Library Resources & Technical Services

ISSN 2159-9610
January 2016
Volume 60, No. 1

ALCTS
Association for Library Collections & Technical Services

OJS Is the New Host of *LRTS*

http://journals.ala.org/lrts

Library Resources & Technical Services (*LRTS*), which went completely online in January 2015, is now available at http://journals.ala.org/lrts on the Open Journal Systems (OJS) platform hosted by the American Library Association (ALA) and is updated and maintained internally by in-house production staff. Content is no longer available on the Metapress site.

ACCESSING YOUR CONTENT

For the first few months, no login or credentials will be required—content will be openly available to anyone who goes to the website (journals.ala.org/lrts). In the near future, the OJS site will be synchronized with the ALA membership database, and every *LRTS* user (members and subscribers are both considered *LRTS* users) will be able to login to this OJS site using the same credentials used for other ALA websites, including www.ala.org, ALA conference registration, and ALA Connect. Users will be notified in advance by ALCTS staff before the OJS login requirements take effect.

While the site is open, be sure to visit http://journals.ala.org to enjoy other ALA digital journals and newsletters, including Newsletter on Intellectual Freedom, Library Technology Reports, Reference & User Services Quarterly, and the Smart Libraries Newsletter.

For Technical Questions and Support

Please contact journals@ala.org.

Membership or Subscription Questions

To receive free access to *LRTS*, join ALA and ALCTS by visiting www.ala.org/membership/joinala or call ALA's Member and Customer Service (MACS) department at 1-800-545-2433 and press 5. Contact MACS with membership questions, too.

To subscribe to LRTS or to ask questions about your existing subscription, email subscriptions@ala.org or call ALA's MACS department at 1-800-545-2433 and press 5.

If you have any general questions about *LRTS*, please contact Christine McConnell (cmcconnell@ala.org) in the ALCTS Office.

Library Resources & Technical Services, alcts.metapress.com (ISSN 2159-9610) is published quarterly by the American Library Association, 50 E. Huron St., Chicago, IL 60611. It is the official publication of the Association for Library Collections & Technical Services, a division of the American Library Association, and provided as a benefit to members. Subscription price to nonmembers $100. Individual articles can be purchased for $15. Business Manager: Keri Cascio, Executive Director, Association for Library Collections & Technical Services, a division of the American Library Association. Submit manuscripts using the online system: www.editorialmanager.com/lrts. Mary Beth Weber, Editor, *Library Resources & Technical Services*; e-mail: mbfecko@rulmail.rutgers.edu. Advertising: ALCTS, 50 E. Huron St., Chicago, IL 60611; 312-280-5038; fax: 312-280-5033; alcts@ala.org. ALA Production Services: Troy D. Linker, Chris Keech, Tim Clifford, and TJ Johnson. Members may update contact information online by logging in to the ALA website (www.ala.org) or by contacting the ALA Member and Customer Services Department—*Library Resources & Technical Services*, 50 E. Huron St., Chicago, IL 60611; 1-800-545-2433. Nonmember subscribers: Subscriptions, orders, changes of address, and inquiries should be sent to *Library Resources & Technical Services*, Subscription Department, American Library Association, 50 E. Huron St., Chicago, IL 60611; 1-800-545-2433; fax: (312) 944-2641; subscriptions@ala.org.

Library Resources & Technical Services is indexed in Library Literature, Library & Information Science Abstracts, Current Index to Journals in Education, Science Citation Index, and Information Science Abstracts. Contents are listed in CALL (Current American—Library Literature). Its reviews are included in Book Review Digest, Book Review Index, and Review of Reviews.

Instructions for authors appear on the *Library Resources & Technical Services* webpage at www.ala.org/alcts/resources/lrts. Copies of books for review should be addressed to Elyssa M. Gould, University of Michigan Law Library, 801 Monroe St, Ann Arbor, MI 48109; e-mail: lrtsbookreviews@ala.org.

Association for Library Collections & Technical Services (ALCTS)

For current news and reports on ALCTS activities, see the ALCTS News at www.ala.org/alctsnews.

LRTS was available in print (ISSN 0024-2527) from 1957 through 2014. Single print issues from volume 38 through volume 58 can be purchased for $30 each. Contact alcts@ala.org with purchase requests.

Library Resources & Technical Services

ISSN 2159-9610 **January 2016** **Volume 60, No. 1**

Cover image: "Duke Tobacco Company Cigarette Cards," digital image, accessed September 25, 2015, https://wakespace.lib.wfu.edu/handle/10339/86, Z. Smith Reynolds Library Special Collections and Archives, Wake Forest University, Winston-Salem, North Carolina, USA.

Association for Library Collections & Technical Services (ALCTS)
Visit *LRTS* online at www.ala.org/alcts/lrts. *eLRTS*, the searchable, digital version of *LRTS* is accessible at journals.ala.org/lrts.
For current news and reports on ALCTS activities, see the *ALCTS News* at www.ala.org/alctsnews.

Editorial

Due Process

Mary Beth Weber

I spent the last three weeks reporting for jury duty. My term of service coincided with finalizing the production of this issue of *LRTS*. Since the courthouse provided limited access to Wi-Fi, I did not bring my ancient laptop and was forced to take a non-technological approach to editing papers. I brought a stack of papers printed from Editorial Manager, *LRTS*' online submission management system. I typically edit submissions and revisions online. After reading all the submissions, I still needed to use a computer to incorporate the reviewers' responses and return papers to the authors. While I used a low tech approach in this particular instance, the end results are the same—a thorough reading of the paper and substantive feedback. However, it made me wonder how my predecessors functioned before Editorial Manager.

Papers submitted to *LRTS* cover the gamut of topics ranging from BIBFRAME and emerging technologies to best practices for preserving fragile materials. How authors conduct their research, how their papers are structured, and their style of writing varies by individual. The *LRTS* author guidelines (www.ala.org/alcts/resources/lrts/authinst) outline the required elements for a research paper. I frequently receive questions from prospective authors about topics, asking whether they need to submit a proposal or if there is a deadline for submissions. Proposals are not required and submissions are accepted on a rolling basis.

The time required for a paper to be accepted and published varies. It sometimes is a challenge to match a paper on a very specialized topic with reviewers. Authors may need additional time to revise and resubmit papers. One of the authors in this issue of *LRTS* needed additional time since she was also completing her doctoral dissertation. Papers may be accepted well before they are published. The papers in this issue were accepted in August and September 2015, for example.

The past year has been an excellent one for *LRTS*. The journal received more than twenty-seven submissions, which is an increase from last year. The thanks I receive from authors or praise from readers is one of the perks of being *LRTS* Editor, and what makes it rewarding. I owe thanks to the ALCTS Publications Committee's Publicity Committee and their work to publicize the journal. Outreach by editorial board members, both current and former, has also generated submissions. I am constantly on the lookout for presentations, surveys, etc. that can be developed into a research paper.

In closing, I bring your attention to this issue's contents:

- Demand-driven acquisition is a just-in-time method of collection development, while approval plans are just-in-case collection models. In "Both Just-In-Time and Just-in-Case: The Demand-Driven-Preferred Approval Plan," Ann Roll details how California State University, Fullerton implemented a hybrid approach of demand-driven acquisition and the approval plan, resulting in their DDA-preferred approval plan that enabled the library to provide access to more books while saving money.

- In "The Promise of the Future: A Review of the Serials Literature, 2012–13," Paula Sullenger discusses the ongoing challenges faced by those who participate in the serials information chain. Her paper considers issues including workflow, the electronic exchange of information, and control of proprietary information.
- Amy Buhler and Tara Cataldo assess university students' ability to identify document types or information containers such as journals, books, or articles, in "Identifying E-Resources: An Exploratory Study of University Students." The pervasive nature of electronic resources poses challenges for students, and Buhler and Cataldo's research seeks to understand the impact of these resources on students' information seeking behavior and the resulting impact on information literacy.
- Annie Peterson, Holly Robertson, and Nick Szydlowski discuss the American Library Association's Preservation Statistics Survey and the Association of Research Libraries' discontinued preservation statistics program in "Do You Count?: The Revitalization of a National Preservation Statistics Survey." Their paper examines both surveys and discusses the rationale for collecting national data on preservation efforts, and suggests that support for preservation activities has declined since the early 1990s.
- In "Transforming Technical Services: Evolving Functions in Large Research University Libraries," Jeehyun Yun Davis investigates how technical services operations in large research libraries are adapting to support the changing role of the academic library. Her research is based in part on hour-long interviews with representatives from nineteen of the twenty-five institutions that participate in the ALCTS Technical Services Directors Large Research Libraries Interest Group.

I hope you enjoy this issue of *LRTS* and are able to attend the ALA Midwinter Meeting in Boston.

Both Just-In-Time and Just-in-Case

The Demand-Driven-Preferred Approval Plan

Ann Roll

While demand-driven acquisition (DDA) or patron-driven acquisition (PDA) focuses on providing library materials at a user's point of need, approval plans attempt to help the library collect everything that might be desired in the future. DDA is the standard method of just-in-time library collecting, while approval plans are a prime example of just-in-case collecting. Therefore, these two methods are often perceived as oppositional library acquisitions practices. Yet, for the start of the 2013–14 fiscal year, California State University, Fullerton's Pollak Library implemented a hybrid approach of DDA and the approval plan, which came to be known as the DDA-preferred approval plan. This study analyzes the cost and number of books acquired before and after the implementation. Findings demonstrate that the library was able to provide access to a significantly higher number of books in the 2013–14 academic year than in the prior year, and spent much less, suggesting that DDA and the approval plan can work together harmoniously for cost-effective collection building.

Approval plans and demand-driven-acquisition (DDA), also known as patron-driven acquisition (PDA), have come to be known as opposing methods of library collection building. With a focus on setting parameters so that books will be acquired soon after publication, but before a user expresses an actual need, approval plans are rooted in a just-in-case model. By contrast, libraries using DDA methods only acquire materials when users directly access or request them, and so, DDA epitomizes a just-in-time approach. However, a hybrid approach, essentially a demand-driven-preferred approval plan, can enable libraries to provide access to more content at a lower overall cost. While approval plans enable libraries to purchase monographs which they then own, DDA plans allow libraries to tailor a grouping of unowned items that library users may access, with the library only expending funds when an item is used. As Alison Scott noted, "The technical innovations that have enabled DDA to flourish have allowed for a harmony to develop between these seemingly conflicting collection development philosophies (just-in-case versus just-in-time)."[1]

Pollak Library at California State University, Fullerton (CSUF) has taken advantage of those technical innovations and developed a DDA-preferred approval plan. It is common for an approval plan to be print preferred, paperback preferred, or e-book preferred, meaning that when a book is slated to be sent to a library on the basis of an approval profile, the preferred format is provided if it is available. If the preferred format is unavailable, the approval plan dictates if another format,

Ann Roll (aroll@fullerton.edu) is a Collection Development Librarian at California State University Fullerton.

Manuscript submitted May 22, 2015; returned to author June 28, 2015, for minor revisions; revisions submitted July 29, 2015; accepted for publication August 19, 2015.

Initial results of this study, showing only the first quarter of data, were presented at the 2013 Charleston Conference. A report of this session is available in the conference proceedings (http://dx.doi.org/10.5703/1288284315304).

such as a print book rather than an e-book, will be provided. The library still receives the needed content, though it may not be in the library's most desired format. A DDA-preferred approval plan simply means that the library prefers titles eligible for DDA, but will accept and purchase other formats if necessary. If a title can be added to a pool of available DDA titles rather than purchased outright, it will be, but if it is only available for outright purchase, then it will be purchased. After reviewing the inherent differences and similarities between approval plans and DDA methods, this paper details Pollak Library's transition to a DDA-preferred approval plan and provides evidence that the method enables access to more content at a lower cost.

Literature Review

Approval Plans

Noting that faculty, a recognized and influential group of academic library users, often selected library materials before the use of approval plans, Nardini states, "Approval plans killed patron selection."[2] However, when approval plans first began, the intention was not to kill selection, but to lessen its necessity by ensuring that the library would already own desired materials by the time users needed them. While approval plans and DDA are viewed as opposites, when approval plans were first utilized in the 1960s, their goal was very similar to what we currently refer to as DDA. For example, Abel, whose company introduced the first approval plans, notes, "By virtue of the fact that the approval plan automatically sends into a library all books, or information on them, immediately upon publication, the books needed by faculty, research staff, and/or students are available upon their first perception of that need."[3] As DDA enables libraries to provide access to large pools of content that it may not have acquired otherwise, this notion of having content available at a user's first perception of need is also associated with DDA.

The basic structure of the approval plan is that a library will create a profile stipulating the types of materials that the library would like to receive, and when a book fits those criteria, either the book or information about it will be sent to the library. Library staff then review the materials and choose to either purchase or return them. Abel originally considered the libraries' internal review, in which librarians examine each book received and either reject or approve it, to be integral to the approval process.[4] However, this internal approval and potential return of the materials has been reduced in current practice as libraries often receive approval books physically processed by the vendor, or shelf-ready. In 2006, Jacoby surveyed libraries about their approval plans and found that 9 percent of those surveyed had shelf-ready plans, while none of them used shelf-ready services five years prior.[5] Of those taking advantage of shelf-ready services, many no longer reviewed approval receipts. While a follow-up survey has not been conducted, the number of libraries utilizing shelf-ready services has likely grown. Budget downfalls in the years following the survey led libraries to continue to seek savings on operational costs. However, shelf-ready processing of print books with no option of return essentially takes the approval aspect out of approval plans.

Because e-books require no physical processing or use of shelf-ready services, the introduction of e-books into approval plans has once again brought the option of approval or denial back to approval plans. Pickett, Tabacaru, and Harrell describe Texas A&M University's transition to an e-preferred approval plan, in which the library prefers e-books, but accepts print books if electronic options are not available.[6] They detail the use of YBP Library Services' online e-book approval bookshelf, which includes all e-book titles profiled for the library's approval plan. Librarians visit the online e-book approval bookshelf and choose to either accept or reject individual titles. This mimics a physical bookshelf on which print approval books would be placed for review that was much more common before shelf-ready services were adopted.

DDA and Approval Plans

Current DDA practices in some libraries demonstrate that DDA is actually returning the approval aspect of approval plans. However, users, rather than librarians, approve the titles. For a library to utilize DDA, some mechanism must create a pool of discoverable items for users to select. In many cases, an existing approval plan profile, or a separate profile that employs similar parameter options such as subject and publisher, forms the DDA pool. After first attempting a DDA program providing access to the full catalog of an e-book provider, Fischer et al. found that using their existing approval profile to narrow the offerings was essential to stay within funding restrictions at the University of Iowa.[7] Because many libraries rely on a profile to define which materials will be available via DDA, Nardini notes that approval profiles are "already an essential piece of patron-driven programs."[8] While multiple options to create DDA profiles exist, they often mimic approval plan profiles even if not built straight from them. For example, while Southern Illinois University Carbondale (SIUC) and St. Edward's University both opted to create new profiles with an e-book aggregator, rather than using an existing approval profile, their parameters resembled those applied to approval plan profiles.[9] In initiating the demand-driven e-book program at SIUC, Nabe and Imre noted that the chosen e-book platform, Coutt's MyiLibrary, offered more than 230,000 titles. Therefore, librarians chose to customize the offerings

by "multiple factors including price, year of publication, publisher name, Library of Congress classification, and readership level," all typical parameters of an approval profile.[10] Similarly at St. Edward's University, Ferris and Herman Buck created a profile with Ebook Library (EBL) including university presses and academic publishers and focusing on the subjects within the university's curriculum as specified by Library of Congress Classification (LCC) and keywords.[11] Ferris and Herman Buck encountered some undesirable content in the DDA pool, such as cookbooks and juvenile fiction. However, they chose to continue to refine the profile with e-book aggregators, rather than involving their primary monograph vendor, YBP Library Services (YBP). Other libraries, such as Kent State University and Colorado State University, worked with their approval vendor, YBP, to create a DDA profile.[12] Downey explains that Kent State University preferred to use their approval plan vendor because of their "ability to create a very specific profile."[13] McLure and Hoseth note that DDA is the "primary purchasing mechanism for both print and e-books" at Colorado State University (CSU).[14] As CSU acquires both print and e-books via DDA, McLure and Hoseth rely on an approval vendor who provides both formats, rather than creating a DDA profile with a specific e-book provider. These two examples, Downey and McLure and Hoseth, show close relationships between approval plans and DDA.

Approval Plans, DDA, and Economics

While both approval plans and DDA have attempted to enable libraries to build collections anticipating users' needs, both methods have also strived to make the most efficient use of library materials budgets. Librarians have scrutinized the cost effectiveness of approval plans shortly following their inception. In fact, the Third International Seminar on Approval and Gathering Plans in Large and Medium Size Academic Libraries held in 1971 focused specifically on economics. The opening sentence of the proceedings, "Current budget strains on college and university libraries require a stepped-up search for operating economies," could easily be the first sentence of a recent publication on DDA.[15] Soon thereafter in 1976, Maddox commented that many libraries had begun canceling approval plans because of budget reductions. She criticized the fact that libraries failed "to recognize the inherent flexibility which allows a plan to address a variety of situations effectively."[16] The cost effectiveness of approval plans continues to be evaluated in recent years. In their analysis of approval plan receipts at two large research libraries, Alan et al. found that their cost per use of approval plan receipts was favorable as compared to previous studies.[17] However, they still questioned if approval plans are an "outmoded collection strategy given the changes in the economic climate."[18]

Just as some libraries initiated approval plans to take advantage of discounted pricing and operational cost savings, many libraries have begun DDA programs for similar reasons. With key goals of cost and space savings, University of Vermont adopted DDA as a primary monograph acquisition method as early as 2007.[19] In describing multiple DDA efforts at University of Alabama at Birmingham, Lorbeer notes that "demand-driven solutions allow librarians to add content without the financial liability."[20] Dewland and See recently developed a list of key metrics to evaluate the DDA program at University of Arizona.[21] Not surprisingly, Dewland and See's highest priority metrics directly related to cost per use.

DDA and the Approval Plan at California State University, Fullerton (CSUF)

History

Like other libraries noted, CSUF's Pollak Library sought to take advantage of DDA's potential cost savings while increasing the number of available monographs. CSUF, one of the largest members of the twenty-three-campus California State University system, is a comprehensive university of more than 37,000 students. Pollak Library serves a predominantly undergraduate and master's-level teaching institution. The primary collecting goals are to support CSUF's current curriculum and students' research needs. Because of both space constraints and a desire to provide broader offsite access, the library prefers to acquire online versions whenever possible. Having experienced a 77 percent reduction of the monographs budget from the 2006–7 fiscal year to the 2012–13 fiscal year, Pollak Library not only desired a method for cost savings, but found it essential.

Pollak Library had a long-established print approval plan with YBP. While librarians adjusted and modified the approval profile over time, more drastic measures were needed to continue to actively collect monographs. Unlike University of Vermont, Pollak Library intended to keep and improve the approval plan, not replace it with DDA.[22] Pollak Library librarians appreciated the known efficiencies of the approval plan, such as the steady, automatic receipt of new shelf-ready materials in high-demand subject areas. However, a significant evaluation was necessary to ensure that useful materials were being received at a reasonable overall cost. Like at other libraries with shelf-ready plans, librarians did not review approval receipts upon arrival.

In addition to the print approval plan, Pollak Library had provided e-books via DDA since 2010. When the e-book DDA program first began, library staff created a profile directly with EBL. However, like Ferris and Herman Buck, Pollak Library librarians noticed issues with

undesirable content in the DDA pool, such as juvenile and popular titles.[23] While St. Edward's University chose to further refine their DDA profile with EBL, Pollak Library incorporated the EBL DDA program into the approval plan with YBP in 2011. The approval plan already dictated the parameters determining whether the library would receive an automatic shipment of a book or an online notification for subject librarians to review. When the EBL DDA program was incorporated into the YBP approval plan, the library adjusted the profile so that if any title to be sent as a notification was also available as an EBL e-book, the e-book was automatically added to the DDA pool. As the e-books were added to the DDA pool, selectors no longer received notifications for those titles. Titles slated to be sent as books continued to be supplied shelf-ready in print format, regardless of whether an e-book version was available.

Approval Plan Analysis and Revision

As the approval plan notifications continued to populate Pollak Library's e-book DDA pool, DDA soon became an integral part of the library's monograph collecting strategy. Previously, for an approval plan notification title to be added to the library catalog, a selector would first select the title and acquisitions staff would place a firm order. Considering both budget restrictions and workflow, only a small percentage of the actual notifications yielded an addition to the collection that users could access. However, since the DDA program was incorporated into the approval plan, more notification titles were added to the catalog, simply due to their availability as EBL e-books. This enabled the library to offer more content without committing to a purchase. To assess possible approval plan adjustments and cost savings for the start of the 2013–14 fiscal year, Pollak Library librarians reviewed the 2011–12 approval plan receipts. The review showed that 33 percent of print approval books sent automatically had been simultaneously available as EBL e-books. Additionally, while the library does not acquire textbooks as a typical practice, many textbooks had been sent on the approval plan. These two facts made it clear that the library needed to examine and adjust the approval plan.

The library already sought to acquire as much content in electronic format as possible, and would have preferred for the print approval books to be provided as e-books when available. The library was aware of YBP's ability to offer e-preferred approval plans, and while such a plan would enable the library to acquire needed content in electronic format, the budgetary impact was uncertain. E-books typically cost at least as much as the cloth list price, and often considerably more. Since the library had been receiving discounted paperbacks on approval when available, rather than full price cloth versions, an e-preferred approval plan could cost considerably more. However, the library's DDA program already took advantage of the e-book short-term loan (STL) rather than outright purchase. Pollak Library users triggered STLs when they encountered unpurchased DDA e-books and downloaded, printed, or read them online for five minutes or more. After four STLs had taken place, an e-book would be purchased on the fifth use. While STL costs have increased significantly since this analysis took place in early 2013, individual STL costs at that time were typically 10 percent to 15 percent of the e-book list price. For e-books used four or fewer times, the library saw significant cost savings over purchasing e-books outright. However, for those e-books used five times and eventually purchased, the cost per title was greater than if the e-books had been initially purchased outright. By the time an e-book was purchased at full list price, the library had already expended the cost of four STLs. Considering these cost factors of a potential move to an e-preferred approval plan, the library needed to assess if e-books sent automatically as books (rather than notifications) should be purchased outright as the print books had been, or if they should be added to the DDA pool and made available via STL along with the e-book titles for which notifications had been sent.

To predict the possible budget impact of both options, the circulation statistics of the 2011–12 print approval receipts were analyzed. The goal was to determine how many print approval books received would have actually been purchased by one year later if they had instead been DDA e-books available in the library catalog. If the print approval books were being used often, then continuing with outright purchase would be most cost effective. However, if the print approval books were not being used frequently, utilizing STLs would enable access to more content at a lower total cost, at least in the short term. The 2011–12 circulation data clarified that outright purchase was unnecessary for the immediate future. A mere seven print approval titles acquired in 2011–12 circulated five or more times when the data were analyzed in early 2013. With this information, the library determined that if an EBL e-book was available for a title profiled as either a book or a notification, then that e-book would be added to the DDA pool rather than purchased. Since adding to the e-book DDA pool was preferred whenever possible, the library essentially chose a DDA-preferred approval plan.

