]

Graduate students can also benefit from special collections exhibitions. Materials in special collections offer graduate students an outstanding opportunity to build a professional portfolio in either archival or curatorial studies. Unlike traditional "art" exhibitions, which can require the reservation of gallery space months or even years in advance, extensive funding, and complex negotiations for the loan, insurance, and transfer of works, special collections exhibitions offer graduate students the opportunity to work with museum-quality objects from the library's own collection. Whether displayed onsite or featured as a digital exhibition, graduate students gain valuable research and professional skills through exhibition design and installation.

Similarly, faculty members can incorporate exhibitions into their work in many ways. As instructors generate new assignments and syllabi, they could meet with archivists to consider ways to incorporate materials from collections into their pedagogy. Although this approach would seemingly produce more work for overloaded instructors, empowering students to engage in active learning can actually remove some of the burden from faculty by moving away from a unidirectional, lecture-based learning model to a more collaborative approach, which is explored further in this volume in "Collaboration in the Evolving Academy." Although mentoring undergraduate exhibitions may not play a significant role in a faculty member's application for tenure, faculty can include these exhibitions in their annual reports as examples of student-based learning and student research supervision; they can use these projects to apply for pedagogy grants and awards; and they can use them as evidence of learning goal attainment in program assessment. Instructors need to learn to work

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5   For just two examples of articles that extol the benefit of student-based exhibitions, see Rockenbach 2011 and Schuchard 2002. Many exhibition projects curated by students are also captured on library blogs rather than in academic journals.

collaboratively with special collections instructors, physical exhibition designers, and digital exhibition designers in order to create these types of projects.

Exhibitions can also enhance the image of host institutions to external researchers and the general public. A well designed, well researched exhibition can demonstrate—in a very public and accessible way—that the host institution contains a vibrant scholarly community and sizable resources, whether those resources include extensive collections, a well appointed exhibition space, or staff with significant skill sets. External researchers browsing through such physical exhibitions will carry their perceptions back to their colleagues at their home institutions, spreading the word that a particular college or university has innovative and rich holdings. Displays can convey the same message to members of the general public, who are likely to discuss their positive impression of the academic library with their friends and family. If included on visits to the library during campus tours, exhibitions can highlight to potential incoming students, particularly high-achieving students interested in research, that the campus supports student intellectual endeavors. Digital exhibitions create similar impressions; further, they remain accessible for much longer than a physical show, offering an even higher possible return in terms of their potential audience engagement over time.

Both physical and digital exhibitions support donor relations objectives. Exhibitions are a substantial subject within the *Chronicle of Philanthropy*: 555 articles and 276 blog posts between 1997 and 2015 discuss exhibitions at a range of institutions supporting stewardship goals.[6] Shows at academic libraries demonstrate a commitment to the donors whose materials are on display, reinforcing the university's relationship to those individuals.[7] Dedicating an exhibition to a donor's collection may even inspire additional giving by that person. Exhibitions also facilitate relationships with new donors, who become more willing to give collections when they perceive how a university might broadly promote their materials to enrich the intellectual life of the university and surrounding community (Browar 2004, 53). And, although the ranks of the general public may include many people who will never be able to give to the university or the library, their interest in the institution could be sustained by special collections exhibitions.[8] Support for these exhibitions realistically may never reach the level garnered by university athletics, but they can play a role similar to that of other arts and cultural events offered on campus and online.

However, creating academically rigorous, visually pleasing, and well-attended or well-viewed special collections exhibitions requires a significant investment in personnel on the part of university libraries.

6   As seen through a keyword search for exhibitions within the *Chronicle of Philanthropy's* website, available at http://philanthropy.com/section/Home/172.

7   Universities already realize the power of using museum displays to stimulate giving. See, for example, Sullivan and Glascock-Broze 2013.

8   ARL's SPEC Kit 317 notes that two-thirds of exhibitions are assessed on their attendance and impact, and 40 percent of these institutions use their assessments to modify their exhibition programs (Berenbak et al. 2010, 12).