Workflow Adjustments

While YBP could easily convert the existing print approval plan to the e-preferred option, there was not a method in place to create a DDA-preferred approval plan in which all titles available as e-books would be automatically added to the DDA pool without library staff intervention. Because the library had been receiving DDA records for some time, a workflow was in place to add titles to the DDA pool. Weekly,

a library staff member retrieved all new records generated from notifications and loaded them into the library catalog. Pollak Library librarians hoped that records for all approval plan e-books, both books and notifications, could also be folded into the existing workflow. However, this was not possible.

To make the DDA-preferred approval plan concept work, the library took advantage of two tools within YBP's online selection and ordering interface, Global Online Bibliographic Information (GOBI). For e-preferred approval plans, e-books to be sent as books, rather than notifications, are loaded onto the online approval bookshelf within GOBI for library staff to review weekly. Each title may be either accepted, rejected, or held for further review in the future. Titles that are accepted, or those that have received no response after one week, are automatically purchased. Because Pollak Library sought to add the e-books on the approval bookshelf to the DDA pool, rather than purchase them outright, no existing approval bookshelf actions worked for the library's goal. GOBI also has a feature allowing library staff to select a title for "manual DDA." While a library's DDA pool is likely to populate automatically through bulk additions to the library catalog, GOBI also allows selectors to manually add titles to the DDA pool as needed. Pollak Library chose to combine these two separate GOBI features, the approval bookshelf and manual DDA, to create an action that worked for a DDA-preferred approval plan.

Because the Pollak Library approval plan is technically e-preferred, new titles are added to the approval bookshelf weekly. Each week, rather than individually accepting or rejecting titles on the approval bookshelf, Pollak Library staff designate all titles on the approval bookshelf for manual DDA. While this is a very quick weekly process, it sometimes confuses selectors, since each title displays a status of "rejected from the approval bookshelf," although the title has actually been added to the DDA pool.

Results

Pollak Library modified many approval profile elements for the start of the 2013–14 fiscal year, yet the move to a DDA-preferred approval plan, along with the removal of textbooks in all formats, had the most significant effect. The library had adjusted the approval plan with the key goal of providing access to more valuable content while spending less. Pollak Library met that goal by combining the cost savings of STLs with the detailed options available via approval plan profiling.

After one year, the DDA-preferred approval plan has produced the desired results of access to more content at a lower cost. As figure 1 demonstrates, the number of print books that Pollak Library received from the approval plan fell from fiscal year 2012–13 to fiscal year 2013–14 after the DDA-preferred approval plan was in place. However, excluding textbooks, the number of desirable titles, regardless of format, remained constant. Consistent with the analysis of the 2011–12 receipts, about one third of the approval books added to the catalog in fiscal year 2013–14 were e-books.

It is notable that while the number of desirable titles received on approval remained consistent from 2012–13 to 2013–14, the total cost of the approval plan was cut in half. As figure 2 shows, approval costs were drastically reduced as a direct result of the DDA-preferred approval plan. Costs represent both the purchase price of print books sent automatically, plus costs for STLs and automatically purchased e-books profiled as approval plan books but added to the DDA pool.

Adding to the analysis titles for which approval notifications were sent, the number of new e-books added to the Pollak Library catalog increases yet again. Although cost savings were an important goal, Pollak Library also sought to increase overall availability of electronic content. As figure 3 illustrates, the total number of e-books added to the DDA pool in fiscal year 2013–14 was more than 20 percent higher than the number added in fiscal year 2012–13 because of the approval plan changes.

As an added benefit of the approval plan cost savings, Pollak Library subject librarians had more funds to select needed books for firm order, regardless of format. Anticipating that the total amount spent on monographs over the course of the year would be less than budgeted, selectors began adding titles to "wish list" folders in GOBI early in fiscal year 2013–14. When the actuality of the savings was clear by the fourth quarter of the fiscal year, acquisitions staff ordered titles from the selectors' wish lists. To ensure expenditure by the end of the fiscal year, e-books and print titles in stock with YBP were prioritized. As a result of the DDA-preferred approval plan, the library not only increased the number of titles in the DDA pool, but also collected titles that may have been rejected for budgetary reasons in prior years, especially in interdisciplinary subject areas and newer programs. This led to even deeper harmony of both just-in-case and just-in-time collecting, as the use of DDA allowed increased funding for librarian-selected titles which in some cases were only available in print format. As figure 4 demonstrates, the total number of new monographs added to the library catalog increased from fiscal year 2012–13 to fiscal year 2013–14, despite the lower amount spent on the approval plan.

Discussion

Through an analysis of past approval plan receipts and expenses, Pollak Library librarians suspected that a hybrid approach to monograph acquisition, combining both the strength of approval plan profiling and the user focus of

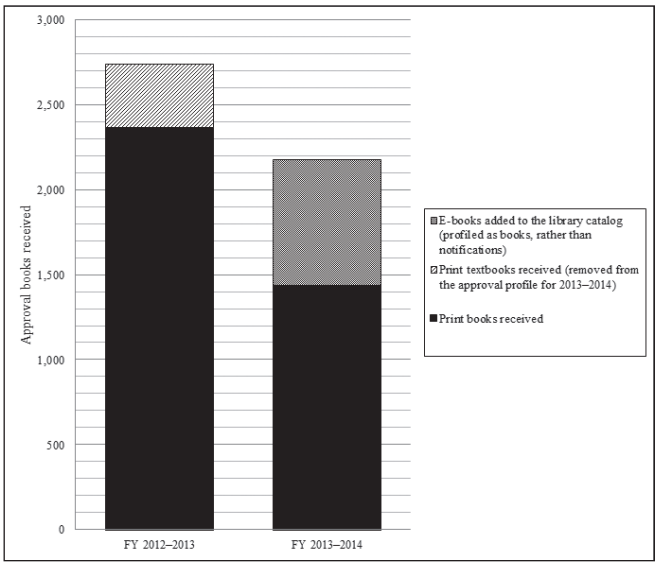


Figure 1. The number of approval books received in fiscal year 2012–13 as compared to fiscal year 2013–14.

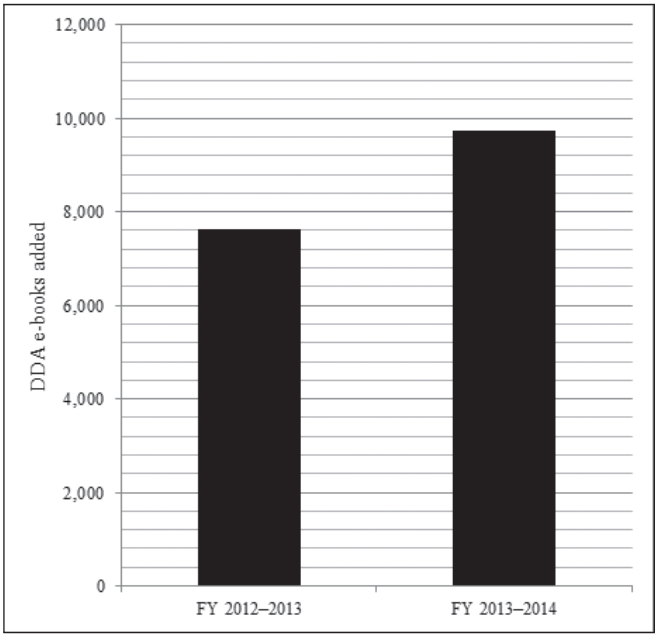


Figure 3. The total number of e-books added to the DDA pool in fiscal year 2012–13 as compared to fiscal year 2013–14.

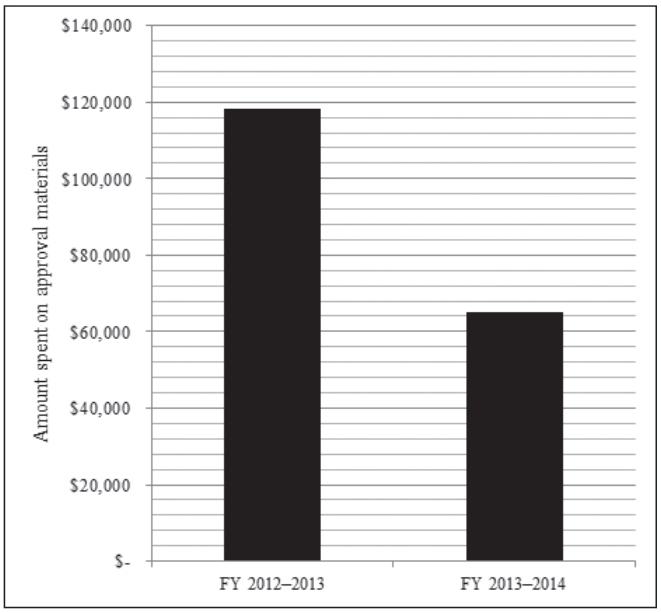


Figure 2. The total amount spent on approval materials in fiscal year 2012–13 as compared to fiscal year 2013–14.

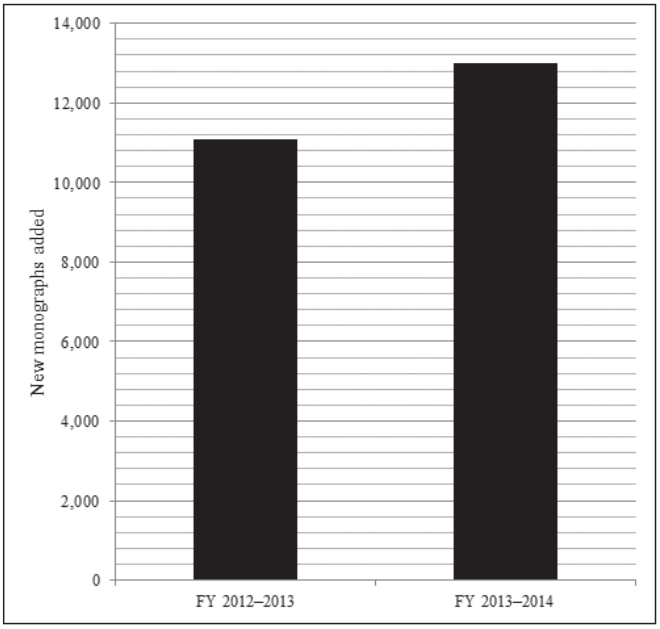


Figure 4. The total number of monographs added to the library catalog in fiscal year 2012–13 as compare to fiscal year 2013–14.

DDA, would enable access to more content while spending less. After revising the approval plan to direct titles to DDA whenever possible, regardless whether they had been profiled as books or as notifications, the library did indeed increase access and reduce cost. As an added advantage, e-books were provided over print versions when available. The data are clear that funds spent on the approval plan decreased significantly after the approval plan adjustment, while more content became available. This approach assures that the library will regularly receive new publications in the subject areas of primary interest (the strength of the approval plan), and save costs and provide immediate access to unowned materials users may need (the strength of DDA). Through budget savings, it also allows for deeper

collecting through subject librarian selections. As already noted, libraries often create profiles to populate DDA pools, but some libraries have chosen to keep DDA profiles separate from their approval plan profiles.[24] This study's findings suggest that combining DDA and the approval plan can offer libraries the ability to provide access to broad collections just in case, while only purchasing them when just-in-time needs present themselves.

As the DDA environment continues to evolve, future study on the effects of the recent STL cost increases will be necessary. The STL's affordability is a key component of the success of Pollak Library's DDA-preferred approval plan. Shortly after the period analyzed by this study (July 2013–June 2014), several publishers increased the cost of individual STLs dramatically, in some cases as much as 900 percent.[25] Thus the period analyzed is a limitation of this study. Despite these increases, Pollak Library chose to continue the DDA-preferred approval plan without adjustment for fiscal year 2014–15. Although quite rare before June 2014, library staff members had mediated STLs for more than fifty dollars for some time. This practice has continued, and since July 2014, staff mediate nine high-cost STLs on average per month. Staff approve first requests for high cost STLs. However, after assessing costs and potential future use, occasionally staff authorize a purchase on the second, third, or fourth STL request, rather than the fifth as takes place in the unmediated DDA process. Ten months into the 2014–15 fiscal year, the total cost of all DDA transactions were consistent with expectations. However, total STL costs have been higher than the prior year, while total purchase costs have been lower. While data will need to be analyzed closely, it appears that the DDA-preferred approval plan will continue to meet the desired goals of providing more content at a lower cost, despite the increased cost of STLs. This further suggests that the method is a potentially viable model in other library settings.

Conclusion

Using a DDA-preferred approval plan can enable libraries to have the advantage of a closely tailored DDA pool plus automatic shipments of needed materials still only available in print, all while maximizing the amount of content available despite slim budgets. Although some libraries have taken either/or approaches to approval plans and DDA, a harmony of the two methods can ensure access to needed monographs despite the limitations of cost and format. Depending on savings, it can also allow for not only broader, but deeper collections, when savings are applied to focused collection development. Embracing a combination of just-in-time and just-in-case methods can indeed lead to the best of both worlds.

References

1. J. Michael Thompson and Laura Zusman, "The Long & Short of Short-Term Loans. A Report of the ALCTS AS Acquisitions Managers and Vendors Interest Group (AMVIG). American Library Association Annual Conference, Las Vegas, June 2014," *Technical Services Quarterly* 32, no. 1 (2015): 80, http://dx.doi.org/10.1080/07317131.2015.972881.
2. Bob Nardini, "Approval Plans and Patron Selection: Two Infrastructures," in *Patron-Driven Acquisitions: History and Best Practices*, ed. David A. Swords (Berlin: Walter de Gruyter, 2011), 23.
3. Richard Abel, "The Origin of the Library Approval Plan," *Publishing Research Quarterly* 11, no. 1 (1995): 47.
4. Ibid., 48–49.
5. Beth E. Jacoby, "Status of Approval Plans in College Libraries," *College & Research Libraries* 69, no. 3 (2008): 227–40, http://dx.doi.org/10.5860/crl.69.3.227.
6. Carmelita Pickett, Simona Tabacaru, and Jeanne Harrell, "E-Approval Plans in Research Libraries," *College & Research Libraries* 75, no. 2 (2014): 218–31, http://dx.doi.org/10.5860/crl12-410.
7. Karen Fischer et al., "Give 'Em What They Want: A One-Year Study of Unmediated Patron-Driven Acquisition of e-Books," *College & Research Libraries* 73, no. 5 (2012): 469–92, http://dx.doi.org/10.5860/crl-297.
8. Nardini, "Approval Plans and Patron Selection," 35.
9. Jonathan Nabe, Andrea Imre, and Sanjeet Mann, "Let the Patron Drive: Purchase on Demand of E-books," *Serials Librarian* 60, no. 1–4 (2011): 193–97, http://dx.doi.org/10.1080/0361526X.2011.556033; Kady Ferris and Tina Herman Buck, "An Ethos of Access: How a Small Academic Library Transformed Its Collection-Building Processes," *Collection Management* 39, no. 2–3 (2014): 127–44, http://dx.doi.org/10.1080/01462679.2014.900732.
10. Nabe, Imre, and Mann, "Let the Patron Drive," 194.
11. Ferris and Herman Buck, "Ethos of Access," 131.
12. Kay Downey, "Technical Services Workflow for Book Jobber-Mediated Demand Driven Ebook Acquisitions," *Technical Services Quarterly* 31, no. 1 (2014): 1–12, http://dx.doi.org/10.1080/07317131.2014.844617; Merinda McLure and Amy Hoseth, "Patron-Driven E-book Use and Users' E-book Perceptions: A Snapshot," *Collection Building* 31, no. 4 (2012): 136–47, http://dx.doi.org/10.1108/01604951211274043.
13. Downey, "Technical Services Workflow," 4.
14. McLure and Hoseth, "Patron-Driven e-book Use," 142.
15. Peter Spyers-Duran and Daniel Gore, eds., *Economics of Approval Plans: Proceedings of the Third International Seminar on Approval and Gathering Plans in Large and Medium Size Academic Libraries* (Westport, CT: Greenwood, 1971), vii.
16. Jane Maddox, "On My Mind . . . Approval Plans—Viable?" *Journal of Academic Librarianship* 1, no. 6 (1976): 22.

17. Robert Alan et al., "Approval Plan Profile Assessment in Two Large ARL Libraries: University of Illinois at Urbana-Champaign and Pennsylvania State University," *Library Resources & Technical Services* 54, no. 2 (2010): 64–76, http://dx.doi.org/10.5860/lrts.54n2.64.
18. Ibid., 75.
19. Peter Spitzform, "Patron-Driven Acquisition: Collecting as if Money and Space Mean Something," *Against the Grain* 23, no. 3 (2011): 20–24.
20. Elizabeth R. Lorbeer, "A Demand-Driven Future," *Against the Grain* 25, no. 2 (2013): 26.
21. Jason C. Dewland and Andrew See, "Notes on Operations: Patron Driven Acquisitions: Determining the Metrics for Success," *Library Resources & Technical Services* 59, no. 1 (2015): 13–23, http://dx.doi.org/10.5860/lrts.59n1.13.
22. Spitzform, "Patron-Driven Acquisition," 20–22.
23. Ferris and Herman Buck, "Ethos of Access," 132.
24. Downey, "Technical Services Workflow," 1–2; McLure and Hoseth, "Patron-Driven e-book Use," 137; Nabe, Imre, and Mann, "Let the Patron Drive," 194; Ferris and Herman Buck, "Ethos of Access," 132.
25. Michael Kelley, "Check It Out," *Publishers Weekly* 261, no. 27 (2014): 18–19.

The Promise of the Future

A Review of the Serials Literature, 2012–13

Paula Sullenger

The serials literature for 2012–13 reflects the ongoing challenges faced by members of the serials information chain. Problems with workflow, systems, electronic exchange of information, and control of proprietary information still occur and can be seen documented in the literature. However, the literature also reflects growing determination that this state of affairs can and should change. Serialists are experimenting with new models of pricing and delivery of content. They are developing standards and protocols to facilitate more seamless communication of accurate information. The changes that need to occur and the difficult decisions that need to be made to create this new, well-functioning system can clearly be seen in the literature under review.

The serials literature for 2012–13 continues the tradition of being a literature of practice and purpose. Libraries exist in a world of increased user expectations and decreased user tolerance of barriers to access. Libraries also exist in a world of increased complexities in bringing access to users. The long serials information chain is filled with proprietary information, miscommunication, prohibitive costs, inadequate metadata and system incompatibilities that lead to broken links between users and information. These systemic flaws are a major component of the 2012–13 literature. As has been the case with previous reviews, the serials literature describes these flaws in detail and how each actor in the chain is addressing them. A marked feature of this two-year period, however, is an increased attention to overcoming these barriers and forging the links for a streamlined and seamless information future.

The author began this review by compiling an initial group of 118 articles in the 2012 and 2013 issues of three core serials journals: *Serials Librarian*, *Serials Review*, and *Insights, The UKSG Journal*. The author read the abstracts for these articles, then sorted them into several broad categories. She then viewed these articles more fully, one category at a time, and used keywords and subjects from them as a basis for broader searches in *Library Literature & Information Science Index with Full Text* and *Library, Information Science, & Technology Abstracts with Full Text*. The results of these searches were loaded into RefWorks and sorted into the preliminary categories. As patterns became clearer, additional categories were created and some preliminary categories were collapsed. The author ended with 511 references and began reviewing and summarizing the results one category at a time. The open-access category was extensively culled because of

Paula Sullenger (psullenger@tamu.edu) is Associate Dean for Information Resources at Texas A&M University.

Manuscript submitted May 15, 2015; returned to author for minor revisions July 21, 2015; revised manuscript submitted August 12, 2015; accepted for publication September 8, 2015.

the large number of results in the broader database searches. Similarly, discovery and access were addressed in many articles and the author had to pare down to only those that directly affect the work of serials and electronic resources librarians. Although e-books were addressed in the serials literature, the author elected to focus on serials only.

The literature under review covers topics familiar to serials librarians: pricing models, electronic resource management and discovery, licensing, bibliographic control, and usage collection and analysis. This literature is infused with optimism about the future and contains blueprints for getting there. The importance of standards, cooperation, and interoperability take front and center. Virtually all of the literature reviewed addresses electronic resources, while print resources barely receive mention. It appears that for most of the serials library world, the transition to electronic has occurred and is taken for granted. Authors write about print journals mainly to describe what is occurring with legacy collections.

Pricing Models

Libraries continue to face rising serial prices and flat budgets. EBSCO's 2012 survey found that roughly a third of libraries' budgets for 2011–12 decreased, another third remained flat, while only a third saw increased funds. EBSCO estimated a 6 to 7.5 percent increase in serials prices for 2013.[1] While commercial publishers continue to take heat for their pricing, society publishers are increasingly becoming the target of scorn by librarians.

Leaving the Big Deal is often mentioned as a means of dealing with rising prices, though many are uncertain if libraries are actually cutting packages or just talking about it.[2] Glasser describes a method to determine cost per use for journals within five Big Deal packages and then ranks those packages in a simulated cut.[3] Blecic et al., developed two more involved metrics for quantitative analysis of Big Deals. Both metrics depend on COUNTER's (Counting Online Usage of Networked Electronic Resources) Successful Full-Text Article Request (SFTAR) figure for journal titles. Using SFTARs and package costs, the first metric compared three Big Deals and ranked according to the value given to the library. The second metric used SFTARs and journal costs to rank journals within a single Big Deal to determine which journals to keep.[4] In contrast to simulated cuts, Jones, Marshall, Nabe, and Fowler describe cutting Big Deals at smaller universities and the aftermath.[5] Both analyses found that, contrary to expectations, document delivery costs did not increase much at all. Plutchak, however, reported a doubling of these costs after cancelling the Big Deal.[6] Despite this talk of cutting, EBSCO reports that more than 60 percent of publishers believe the Big Deals will still exist in five years.[7]

Librarians and publishers are much more willing to experiment with pricing and access models. A given publisher may allow a library to pursue a "small deal" for a core group of its journals using the bundled purchase method. Desired articles outside of that core may be "rented" for a short, set period. Librarians use pay-per-view/token access as a substitute for subscriptions and as a new form of interlibrary loan, one which does not trigger higher copyright fees.[8] Pay-per-view and token access often come into play after major cancellations and both allow for a hybrid model of content acquisition. Patron use can be either mediated, whereby a librarian reviews requested articles and approves purchases, or unmediated, whereby article purchases are automatically approved. Hosburgh shows one library's experience with both models from the same publisher.[9] In either case, librarians resign themselves to the fact that they will purchase the same article several times. Busby speculates that publishers may eventually rely on multiple purchases of certain high-demand article for their revenue instead of journal subscriptions.[10]

Michigan State University's (MSU) experiment with pay-per-view access to all journals from one publisher, Multi-Science Publishing, yields instructive lessons. The majority of article downloads are from journals to which MSU has never subscribed. As with interlibrary loan (ILL) articles, the MSU Libraries have no perpetual access rights, nor may they loan their pay-per-view articles. Despite the drawbacks, Sowards advocates further experimentation with purchasing models.[11]

Libraries are not the only ones thinking about the future and experimenting with new models. Hoping to reach users who lack subscriptions or access to institutional subscriptions, the Nature Publishing Group (NPG) experimented with DeepDyve, which allows viewing articles for only a short time. For less than $4, a person has viewing rights for twenty-four hours with no downloading, printing, or saving. NPG intends to explore other models of article rentals.[12] All this focus on article purchasing is no surprise to Anderson, who argues that the journal, while still a useful container, is increasingly less important than the article.[13]

Open Access

Publishers are experimenting with open access models. Gold open access refers to the model whereby the author (or author's institution) pays a set charge to make the article freely available online immediately and permanently. New journals have emerged in the last few years in which all content is gold open access and there are no subscription fees for these journals. Established subscription-based journals will sometimes accept open access fees for individual articles, while the majority of the content stays behind the

publisher's paywall. This is called the hybrid subscription model. Some publishers make their subscription-based content freely accessible after a certain period, which can vary by six months to several years, depending upon the publisher or the journal. Publishers such as the American Physical Society publish content under more than one of these models.[14]

Professional societies often rely on member and library subscriptions to cover their journal production costs and use this revenue to support other aspects of their mission. Since wider dissemination of their members' research is the goal of these societies, they are exploring open access as a means to this end. The American Physical Society and the American Meteorological Society report that their members have expressed interest in open access but the societies have not yet found a way to make this approach financially viable.[15]

While most discussions regarding open access revolve around articles, journals, or publishers, the discipline of high-energy physics formed a coalition to investigate open-access publishing for its journals. Under the Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP[3]) proposal, institutions already subscribing to the list of journals would pay those fees to CERN, the European Organization for Nuclear Research, which in turn pays the publishers. Authors will have their articles immediately available as gold open access without the bother of paying the costs themselves.[16]

While some view open access as a relief to journal subscription prices, others point out that this will not be the case if subscriptions are partially or wholly replaced by article processing charges (APCs) that are actually paid by the authors' institutions. Those institutions that are research-intensive could face even greater costs as they pay for all of the costs of publications. Institutions and individuals that are the consumers of research would no longer pay for access to this research.[17]

Hybrid journals have become common but this does not necessarily translate into more open access articles. Bjork's 2012 study of fifteen major journal publishers found they had more than four thousand hybrid journals among them, but fewer than 2 percent of the articles were open access. He found that the higher the APC, the lower the uptake rate. Authors do not appear willing to pay these fees and many sponsoring institutions will not pay APCs for articles in hybrid journals. Instead, they reserve underwriting for full open access journals.[18] This non-support for hybrid journals was criticized by Zinn, a faculty member and editor of a scholarly journal, at a panel on scholarly publishing. Under such a policy, librarians rather than authors determine where articles are published. Because many purely open-access journals are new and may not be ranked or lack an impact factor, he feels younger faculty who publish in these journals may suffer at tenure time.[19]

Electronic Resource Management and Discovery

Electronic Resource Management and Discovery systems (ERMs) continue to dominate serials discussions and workflows continue to be a source of frustration and discussion. Branscome's survey results show wide variety in where electronic resource management occurs and how many people are involved. Her survey also shows that vendor systems predominate, although they are only briefly described in the literature during the period under review.[20] Czechowski, Fort and Spear detail the implementation of one commercial ERM, noting some areas, such as coverage data, where that system falls short and the library has retained manual processes that they hoped they could replace with the ERM. There is still too much local manipulation of data to make these systems as useful as promised.[21] Many libraries are on their second or third ERM with open source systems such as CORAL and Drupal being implemented in more libraries.[22] Libraries are also adapting free products, such as those from Google, in library workflows.[23] Lupton's description of York University's Managing University Library Electronic Resources (MULER) ERMs integration with the library's public interface demonstrates the flexibility allowed by locally developed systems.[24] McQuillan provides a description of various standards or guidelines relevant to five major areas of electronic resource management: link resolvers and knowledge bases; work, manifestation and access points; cost and usage-related data; license terms; and data exchange using institutional identifiers.[25]

Limitations of existing ERMs continue to be documented. England found that even with an ERM, many librarians are still storing additional information in spreadsheets, paper files, email records, and databases because these systems do not provide a home for all of the information necessary to manage electronic resources.[26] Downey describes the prepurchase workflows and tasks that current ERMs do not track.[27] Carroll et al. describe using a Google calendar to create a renewal alerting system that its commercial ERM could not provide.[28] Using the cloud to manage information is in its infancy but may be mainstream soon.[29] Ohler cautions that some of the problems libraries experience with electronic resources workflows and systems may be due to entrenched library practices plus product limitations.[30]

Currently, libraries' integrated library systems, ERMs, A to Z lists, link resolvers, and knowledge bases are separate entities which take some coaxing to work together. Wilson gives an overview of five systems recently released or in development that promise to combine most of these elements into one system.[31] Attention to ERM and flexible, customizable workflows are promised in each of these systems and remain the key weak point in current ERMs, as "ERM system designers often misunderstood workflow

design."[32] England and Shipp argue that each type of electronic resource rates its own workflow and system.[33] Wang and Dawes describe four essential elements of a functioning next generation ILS: "comprehensive (format-neutral) library resources management; a system based on service-oriented architecture; the ability to meet the challenge of new library workflow; and a next-generation discovery layer."[34] Optimism about these emerging systems is high, with the view that these systems will solve the interoperability problems libraries experience today and take them out of today's world of local spreadsheets and scripting.

Robust, accurate knowledge bases are the key to this future. There are two major efforts underway to create global knowledge bases to address the lack of accurate, timely information in the serials information supply system. KB+ is the United Kingdom's JISC-based system and GOKb (Global Open Knowledgebase) is the United States' Mellon-funded system. Both aim to create a shared, open platform to store crucial information that currently is only available in scattered silos. A central location would reduce the huge duplication of effort that link resolvers and libraries currently perform.[35] Data quality for titles varies by publisher and is often lost during publisher transfers. Beals and Harwood's survey of publishers and librarians showed that a majority of publishers do not know when link resolver companies are informed that the publisher is transferring a title to a new publisher.[36] Diven discusses the benefits that are gained when the end user is kept in mind, and gives a good overview of the challenges involved in relying on a community-based approach. For instance, the scope of the project changes when the knowledge base is intended for use not only by ERM staff but by end users, such as students and researchers. The quality and granularity of metadata (journal versus article, for example), the interoperability of standards, willingness of publishers to share proprietary information, consortial governance, and especially the willingness of individuals and institutions to maintain and update contributed information are crucial to successful projects.[37]

The effect of this lack of interoperability is keenly seen by users. Chen's study of SFX dead-link reports found a variety of errors causing these reports: the articles really were not available; index errors such as incorrect citations; links that go to the journal only; links go to book reviews or other special items; abnormal volume, issue, or page numbers, especially with articles in supplemental issues; confusion between online publication date and official publication date; DOI errors; and missing online content.[38] Presentation and Identification of E-Journals (PIE-J) is an emerging standard that makes recommendations that address some of these issues: publishers should present content under the original journal title, instead of putting all online content under the latest title; the print and online ISSNs should be displayed; publishers should use clear and consistent numbering schemes.[39]

OpenURLs dynamically link users from citations to library holdings and have been widely adopted by librarians and information providers. They are known to have high error rates, however, and NISO's Improving OpenURLs Through Analytics (IOTA) is one effort to improve providers' data. The Knowledge Bases and Related Tools (KBART) working group also investigates and identifies OpenURL metadata issues in the serials supply chain.[40]

Licensing

Perpetual access clauses are still a major concern for libraries. Sometimes referred to as post-cancellation access, perpetual access refers to the library's right to have access to the online content of a journal, for the issues specified in the license, after the library cancels the journal. Beh and Smith reviewed nineteen licenses from major journal publishers for perpetual access clauses and found great variation among the clauses. The ambiguity regarding in what formats the content will be retained, how it will be accessed, or where it will be permanently housed are only some of the difficulties present in accessing the "perpetual" content.[41] They also raise doubt as to whether all promised content will be available. Calvert describes a cancellation project and the extensive, time-consuming steps taken to obtain promised perpetual access, while admitting that sometimes they did not always succeed.[42] This uncertainty about future access to journal and other content led to the formation of a Keepers Registry in which several major archiving organizations contribute metadata about the journals they archive. Like the inventories conducted by Calvert and Beh and Smith, the pilot project revealed many inconsistencies in how content is preserved, especially at the issue level.[43]

Libraries are facing new forms of teaching and research that need to be addressed in licenses, such as text mining and MOOCs, while a long-term issue, ADA-compliance, is receiving increased legal scrutiny.[44] Data mining is another new, complex area of research librarians are asked to incorporate into licenses.[45]

One eagerly anticipated advance in academic licenses is the ONIX-PL standard, which uses an XML database structure to standardize encoding of licensing elements for transmitting that information electronically. Although ONIX-PL has been around for years it has not seen much use in the United States. Under a NISO grant sample, licenses are being encoded and deposited in GOKb.[46] Time will tell if this effort leads to adoption of the standard by librarians and publishers.

Bibliographic Control

Early in 2012, Boehr et al. laid out the differences in AACR2 and RDA in reference to serials, integrating resources, and continuing resources.[47] They highlight areas where recommended practices conflict with RDA principles, such as the single-record approach. This work was followed by others in 2013 that provided guidance on the changes serials catalogers face. Blythe gives special attention to electronic integrating resources while Bross focuses on CONSER practice.[48] Culbertson explains the Program for Cooperative Cataloging's (PCC) decision to go against both AACR2 and RDA principles and recommend provider-neutral records for resources that are available on multiple platforms.[49]

The cataloging literature focuses on metadata as much as on traditional cataloging. In particular, open access (OA) metadata, which describes content that is openly licensed and freely accessible, has captured much attention. There are several flavors of OA metadata. One is simply the cataloging records themselves, whereby libraries make their catalog records freely available for any library to use. Flynn calls for publishers to provide clean metadata to vendors, who can then create high-quality metadata that can be provided to their customers.[50] Article-level metadata are the subject of a new NISO initiative, developing standard language to denote an article's open access status.[51]

Looking past RDA, linked data are heralded as the new future of cataloging. The Resource Description Framework (RDF) promises to describe relationships between entities, leading to the Semantic Web that is mentioned in almost articles or presentations that refer to the future. The Universal Resource Identifier (URI) is the essential component of turning the conceptual framework into reality. Szeto provides several useful diagrams for visualizing these new relationships.[52] According to Singer,

> linked data is achieved by following four rules. First, a URI is assigned to a piece of data (e.g., an author or title). Second, HTTP protocol is used to look up these URIs. Third, information is provided in a data model such as the RDF standard. Fourth, links to other URIs are included so that the searcher can discover or link to other data. . . . These linkages broaden users search and can connect users to resources or information that had not been linked to before. Unexpected discoveries are made through these serendipitous connections.[53]

The significant difference between traditional record-based cataloging and cataloging in a linked data model revolves around the existence of discrete records in local databases. In a linked data model, records largely disappear. Rather than downloading and editing, or creating a new record for each item added to the collection, a cataloger would find data readily available about an item, and make statements that link the item to the library, indicating that it is held in the library's collection. The cataloger could also publish any locally specific notes as additional RDF statements. Library systems would in turn pull data from many places on the web to dynamically assemble a display for a user. Different data elements could be pulled together depending on the user's need; no single, consistent record exists, but a "record" is created at the point of need.[54] The Library of Congress is developing the Bibliographic Framework Initiative (BIBFRAME) with this linked data future in mind.

Using current MARC record-based cataloging standards, an article must be either described discretely as an article or subsumed under the larger journal heading. Krier argues that the Functional Requirements for Bibliographic Records, or FRBR, can be used to describe both the journal and the article as the "work," and the user can determine which entry point is needed.[55] Differentiating between the print and electronic versions of titles and describing the complex relationships between former, later, and split titles is no longer necessary as links can take the user to any version of the title. Jones specifies several changes to the MARC 21 format that would be needed to bring about this utility.[56]

It appears the charge of describing serials resources will be in a state of flux for some time. Libraries are still a long way from a world of shared bibliographic data that will eliminate the needless duplication of effort with today's world of multiple records for the same item.

Usage and Analysis

The most commonly used figure for analysis of journal value is the cost per use (CPU). Bucknell provides a thorough analysis of the shortcomings of this method, including: platform choices that affect downloads; editorials, book reviews, and other "light" content may be counted with articles; unexplained usage spikes; usage data lost when journals change publishers; mixing of open-access downloads with paid content.[57] Despite the known limitations of usage data, including COUNTER data, libraries still collect and analyze them. Wical's and Brown's surveys illustrate how these data are used.[58] Sometimes COUNTER reports are the major data points or they are only one of several data points used to evaluate electronic resources.[59] The Association of Research Library's (ARL) MINES (Measuring the Impact of Networked Electronic Services) survey is being implemented more and in one case its methods have been used to create an institution-specific version.[60]

Sharing information is what libraries do, and this continues now even in the usage environment. The University of North Carolina system's central administration mandated

a return on investment (ROI) analysis for system libraries' electronic journal collections. The method was determined by the system administrators, not the librarians, and not all recommendations that stemmed from the administrators based on this method seemed relevant or feasible to the librarians.[61] The joint usage data repository may prove useful in the future. JISC has persuaded many publishers to provide a single point of access to journal usage statistics for UK academic libraries. This project reports increased efficiencies in data gathering and opportunities for more extensive data analysis.[62] Bulut also reports on consortial-level usage data collection and analysis.[63]

Dissatisfaction with the Institute for Scientific Information's (ISI) impact factor is widespread and librarians are finding ways to develop new measures of journal quality. The United Kingdom Serials Group (UKSG) and COUNTER are partnering to develop a journal usage factor based on readership and not the number of times articles are cited.[64] Black reports on the customized citation analysis he performs on journals of interest to his institution.[65]

"Altmetrics," short for alternative metrics, aim to measure the impact of an article based on its presence in social media. This new measurement avenue boasts faster feedback time, in contrast to the year-long (or longer) delay in traditional measures such as the impact factor. Altmetrics use publicly available data that can easily and quickly be mined. For such a new field there are no standards such as COUNTER and the data gathered is open to many avenues of interpretation. Galligan explores the current situation and the future possibilities of this new tool.[66] The subjective nature of the data, the wide possibilities of sources, the emerging problem of gaming the measures, possible inflation of measures due to multiple versions (final published version versus prepublication version hosted on an institutional repository), and the many ways the data can be interpreted may remain significant challenges for the immediate future.[67]

Physical Holdings

With all the attention given to new electronic formats, we cannot forget that the old formats continue to be very much with us. Libraries maintain significant microform holdings and they are still used, even when electronic versions of the same material are available.[68]

The preservation issues with print and microform are nothing new. One format that has time-sensitive pressures is newsprint. The University of Florida found that 70 percent of newspapers reviewed for a Judaica anniversary newspaper project were disintegrating.[69] Digitizing newspapers directly from the printed newspaper is the preferred method because it produces better copies. However, the significant costs this entails are leading to acceptance of digitizing from microfilm. Metadata for these resources are crucial and difficult. Elstrom and Jensen discuss the trade-offs in choosing file formats. They emphasize that digitization is not a one-time occurrence but that the digital copies must be frequently monitored and transferred to new files. They also describe thoroughly the difficulties in devising proper metadata for a resource that often changes names and may have multiple editions. [70] Robertson lists this as one of the reasons a serials librarian should be included in digitization projects involving serials.[71] We will see more in the future about preserving "born digital" files.

Shared Print

Libraries still have large print collections to maintain. Gallagher and Rathemacher lay out the risks inherent in relying on perpetual access rights for online access, rather than keeping a print archive onsite.[72] Few want to keep all of their print, however, and serials librarians are forming collaborative partnerships for print journal retention. These often use a "last-copy" arrangement, whereby at least one library in the partnership agrees to permanently keep the print run of a particular title for a specified time. Most of the shared print storage arrangements are regional and based on existing consortia. Some have well-defined collection policies, such as for print runs of JSTOR titles, while others depend on what their members are willing to contribute. For a complete history and discussion of current shared print repositories, see Genoni's excellent 2013 review article.[73] Keift and Payne suggest steps needed to expand these repositories and to make them true collaborative collections that free up libraries' physical spaces for new programs and functions.[74]

Some of these regional repositories have a distributed holdings model: member libraries promise to retain and maintain in their own facilities the print volumes they "claim." The western Canada alliance COPPUL, the American southeast's ASERL, and the American eastern PALCI follow this model.[75] Another common model is for the consortium to build a single joint off-site storage facility. Even these "joint" facilities may not be a true shared collection, as participating libraries may not be willing to relinquish ownership of materials. Australia's CARM, for instance, was built in 1996 with the agreement that materials sent there would become the property of the consortium and the member libraries could discard their copies of the shared items. The optimistic plans for a shared collection policy for the facility never materialized. When an additional facility was built in 2010, none of the libraries wanted to participate in a shared collection. Instead, they only wanted storage space for their items.[76]

The United Kingdom's Research Reserve (UKRR) is a distributed national repository.[77] Brown provides an

excellent description of the problems faced in organizing a distributed shared collection. The difficulty of interpreting holdings information for the same title in several different libraries is particularly illuminating.[78] Genoni lists the advantages of a distributed arrangement as lower start-up costs and library autonomy in de-duping decisions, while the disadvantages are that member libraries are less likely to actually de-dupe and have less collection management oversight, thereby creating higher costs on a system-wide level.[79] Alternatively, the Committee on Institutional Cooperation's (CIC) analysis of the pros and cons of distributed and centralized shared storage led to a decision to invest in a centralized facility. The costs involved in building a facility and maintaining it seemed acceptable given that the CIC would retain control of the volumes, be assured of the physical conditions in which they were stored, and assure their perpetual retention, rather than rely on member libraries to adhere to all promises they made. Sandler et al, provide an equally excellent exposition of the management issues involved in a centralized collection.[80]

Three smaller trends deserve mention, as they are likely to grow in importance soon. A new development in the serials field is the evolution of library as publisher. Bakker recounts a joint project between a library and its associated university press to take a former print journal to an open-access (with moving two year wall) electronic journal.[81] Robertson and Simser operate library electronic publishing enterprises for both subscription and open access journals. They detail the complexities of establishing new journals and bringing formerly print journals online and working with faculty who are often entirely new to editing and publishing a journal. At both of their institutions the libraries consider open access publishing part of their mission and fully underwrite their costs.[82] Lefevre and Huwe give two detailed further examples of special collections libraries that have partnered with their respective faculty constituencies to publish unique scholarly content.[83]

Traditional online journals have been adding still images, 3D images, video content, chemical structures, etc. in the last few years. Journals consisting of purely video content are coming into their own, bringing new challenges in bibliographic description, pricing, and subscription models. Stern raises questions of metadata, indexing, discoverability, delivery, display, and preservation in his analysis of these pioneering journals.[84] Experimentation with nontraditional content is sure to continue.

With tablets expected to outsell PCs and laptops soon, vendors and librarians are poised to move into the world of information delivery via mobile devices. More publishers have a mobile website in conjunction with their regular website, though the content and functionality may be decreased. They may also require a separate click-through end user license.[85] Mihlrad reports that database providers are more likely than journal publishers to offer complete content.[86] There are a few journals that exist only in a mobile-readable version.[87]

Conclusion

While the serials literature remains practical and focused on addressing day-to-day issues, it has always had a spot for future possibilities. True to its down-to-earth nature, the serials literature in the world we can help create is not viewed through rose-colored glasses. It is a clear-eyed critique of what is lacking today and why. It is filled with realistic outlines of how a better serials world would look and careful analyses of what it will take to get there. Shared repositories of information, physical and digital, that can be trusted to be accurate and complete; shared metadata that publishers, vendors, and libraries can use to seamlessly and unambiguously connect users to content; shared bibliographic records that are created only once. This world is still a long way from certain. The parties involved must relinquish control and look to the greater good and not just their own individual needs. Libraries as well as publishers must be willing to give up some measure of control to achieve this hoped-for connectivity.