Currently, only a small proportion of the ARL libraries that mount physical exhibitions with special collections material have dedicated staffing for this work. According to the 2010 ARL survey, 56 percent of the time, exhibitions are curated by an exhibition committee that consists of staff members from the library whose curricular or subject expertise pertains to the topic of the displays. Only 22 percent of institutions have a staff member for whom exhibitions are a primary responsibility (Berenbak et al. 2010, 12–14). Postings between 2012 and February 2015 at the ARL Position Description Bank Project, which aggregates position descriptions posted by its member libraries, includes only 20 positions at seven institutions whose primary job responsibility is exhibition work.[9] Within the CLIR Postdoctoral Fellowship Program, which has placed recent PhDs in a variety of positions in academic libraries between 2007 and 2015,[10] only two positions included physical exhibition work explicitly in their list of responsibilities.[11]

The few universities that designate physical exhibition work as the primary responsibility of an employee demonstrate their lack of support for these roles by ranking these employees below the level of librarian. Employees with librarian status who are responsible for physical exhibitions typically have a number of other unrelated responsibilities. For example, 18 of the positions with responsibility for physical exhibitions listed in the ARL Position Description Data Bank were full-time positions, but only 8 of these full-time positions were considered librarian-level roles. Librarian-ranked exhibition personnel all had additional duties, such as conservator or cataloger, and their job titles reflected this bifurcation. These numbers indicate that only 40 percent of employees responsible for physical exhibitions were granted the highest rank within academic libraries. The two CLIR fellows who had physical exhibition work designated as part of their responsibility also had roles in areas such as reader services, promotion, and instruction that were stressed equally, reinforcing the pattern that staff members responsible for physical exhibitions, if they are eventually to be ranked at a higher level, must also manage other responsibilities seen as more central to special collections.

Digital exhibitions enjoy more support in both staffing levels and status, whether digital humanities centers or digitization departments create them. Digital humanities centers are likely to be tasked with creating and managing online shows. Digital humanists placed within academic libraries[12] enjoy a growing employment rate,

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9   Amy Chen obtained access to this database by requesting permission through the University of Alabama Libraries. She thanks Lourdes Santamaría-Wheeler at the University of Florida for alerting her to this resource: ARL Position Description Bank Project, available at http://www.uflib.ufl.edu/arlpdbank/.

10   Position descriptions were not available for the years 2004 to 2006.

11   These positions were listed at Bryn Mawr in 2009 and Arizona State Library and Archives in 2010. Many CLIR postdoctoral fellows have done exhibitions even when their job descriptions do not specify exhibitions as one of their responsibilities, but it is impossible to track how many engaged in this type of work without undertaking a full survey of all current and past alumni of the program.

12   Without providing statistics, it is likely that many more digital humanities practitioners are placed in academic departments than in digital humanities centers; generally, the centers are staffed with postdoctoral fellows and other short-term employees, whereas scholars who practice digital humanities are hired into individual departments.

compared with those employees tasked with physical exhibition development.[13] The ARL Position Description Bank, which, again, is not an exhaustive source, but does provide a valuable introduction to the broad management of these fields, lists 16 positions posted under "digital humanities" between 2012 and 2015, 14 of which are given the status of a professional librarian; thus, an astounding 87.5 percent of positions in digital humanities were given the highest ranking category available within academic libraries.

This trend also can be seen clearly in the range of position descriptions published by CLIR. Out of the cohort of CLIR postdoctoral fellows taking up their fellowships between 2007 and 2015, 69 of 96 fellows were placed in digital humanities centers or similar venues and were tasked with digital projects. These projects likely included online exhibitions. However, only three CLIR postdoctoral fellowship position descriptions specifically mentioned digital exhibitions;[14] interestingly, these were not the same positions that allocated responsibility for physical displays. Although rank is not tracked for CLIR fellows, their background as PhDs makes them more likely to attain higher-level positions in the future.

Digital services divisions may also be responsible for creating digital exhibitions. As digitization is a growing field within academic libraries, many more staff members are allocated to these sectors of the academic library than are allocated to physical exhibition work. According to the ARL Position Description Data Bank, between 2010 and 2015, 129 positions relating to digitization were listed. Additionally, a staff member in digital services who works on online exhibitions is slightly more likely to attain a librarian rank than those personnel creating physical shows. Sixty-two of the ARL-listed jobs in digitization were at a professional librarian level compared with 69 at other ranks.[15] These numbers demonstrate that a total of 48 percent of listed positions within the digitization field are at a professional librarian level. Within CLIR postdoctoral fellowships, 7 of 96 positions were listed as working with digitization; however, most of these positions were listed in 2007 and 2008, indicating that, as the field developed over time, more CLIR fellowships were allocated to digital humanities centers than to digital services. This trend likely occurred as digitization responsibilities became increasingly separate from the creation of digital projects. Nevertheless, as these two sectors work closely together and share similar hiring and status levels, together they demonstrate the relatively higher value placed on digital exhibitions over physical displays.

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13   Of course, because of physical space constraints, more digital exhibitions than physical displays can be developed at one time. But even so, these numbers indicate a wide disparity in the rates of hiring between those with physical and digital exhibition responsibility.

14   Positions indicating responsibility for digital exhibitions included the University of North Carolina, Greensboro, in 2008 and the University of Alabama twice in 2013 and 2014.

15   Thirty-nine positions were listed at an "exempt support or paraprofessional" status, 20 at a "non-exempt support or paraprofessional" status, and 10 under an "other professional" category.

Therefore, job descriptions found in ARL's Position Description Data Bank and CLIR's history of postdoctoral fellowships indicate that library administrators do not give physical exhibitions priority when they consider what positions should be created. When physical exhibitions are listed as a responsibility for a new staff member, competency in this area is likely to be considered secondary to other skill sets when the position is designated a librarian. But, when physical exhibitions are the focus of the role, which is rare, the position is likely to be at a support level. The decision to rank physical exhibitions professionals at a lower tier than traditional librarians reflects the relative value academic library administrators place on these skills. In contrast, those charged with developing digital displays enjoy a much higher number of potential jobs as well as the likelihood that they will attain a higher rank.

To expand undergraduate engagement and enrich donor engagement in the future, funding for special collections exhibitions should be directed toward improving personnel levels for physical displays and ranking these individuals at a higher level. Online shows are also an important component to any library's exhibition program, but these displays are already funded and valued highly in contrast to those mounted in campus spaces. Investing more heavily in physical displays does not radically change the priorities of existing institutions, but rather will allow the types of shows that are being created in libraries already to be completed to a higher level of rigor for greater impact.

Shifting priorities across academic libraries in general and special collections in particular will require administrators to value candidates for physical exhibition positions whose training comes from outside a traditional library and information science background. Library administrators already have become more comfortable with the shift in demographics within their set of employees because of the new types of training necessary to manage digital workflows. For example, the staff of digital humanities centers and digitization departments often include a combination of trained academics who have degrees from a range of different disciplines and technology specialists who may or may not have advanced subject degrees, but usually have extensive prior experience in programming, information technology, visualization, and adjacent fields.

Similarly, formal education for exhibition work usually is obtained through master's degrees in art or museum studies rather than master's degrees in library and information science. Advanced degrees in a particular academic discipline may also be useful for curators of collections who can look forward to mounting displays out of their holdings. However, those with library-only backgrounds should not be overlooked; rather, they should be mentored by someone who has prior experience creating exhibitions or who is formally trained to do so, or they should be willing and able to attain further professional development by learning and following the best practices of the field. This openness to a variety of candidates mirrors the larger movement within special collections to realize that "young

professionals hoping to make a career in rare books and special collections must exercise a degree of self-reliance, commitment, and imagination unmatched in other fields of librarianship" (Holzenberg 2006, 12) precisely because they must combine expertise across a wide variety of fields to suit the demands placed on them.