References

1. Allen Powell, "Navigating the New Norm: Vendor, Publisher, and Librarian Strategies to Cope with the Changing Information Industry," *Journal of Library Administration* 52, no. 5 (2012): 374–76, http://dx.doi.org/10.1080/01930826.2012.701112.
2. Robert W. Boissy et al., "Is the 'Big Deal' Dying?," *Serials Review* 38, no. 1 (2012): 36–45, http://dx.doi.org/10.1080/00987913.2012.10765417.
3. Sarah Glasser, "Judging Big Deals: Challenges, Outcomes, and Advice," *Journal of Electronic Resources Librarianship* 25, no. 4 (2013): 263–76, http://dx.doi.org/10.1080/1941126X.2013.847672.
4. Deborah D. Blecic et al., "Deal or No Deal? Evaluating Big Deals and Their Journals," *College & Research Libraries* 74, no. 2 (2013): 178–93, http://dx.doi.org/10.5860/crl-300.
5. Mary Ann Jones, Derek Marshall, and Sharon A. Purtee, "'Big Deal' Deconstruction," *Serials Librarian* 64, no. 1–4 (2013): 137–40, http://dx.doi.org/10.1080/0361526X.2013.760389; Jonathan Nabe and David C. Fowler, "Leaving the 'Big Deal': Consequences and Next Steps," *Serials Librarian* 62, no. 1–4 (2012): 59–72, http://dx.doi.org/10.1080/0361526X.2012.652524.
6. Rob Van Rennes, "Technical Services Report: Ending the Big Deal: Truth and Consequences. A Report on the ALCTS Continuing Resources Section Program, American Library

Association Annual Conference, Anaheim, June 2012," *Technical Services Quarterly* 30, no. 3 (2013): 318, http://dx.doi.org/10.1080/07317131.2013.785805.
7. Powell, "Navigating the New Norm," 380.
8. Steven W. Sowards, "Library–Publisher Experimentation and Partnership in Alternative Models for Journal Content," *Serials Librarian* 65, no. 3–4 (2013): 309–34, http://dx.doi.org/10.1080/0361526X.2013.837858.
9. Nathan Hosburgh, "Getting the Most Out of Pay-Per-View: A Feasibility Study and Discussion of Mediated and Unmediated Options," *Journal of Electronic Resources Librarianship* 24, no. 3 (2012): 204–11, http://dx.doi.org/10.1080/1941126X.2012.706112.
10. Lorraine Busby, "Contentus Withoutus: Living Contentedly Without Serials," *Serials Librarian* 65, no. 2 (2013): 133, http://dx.doi.org/10.1080/0361526X.2013.817227.
11. Sowards, "Library–Publisher Experimentation and Partnership," 324–25.
12. Grace Baynes and Michael Hanson, "Trialing Mobile and Article Rental Access Options for Journal Content," *Serials Librarian* 62, no. 1–4 (2012): 217–21, http://dx.doi.org/10.1080/0361526X.2012.652924.
13. Rick Anderson and Kate B. Moore, "Is the Journal Dead? Possible Futures for Serial Scholarship," *Serials Librarian* 64, no. 1–4 (2013): 72–73, http://dx.doi.org/10.1080/0361526X.2013.759877.
14. Andrée J. Rathemacher, "ACRL New England Scholarly Communication Special Interest Group Workshop: Open Access and Scholarly Societies: A Panel Discussion about The Opportunities and Challenges," *Serials Review* 38, no. 2 (2012): 152–53, http://dx.doi.org/10.1080/00987913.2012.10765445.
15. Rathemacher, "ACRL New England Scholarly Communication Special Interest Group Workshop," 154.
16. Ralf Schimmer, "A Road Long Travelled: Is SCOAP 3 Now Arriving?" *Insights: The UKSG Journal* 26, no. 2 (2013): 135–40, http://dx.doi.org/10.1629/2048-7754.73.
17. Nol Verhagen, "Hybrid OA: A Way to Go?" *Insights: The UKSG Journal* 26, no. 1 (2013): 52, http://dx.doi.org/10.1629/2048-7754.26.1.51.
18. Bo-Christer Björk, "The Hybrid Model for Open Access Publication of Scholarly Articles: A Failed Experiment?," *Journal of the American Society for Information Science & Technology* 63, no. 8 (2012): 1496–1504.
19. Rathemacher, "ACRL New England Scholarly Communication Special Interest Group Workshop," 153.
20. Beth A. Branscome, "Management of Electronic Serials in Academic Libraries: The Results of an Online Survey," *Serials Review* 39, no. 4 (2013): 222–24, http://dx.doi.org/10.1080/00987913.2013.10766402.
21. Leslie Czechowski, Malgorzata Fort, and Geoffrey Spear, "Implementing a New ERMS & Link Resolver to Better Manage E-Resources," *Serials Review* 38, no. 1 (2012): 34, http://dx.doi.org/10.1080/00987913.2012.10765416.
22. Andre Imre, Eric Hartnett, and C. D. Hiatt, "CORAL: Implementing an Open-Source ERM System," *Serials Librarian* 64, no. 1–4 (2013): 224–34, http://dx.doi.org/10.1080/0361526X.2013.760414; Amanda Yesilbas and Susan Davis, "Using Drupal to Track Licenses and Organize Database Information," *Serials Librarian* 62, no. 1–4 (2012): 155–58, http://dx.doi.org/10.1080/0361526X.2012.652911.
23. Eric Hartnett and Regina Koury, "Using Google Apps through the Electronic Resource Life Cycle," *Collection Management* 37, no. 1 (2012): 47–54, http://dx.doi.org/10.1080/01462679.2012.629600; Karen Jensen, "Managing Library Electronic Resources Using Google Sites," *Journal of Electronic Resources Librarianship* 25, no. 2 (2013): 115–23, http://dx.doi.org/10.1080/1941126X.2013.785289.
24. Aaron Lupton and Marcia K. Salmon, "MULER: Building an Electronic Resource Management (ERM) Solution at York University," *Journal of Library Innovation* 3, no. 2 (2012): 105–22.
25. Bob McQuillan, "Gateway to Improving ERM System Deliverables: NISO ERM Data Standards and Best Practices Review," *Serials Librarian* 62, no. 1–4 (2012): 112–24, http://dx.doi.org/10.1080/0361526X.2012.652482.
26. Deberah England, "We Have our ERM System, It's Implemented: Why Am I Still Going Here and There to Get the Information I Need?," *Serials Librarian* 64, no. 1–4 (2013): 112–14, http://dx.doi.org/10.1080/0361526X.2013.760148.
27. Kay Downey, "Managing Selection for Electronic Resources: Kent State University Develops a New System to Automate Selection," *Journal of Electronic Resources Librarianship* 24, no. 2 (2012): 128, http://dx.doi.org/10.1080/1941126X.2012.684558.
28. Jeffrey D.Carroll et al., "Assessing Ongoing Electronic Resource Purchases: Linking Tools to Synchronize Staff Workflows," *Journal of Electronic Resources Librarianship* 24, no. 2 (2012): 79–90, http://dx.doi.org/10.1080/1941126X.2012.684330.
29. Denise Branch, "Electronic Workflows: Taking It to the Cloud," *Serials Librarian* 63, no. 3–4 (2012): 328–30, http://dx.doi.org/10.1080/0361526X.2012.721739.
30. Lila (Angie) Ohler, "ERM Ideas and Innovations: Thinking Beyond 'The Way We've Always Done It'," *Journal of Electronic Resources Librarianship* 25, no. 2 (2013): 53–60.
31. Kristen Wilson, "Introducing the Next Generation of Library Management Systems," *Serials Review* 38, no. 2 (2012): 110–23, http://dx.doi.org/10.1080/00987913.2012.10765438.
32. Emma Cryer, "Technical Services Report: Integrating Erms Into the ILS: Systems for Holistic Resource Management. A Report of the LITA/ALCTS Electronic Resource Management Interest Group Meeting, American Library Association Midwinter Meeting, Dallas, January 2012," *Technical Services Quarterly* 30, no. 1 (2013): 86, http://dx.doi.org/10.1080/07317131.2013.735961.

33. Lenore England and Kelly Shipp, "ERM Ideas and Innovations: Flexible Workflows for Constantly Changing ERM Environments," *Journal of Electronic Resources Librarianship* 25, no. 3 (2013): 220, http://dx.doi.org/10.1080/1941126X.2013.813312.
34. Yongming Wang and Trevor A. Dawes, "The Next Generation Integrated Library System: A Promise Fulfilled," *Information Technology & Libraries* 31, no. 3 (2012): 78.
35. Liam Earney, "Maximizing the Knowledge Base: Knowledge Base+ and the Global Open Knowledgebase," *Insights: The UKSG Journal* 26, no. 3 (2013): 244–49, http://dx.doi.org/10.1629/2048-7754.71.
36. Nancy Beals and Paul Harwood, "Project Transfer: Findings from Surveys of Publishers and Librarians Undertaken in 2011," *Serials Librarian* 63, no. 2 (2012): 216, http://dx.doi.org/10.1080/0361526X.2012.701985.
37. Yvette B. Diven, "Communities of Knowledge: Creating and Connecting Resource Metadata," *Serials Review* 39, no. 3 (2013): 162–66, http://dx.doi.org/10.1080/00987913.2013.10766386.
38. Xiaotian Chen, "Broken-Link Reports from SFX Users: How Publishers, Vendors and Libraries Can Do Better," *Serials Review* 38, no. 4 (2012): 223–25, http://dx.doi.org/10.1080/00987913.2012.10765470.
39. Derek Marshall and Regina Reynolds, "Having E-Journal Title and ISSN Problems? Have some PIE-J!," *Serials Librarian* 65, no. 1 (2013): 63–68, http://dx.doi.org/10.1080/0361526X.2013.800465.
40. Rafal Kasprowski, "NISO's IOTA Initiative: Measuring the Quality of OpenURL Links," *Serials Librarian* 62, no. 1–4 (2012): 95–102, http://dx.doi.org/10.1080/0361526X.2012.652480.
41. Eugenia Beh and Jane Smith, "Preserving the Scholarly Collection: An Examination of the Perpetual Access Clauses in the Texas A&M University Libraries' Major E-journal Licenses," *Serials Review* 38, no. 4 (2012): 239, http://dx.doi.org/10.1080/00987913.2012.10765472.
42. Kristin Calvert, "Starting from Scratch on Perpetual Access," *Serials Librarian* 65, no. 1 (2013): 69–73, http://dx.doi.org/10.1080/0361526X.2013.800464.
43. Peter Burnhill, "Tales from the Keepers Registry: Serial Issues about Archiving & the Web," *Serials Review* 39, no. 1 (2013): 9–10, http://dx.doi.org/10.1080/00987913.2013.10765481.
44. Andrée J Rathemacher, "Developing Issues in Licensing: Text Mining, MOOCs, and More," *Serials Review* 39, no. 3 (2013): 209, http://dx.doi.org/10.1080/00987913.2013.10766397.
45. Clara Ruttenberg, "Technical Services Report: Report of the ALCTS Electronic Resource Management Interest Group. American Library Association Midwinter Meeting, Seattle, January 2013," *Technical Services Quarterly* 30, no. 4 (2013): 428, http://dx.doi.org/10.1080/07317131.2013.819755.
46. C. D. Hiatt, "ONIX-PL: An Adaptable Standard for E-Resource Licenses," *Technicalities* 33, no. 5 (2013): 12–15.
47. Diane Boehr, Regina Romano Reynolds, and Tina Shrader, "The U.S. RDA Test Process," *Serials Librarian* 62, no. 1–4 (2012): 125–39, http://dx.doi.org/10.1080/0361526X.2012.652485.
48. Kurt C. Blythe, Wanda K. Gunther, and Kristina M. Spurgin, "Resource Description and Access: It's Really Not so Bad," *Serials Review* 39, no. 3 (2013): 178–79, http://dx.doi.org/10.1016/j.serrev.2013.07.008; Valerie Bross, Les Hawkins, and Hien Nguyen, "CONSER Serial RDA Workflow," *Serials Librarian* 64, no. 1–4 (2013): 211–15, http://dx.doi.org/10.1080/0361526X.2013.760412.
49. Rebecca Culbertson and Les Hawkins. "The Development of the Provider-Neutral E-Resource MARC Record Guide: P-N/RDA Version," *Serials Review* 39, no. 1 (2013): 62–63, http://dx.doi.org/10.1016/j.serrev.2013.01.006.
50. Emily Alinder Flynn, "Open Access Metadata, Catalogers, and Vendors: The Future of Cataloging Records," *Journal of Academic Librarianship* 39, no. 1 (2013): 30, http://dx.doi.org/10.1016/j.acalib.2012.11.010.
51. Todd Carpenter, "Progress toward Open Access Metadata," *Serials Review* 39, no. 1 (2013): 1–2, http://dx.doi.org/10.1016/j.serrev.2013.02.001.
52. Kimmy Szeto, "Positioning Library Data for the Semantic Web: Recent Developments in Resource Description," *Journal of Web Librarianship* 7, no. 3 (2013): 305–21, http://dx.doi.org/10.1080/19322909.2013.802584.
53. Ross Singer, quoted in Christine K. Dulaney, "Libraries, Linked Data, and the Semantic Web: Positioning Our Catalogs to Participate in the 21st Century Global Information Marketplace: An ALCTS Midwinter Symposium; ALA Midwinter Meeting, Dallas, TX, January 20, 2012," *Serials Review* 38, no. 2 (201): 160, http://dx.doi.org/10.1016/j.serrev.2012.05.008.
54. Christine K. Dulaney, "Libraries, Linked Data, and the Semantic Web: Positioning Our Catalogs to Participate in the 21st Century Global Information Marketplace: An ALCTS Midwinter Symposium; ALA Midwinter Meeting, Dallas, TX, January 20, 2012," *Serials Review* 38, no. 2 (201): 160, http://dx.doi.org/10.1016/j.serrev.2012.05.008.
55. Laura Krier, "Serials, FRBR, and Library Linked Data: A Way Forward," *Journal of Library Metadata* 12, no. 2–3 (2012): 177–87, http://dx.doi.org/10.1080/19386389.2012.699834.
56. Ibid, 184–85; Ed Jones, "Description of Serials, RDA, and the MARC 21 Bibliographic Format," *Serials Librarian* 65, no. 3–4 (2013): 295–308, http://dx.doi.org/10.1080/0361526X.2013.836465.
57. Terry Bucknell, "Garbage In, Gospel Out: Twelve Reasons Why Librarians Should Not Accept Cost-Per-Download Figures at Face Value," *Serials Librarian* 63, no. 2 (2012): 192–212, http://dx.doi.org/10.1080/0361526X.2012.680687.
58. Stephanie H. Wical and Hans F. Kishel, "Strategic Collection

Management through Statistical Analysis," *Serials Librarian* 64, no. 1–4 (2013): 171–87, http://dx.doi.org/10.1080/0361526X.2013.760394; Jeanne M. Brown and Eva D. Stowers, "Use of Data in Collections Work: An Exploratory Survey," *Collection Management* 38, no. 2 (2013): 143–62, http://dx.doi.org/10.1080/01462679.2013.763742.

59. Sarah Sutton, "A Model for Electronic Resources Value Assessment," *Serials Librarian* 64, no. 1–4 (2013): 245–53, http://dx.doi.org/10.1080/0361526X.2013.760417; Sarah Anne Murphy, "Data Visualization and Rapid Analytics: Applying Tableau Desktop to Support Library Decision-Making," *Journal of Web Librarianship* 7, no. 4 (2013): 465–76, http://dx.doi.org/10.1080/19322909.2013.825148; Susan Hurst, Andy Revelle, and Aaron Shrimplin,"Seeing the Forest by Counting the Trees: Using a Variety of Data Sources to See the Big Picture," *Journal of Web Librarianship* 7, no. 4 (2013): 434–50, http://dx.doi.org/10.1080/19322909.2013.835175.
60. Aaron Lupton and Catherine Davidson, "Assessing the Value of E-Resources to York University Faculty Using the MINES for Libraries Protocol: An Evolving Landscape," *Journal of Web Librarianship* 7, no. 4 (2013): 422–33, http://dx.doi.org/10.1080/19322909.2013.839849; Terry Reese, "Giving the User a Voice: Capturing Impact through the Interjection of User Impact Surveys Into the Information Retrieval Workflow," *Collection Management* 38, no. 2 (2013): 163–67, http://dx.doi.org/10.1080/01462679.2013.765318.
61. Virginia Bacon and Patrick L. Carr, "Assessing Value Through Cross-Institutional Comparisons: A Discussion of the 2012 University of North Carolina System-Wide E-Journal Survey," *Serials Review* 39, no. 2 (2013): 86–92, http://dx.doi.org/10.1080/00987913.2013.10765499.
62. Jo Lambert and Angela Conyers, "Adding Value to Usage Statistics: The Journal Usage Statistics Portal (JUSP) Enhancements," *Serials Librarian* 63, no. 3–4 (2012): 305–14, http://dx.doi.org/10.1080/0361526X.2012.723608.
63. Burcu Bulut et al., "ANKOS Publisher Application System and Its Impact on the E-Resource Evaluation Process," *Serials Review* 39, no. 1 (2013): 29–36, http://dx.doi.org/10.1080/00987913.2013.10765483.
64. Oliver Pesch, "Usage Factor for Journals: A New Measure for Scholarly Impact," *Serials Librarian* 63, no. 3–4 (2012): 261–68, http://dx.doi.org/10.1080/0361526X.2012.722522.
65. Steve Black, "Practical Applications of Do-It-Yourself Citation Analysis," *Serials Librarian* 64, no. 1–4 (2013): 285–98, http://dx.doi.org/10.1080/0361526X.2013.760420.
66. Finbar Galligan and Sharon Dyas-Correia, "Altmetrics: Rethinking the Way We Measure," *Serials Review* 39, no. 1 (2013): 56–61, http://dx.doi.org/10.1080/00987913.2013.10765486.
67. Jean Liu and Euan Adie, "Five Challenges in Altmetrics: A Toolmaker's Perspective," *Bulletin of the Association for Information Science & Technology* 39, no. 4 (2013): 31–34.
68. Dana M. Caudle, Cecilia M. Schmitz, and Elizabeth J. Weisbrod, "Microform–Not Extinct Yet: Results of a Long-Term Microform Use Study in the Digital Age," *Library Collections, Acquisitions & Technical Services* 37, no. 1–2 (2013): 2–12, http://dx.doi.org/10.1016/j.lcats.2013.02.001.
69. Rebecca Jefferson, Laurie Taylor, and Lourdes Santamaría-Wheeler, "Digital Dreams: The Potential in a Pile of Old Jewish Newspapers," *Journal of Electronic Resources Librarianship* 24, no. 3 (2012): 185, http://dx.doi.org/10.1080/1941126X.2012.706109.
70. Gry Vindelev ElstrØm and Tonny Skovgård Jensen, "Planning for Mass Digitisation of Newspapers: A Castle, a Shed or Something in Between?" *Microform & Digitization Review* 41, no. 3–4 (2012): 129–39, http://dx.doi.org/10.1515/mir-2012-0021.
71. Wendy Robertson and Stephen Headley, "New Life to Old Serials: Digitizing Back Volumes," *Serials Librarian* 62, no. 1–4 (2012): 181–82, http://dx.doi.org/10.1080/0361526X.2012.652917.
72. Brian T. Gallagher and Andrée J. Rathemacher, "Need Exceeds Space: A Serials Withdrawal Project at the University of Rhode Island University Libraries," *Library Resources & Technical Services* 56, no. 2 (2012): 97. http://dx.doi.org/10.5860/lrts.56n2.94.
73. Paul Genoni, "An International Review of the Development and Implementation of Shared Print Storage," *Australian Academic & Research Libraries* 44, no. 1 (2013): 50–66, http://dx.doi.org/10.1080/00048623.2013.773867.
74. Robert H. Kieft and Lizanne Payne, "Collective Collection, Collective Action," *Collection Management* 37, no. 3–4 (2012):137–52, http://dx.doi.org/10.1080/01462679.2012.685411.
75. Gwen Bird and Gohar Ashoughian, "All Together Now: Planning for Shared Print Archiving at Canada's Western Universities," *Collection Management* 37, no. 3–4 (2012): 260–70, http://dx.doi.org/10.1080/01462679.2012.685433; Diane Bruxvoort, John E. Burger, and Lynn Sorensen Sutton, "Like a Snowball Gathering Speed: Development of ASERL's Print Journal Retention Program," *Collection Management* 37, no. 3–4 (2013): 223–36, http://dx.doi.org/10.1080/01462679.2012.685423; Sharon Wiles-Young, Christy Roysdon and John Barnett, "No Substantial Penalty for Withdrawal: The PALCI Shared Print Journal Archive," *Serials Librarian* 62, no. 1–4 (2012): 79–86, http://dx.doi.org/10.1080/0361526X.2012.652466.
76. Cathie Jilovsky, "The CARM Centre: The Creation, Revelation and Evolution of a Print Repository," *Australian Academic & Research Libraries* 44, no. 2 (2013): 113–24, http://dx.doi.org/10.1080/00048623.2013.793590.
77. Chris Brown, "Building the UK Research Reserve: Using Coordinated De-Duplication to Create a Collaborative Print Journal Collection," *Serials Librarian* 63, no. 1 (2012): 38–54, http://dx.doi.org/10.1080/0361526X.2012.684857.

78. Ibid, 47–49.
79. Paul Genoni, "A Distributed National Stored Collection: Testing the Possibilities," *Australian Academic & Research Libraries* 44, no. 2 (2013): 75–89, http://dx.doi.org/10.1080/00048623.2013.795474.
80. Mark Sandler et al., "CIC Co-Investment to Protect Print Research Library Collections in the Midwestern United States," *Collection Management* 37, no. 3–4 (2012): 237–59, http://dx.doi.org/10.1080/01462679.2012.685432
81. Caitlin Bakker, "Bringing History into the Digital Age: A Case Study of an Online Journal Transition," *Serials Librarian* 64, no. 1–4 (2013): 263–66, http://dx.doi.org/10.1080/0361526X.2013.760419.
82. Wendy C. Robertson and Charlene N. Simser, "Managing E-Publishing: Perfect Harmony for Serialists," *Serials Librarian* 64, no. 1–4 (2013): 118–28, http://dx.doi.org/10.1080/0361526X.2013.760399.
83. Julie Lefevre and Terence K. Huwe, "Digital Publishing from the Library: A New Core Competency," *Journal of Web Librarianship* 7, no. 2 (2013): 190–214, http://dx.doi.org/10.1080/19322909.2013.780519.
84. David Stern, "The Future of Peer-Reviewed Scientific Video Journals," *Online Searcher* 37, no. 5: 28–32, 49–50.
85. Leigh Mihlrad and Nancy R. Glassman, "Institutional Access to Mobile Resources," *Journal of Electronic Resources in Medical Libraries* 9, no. 1 (2012): 77–86, http://dx.doi.org/10.1080/15424065.2011.651383.
86. Ibid.
87. Regina Romano Reynolds and Esther Simpson."ISSN for Serials Available on E-Readers and Other Mobile Devices: Issues and Challenges," *Serials Review* 38, no. 3 (2012): 171, http://dx.doi.org/10.1080/00987913.2012.10765453.

Identifying E-Resources

An Exploratory Study of University Students

Amy Buhler and Tara Cataldo

This preliminary study assesses university students' ability to identify document types or information containers (journal, article, book, etc.) and different types of search tools (database, search engine) in the online environment. It is imperative to understand students' behaviors due to the pervasiveness of online resources and their impact on information literacy. A survey administered at the University of Florida sought to investigate this phenomenon and queried respondents about their age, higher education level, exposure to bibliographic instruction, and time devoted to school-related online searching. Analyses of 765 responses show that many students cannot consistently correctly identify these containers and behavioral characteristics have no influence on this process. This has implications for the online information seeking process and judging credibility and is of importance to the library, education, and publishing communities. Recommendations for these various communities are discussed.

In 2010, *The Economist* noted that digital information is increasing tenfold every five years.[1] Navigating this vast amount of information to find what a seeker needs to answer a question, solve a problem, or complete a task becomes more challenging as the amount of digital information grows. This is particularly problematic for college students who by necessity must navigate this sea of information as a critical part of their education. Head recently described this phenomenon in a study of freshmen as an "information tsunami that engulfed them."[2] Librarians often encounter students with the question "How do I cite this book?" only to discover that the resource in question is a journal article, conference proceeding, or other type of resource that they found online. Additionally, library instruction sessions reveal that students do not readily distinguish between the various types of resources when searching online (e.g., Google versus a library database). Because of these behaviors, we hypothesize that in the online environment many students do not differentiate between the varieties of electronic information. It is prudent to understand students' behaviors not only because of the pervasiveness of online resources, but more importantly, the impact that this populations' information literacy will eventually have on society. Identification of the container plays a role in the judgment of reliability or authoritativeness of the source. Students are told to use peer-reviewed journal articles over books or books over Wikipedia, presumably because of the higher authority of one, but what happens when the student cannot distinguish between them? If a student cannot identify these containers, it can have a negative effect on how they seek information and assess credibility. This issue also has ramifications for libraries:

Amy Buhler (abuhler@ufl.edu) is the Engineering Librarian at Marston Library, University of Florida, Gainesville, and **Tara Cataldo** (tara@uflib.ufl.edu) is the Science Collections Coordinator, Marston Science Library, University of Florida, Gainesville.

Manuscript submitted December 19, 2014; returned to authors for revision March 6, 2015; revised manuscript submitted April 28, 2015; returned to authors for minor revisions July 22, 2015; revised manuscript submitted August 21, 2015; accepted for publication September 14, 2015.

We express our deepest gratitude to Dr. David Schwieder for his assistance with our statistics-related questions. The research was funded by a University of Florida faculty Enhancement Opportunity award.

how we provide reference and instruction services, market resources, create metadata to describe resources, and design our online presence.

Until this point, our stated hypothesis has only been represented in the literature as a byproduct of other types of studies. Our study administered a survey to students at the University of Florida to preliminarily evaluate this phenomenon that Abram and Luther call "format agnostic."[3] We attempted to answer the following questions:

1. Do university students have difficulty in identifying different digital information resources?
2. Do factors such as age, level of university experience, amount of bibliographic instruction, or amount of time spent searching play a role in a student's ability to identify digital information resources correctly?

This paper offers an exploration of the survey results, including comparative analyses of these different containers and search tools. In addition, a brief discussion of implications, future research directions, and recommendations for libraries, publishers, and educators is included.