Staff members who manage either physical or digital exhibitions tie special collections closer to the field that has come to be known by the acronym GLAM: Galleries, Libraries, Archives, and Museums.[16] Designating special collections as part of the GLAM cohort moves repositories of manuscripts, archives, and rare books away from their traditional affiliation with libraries and into the wider range of cultural heritage institutions. Robert Byrd acknowledged this shift as a positive one for special collections centers located in academic libraries in 2001. Continuing to support this identity expansion within special collections in general and among both physical and digital exhibition professionals in particular can allow these employees to draw more confidently upon the resources of a variety of disciplines to make shows more innovative and academically rigorous (Marty 2010). In doing so, they will continue to develop and improve the value of such shows for special collections repositories.

Investing in exhibitions aligns special collections with the broader move within academic libraries to promote themselves as producers of research rather than just collectors of research. By producing exhibitions, special collections staff can produce their own narrative of the value of their collection while also attracting more students and donors to work with and support their mission. But, to recognize the value exhibitions bring to libraries and to their universities, more special collections personnel should have roles either partially or fully dedicated to physical exhibition design. After all, according to the ARL SPEC Kit, about half of the 51 universities that complained of outreach barriers named the lack of full-time exhibition staff as a primary concern (Berenbak et al. 2010, 15). Additionally, partnering more closely with digital humanities centers and digital services departments is another way to expand the number of staff members already engaged in this important outreach activity. As a result, special collections staff will be able to work more productively at a higher level, incorporate the expertise of different divisions in the library, and begin to follow the best practices of similar cultural heritage institutions to produce more innovative and widely seen scholarship to audiences both within and outside of the home campus community.

Exhibitions are taking libraries in new directions. Although they may remain object-oriented, even when presented in digital form, exhibitions draw on extant library collections to highlight the library's

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16   Alternatively, and perhaps more widely, this field has been called LAMs: Libraries, Archives, and Museums. However, we prefer the acronym GLAMs, because GLAMs includes galleries, which share a professional interest in exhibitions.

significance as a repository. Exhibitions also produce new knowledge about the institution and offer ways for faculty and students to engage in experiential learning. The special collections division from which the exhibitions originate has significant differences from the IR in the academic library; the special collections staff are committed to meticulous practices of collection care while the IR often ingests objects with little or no mediation. Similarly, special collections staff typically work with materials deposited from outside the current population of the institution, while depositors in the IR are almost always individuals who have an active affiliation with the institution. But this perspective belies the significant point that both the special collections section and the IR are dedicated to sharing unique or, at least, rare materials.

In reference to a repeated claim by Sayeed Choudhury of the Johns Hopkins' Sheridan Libraries that "data are the new special collections," Mike Furlough, director of HathiTrust, has drawn meaningful parallels between the practices of data curation and curation undertaken in special collections, including managing, arranging, processing, describing, and preserving objects (Furlough 2013).[17] To that list of shared activities, we might also add the dissemination of the materials curated by the teams working with special collections and the IR. Considering these two directions of library practice reveals that libraries are not only working at the vanguard of knowledge production, but also are closely tied to the broader mission of the university itself.

Institutional Repositories: Highlighting University Research

Since the early 2000s, research libraries around the world have invested significant financial, technological, and human resources in the creation and development of digital IRs. The founding promises of the IR, as outlined most convincingly in "The Case for Institutional Repositories" by Raym Crow (2002), are that this technology can preserve the digital scholarly record of an institution and can share it with the broader research community. This mission still rings true today. Even at a time when publishers are gradually opening access to scholarly articles and monographs, there is still a critical need for an *institutional* commitment to preservation and access that is not driven by a need to turn a profit. If provided with the resources necessary to fulfill its true potential as it enters adolescence, the IR and its supporting services will become central to the academic library of the future.