Literature Review

Many students feel confident locating information resources for papers or projects, but experience confusion when they need to identify the document type (from here on referred to as the *information container*).[4] This could be for the purposes of formatting a bibliography or ensuring that they have used the required types of sources for an assignment. The impetus for this project stems from our observations as practitioners and anecdotal evidence found in the literature. A catalyst for our research was ebrary's two surveys examining e-book usage.[5] The study examined trends through surveys administered in 2008 and 2011. During that three-year period, self-reported usage of e-books declined whereas actual usage significantly increased. This discrepancy led to a third follow-up survey in late 2011 where respondents were asked: When you are using electronic resources at your library how often do you know what type of document you are using? Only 47.39 percent replied "Always," indicating that over half of students experience confusion regarding information containers. Our study seeks to expound upon this trend. In the current world of scholarly digital information, the lines between the various traditional information containers (book, journal, conference proceeding, etc.) are blurred. We surmise that within this environment, many information consumers, particularly current university students, cannot consistently and correctly identify these containers. Since this issue has not been thoroughly explored and understood, it is not currently addressed in most teaching opportunities.

A search of the literature yields a few articles over the past decade that alludes to this issue, particularly in the area of e-book usage studies. Croft and Bedi discovered the phenomenon as part of the open-ended responses to their 2003 e-book usage survey of students at Royal Roads University (a distance-based university). One of the most intriguing results of their survey was the students' comments:

- "We were shown during our residency how to access journals and info. Is this the same as ebooks?"
- "An explanation of what an ebook is would be helpful. I've answered these questions as if they refer to the journals and articles that I accessed through the LRCsite."
- "I think that I used eBooks. For sure, I searched for articles. For some limited material, I had access to a whole book. I must confess that I am unsure by exactly what you mean by elibrary and netlibrary!"[6]

Levine-Clark conducted an e-book usage study at the University of Denver in 2005 and noted " . . . a small, but significant portion of those responding to the survey indicated a degree of confusion about the concept of the electronic book." He continues by stating "It is hard to draw any conclusions from the limited responses to open-ended questions, but it is clear that some degree of confusion exists between electronic resource types. This blurring of the distinction between book and journal may mean that for some users the online/print division is more important than the traditional book/journal distinction."[7]

In our own experience as practitioners, students do not appear to care about the type of information they find until it is absolutely necessary. Palfrey and Gasser elaborate on this notion in their 2008 book by stating students do not care about the quality of information they find on the web until they get poor grades on an assignment. They trust the search engine to give them reliable information and judge quality by what "makes sense." [8] Shelburne's 2008 study also produced findings that support this idea:

> The open comments on why e-books have not been used are especially interesting and indicate that lack of awareness of the content is clearly a problem. It appears that users may be accessing e-books without knowing that the resources they are using are actually e-books. . . . Further, several of the open responses indicate that some users may not even be aware of any difference between an electronic journal and an electronic book, a phenomenon also noted by Levine-Clark.[9]

The Primary Research Group 2009 Survey of American College Students produced a report on library e-books usage

that asked "What do you think of your college library's E-book collection?"[10] Approximately 32 percent chose the response "I am not sure what an e-book is." This was also noted in the UK's Joint Information Systems Committee (JISC)'s famous National E-book Observatory study in which the authors state "The lack of awareness about the availability of e-books was accompanied by confusion about what an e-book actually is."[11]

In her discussion of e-book studies, Soules makes an observation in line with the authors' experiences. She argues that this is not an issue limited to e-books, but is pervasive across all e-content. From her perspective, users are only concerned with content, and the ability to detect the differences between resources is a relic of the print era.[12] Holman echoes this in her study of millennial students, "Having grown up with online information sources, they do not discriminate between websites and more traditional print and broadcast media."[13] She noted problems such as when a student found a newspaper article online but was unsure if it was from a newspaper.[14] A 2007 report from JISC on the future researcher's information seeking behavior stated that the "Google Generation are format agnostic and have little interest in the containers (reports, book chapters, encyclopedia entries) that provide the context and wrapping for information `nuggets.'" This report describes this as an issue of importance that has yet to be addressed by the literature, but one that should be studied given the impact for libraries and publishers.[15] Clearly; there is a call for the type of research that our preliminary study seeks to explore.

Table 1. Individual resources included in survey instrument

Individual Resource	Authors' Designation
An e-journal article (JSTOR)	Article
An e-journal Title/Table of Contents page (Science Direct)	E-journal
An e-book front matter from a publisher (Springer)	E-book
An e-book front matter from Google Books	E-book
An e-textbook front matter from an aggregator (Knovel)	E-book
An e-encyclopedia (Gale)	E-book
A Wikipedia article	Article
A video journal (JoVE)	E-journal
A blog post	Article
An organization's online annual report (NEA)	E-Book
A newspaper article (Chicago Sun Times)	Article

Table 2. Search tools included in survey instrument

Search Tool	Authors' Designation
An Abstracting & Indexing database search page (PubMed)	Database
An Abstracting & Indexing database search page (Proquest)	Database
A medical website (Medline Plus)	Website
A library catalog search screen (Stanford)	Catalog
A discovery service search screen (Summon)	Search engine
Google Scholar search screen	Search engine
A shopping catalog search screen (Zappos)	Catalog

Methods

Qualtrics survey software (www.qualtrics.com) was used to construct the instrument assessing this information container phenomenon. Two identical instruments were created: one requiring the respondent to click on live links and one that allowed respondent to view screen captures for each example. Once these initial surveys were completed, a pilot commenced using approximately twenty subjects to compare the survey formats in addition to testing different response choices (the option of "other" was a response choice). Unlike the screen capture survey, the live link survey did not offer the consistency and uniformity across surveys. Due to this reason plus overall response time being affected (it took 3–4 times longer to complete), the live link survey was discarded. Further, after consulting with a statistician, the response choices of "other" and "textbook" were eliminated to provide more targeted analysis. Eighteen online resources were selected to test users' perceptions. The resources are broken down into the two respective categories of individual resource and search tool (see tables 1 and 2).

The Resources are Broken

The final version of the survey (see the appendix) used the question "What would you call this?" when querying respondents. We felt that this was a neutral question and would not provide textual cues that would skew respondents' choices. Choice selections were standardized based on category; however, these selections were randomized. For individual resources, the choices were: e-book, e-journal, article, website or webpage. The choices for search tools were: search engine, database, catalog, website or webpage. The option of "website or webpage" was listed as a choice to allow respondents to select a generic term for a particular resource. We did not provide a definition of the choices so as not to alter the respondents' established perceptions.

For our own analyses, we have used definitions from the *Oxford English Dictionary*:[16]

- Article—A separate portion of something written.
- Catalog—Now usually distinguished from a mere list or enumeration, by systematic or methodical arrangement, alphabetical or other order, and often by the addition of brief particulars, descriptive, or aiding identification, indicative of locality, position, date, price, or the like.
- Database—A structured set of data held in computer storage and typically accessed or manipulated by means of specialized software.
- E- Prefixed to nouns to denote involvement in electronic media and telecommunications (esp. the use of electronic data transfer over the Internet, etc.), usually to distinguish objects or actions from their non-electronic counterparts.
- E-book—A hand-held electronic device on which the text of a book can be read. Also: a book whose text is available in an electronic format for reading on such a device or on a computer screen; (occas.) a book whose text is available only or primarily on the Internet.
- Journal—A daily newspaper or other publication; hence, by extension, any periodical publication containing news or dealing with matters of current interest in any particular sphere.
- Search Engine—a program that searches for and identifies items in a database that correspond to one or more keywords specified by the user; *spec.* such a program used to search for information available over the Internet, using its own previously compiled database of Internet files and documents.
- Webpage—a hypertext document that is accessible via the World Wide Web.
- Website—a document or a set of linked documents, usually associated with a particular person, organization, or topic that is held on such a computer system and can be accessed as part of the World Wide Web.

Data was collected with the survey instrument in two different ways: in person using a peer-to-peer model and online via a pop-up on all of the libraries' 400 public computers. This was done to assess how the peer-to-peer model would compare with a computer pop-up in terms of response rate. Two student assistants were hired to conduct the peer-to-peer method of collection using surveys loaded on iPads. They primarily collected data in the lobbies of the two largest campus libraries and in quad areas and the student union. They worked for fifty-nine days for a total of seventy-five hours and collected 436 surveys with a 100 percent completion rate. The online collection method took eighteen days and was available for a total of 314 hours (this number corresponds to when any given library was open). A total of 327 surveys with a 100 percent completion rate were collected. The peer-to-peer method gathered an average of 5.8 completed surveys per hour compared to the online method which yielded an average of one completed survey per hour. However, the peer-to-peer method was much more labor intensive in terms of hiring, training, scheduling, and managing the student workers. Additionally, there was a potential for bias in the survey population due to the respondents recruited by the student workers. Due to these factors, the online delivery method appears to be ideal when gathering unbiased survey responses with little effort (and cost) on the part of the researcher. However, it would be beneficial for future studies to partner with campus computer labs to reach a broader audience. The analysis of the results was conducted using tools housed within Qualtrics as well as the use of SPSS software.

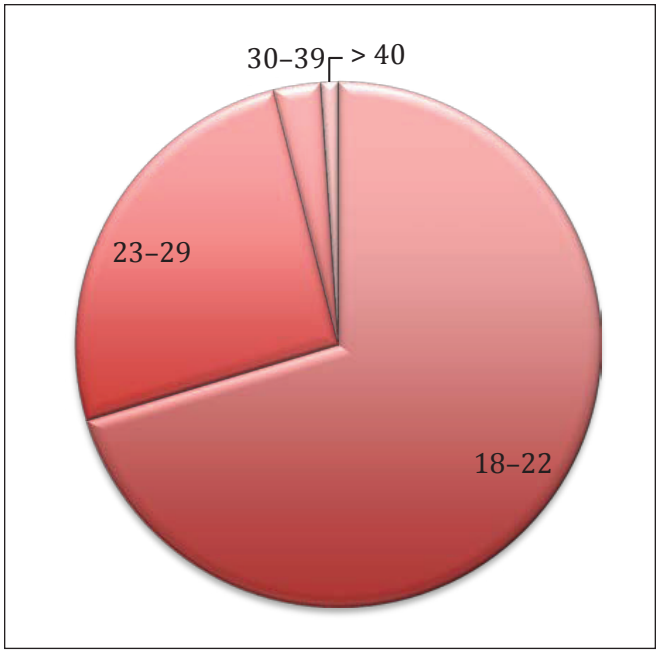


Figure 1. Respondents' Age Range

Results

Seven hundred and eighty respondents completed the survey. Six hundred fifty-six (84 percent) were undergraduate students and 109 (14 percent) were graduate students. The remaining respondents (2 percent) fell into the categories "High School Student" or "Other." For the purposes of this study, only the university students' responses were analyzed (N = 765). Due to the size difference between the graduate and undergraduate pools, figures comparing these two groups use percentages as opposed to raw numbers. The age breakdown of these university students appears in figure 1.

Figure 2 shows how long students spent searching online for class assignments in an average week. Graduate students

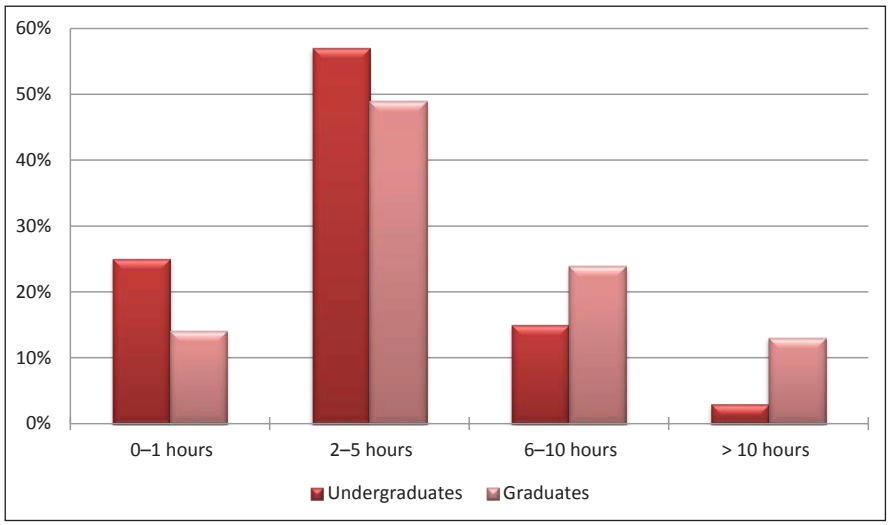


Figure 2. Time Spent per Week Searching Online for Class-Related Assignments

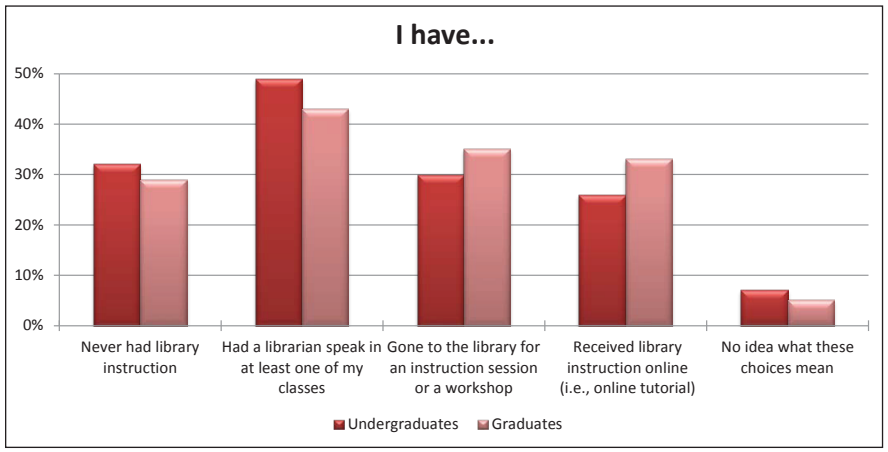


Figure 3. Survey Respondents' Exposure to Library Instruction

are more likely to spend over six hours per week performing school-related searches compared to undergraduates who were more likely to spend less than five hours. This is most likely due to research associated with graduate students' theses or dissertations. However, close to half of both graduates and undergraduates fall in the 2–5 hour range.

Participants were also asked what type of bibliographic instruction (BI) they have received, if any. Figure 3 shows the breakdown between graduate and undergraduate students. Again, there were similar trends in the responses of both graduates and undergraduates, with the most common form of BI exposure being a librarian visiting their class. It is important to note that nearly 30 percent of both graduate and undergraduate respondents had not received any form of BI.

Tables 3 and 4 report the 765 university student responses to the e-resource questions broken down into the categories of undergraduate and graduate student.

Discussion

When we presented the preliminary survey results, the following question arose: "Is it really wrong to call any of these resources a website?"[17] By definition, this is correct. These resources could all fall under the technical description for a website or webpage. We wanted to determine whether students apply this generic label or if they could categorize the resource as a specific information container or search tool. It is not wrong, per se, though we consider it incorrect for purposes of this study. It is problematic when a student (or any information seeker) needs to reference an electronic resource and identifies an item as a website when the more precise container is an e-journal. For example, the JSTOR journal article shown in the survey (see the appendix) would correctly be cited in MLA style as:

> Nilsson, Lena Maria, Ingegerd Johansson, Per Lenner, Bernt Lindahl and Bethany Van Guelpen "Consumption of filtered and boiled coffee and the risk of incident cancer: a prospective cohort study" Cancer Causes & Control, 21.10 (2010): 1533–1544. Web. 22 Apr. 2013

As a webpage, which 8 percent of survey respondents identified it as, the citation would likely look like this:

> Nilsson, Lena Maria, Ingegerd Johansson, Per Lenner, Bernt Lindahl and Bethany Van Guelpen "Consumption of filtered and boiled coffee and the risk of incident cancer: a prospective cohort study." JSTOR. 2010. Web. 22 Apr. 2013.

The second citation does not provide the precise detail (the journal title) needed by a reader to locate the resource that student has used. Therefore, the webpage citation would be considered incorrect and a student citing it this

Table 3. Survey Responses—Individual Resources

	% Undergraduates				% Graduates			
	Article	E-book	E-Journal	Website or Webpage	Article	E-book	E-Journal	Website or Webpage
Springer e-book	3	36*	21	41	8	28*	19	44
Science Direct e-journal	8	12	40*	41	9	6	54*	31
Knovel e-book	8	74*	6	11	9	72*	6	12
Blog post	45*	2	9	43	26*	0	6	68
Wikipedia article	36*	0	2	62	31*	0	5	64
Google e-book	2	79*	4	15	6	66*	5	23
JoVE e-journal	51	2	29*	18	41	4	27*	28
JSTOR article	27*	25	40	8	42*	18	34	6
Gale e-encyclopedia	4	54*	16	27	4	59*	16	22
NEA Annual Report	15	22*	33	30	15	27*	35	24
Chicago Sun Times article	85*	1	2	12	50*	3	8	39

* Authors' designated "correct answer"

Table 4. Survey Responses—Search Tools

	% Undergraduates				% Graduates			
	Catalog	Database	Search Engine	Website or Webpage	Catalog	Database	Search Engine	Website or Webpage
PubMed	6	50*	20	24	10	40*	22	28
Zappos	40*	1	6	52	34*	1	10	55
Google Scholar	0	3	90*	7	0	4	87*	9
Library Catalog	51*	31	15	3	37*	29	29	5
Summon	13	32	50*	5	16	17	61*	6
Database (Proquest)	8	61*	10	21	6	57*	17	19

* Authors' designated "correct answer"

way in a paper, poster or bibliography would lose points on the assignment. This can present real problems for not only students during their academic careers, but also have ramifications for them once they become professionals.

E-Books

E-books seemed to be the most problematic, according to the literature. Five different e-books were shown in the survey and comparing the responses for these yields interesting findings and additional questions. The five resources were:

- A Springer e-book
- A Google e-book
- An e-textbook in Knovel
- A Gale encyclopedia
- An annual report from the National Endowment for the Arts (NEA)

Figure 4 provides a breakdown of the respondents' answers.

The NEA report showed the widest distribution in responses and we concluded its label as an e-book was more tenuous than the other examples and excluded it from further analysis. The Google e-book was the most recognizable of the remaining four with 77 percent (N = 589) choosing "e-book" as their answer. This was followed by the Knovel e-book at 74 percent (N = 567), the Gale encyclopedia at 54 percent (N = 416), and the Springer e-book proved the least identifiable with only 35 percent (N = 264) identifying it as an e-book. The question is then raised as to why there are such discrepancies. This survey study cannot answer the question but it can provide some observations and hypotheses for further study. The least and most recognizable e-books, the Springer e-book (see figure 5) and Google e-book (see figure 6), are examined.

The Springer e-book is hosted on the same platform as the publisher's e-journals and the layout for each is almost

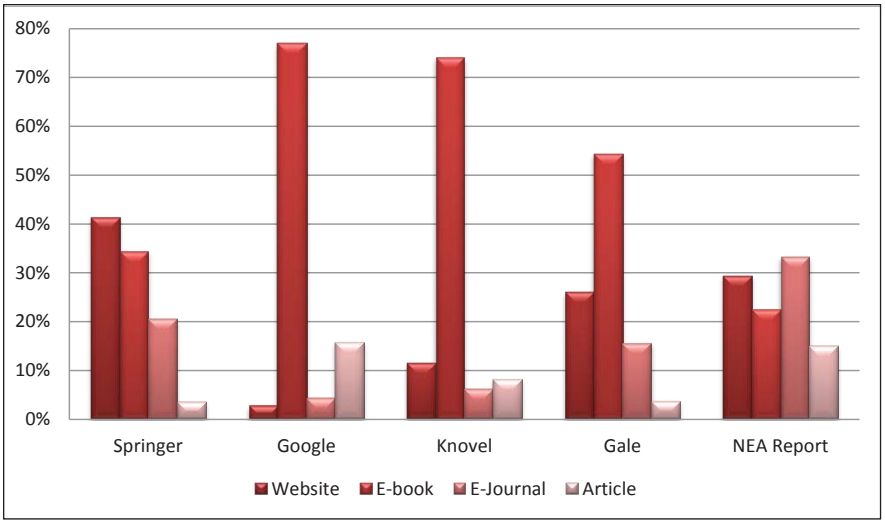


Figure 4. Respondents' Labels for E-Books

identical. The image of the book cover is a small icon, and the text on the page uses the word "book" in four places. In contrast, the Google e-book's page is dominated by a large image of the book cover. There is minimal text on this page and, within the text; the word "book" is listed six times. Based on these observations and the survey results, a hypothesis for further study could be: *Imagery and heavy labeling are key to an electronic resource being labeled correctly by users*. After the survey was conducted, Springer launched its new interface and the look changed substantially. Additional study would need to be conducted to see if these changes improve identification.

When a respondent answered the question "wrong," how did they identify the resource? In the case of the e-books, the most popular "wrong" answer tended to be the generic "website or webpage" choice. Forty-one percent of the responses for the Springer e-book chose this option, 12 percent for Knovel and 26 percent for Gale. The exception was the Google e-book where the next most common wrong answer was "article" (16 percent). It is presumed that many respondents were unsure of what to call the resource and therefore reverted to the most generic choice option. Regarding the response to the Google e-book, we cannot determine any rationale on how it could be identified as an article.

We also compared graduate student and undergraduate student perceptions. It seems plausible to hypothesize that graduate students would more accurately identify the information container, but this was not the case for e-books. In three of the four examples, a greater percentage of the undergraduate students correctly identified the resource than the graduate students (see figure 7). Seventy-nine percent of the undergraduate students identified the Google e-book correctly, compared to 66 percent of the graduate students. Only with the Gale encyclopedia did the graduate students identify more accurately than the undergraduates with 58 percent versus 54 percent. Firm correlations are not possible with this study because the undergraduate respondents far outnumber the graduate (N = 656 and N = 109, respectively).

E-Journals

The survey asked respondents to examine two e-journal homepages. One featured a more traditional set-up with the table of contents page of an academic journal on Elsevier's ScienceDirect platform. The other was the main page of the born-digital video journal, *JoVE* (*Journal of Visualized Experiments*). Figure 8 shows how respondents labeled these resources.

Responses were split between labeling the ScienceDirect e-journal correctly (N = 320) or a website (N = 301). The high number of website responses reinforces the idea that students are selecting this generic designation because they are unsure of which more specific choice to select. Additionally, the graduate students recognized the more traditional ScienceDirect journal as an e-journal more frequently than the undergraduate students (54 percent to 40 percent). *JoVE* was labeled an article most often (N = 378) with 49 percent of all students providing this response. Twenty-eight percent referred to *JoVE* as an e-journal. This could be attributed to the fact that, even though this page serves as what would traditionally be considered a table of contents page, it prominently features a video article.

Articles

The survey included four articles: a blog article, a Wikipedia article, an academic journal article from JSTOR, and a newspaper article. Although different in nature, they do lend to cross comparison as a student might readily choose any of them for a project or paper. This is especially true when they begin their research with Google or a discovery service search, as a mix of these containers will appear in their results. Figure 9 shows the distribution of responses.

By far, the newspaper article was the most recognizable with 80 percent (N = 610) calling it an article. The Wikipedia article was most often termed with the generic "website" label with 62 percent (N = 476) identifying it as such. The JSTOR article had the most variance across the labels, which we found surprising. However, more graduate students

recognized it as an article than undergraduates, at 42 percent and 27 percent respectively. Perhaps the high level of recognition for the newspaper article stems from the fact that many students have used online newspapers from an early age and thus have a good understanding about this information container. Both the blog and *Wikipedia* articles were often labeled as "website" by participants. This is not surprising considering that both are open, born digital resources.

Search Tools

The survey included the biomedical literature database, PubMed; the ProQuest database, Computer and Information Systems Abstracts; the Zappos shopping catalog; the Stanford University Library catalog; the Google Scholar search screen and the discover service, Summon's search screen; and the website MedlinePlus. All are analyzed with the exception of Medline Plus, which was not included because it was inadvertently assigned the answer choices for an individual resource as opposed to a search tool.

When cross comparing these tools as a group, many interesting trends are revealed (see figure 10). Most notably, Google Scholar was the most correctly identified search tool by a 29 percent margin. Additionally, Zappos was the most likely to be labeled with the generic designation of website or webpage, which is not unusual given the commercial nature of this resource. However, it was surprising that when offered the option to assign the label "catalog," only 39 percent (N = 301) of respondents chose this container.

Given the current library landscape, a comparison should be made between discovery services, the traditional library catalog, and Google. Discovery services are marketed as a more effective search tool because they mimic web search engine aesthetics and functionality. As previously noted, there was little ambiguity correctly labeling Google Scholar (90 percent or 686 choosing search engine). A slight majority labeled Summon correctly as a search engine (52 percent or 395) and the Stanford catalog as a catalog (49 percent or 376). However, there was a greater distribution suggesting some confusion with regards to these tools compared to Google Scholar. It is also interesting to note that the Stanford catalog and Summon had a nearly identical incidence of being labeled as a database.

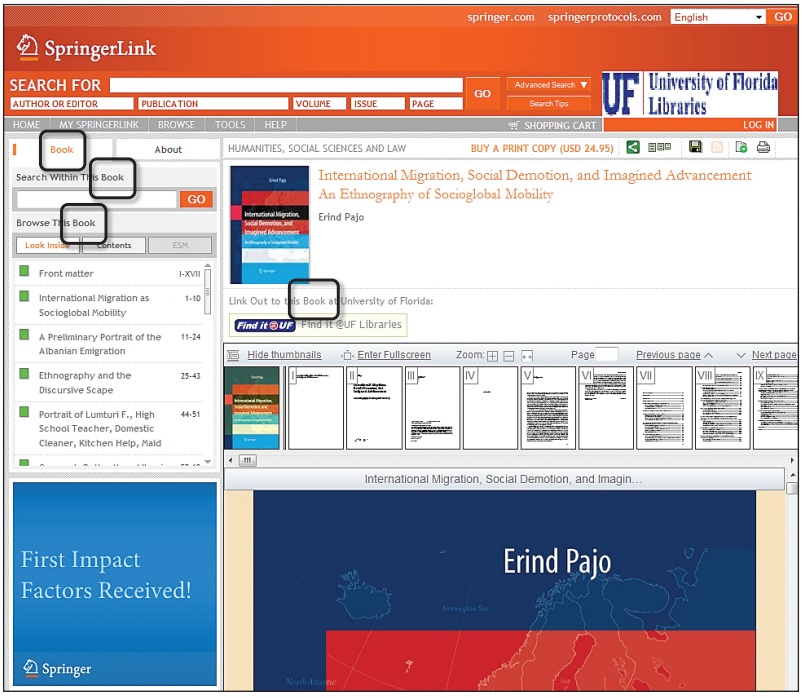


Figure 5. Springer E-book Screenshot

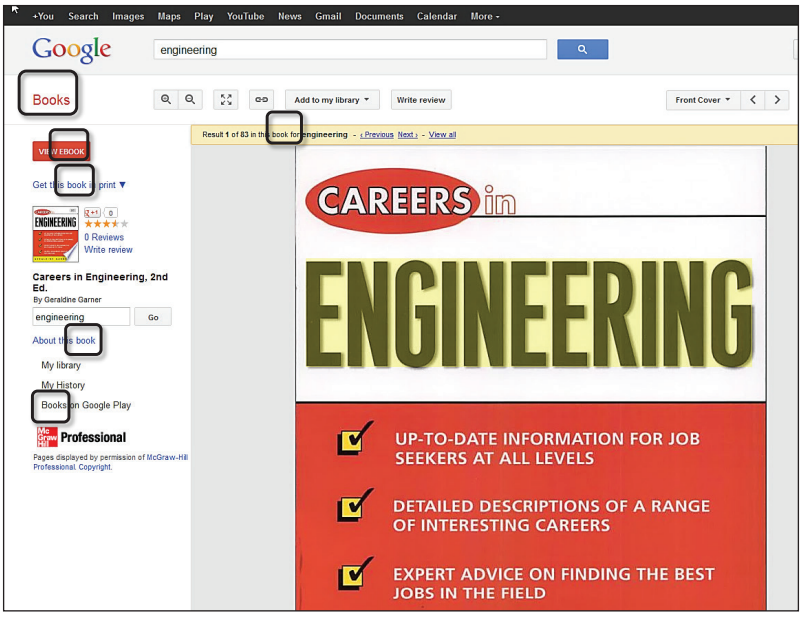


Figure 6. Google E-book Screenshot

PubMed and the ProQuest databases had equal distribution, with database being the most popular response, followed by website or webpage. However, there is a margin of difference in the correct response for these two databases, 49 percent (N = 375) for PubMed and 61 percent (N = 463)

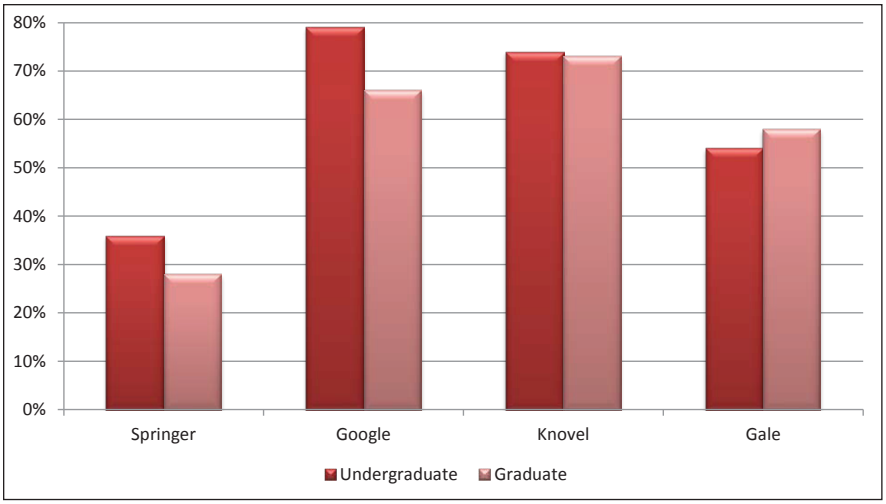


Figure 7. Percentage of Students Who Correctly Identified the E-Books

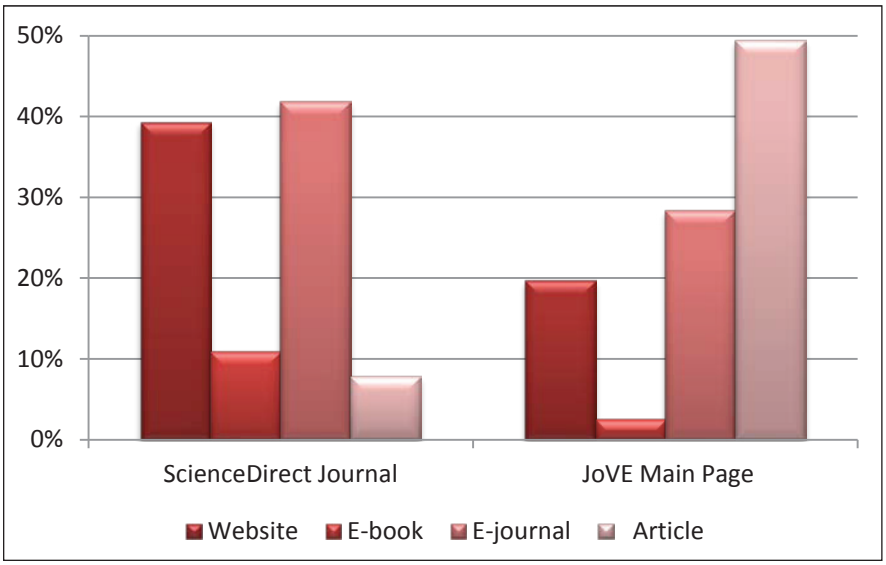


Figure 8. Respondents' Labels for E-Journal Front Pages

for ProQuest. We hypothesize that, similar to the e-book comparison, labeling played a role. The ProQuest database used the term "database" in four instances on the page and even included the term in the description. On the PubMed page, the term "database" only appeared when referring to other search tools.

Influence of Respondent Characteristics

The survey queried respondents about their age, higher education level, exposure to bibliographic instruction, and time devoted to school-related online searching. We hypothesized that one or more of these factors would influence the rate of correctly identifying these information containers. After analysis, comparison of the other characteristics against the results proved inconclusive with no significant trends emerging. For example, the theory that a graduate student would be more likely than an undergraduate to correctly identify an academic e-book.

We attempted to correlate a positive relationship between the amount of bibliographic instruction (see figure 3) and container identification, but no significant results emerged. Students with no BI identified the Springer e-book correctly 32 percent of the time, whereas others who had BI in at least three instances only made the correct identification 39 percent of the time. In the case of the Gale encyclopedia, there was a negative correlation. Those with no BI correctly identified at a rate of 60 percent compared to those with three only did so at 48 percent.

Recommendation for Practitioners and Publishers

Though this phenomenon is early in its study, some interventions can be implemented for reference and instructional services to address the issue. Previously, librarians devoted time to explaining the characteristics that differentiated various print resources. We argue that this component of instruction should be restored for electronic resources. This is not an easy task in the online environment, but librarians can help to facilitate users' identification through different visual cues such as the structure of an online document and what the front matter denotes. Simple, even elementary, rules may need to be emphasized such as *a book has chapters, a journal has articles*. We see the creation of such rules stemming from a partnership between both public services and technical services librarians. We, as a library community, can disseminate this information via traditional instruction sessions, face-to-face reference interactions, and virtually using online tools and tutorials (e.g., LibGuides or YouTube videos). It should be noted that this intervention is not something that should begin at the university level, but perhaps as early as elementary school. This is a shared opportunity for media specialists/school librarians and educators to impart this skillset during the formative years.

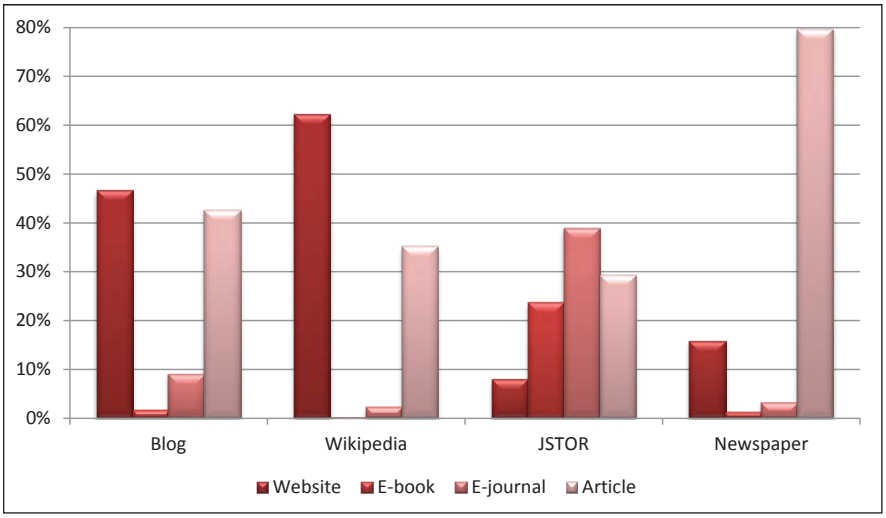


Figure 9. Respondents' Labels for Articles

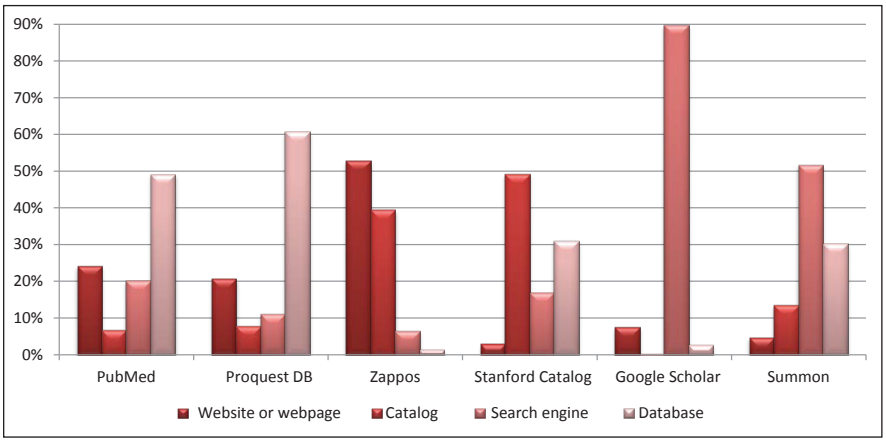


Figure 10. Respondents' Labels for Search Tools

Further recommendations that would involve broader conversation plus stakeholder buy-in and take more time to implement include:

- Marketing and branding of different containers to clearly differentiate between resource types
- Leveraging metadata to "tag" items with a container type and enabling this as a search parameter for discovery services and search engines

Producers of online information should look to strong labeling models if container recognition is important. Likewise, if container recognition is truly valued, educators and librarians should dedicate instruction time to teaching the concept and the role it plays in scholarly communication. Ideally, a future dialogue should occur between information producers, educators, and librarians (from both public services and technical services) to determine whether content and container are independent of one another. This conversation is already beginning to happen with the introduction of the ACRL Framework for Information Literacy for Higher Education (www.ala.org/acrl/standards/ilframework#authority) that suggests that information literate learners recognize that authoritative content can be presented both formally and informally. This can also lead to better mechanics of citation management tools which exist to assist users in the organization of digital information. We feel confident that labeling and branding play a role in recognition, but more study is needed to deduce the reasoning behind these choices.

Study Limitations and Future Research

As there were no prior studies that directly investigate this phenomenon, we approached this as a pilot that was bound to define limitations, raise more questions, and be a foundation for further research with more rigorous methodologies. Examples of such limitations include: not using a live online search environment, a one-dimensional data collection method, and too many disparate individual resources hindering cross comparisons. Future research design should utilize multi-modal data collection methods that feature banks of more directly comparable containers (e.g., bank of several academic journals from different platforms). To better determine what experiences influence accurate identification of information containers, collection of demographic data should be expanded to factors such as study major, country of origin, socioeconomic status, and early exposure to Internet technologies.

Conclusion

This preliminary study begins to provide insight into the ambiguity of information containers in the eyes of the information consumer, namely university students. This study begins to answer the questions: (1) Do university students have difficulty identifying different digital information

resources?, and (2) Do factors such as age, level of university experience, amount of bibliographic instruction, or amount of time spent searching influence a student's ability to identify digital information resources correctly?

The most basic answers to these are yes and no, respectively. The results suggest that often identification cannot be correctly ascertained, at least not to a degree that we find academically acceptable. This has implications for the online information seeking process and judging credibility. Students are instructed to use peer-reviewed journal articles over books or books over Wikipedia, presumably because of the higher authority of one, but what happens when the student cannot distinguish between them? Clearly, there is confusion surrounding the identification of online information containers. Further, we found no correlation between student levels, age, experience in online searching, and bibliographic instruction and their ability or inability to identify an electronic resource correctly. If the information container is still important then this knowledge can not only lead to improvements in the navigation and presentation of the digital resources, but also provide further insights for the librarians, educators and businesses that serve them.

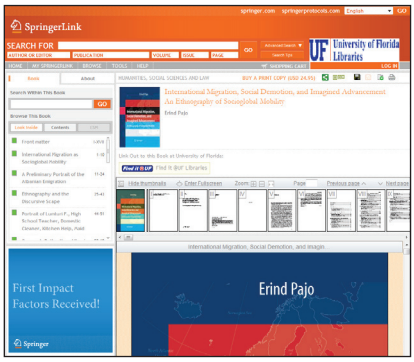
References

1. Kenneth Cukier, "Data, Data Everywhere," *Economist* 394, no. 8671 (2010): 3.
2. Alison Head, "Learning the Ropes: How Freshmen Conduct Course Research Once They Enter College," *Project Information Literacy*, 2013, accessed November 13, 2014, http://projectinfolit.org/images/pdfs/pil_2013_freshmenstudy_fullreport.pdf.
3. Stephen Abram and Judy Luther, "Born with the Chip," *Library Journal* 129, no. 8 (2004): 34.
4. Lynn Silipigni Connaway and Timothy J. Dickey, "The Digital Information Seeker: Findings from Selected OCLC, RIN and JISC User Behaviour Projects," 2010, accessed October 10, 2014, www.jisc.ac.uk/publications/reports/2010/digitalinformationseekers.aspx.
5. Allen W. McKiel, "2011 Global Student E-book Survey," ebrary, 2012, accessed June 26, 2013, http://site.ebrary.com/lib/surveys/docDetail.action?docID=80076107&ppg=1.
6. Rosie Croft and Shailoo Bedi, "eBooks for a Distributed Learning University: The Royal Roads University Case," *Journal of Library Administration* 41, no. 1–2 (2004): 130.
7. Michael Levine-Clark, "Electronic Book Usage: A Survey at the University of Denver," *portal: Libraries and the Academy* 6, no. 3 (2006): 289, http://muse.jhu.edu/journals/portal_libraries_and_the_academy/v006/6.3levine-clark.html.
8. John G. Palfrey and Urs Gasser, *Born Digital: Understanding the First Generation of Digital Natives* (New York: Basic Books, 2008), 161.
9. Wendy Allen Shelburne, "E-book Usage in an Academic Library: User Attitudes and Behaviors," *Library Collections, Acquisitions, & Technical Services* 33, no. 2–3 (2009): 61.
10. Primary Research Group, *The Survey of American College Students: Student Use of Library E-book Collections* (New York: Primary Research Group, 2009): 15.
11. Harnid R. Jamali, David Nicholas, and Ian Rowlands, "Scholarly E-books: The Views of 16,000 Academics: Results from the JISC National E-book Observatory," *Aslib Proceedings* 61, no. 1 (2009): 42.
12. Aline Soules, "E-books and User Assumptions," *Serials* 22, no. 3 (2009): S4.
13. Lucy Holman, "Millennial Students' Mental Models of Search: Implications for Academic Librarians and Database Developers," *Journal of Academic Librarianship* 37, no. 1 (2011): 20.
14. Ibid, 25.
15. Peter Williams and Ian Rowlands, "The Literature on Young People and Their Information Behaviour," British Library/JISC, 2007, accessed October 12, 2013, www.jisc.ac.uk/media/documents/programmes/reppres/ggworkpackageii.pdf, 20.
16. OED Online, Oxford University Press, 2014, accessed April 10, 2015, www.oed.com.
17. Tara T. Cataldo and Amy G. Buhler, "Positively Perplexing E-books: Digital Natives' Perceptions of Electronic Information Resources," in Charleston Conference Proceedings, 2012, http://dx.doi.org/10.5703/1288284315106.

Appendix. The E-Resources Survey

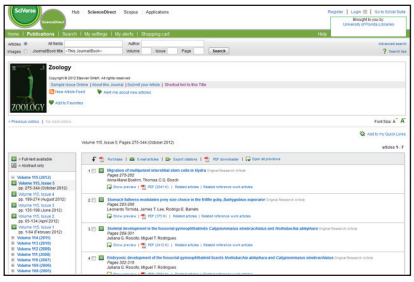
http://ufdc.ufl.edu/IR00004920/0001

1. What would you call this?



○ A website or webpage
○ An e-book
○ An e-journal
○ An article

2. What would you call this?

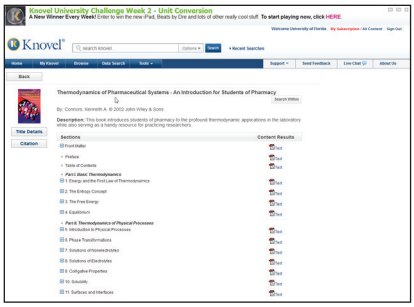


○ An article
○ A website or webpage
○ An e-book
○ An e-journal

3. What would you call this?

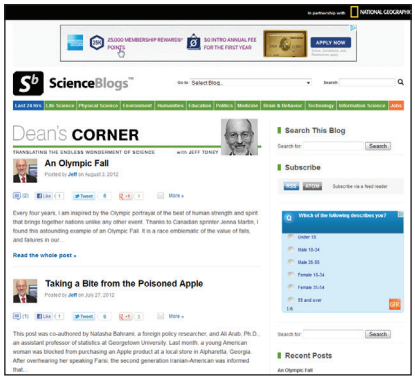
○ An e-journal
○ A website or webpage
○ An e-book
○ An article

4. What would you call this?



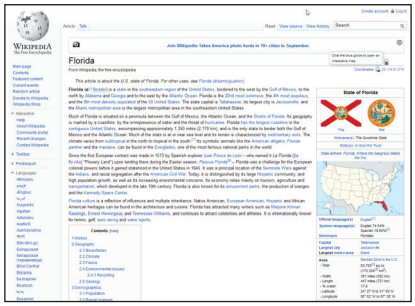
a. A website or webpage
b. An article
c. An e-book
d. An e-journal

5. What would you call this?



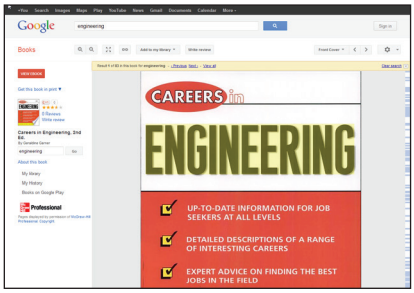
○ An e-journal
○ A website or webpage
○ An e-book
○ An article

6. What would you call this?



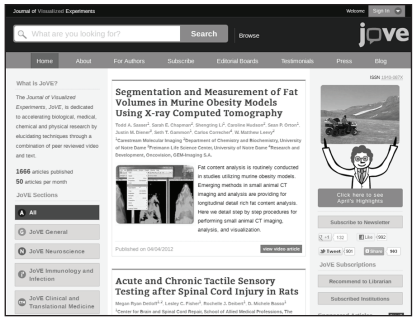
○ An e-book
○ A website or webpage
○ An e-journal
○ An article

7. What would you call this?



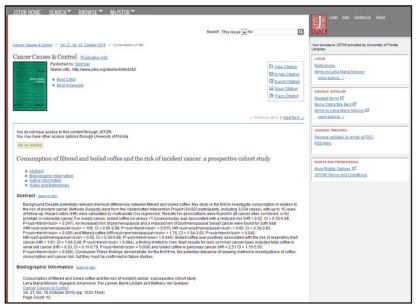
○ An article
○ An e-book
○ An e-journal
○ A website or webpage