To those unfamiliar with it, the IR may appear to be a virtual container for digital copies of the traditional scholarly publications of local researchers—a public storage space for sharing work and highlighting research accomplishments. Yet the effort involved in

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17   For more from Choudhury, see Robbins 2013.

preserving IR content and managing the IR platform demonstrates that the repository is far more than a passive container or a replacement for a scholar's personal website. The resources it protects and makes available are typically far more heterogeneous than the products of formal scholarly publishing (i.e., journal articles, monographs). It is both the strength and potential weakness of the IR that it is an active and living technology hosting varied scholarly outputs and demanding significant ongoing attention, because successfully attending to this dynamism requires the academic library to fulfill a set of responsibilities that are both familiar and somewhat new.

A quick tally of the contents of Penn State University's IR, ScholarSphere,[18] reveals that it is home to 356 books and 332 journal articles, and that these are the two most common object types in the repository. Not far behind, however, are the 321 data sets, which are followed by an assortment of presentations, posters, maps, images, software or program code, video, audio, theses, dissertations, and still other types of materials. In total, only 34 percent of the objects in ScholarSphere fall into the category of formal scholarly publications.[19]

Like ScholarSphere, most IRs are designed to be flexible enough to host a variety of research outputs. When a 2006 survey asked ARL member libraries what types of materials are included in the their IRs, the questionnaire authors offered a list of 22 object types. Even the least commonly included type of material (yearbooks) was selected by 5 percent of respondents (Bailey et al. 2006, 67).

For the IR to be successful, researchers must recognize its value and contribute to it. It is not hard to imagine that, from their perspective, a chief advantage of the IR's flexibility is based on the premise that a research project does not begin and end with formal publications. In other words, all the materials generated between a project's inception and publication may well be worth sharing, too. For instance, a sociologist who recently published a paper describing her findings from a two-year study involving both surveys and interviews of her research subjects may wish to deposit that paper in the IR. Doing so would certainly benefit the greater scholarly community, but how much more of an impact might her work have if she were to create in the IR a fuller "research package" that would include her survey and interview instruments, the databases she used to organize the data she gathered, the code she used to analyze those data, and any other relevant materials? With this research package, other scholars could repeat her approach in other locations by reusing her instruments; they could try to verify her findings through the replication of her analysis; and they could seek to answer new questions by running their own analyses against her data. Not only are these approaches more efficient ways to do research,[20] but they

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18   Available at http://scholarsphere.psu.edu.

19   Figures are accurate as of February 7, 2015. Object type classifications are self-selected by depositors.

20   Financial efficiency is one benefit of data-sharing requirements for sponsored research. Why should a funder pay more than once to collect the same or similar data when researchers can instead share their data with each other and thereby enable new findings to be drawn from previous studies?

are also critical steps toward protecting the integrity of scholarship.[21] In attempting to provide a safe home for these previously hidden miscellaneous materials, the IR helps make the case for the enduring significance of the academic library.

Although the more informal research products are generally outside the collection policies of the academic library, their inclusion in the IR and the library's stewardship of them is an extension of the library's traditional collection and preservation activities in the digital medium. And yet, the move to embrace new materials in this new environment brings with it a host of new responsibilities. Simply meeting the bare requirements of the original goals of the IR—access and preservation—is not enough. Because of their informal nature, the data sets, learning objects, lecture transcriptions, conference proceedings, and other research objects deposited in the IR require a great deal of additional support to make them discoverable, understandable, and useful to others. Without this work, the IR is indeed just a container—a silo piled high with miscellaneous objects—and efforts to preserve them and provide access to them might be in vain. Making these objects discoverable and useful is a great deal of work and involves activities familiar to those working in technical services: describing objects in a structured and standard way for interoperability among various systems. But when an IR accepts heterogeneous materials by self-deposit, as most do,[22] the writing of those precise metadata is taken out of the hands of information professionals and given to the researcher. This creates a low barrier to participation in the IR and perhaps brings in more materials, but it also leads to two substantial challenges.

The first challenge is the creation of a form for metadata and object description that is both generic enough to apply to the diversity of objects accepted by the IR and specific enough to be helpful to those in each object's ideal audience or related discipline.[23] The quest to find the balance between general and specific is one long familiar to metadata experts, and it is significantly compounded by the second challenge: the "self" in self-deposit. If the ambitions of the IR are to enable the discovery and use of its holdings, then the objects it hosts must be described in standard ways that allow them to be properly organized and searched. Though the researchers filling out the metadata forms are subject experts, they are not information professionals; thus, they

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21   For more on open science and the related call for replicability of experimental studies and analyses, see, for example, the December 2, 2011 special issue of *Science*, Data Replication and Reproducibility, available at http://www.sciencemag.org/site/special/data-rep/.

22   A 2009 survey distributed to institutions listed in the Directory of Open Access Repositories (http://www.opendoar.org) indicated that just 33.6 percent of respondents (n=116) had IRs that only accept deposited materials "on behalf of the author." See Hanlon and Ramirez 2011.

23   For more on disciplinary standards, see the Digital Curation Centre in the United Kingdom's guide to disciplinary metadata standards, available at http://www.dcc.ac.uk/resources/metadata-standards, or the information provided in Jain Qin and Ruth Small's Science Data Literacy Project, available at http://sdl.syr.edu/?page_id=32.

are liable to generate metadata of varying quality, as judged by the standards necessary for meeting those goals.[24]

It would be both inaccurate and against the interests of the IR to blame the researchers themselves for not universally succeeding in something that they were never trained to do, something that is difficult even for professional catalogers. The answer to the second challenge, then, is to take advantage of each party's strengths by developing a process for the mediated deposit of scholarly resources in the IR. Particularly for those nontraditional research objects and "packages" of objects, a more involved team will be critical to helping researchers create metadata that facilitate discovery as well as any other documentation (e.g., codebooks, README files, data dictionaries, terms of use) key to the understanding and reuse of those materials. Members of the library side of such a team would likely include a combination of more and less traditional library positions, such as the following:

- A metadata specialist to ensure that the information provided is as standard as possible and in the right place so that the metadata are prepared to be pushed out to selected aggregators as well as crawled, harvested, and shared by search engines
- A copyright specialist to assist with issues of intellectual property rights
- A technologist to pull together and hierarchically organize disparate research objects from the same project
- A digital curation expert who could guide the conversation among team members[25]

The basic contours of the work described are not entirely new. Libraries have long engaged in these types of cross-unit collaborations and have long puzzled over similar problems of information management; additionally, the benefits of mediated deposit have been extolled by librarians since the early days of the IR.[26] Although a handful of institutions have already tested or made available collaborative teams for mediated deposit in their IRs,[27] such efforts are still rare, likely because of the enormous investments needed to do that work well.[28] Indeed, doing it well would require creating and

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24   For a summary of issues related to this topic, including the completeness, accuracy, and consistency of IR metadata, see Park 2009.

25   Although it is clearly impractical to assign such a team to the description of every object deposited in an IR, the availability of such a service is critical. The idea that the IR service must be a team effort—one that truly reaches all corners of the library—with dedicated resources is far from new. Seven years ago, Dorothea Salo convincingly argued this point in the essay "Innkeeper at the Roach Motel" (2008); she also noted that repository services need more resources if they are going to meet future demand in the wake of proliferating open-access policies.

26   See Joint 2006.

27   See, for instance, Johnston 2014, which describes efforts of the University Libraries at the University of Minnesota in this area. As part of the 2009 Association of College and Research Libraries Roadshow on Scholarly Communication, Ann Campion Riley from the University of Missouri Libraries made a presentation on research undertaken to inform an "author-centered approach" to the IR (Riley 2009).