8. What would you call this?



○ A website or webpage
○ An e-book
○ An e-journal
○ An article

9. What would you call this?

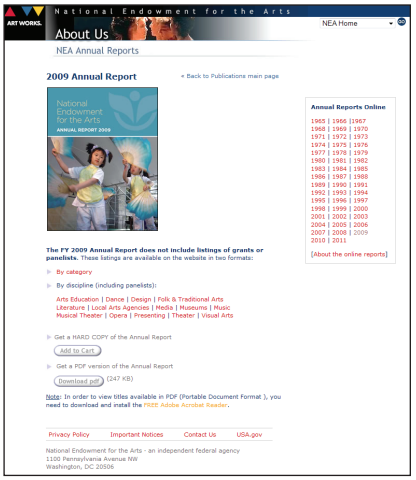


○ An article
○ An e-book
○ A website or webpage
○ An e-journal

10. What would you call this?

○ An e-journal
○ A website or webpage
○ An e-book
○ An article

11. What would you call this?

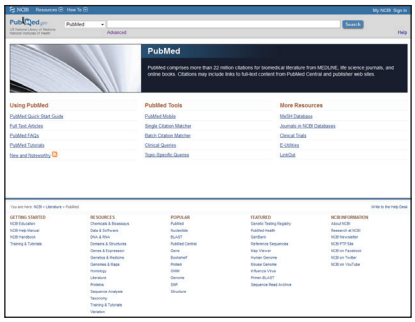


○ An article
○ An e-journal
○ A website or webpage
○ An e-book

12. What would you call this?

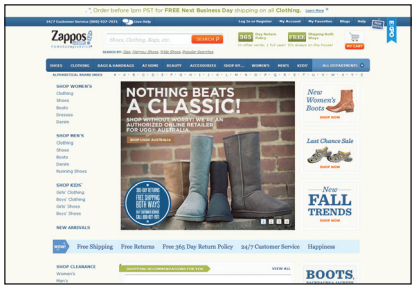
○ A website or webpage
○ An e-book
○ An e-journal
○ An article

13. What would you call this?



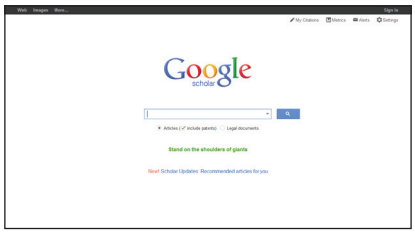
○ A website or webpage
○ A search engine
○ A database
○ A catalog

14. What would you call this?



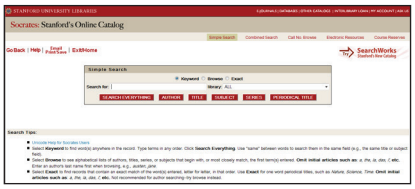
○ A website or webpage
○ A catalog
○ A search engine
○ A database

15. What would you call this?



○ A catalog
○ A website or webpage
○ A search engine
○ A database

16. What would you call this?

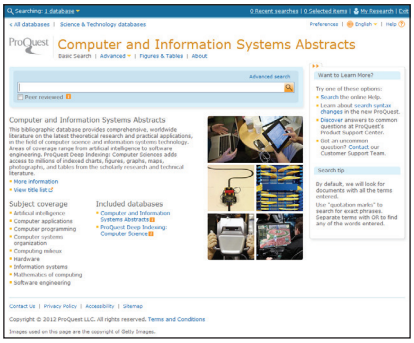


○ A database
○ A website or webpage
○ A search engine
○ A catalog

17. What would you call this?

○ A search engine
○ A website or webpage
○ A database
○ A catalog

18. What would you call this?



○ A website or webpage
○ A search engine
○ A database
○ A catalog

19. I am a _____
○ High School Student
○ Undergraduate Student
○ Graduate Student
○ Other _____

20. What year were you born?

21. Honestly, I spend about this amount of time a week searching online for class-related assignments
    - ○ 0–1 hours
    - ○ 2–5 hours
    - ○ 6–10 hours
    - ○ More than 10 hours

22. I have . . . (you can choose more than one response)
    - ○ Never had library instruction
    - ○ Had a librarian speak in at least one of my classes
    - ○ Gone to the library for an instruction session or a workshop
    - ○ Received library instruction online (i.e. online tutorial)
    - ○ No idea what these choices mean

Do You Count?

The Revitalization of a National Preservation Statistics Survey

Annie Peterson, Holly Robertson, and Nick Szydlowski

The American Library Association (ALA) Preservation Statistics Survey, a national survey on the preservation activities of cultural heritage institutions, was introduced in 2012 in response to the decision of the Association of Research Libraries' (ARL) decision to discontinue its long-running preservation statistics program. This paper presents the history of both surveys, discusses the rationale for collecting national data on these activities, and how the data has been used. The paper also includes key results, derived from analysis of both surveys. The surveys suggest that institutional support for preservation activities has declined significantly since its peak in the early 1990s. Preservation programs continue to focus on text-based materials and seem to employ fewer nonprofessional staff than they did five years earlier. The benefits and challenges of conducting a voluntary national survey are also discussed.

The systematic collection of data that documents and describes preservation activities locally and nationally facilitated the emergence of library preservation as a professional field of practice and supports preservation programs today as libraries and archives preserve collections in a digital era. In the early years of the field, institutions conducted condition surveys such as Gay Walker's influential publication "The Yale Survey: A Large-Scale Study of Book Deterioration in the Yale University Library" to prioritize local preservation activities and advocate for program-building resources.[1] National efforts like the Association of Research Libraries' (ARL) Preservation Statistics Survey established benchmarks to measure research libraries' commitment to preservation.[2] Walker's article and the pilot ARL survey were both published in 1985, coinciding with an increased awareness of the need to prevent further deterioration of cultural heritage collections and with gradual increases in institutional expenditures on preservation.

For years, preservation programs in academic libraries have tracked their administrative and production activities for internal reporting and relied on a combination of local and national data to guide preservation decisions and to advocate for their programs. When ARL discontinued its Preservation Statistics program in 2009, the preservation community was shocked despite years of complaints that the survey inadequately reflected preservation activities, especially efforts to preserve and reformat non-book collections. While many institutions continued to maintain local data, the lack of a national statistics program impacted program administrators' ability to advocate for preservation measures within their own organizations. National preservation statistics fostered support for preservation among library administrators by demonstrating the commitment of peer institutions to preservation and providing a venue where libraries could be recognized for the system-wide benefits of their preservation efforts. Additionally, preservation

Annie Peterson (epeters5@tulane.edu) is Preservation Librarian, Howard-Tilton Memorial Library, Tulane University. **Holly Robertson** (hollyrobertson21@gmail.com) is a Preservation Consultant. **Nick Szydlowski** (nick.szydlowski@bc.edu) is Digital Initiatives and Scholarly Communication Librarian at Boston College Law Library.

Manuscript submitted April 30, 2015; returned to authors for revision June 23, 2015; revised manuscript submitted August 22, 2015; accepted for publication September 23, 2015.

administrators had come to rely on the ARL Preservation Statistics data to identify trends and changes within the field; to communicate the value of preservation efforts to libraries, patrons, and the general public; and to benchmark the performance of their own departments.

In terminating its Preservation Statistics program, ARL noted that "the preservation needs ARL addresses should focus at the policy level and not [on] the operational issues that the current ARL Preservation Statistics include" and that even with proposed changes to reflect emerging trends, the program was "not linked to strategic priorities."[3] This assessment stands in marked contrast to the rhetoric with which ARL launched the program less than twenty-five years earlier: "The aggregate result of our efforts should serve to strengthen the research capacities of our libraries for the years ahead. This is our obligation to future generations of scholars."[4]

While the elimination of the ARL Preservation Statistics program suggested a declining prioritization of preservation among the directors of ARL libraries, the preservation community recognized an ongoing need to collect data on preservation activities. In 2012, the Preservation and Reformatting Section (PARS) of the American Library Association (ALA) launched a new national preservation statistics program. The new effort was different from ARL's program: while the previous survey was administered by ARL and managed by research library directors, the new survey was administered by volunteer preservation practitioners and managed by the preservation community. Additionally, the new survey was designed to reflect significant changes in the field, such as emerging digital preservation responsibilities and an increased focus on outreach activities, and to be flexible and prompt in reflecting other evolving preservation activities.

This paper details the history of the ARL Preservation Statistics program to provide context for the current ALA Preservation Statistics Survey, reviews the ALA survey design and methodologies, provides summary results from the fiscal year (FY) 2012 and 2013 surveys, and discusses the future of the revitalized effort. The successes and challenges of collecting and comparing statistics across many types of cultural heritage institutions (libraries, archives, historical societies, museums, and more)—especially by a self-selecting, community-based program, as opposed to a mandatory program such as data collection required by ARL or accrediting agencies—is also discussed.

History of the ARL Preservation Statistics, 1982–2010

The first mention of a nationally coordinated preservation statistics program can be found in the 1982 publication *Preservation Planning Program: A Self-Study Manual for Libraries*.[5] As part of an NEH-funded effort to design and test procedures to enable libraries to identify and address preservation problems, ARL tasked Duane E. Webster of the Office of Management Studies and newly hired Preservation Specialist Pamela Darling to test and develop the preservation planning process. The *Manual* cited that few libraries had developed a "systemic approach to measuring preservation efforts" that would provide "valuable data for evaluating levels of current activity, for making comparisons with earlier years and other libraries, and for projecting future needs."[6] Proposed categories of data about preservation activities to be documented included preservation screening (what most now describe as selection) and replacement, physical care and treatment, preservation staffing and salaries, contract expenditures, and budgets for replacement and repair/treatment.

On October 25, 1984, the ARL membership approved the *Guidelines for Minimum Preservation Efforts in ARL Libraries*, which defined "minimum" as the "desirable and presumably practical level of moderate strength to which all ARL libraries should aspire in the course of this decade."[7] The *Guidelines* also set five goals for every ARL library: (1) the development of a local program statement "of current and prospective preservation activities;" (2) national participation in a coordinated microfilming effort; (3) the defining of minimum environmental conditions for materials storage areas not with environmental thresholds but with "at least a system which has cooling, humidity control, and particulate filtration;" (4) establishing minimum budgetary efforts indicating that 10 percent of a library's materials budget—or 4 percent of its total expenditures—should allocated to "measurable preservation activities;" and (5) the regular compilation of "statistics that will document the annual preservation activity and present over a period of time a picture of the change in activity." At minimum, the compiled statistics were to include preservation staffing and expenditures; the proportion of preservation expenditures as related to the regular library budget; the number of items given conservation treatment, protective enclosures, library binding, and mass deacidification; and the number of reels of microfilm or sheets of microfiche both produced and held.

The *Pilot Preservation Statistics Survey 1984–1985* was mailed to member libraries in June 1985 requesting information in six areas of preservation: full conservation treatment, routine conservation treatment, protective enclosures, contract binding, mass deacidification, and preservation microfilming.[8] Ninety-seven of the 118 ARL member libraries responded to the 1984–85 pilot survey. A report, modeled on ARL's chief statistical publication, the *ARL Statistics*, was published in 1986. Data tables detailing each participating library's responses opened the 1984–85 report, followed by rank order tables (that included only ARL's university library

members) for each question on the survey. These rank order tables would not be tabulated in any future *Preservation Statistics Survey* report, though the practice continues to this day with the *ARL Statistics* and other surveys.[9]

The *ARL Preservation Statistics 1987–1988* survey, prepared by Jan Merrill-Oldham, then Head of the Preservation Department, University of Connecticut Libraries, and consultant to the ARL Committee on Preservation of Research Library Materials, incorporated many suggestions provided by member libraries who participated in the 1984–85 pilot survey.[10] Several questions were dropped and new categories were added to the *1987–1988 Questionnaire*, which opened with a new section asking for information on administration: does the library have a preservation administrator, how much of their time is dedicated to preservation activities and management, to whom do they report, and if they directly administer all, some, or none of the preservation-related units. Additionally, the "full" and "routine" conservation terminology employed in the pilot 1984–85 survey was replaced by "minor," "intermediate," and "major" conservation categories that were defined by treatments listed in the *Questionnaire*'s instructions. Additionally, questions about the conservation of non-book formats ("unbound sheets" and "non-paper items") were introduced, and information about the quantity of materials mass deacidified and preservation photocopied was requested. Respondents were asked to distinguish between contract and in-house quantities of items conserved, commercially bound, mass deacidified, preservation photocopied, and preservation microfilmed. Of the 119 member institutions, 109 libraries participated in the *ARL Preservation Statistics 1987–1988* survey.

Minimal changes were made to the survey questionnaire and its accompanying definitions in the following years; the questionnaire issued for the 1989–90 *ARL Preservation Statistics* survey continued completely unchanged until 1997.[11] Revisions to the 1996–97 *ARL Preservation Statistics* survey eliminated the distinction between "in-house" versus "contract" conservation treatment, commercial binding, and preservation reformatting categories distinctions (reasoning that the data was burdensome to segregate and that the expenditure of outsourcing would account for those activities), simplified the preservation microfilming questions (eliminating questions about the number of titles and frames filmed in favor of a single measure of accomplishment, "number of volumes filmed"), and added optional questions about digitization of bound volumes/pamphlets and single, unbound sheets (manuscripts, maps, photographs). From 1996–97 to the final *ARL Preservation Statistics* survey questionnaire issued for 2008–9, the questions were identical with only the modification of minor renumbering in the 2004–5 questionnaire. Even the question about the number of items digitized remained "optional" for the entire period.

Similarly, the *ARL Preservation Statistics* reports from 1987–88 to the final report issued for 2006–7 were nearly identical: the numbers changed, but the analysis remained the same. Each year, for two decades, the library community was assured that "the data offer persuasive evidence that preservation programs have become a standard unit in the majority of research libraries."[12]

With the challenge of collecting and preserving digital materials firmly in mind and many libraries joining mass digitization projects with Google, the Open Content Alliance, etc., ARL convened the Task Force on the Future of Preservation in ARL Libraries in 2005 to define critical challenges in preservation and propose an action agenda to meet those needs. The resulting report of the task force, the *Strategic Action Agenda for Preservation in Research Libraries* recommended several action items, including a goal to "define recommended guidelines for minimal levels of preservation activity in ARL libraries."[13] These guidelines would be "grounded in data from the ARL Preservation Statistics and data from other recent preservation surveys"—a nod to the 2002 Council on Library Information and Resources (CLIR) report *The State of Preservation Programs in American College and Research Libraries: Building a Common Understanding and Action Agenda* and the first *Heritage Health Index* (2005).[14] However, task force members acknowledged that the "current ARL Preservation Statistics are more and more inadequate as the nature of library collections changes rapidly and members grapple with rapidly diversifying, and often cooperative, approaches to preservation."[15] The Task Force recommended the recruitment of a Visiting Program Officer (VPO) to "consider broadly the qualitative and quantitative data needed to describe the full range of preservation activities supported and being developed by member libraries."[16]

In July 2007, ARL fulfilled an action item defined by the Task Force on the Future of Preservation, reaffirming its commitment to preservation by releasing the statement *Research Libraries' Enduring Responsibility for Preservation*, an update of its 2002 statement *The Responsibility of Research Libraries for Preservation*.[17] Just months later, in September 2007, Lars Meyer of Emory University was appointed VPO to assess the state of preservation programs in ARL Libraries.[18] His culminating report, *Safeguarding Collections at the Dawn of the 21st Century: Describing Roles and Measuring Contemporary Preservation Activities in ARL Libraries* was issued in May 2009 and provided recommendations to serve two purposes: "(1) to inform the development of a preservation self-study tool for libraries, and (2) to offer suggestions to the ARL Statistics and Measurement Program for enhancing the ARL preservation statistics."[19] Appendix B of the "Safeguarding" report offered specific recommendations to the ARL Statistics & Measurement Program to act as catalysts for further discussions

about the future of the ARL Preservation Statistics program. Meyer recommended:

- adding questions that would collect data about general preservation activities (such as environmental monitoring, staff and user education, and disaster recovery and response)
- the continued collection of commercial binding data with separate reporting for the use of contract services (conservation, protective enclosure construction, reformatting) provided by commercial binding vendors
- the continued collection of deacidification data with segregated reporting for general and special collections
- the addition of non-book and non-paper formats (specifically, sound recording and moving image materials) to conservation treatments, and the segregation of conservation treatment data into general and special collection categories
- a greater focus on the collection of data about the activities and expenditures of member libraries on reformatting, specifically the three categories of microfilming, preservation photocopying, and digitization

Meyer reported to the ARL Statistics and Assessment Committee and had presented *Describing and Measuring Contemporary Preservation Activities in ARL Libraries* to them in 2008.[20] The *Safeguarding Collections* report made no mention of discontinuing the ARL Preservation Statistics program. However, at their October 2009 meeting, the committee discussed the report and "agreed to forward a recommendation to the ARL Board that ARL no longer asks the community to complete the preservation statistics in their current format until a more defined ARL agenda for preservation is articulated."[21] The committee further noted:

> The proposed revisions [outlined in appendix B of the *Safeguarding* report] to the annual ARL Preservation Statistics are not linked to strategic priorities. ARL libraries need better ways to make an argument that research libraries need to invest in preservation and the current survey is not asking the right questions. We may have to address the issue of preservation needs with new methodologies. For example, we need to capture the important collaborations LC has with research libraries in preserving sound and motion picture items but these may be one of a kind relationships that do not get captured with annual statistics. The annual survey may not be the best mechanism for assessment of preservation activities as we do not capture important elements like LOCKSS and Portico; we also do not capture important relationships with OCLC, CRL, and other entities. Possible ways to get to the needed information may be commissioning a self-study protocol which is a parallel and probably more important recommendation surfacing from the larger report the committee was reviewing. The preservation needs ARL addresses should focus at the policy level and not the operational issues that the current ARL Preservation Statistics include.[22]

At their February 2010 meeting, the ARL Board agreed with the recommendation of the ARL Statistics and Assessment Committee to cease publication of the annual *ARL Preservation Statistics*. This decision was not publicly announced until the May 2010 issue of *ARL E-News for ARL Directors*: "The Board endorsed a recommendation from the Statistics and Assessment Committee to cease future collection of the Preservation Statistics (beginning with the 2009–10 cycle) while the Transforming Research Libraries Steering Committee folds the stewardship responsibilities of research libraries into its scope of inquiry concerning the future shape of collections."[23]

The ARL Preservation Statistics' website description of these events traces the discontinuation of the program directly to Meyers' 2009 report, despite the fact that the report did not recommend that ARL discontinue the program: "As a result of examining the recommendations in [the *Safeguarding Collections* report], the ARL Statistics and Assessment Committee and the ARL Board recommended that ARL does not collect annual data on this area as outlined in the annual survey but rather focus efforts on defining a vision for the strategic importance of research collections in the 21st century and the related strategic challenges regarding preservation in this environment."[24]

ALA's Revitalization of Preservation Statistics, 2012–Present

Though preservation and conservation professionals had long expressed frustration with how the ARL Preservation Statistics Survey counted and captured preservation activities, the quiet announcement of the end of the ARL Preservation Statistics program in May 2010 surprised the preservation community. Statistics collected with the 2008–9 questionnaire, gathered in November 2009, were never published, and the final 2007–8 *Preservation Statistics Survey* was not published until 2013 and remains unlisted on the ARL Preservation Statistics website.[25] Some groups, like the Committee on Institutional Cooperation (CIC), agreed to continue collecting preservation statistics voluntarily.[26] Others, like the E. Lingle Craig Preservation Lab, Indiana University

Bloomington Libraries, published statistics on their blog.[27]

PARS hosted a PARS Forum "The Future of ARL Preservation Statistics" at the 2011 ALA Midwinter Meeting. Past ARL President and University of Connecticut Library Director Brinley Franklin discussed the reasons for suspending the ARL Preservation Statistics program; ARL Senior Director of Statistics and Service Quality Programs Martha Kyrillidou provided an overview of the history of the ARL Preservation Statistics program and discussed task forces working to revise ARL's statistics collecting programs; and Gordon Fretwell, consultant to ARL's Statistics program, led a discussion about how to improve metrics for preservation that touched on the preservation community's long-running issues with the ARL Preservation program: no use of online survey tools, no way to capture qualitative activities like disaster planning and recovery as well as education and outreach, disagreement over the best way to capture conservation treatment, and concerns about documenting digital efforts and preservation of nonprint materials.[28]

Over the next year, PARS leaders worked to ascertain support among the preservation community for a revitalized Preservation Statistics program. Communication with ARL Statistics staff during that period clarified that ARL had no immediate plans to resume the program, and that PARS should proceed if the community indeed wanted to collect data about preservation activities. In June 2012, PARS issued a survey that was open to any library, archive, museum, or cultural heritage institution conducting preservation activities to assess the interest in and feasibility of revitalizing a preservation statistics program. In the survey announcement, the PARS Executive Board asserted, "We believe that most libraries, archives, museums, and other cultural heritage institutions still record preservation statistics for annual reporting purposes within their own institutions and consortiums. The loss of this shared data leaves the preservation community without a way to assess and analyze its collective current practices, staff and budget resources, and strategic direction."[29]

Two interest surveys were issued: one for ARL libraries that had been the focus of the former ARL Preservation Statistics program, and another "open to all" institutions. Fifty-one of the 126 ARL libraries responded, 90 percent of which had continued to collect annual preservation stats since the ARL program ended. The survey revealed that those institutions used the preservation data for internal program analysis and assessment, annual reports, budget requests, and grant writing. Respondents were asked to evaluate the most useful ARL categories of data (preservation program staffing; conservation treatment; and budget) and the least useful (preservation of flat paper, photographs, and audiovisual materials; microfilming; and mass deacidification). Categories of data that respondents believed should be added to future preservation statistics efforts included preservation of audiovisual materials, preservation of digital files and resources, and general preservation activities like environmental monitoring and disaster recovery. A majority of ARL library respondents (57.9 percent) agreed that future preservation statistics survey efforts should be open to any organization.

Seventy institutions responded to the "open to all" interest survey. Most (61 percent) were non-ARL academic libraries; 20 percent were archives; and 10 percent were public libraries. The survey polled whether respondents would participate in a survey that published the respondents' preservation data online (86 percent would) and 74 percent believed that they would have the "time and resources necessary to collect annual preservation statistics." Like ARL libraries, respondents used preservation statistics data for internal program analysis and assessment, annual reports, budget requests, and grant writing.