28   Although it is difficult to imagine how an IR might reduce the number of staff providing user support while still achieving success in the ways proposed here, it might be possible to find efficiencies in the IR's supporting technology without sacrificing the quality of the service. Several institutions are already working in this

sustaining a service not just for IR users, but also for content *providers* (i.e., researchers) that would be tantamount to a dissemination enterprise. To find itself on both sides of the scholarly communications spectrum—dissemination and acquisition—is still a relatively new role for the academic library; but for many reasons—the value brought by the IR, library publishing programs, and special collections exhibits chief among them—this dual position seems likely to be a major part of an academic library's future. With that role come responsibilities that can no longer be focused primarily on preserving scholarly materials and making them accessible; rather, to best support this public-facing, dynamic technology and service, significant attention must be paid to the needs of researchers who desire to share their work and those who may try to use that work.

The pressing question today is what it takes to sustain this service, including the activities already mentioned around mediated deposit, as realizing the true potential of the IR depends so heavily on that deep engagement. How can the library add value to this repository content—essential to preventing the IR from becoming a silo of miscellaneous stuff—so that those diverse scholarly resources and research packages can be discoverable, well described, and helpfully documented (i.e., so that they are given a fair chance to have an impact in the academy)?

Although the library has always been a public-facing institution, the success of the IR as a dissemination service depends significantly more than general library operations do on meeting the needs of those it serves. If the IR is to be sustainable, those in charge will need to devote significant time to what is, effectively, business planning for its long-term viability and usefulness. The development of an effective mediated deposit service forces one step in the right direction, as it inherently requires close attention to the needs of depositors (how to accurately describe and organize their work for sharing) and end users (how to connect them with appropriate resources and how to make those descriptions and ways of organizing resources understandable and useful to them). But how to attract researchers to deposit in the first place?

The traditional repository role of the library involves the acquisition and stewardship of materials acquired from a publisher or distributor of some sort. The IR, however, skips the middleman, leaving the library to do the courting of a publisher.[29] Without participation,

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direction by consolidating repository efforts within existing organizational structures. One illustration of this is the California Digital Library, which is a central unit of the University of California system and provides the eScholarship repository service to all scholars, research units, publishing programs, and departments in the system. Another approach some institutions have taken to managing their technology-related resources is to use to open-source repository software created and maintained by a community of developers. Project Hydra is a model for such collaboration.

29   An interesting line of inquiry extending from this point but beyond the scope of this piece would be to examine the role of the IR vis-à-vis the institutional press, especially given the number of presses that now report to their university or college libraries (e.g., Purdue University Press, Penn State University Press). There is likely a great deal about business development and planning that the library can learn from the press and a great deal the press can learn from the library about new forms of scholarly communication.

the IR fails, so the IR team may find itself in the position of researching its audience and, for lack of a better word, competition. A greater sense of the motivations of those who already share their work in the IR (e.g., compliance with sharing mandates? more research output to include in the dossier?) and those who do not (e.g., time investment too great to make it worthwhile?) will help with tailoring services and outreach strategies for ingesting more content and keeping the IR viable. In the course of these investigations, it may be found that some researchers prefer a disciplinary repository, self-"archiving" on one's own website, or another approach entirely. As a result, additional explorations into competing resources or approaches to sharing could reveal a great deal about how to pitch the IR when trying to increase participation.

A full list of the research and planning that would be necessary to leverage the power of the IR and sustain the services that will make it a significant contributor in the scholarly landscape is beyond the scope of this essay.[30] It must suffice to say that the suggestions shared here are informed by the research into the sustainability of digital scholarly resources conducted by the not-for-profit organization Ithaka S+R, where one of the authors, Sarah Pickle, worked for two years after graduate school and before beginning a CLIR postdoctoral fellowship at Penn State University Libraries.[31]

The great significance of an IR is that it extends the library's traditional role of collector to that of disseminator of content produced on its campus. That development will require libraries to confront a new set of activities related to sustainability planning if it is going to serve confidently as both the purveyor and steward of those resources. Although these new activities are far from small tasks and will require re-evaluation over time, the scholarly contributions that the library will facilitate in these dissemination efforts may well bolster the public's commitment to a rich future for the academic library.

Conclusion: Libraries and Universities, Working Together

Exhibitions and IRs are only two ways that the library is actively participating not only in the future direction of the library, but also in the future growth and enhancement of the university itself. Programs such as those involving embedded librarians and various forms of outreach and partnership have forged strong bonds with current faculty and students, and the library is often a key site on tours for

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30   In addition to research into the users or audience of the service, as well as any barriers to participation ("competition"), the creation of a sustainable IR will require a precise articulation of the goals of the service, a careful understanding of the costs involved relative to IR's funding sources, and detailed plans for supporting the service should that funding model or the goals of the IR change.

31   For more, see Ithaka S+R's dozens of publications on sustaining digital scholarly resources, which are available at http://sr.ithaka.org/research-publications/2. Ithaka S+R also has tools designed to help leaders and institutional supporters of digital projects plan for the future sustainability of those resources and services. See, for instance, Maron and Pickle 2014.

faculty job candidates. Furthermore, the increased emphasis in the academic library on experiential learning, technology, sustainability, and global awareness articulates profoundly with the missions, strategic plans, and quality enhancement plans of most universities. While retaining its historical role as a repository of knowledge and continuing to develop its new manifestation as a producer of knowledge, the library—or more broadly, the information commons—is a significant physical space on campus. Its often innovative architecture is a draw not only for current students, but also for potential students who might imagine themselves meeting and studying there. A dearth of scholarship on the connections between the library and the university's higher administration suggests that more work must be done to determine the myriad ways in which the library might integrate itself further with other campus entities.[32]

Libraries already have a number of initiatives in place that align with the university's academic mission. As noted previously, exhibitions contribute to new pedagogical initiatives based on experiential learning. These projects can also be featured in e-portfolios, used by students to track their progress through vertical learning models, and as forms of self-representation to potential employers that are more academically oriented than LinkedIn and with greater potential for expansion than Academia.edu. University administrators may use e-portfolios for assessment purposes and as ways to keep in touch with alumni. As part of student e-portfolios, library exhibitions highlight both library collections and the dynamic ways that students can incorporate them into their learning process.

Although opening up IRs to every undergraduate student might overtax the system, selecting certain artifacts, such as honors theses, for inclusion in the IR can serve as a way to incorporate the work of top undergraduates. Facilitating access to these documents through the availability of digital copies can help current students remain in honors programs and complete honors requirements by demystifying the thesis process; indeed, misunderstanding of the thesis process is a key barrier to completion. Honors colleges and programs can certainly include theses on their own websites, but incorporating theses into IRs highlights their role as part of the broader intellectual output of the university. They can also be used as recruitment tools for high-achieving students interested in pursuing independent research. In addition, theses can be used as artifacts for university assessment and accreditation applications.

Different campus entities perceive the library in different ways; yet what the library ultimately stands for—research, intellectual inquiry, information retention, and production—is beneficial to all campus agencies. Partnering with campus administrative entities, as well as with faculty and students, can enhance teaching and learning experiences, build a university's reputation, and attract the best

32   There is an emerging body of scholarship on this issue. Some analysis exists on the library's role in institutional assessment; for several examples, see Fraser et al. (2002) and Lakos and Phipps (2004). Franklin (2012) addresses the role that the library can play in advancing the institutional mission, and Kemper et al. (2013) discuss the role of the library as campus community builder.

new students (and faculty) to campus. University administrators—not just library administrators—would do well to pay attention to the forward-thinking nature of the library and consider the role the library can play in university-wide assessment and accreditation, student recruitment and retention, and development. However, the burden may very well rest on libraries to make these connections clear to provosts, chancellors, deans, admissions and development officers, and other members of the university administration.

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