Survey Design and Method

Given the positive response to the interest surveys, the PARS Executive Committee tasked the design of a pilot FY2012 survey to a group of preservation professionals with specialties in conservation, preservation administration, audiovisual preservation, and digital preservation. With no budget, no formal home, and only volunteers, the revitalization of a Preservation Statistics Survey project for ALA was an audacious effort. The design of the pilot survey was based on the ARL Preservation Statistics Survey given the many ARL member libraries in the preservation community, evidence that those libraries had continued to collect statistics and could in theory easily participate in a renewed surveying effort, and that the categories and increments of measure developed by the ARL Preservation Statistics Survey had influenced how statistics were tracked beyond ARL institutions and across the preservation and conservation fields. Survey coordinators sought the advice of experts in the areas of audiovisual preservation, collections digitization, and digital preservation to identify quantitative questions that would capture preservation activities in those emerging areas. Coordinators utilized free platforms (Google Docs, Dropbox) to host documentation and shared resources (ALCTS permitted use of its SurveyMonkey account) to provide an online method of collecting data. Preservation professionals outside the survey team reviewed and sharpened the pilot survey before its official launch. The most notable outcome of the review period was the retention of ARL's levels for conservation treatment based on treatment time, of I (fewer than fifteen minutes), II (fifteen minutes–two hours), and III (more than two hours); anecdotal evidence had suggested that these broadly defined categories were not the best way

to track conservation treatment because they did not allow for highly granular analysis of time-intensive treatments over two hours. However, the ARL treatment time categories did allow for comparisons of conservation treatment statistics by the factors of both time and format, and many institutions had continued to collect statistics using these ARL treatment time categories, so the levels were retained to facilitate the responses of those target participants. Conversations such as the ones that occurred around the treatment levels are an important part of the design and ongoing process of the ALA Preservation Statistics program. It is a community-driven effort that responds to feedback, remains flexible and adaptable to change as it grows, and progresses along with the field.

The new ALA Preservation Statistics program expanded upon previous survey efforts not only by creating a new survey tool, but also by shifting the participating audience and making the data more open for input and reinterpretation. The survey tool was written so that it could be used by libraries, archives, museums, or any other cultural heritage organization conducting preservation activities. Comparisons across different types of institutions could add to the richness of the data and its utility, and demonstrate how approaches to collection care differ across various types of collecting institutions. Encouraging participation by different types of institutions could also minimize duplication of effort across professional organizations or groups that are all interested in collecting preservation statistics. Early on, the decision was made to make the data publicly available so that institutions or individuals could use it not only as it had been in the past (to analyze and define trends in the field), but also in novel ways enabled by new technology in data interpretation and visualization. Making the data open for use and interpretation facilitates its use by scholars both within and outside the preservation community. In support of this idea, the data, survey, and instructions and definitions document are available under a Creative Commons Attribution-ShareAlike License so that the information can be reused, as long as the original survey is credited and the new work carries the same license.[30]

The pilot survey, titled "A Survey of Preservation Activities in Cultural Heritage Institutions" but generally referred to as the Pilot FY2012 Preservation Statistics Survey, included six sections: administration and staffing, budget and expenditures, preservation activities, conservation treatment, reformatting and digitization, and digital preservation. An accompanying Instructions and Definitions document, also modeled after ARL's Preservation Statistics Instructions, provided guidance for respondents collecting data. Though many questions in the survey had not previously been asked of institutions on an annual basis, these inquiries reflected current practices of many cultural heritage institutions. For instance, the preservation activities section included questions about environmental monitoring, outreach, and disaster planning activities, all activities commonly administered by most preservation programs. The digital preservation section was also entirely new and crucial for reflecting the changing nature of preservation.

The Pilot FY2012 Survey was distributed via both preservation-specific and more general cultural heritage email lists, and was open from April 29, 2013 to June 25, 2013. Other survey efforts have directly contacted institutions' upper administration of institutions, but the Preservation Statistics Survey targeted the probable respondents—the preservation administrators, conservators, audiovisual specialists, and digital archivists who are actually doing the preservation work in cultural heritage institutions. The results of the ALA survey were distributed to the same discussion lists that had received the survey invitation, and were made available both as a data set and an interpretive report on the statistics project's website.[31] The data analysis and reporting is a volunteer effort coordinated through PARS.

The ALA survey was initiated in response to the discontinuation of the ARL survey, but the design of the ALA survey was also influenced by another preservation metric project: the 2004 *Heritage Health Index (HHI)*, developed by Heritage Preservation in partnership with the Institute of Museum and Library Services.[32] Emergency planning and environmental monitoring were not part of the ARL survey, and their inclusion in the ALA survey was, at least in part, inspired by the *HHI*. While the two surveys cover some common topics, it is worth noting the significant differences between *HHI*'s approach and the ALA survey's all-volunteer annual project. *HHI*'s 2004 survey received over a million dollars in funding from the Getty Foundation and other private groups, and consultants in the areas of survey design and development, data analysis, and media relations were retained for the project. While the 2004 *HHI* produced a significant media impact and launched the IMLS Connecting to Collections initiative to raise public awareness of the importance of caring for cultural heritage collections, it does not address many of the goals shared by the ARL and ALA surveys, particularly the tracking of production data to identify national trends in preservation activity in a timely manner.[33]

The ALA Preservation Statistics FY2012 and FY2013 Surveys

Survey Redesign

Sixty-two institutions completed the Pilot FY2012 Survey, and many lessons in survey design, community outreach, and statistical analysis were learned over the course of the effort. The Pilot FY2012 Survey was a long questionnaire

(fifty-seven questions), with many data points that proved difficult for institutions with distributed preservation activities to collect. In time, the survey coordinators learned that some questions may not be necessary to ask annually, and that other questions needed further clarification in the instructions and definitions document. Changes to the FY2013 Preservation Statistics questionnaire were intended to improve the online survey tool and experience and to adjust terminology to evolving standards and practices. The narrow definition of digital preservation repositories was also removed from the FY2013 Survey, and institutions were encouraged to respond to questions about digital asset management whether their repository was defined as a "preservation repository" or not. The question about preservation activities performed on the digital repository was retained to continue tracking preservation activities regardless of the definition of "preservation repository." An Excel worksheet was also released in FY2013 for institutions without an in-house data tracking system to use as a year-round method for gathering data. The changes were intended to make the survey easier to use and to better meet the participants' needs, but the statistics program also aims to track trends, so consistency in data points is integral to the effort.

The survey was once again distributed to email discussion lists, targeting both preservation specific and more general library audiences. The FY2013 Survey was open only to libraries, as the Pilot FY2012 Survey showed that the questionnaire was working well for libraries but not for museums and archives, with the goal of honing the tool for libraries and then later partnering with museum and archives professional associations to fashion a questionnaire that could work better across multiple types of institutions. This method of distribution yields a self-selecting group each year, so the results cannot be used to extrapolate and make generalizations about the entire preservation community. The results of the FY2013 Survey confirmed trends observed in the FY2012 Survey, and are detailed in the FY2013 Preservation Statistics Survey report.[34] Between FY2012 and 2013, the statistics program solidified its relationship with ALA. The project is officially under the guidance of ALCTS, which is the broader association for PARS. Feedback from the Pilot FY2012 Survey indicated that the lack of sponsorship by a professional organization negatively affected the response rate. Preservation administrators indicated that because there was no organization officially sanctioning the statistics, there was less of an obligation felt both in preservation departments and more broadly among library administration to complete the survey. The connection with ALA also gave the statistics program an official web presence, an upgrade from the Google and Dropbox services on which the program had previously relied. The FY2013 Survey was released in January 2014, much earlier in the year than FY2012, based on feedback that it was inconvenient for many institutions to provide statistics near the turn of the academic fiscal year (July), and that this timing had prevented some institutions from participating. The survey remained open until the end of April 2014.

Despite ALA's endorsement and changes to the survey tool, the FY2013 Survey received only forty responses. The small number of responses precluded repeating the analysis methods used in the Pilot FY2012 Survey report, which focused on the institutions for which a full data set, including ARL survey responses, were available. Given the low response rate to the FY2013 Survey, only twenty-one institutional responses could be compared to the historical ARL data. As a result, a new method of analysis was developed that allows for reasonable year-to-year comparisons of the available data. For the thirty-nine quantitative questions that the two surveys share, the total value reported for each question—the sum of the values reported by each respondent—was compared to the total library expenditures of all reporting libraries. This method was intended to control for fluctuations in the size and capabilities of the group of responding libraries. Values were adjusted for inflation as necessary. This method of expressing the data allowed for meaningful comparisons despite the dramatic differences between the two surveys, and established a sustainable path for future reports.

Given the low response rate to the FY2013 Preservation Statistics Survey, the program coordinators sought additional feedback and ideas on how to shorten the FY2014 Survey to increase the participation rate. Questions about administrative details, including staffing, expenditures, and preservation activities such as environmental monitoring, outreach, and disaster response, were removed from the survey based on feedback that the data was burdensome for some institutions to calculate and required information from budget offices and staff beyond the preservation unit. To strike a balance between data that is easy for institutions to gather and data that is useful to the preservation community, the annual ALA Preservation Statistics Survey will focus on production data such as number of items conserved, digitized, and added to digital preservation repositories, for the foreseeable future. Given the widely acknowledged usefulness of administrative data, especially in peer comparison and program advocacy, a supplementary survey will be issued less frequently with questions about preservation program administration. As the program moves forward, it will remain important to stay flexible and open to change, while still maintaining the consistency needed to identify changes over time.

The FY2014 Preservation Statistics Survey was released January 20, 2015, and remained open until March 20. An ultimatum was set for the FY14 Survey: if seventy-five institutions did not respond to the survey, the annual survey would not be conducted for FY2015. The management of

this project is a significant investment of volunteer labor: creating the survey and the accompanying Instructions and Definitions document, distributing and publicizing the survey, then analyzing the data and writing a report. If only a very small number of cultural heritage institutions with preservation operations responded to the survey, that annual investment of time on both the survey coordinators and the survey respondents could not be justified. Eighty-seven institutions responded to the FY2014 Preservation Statistics Survey, assuring that an FY2015 Survey will be released in January 2016.

Survey Results

Of the sixty-two institutions that completed the Pilot FY2012 Preservation Statistics Survey, forty-three were academic libraries, six were archives, five were special libraries (a category which includes federal libraries), five were museums, and two were public libraries. The survey consisted of fifty-seven questions, many of which included multiple parts, so the survey results from the pilot survey include 338 separate fields for each respondent.

The number of institutions completing the FY2013 Survey fell to forty, thirty-five of which were academic libraries. Public, state, special, independent research, and national libraries were each represented by a single response. The FY2013 Survey included sixty-eight questions resulting in 356 fields of data.

Analysis of the FY2012 and 2013 data proceeded along two parallel paths. First, many questions were selected where the survey yielded meaningful results on its own. Because the respondents represent a small and self-selecting sample of libraries, archives, and museums, results cannot be confidently extrapolated beyond the group of institutions surveyed. However, many questions, particularly those related to staffing and expenditures, give real insight into the nature of preservation activities at the institutions surveyed. Second, the results from the Pilot FY2012 Survey were compared with results from previous ARL Preservation Statistics surveys. For the Pilot FY2012 Survey and the resulting report, this meant focusing on the thirty-four ARL libraries that responded to that pilot effort. Examining the changes those libraries reported between the 2007–8 ARL Preservation Statistics Survey and the Pilot FY2012 Survey revealed some significant trends, though again results cannot be extrapolated from this small, self-selected group to draw conclusions about the activities of all ARL libraries.

Due to the unpredictable nature of survey responses, methods that rely on the same group of libraries responding to the survey yearly could not be used past the pilot year of the survey. Instead, a new method was developed for the FY2013 Survey report, which used the total library expenditures (TLE) of the group of responding libraries, adjusted for inflation, to control for the size and number of the libraries in the data set. This method was chosen for many reasons: (1) it allows data from all responding libraries, not only ARL libraries, to be used in calculations; (2) it corresponds with one of the original goals of the ARL Preservation Statistics Survey by placing preservation expenditures and activities in the context of total library expenditures; (3) while there are still concerns about the small sample size involved, this method allows for the identification of long-term trends in preservation activity with a greater level of certainty by expanding the pool of survey respondents that can be included in long-term comparisons.[35]

Because the number of respondents is small and self-selecting, the results from many questions were inconclusive. Some activities, such as spending on equipment and digitization of bound volumes seemed to fluctuate wildly annually, suggesting that these results might primarily reflect grants or projects at a small number of institutions. However, in other areas, consistent multiyear trends could be identified, suggesting that the survey's results in those areas can be trusted. The results of the surveys are presented in great detail in *A Survey of Preservation Activities in Cultural Heritage Institutions: FY2012 Report*, which includes detailed comparisons between the final 2007–2008 ARL survey and the pilot survey, and *Preservation Statistics: A Survey for U.S. Libraries: FY2013 Report*, which introduces the methods used to control for total library expenditures and contains comparisons stretching back to the 1999–2000 ARL Survey.

Expenditures

Respondents reported preservation expenditures of $59.6 million in FY2012 and $41.4 million in FY2013, with the Library of Congress accounting for more than half of the reported expenditures in each year. Expenditures at other institutions ranged from $800 to over $1.9 million, reflecting the diversity of institutions that responded to the survey. The median preservation expenditure was $213,700 in FY2012 and $358,000 in FY2013; this change is an example of the year-to-year variation that occurs due to changes in the group of libraries who choose to respond, and which is accounted for by controlling for the overall expenditures of the responding libraries. As a percentage of total library expenditure, preservation expenditures were 2.75 percent in FY2012 and 2.73 percent in FY2013.

Salaries and wages accounted for 50 percent of total expenditures in FY2012 and 55 percent in FY2013, while contract expenditures absorbed 33 percent in FY2012 and 38 percent in FY2013. These results were consistent with previous ARL surveys in identifying staffing and contract expenditures as the largest preservation expenses. In FY2012, equipment made up 12 percent of preservation

expenditures and preservation supplies accounted for 5 percent, while both categories fell to 3 percent in FY2013.

Conservation Treatment and Digitization by Item Format

The survey highlighted the extent to which conservation programs at the surveyed institutions are focused on books and paper documents. Combining the data from the FY2012 and FY2013 surveys, Books and Bound Volumes and Unbound Sheets made up 89.8 percent of items that received conservation treatment, and Photographic Collections accounted for 9.5 percent. No other item format accounted for more than two tenths of a percent of the total number of items treated in either year. For some of the nonpaper formats, such as Archaeological Collections and Natural Science Specimens, it might be fair to conclude that these formats are not widely held among respondents to the survey. For formats that are widely held, most notably Recorded Sound Collections and Moving Image Collections, preservation efforts were focused on reformatting those materials rather than performing conservation treatment.

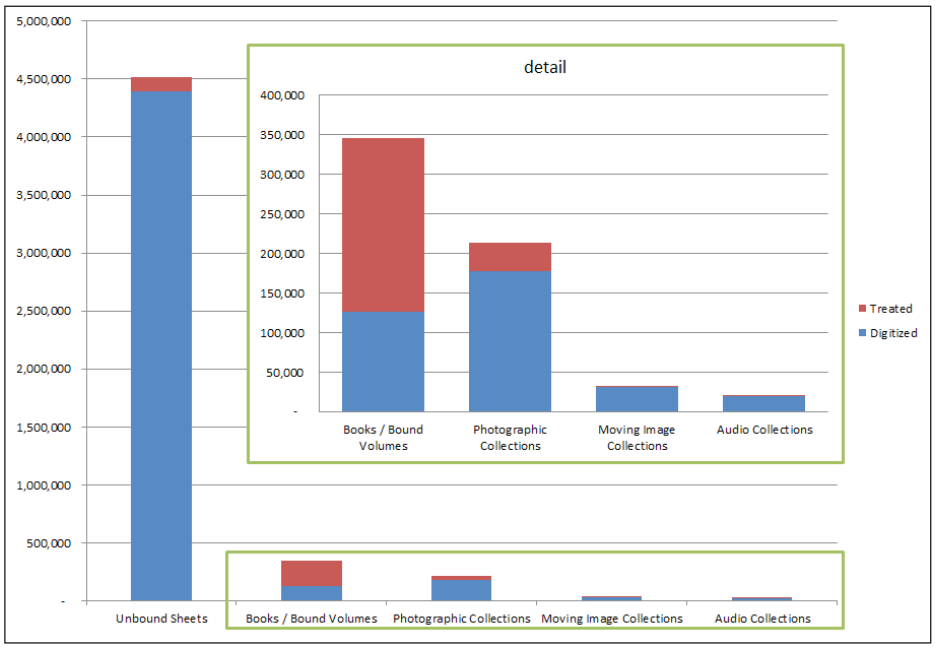


Figure 1. Total Items Receiving Conservation Treatment on Digitization at Responding Institutions, FY2012 and FY2013

Efforts to preserve recorded sound and moving image collections were reflected more strongly in the responses to questions related to digitization, but even here, paper-based materials dominated survey responses. Out of over 4.7 million items that respondents reported having digitized for preservation in FY2012 and FY2013, moving image collections made up 0.7 percent of the total number of items, and recorded sound collections constituted 0.4 percent. Books and bound volumes were 2.6 percent of the total, while unbound paper-based materials accounted for 95.5 percent of the total number of items digitized (unbound sheets: 91.8 percent; photographic collections: 3.7 percent).[36] Unbound sheets includes manuscripts, documents, maps, architectural drawings, and posters. Analysis in the FY2014 Preservation Statistics Survey report focuses on the current dynamic in digitization: the high rate of digitization of unbound sheets (which requires off-the-shelf infrastructure and minimal staff expertise and has a high return on investment) against the low rate of the digitization and reformatting of audiovisual materials, especially in light of the rapid deterioration and risk of format obsolescence characteristic of most audiovisual formats.[37] Figure 1 presents the total number of items of each format treated and digitized at responding institutions in FY2012 and FY2013.

These types of comparisons are problematic, however, because the number of items treated or digitized is a convenient but potentially misleading unit of measure. Especially when considered across formats, the number of items does not necessarily reflect the resources required to treat or digitize those items, nor does it necessarily correspond to the amount of intellectual content being preserved in the process. However, with these caveats in mind, the survey data gives a rough sense of the focus of the preservation programs that responded to the survey, indicating a greater focus on paper-based formats, with efforts to preserve moving image and recorded sound collections more focused on digitization than conservation treatment. It is also worth noting that books and bound volumes was the only format category where more items received conservation treatment than were digitized.

Comparisons to ARL Surveys, Controlling for Total Library Expenditures

The Preservation Statistics Survey retained many questions that had been a part of the ARL survey, allowing the results from the new survey to be compared directly to the ARL results and adjusting for the size and number of libraries responding by dividing totaled responses by the total library expenditures of the respondents. The questions on the two

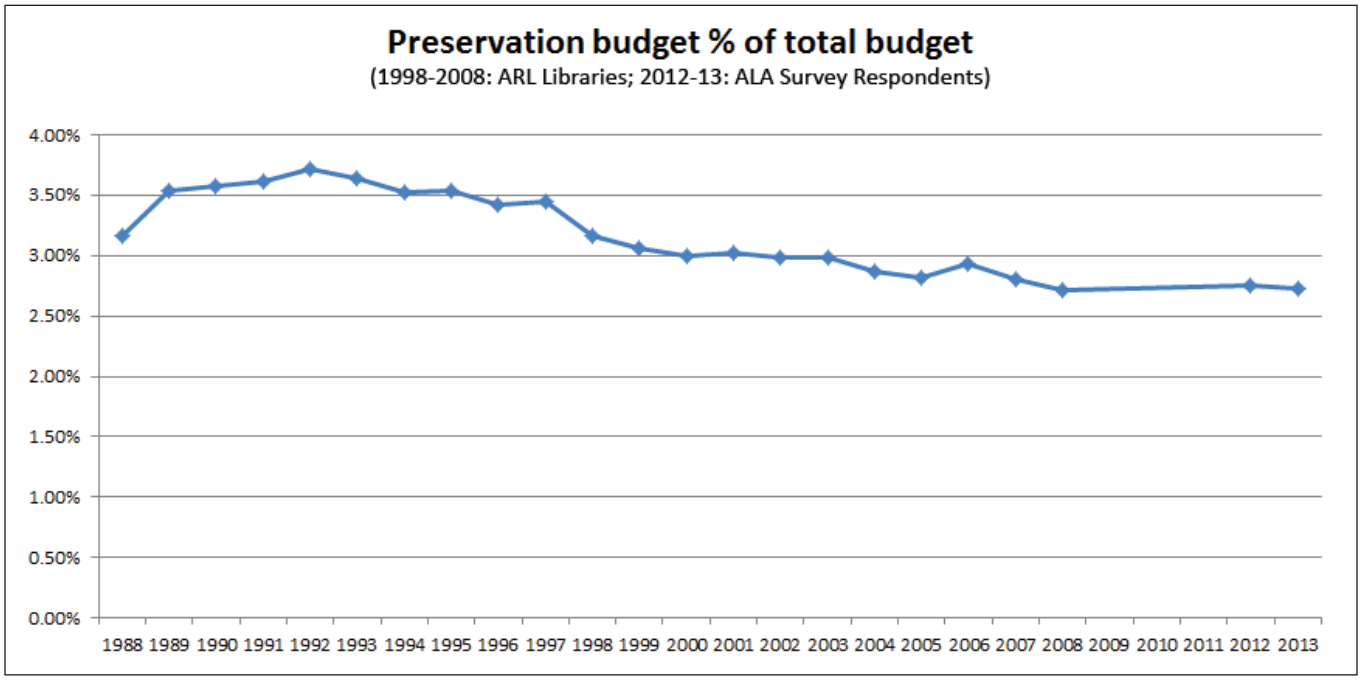


Figure 2. Preservation as a Percentage of Total Library Budget

surveys were not always identical, so in areas where the data from the ALA survey were more granular, calculations were performed to provide totals that corresponded to the categories of the ARL survey. The results discussed in this section were calculated by controlling for the total library expenditure of all responding libraries, as described above.

Many of the results of this comparison were dramatic, if not entirely unexpected. Conservation treatment of bound volumes or pamphlets was down 76 percent from 2008 to 2013. While some part of this effect may be due to differences in the sample pool, the comparison of ARL institutions that responded to both surveys, published in the Pilot FY2012 Survey report, revealed the same trend. This decrease was driven by a reduction in the rate of level I treatments (those which require fewer than 15 minutes of staff time), which appeared to decline by 86 percent from 2008 to 2013. More complex repairs also appeared to decline, but at less dramatic rates.

Spending on contract commercial binding dropped 45 percent since 2008 and 66 percent since 2003, continuing a steady downward trend that corresponds to a widely observed trend. Total contract expenditures were up 26 percent since 2008 though because of a 152 percent increase in spending on "other" types of contract work, including digitization, digital preservation storage, offsite storage, and disaster recovery services. More granular data on these categories is available in the newer survey, but not in the ARL data.

In many preservation departments, level I treatments and the management of the commercial binding workflow have traditionally been performed by nonprofessional staff. The reduction in those activities seems to coincide with a reduction in nonprofessional staffing for preservation. As a percentage of total library expenditures, spending on nonprofessional salaries dropped by 36 percent from 2008 to 2013, while expenditures on professional staffing rose 14 percent. These trends were also confirmed by similar results in the comparison featuring ARL institutions who responded to both surveys.

The reasons for the dramatic decrease in non-professional staffing and a corresponding decrease in output in areas such as level I conservation treatments are no doubt complex, and cannot be completely inferred from the survey data. The impact of these staffing changes on preservation programs might be a fruitful area for future inquiry. These results suggest a profound shift in the staffing of preservation programs and the type of work performed in those programs.

Total Preservation Expenditures

As detailed above, in 1984 the ARL membership approved minimum guidelines for preservation efforts by ARL member libraries. One of the guidelines was that each member library should spend at least 10 percent of its materials budget or 4 percent of its total expenditures on preservation activities.[38] According to the data available, ARL libraries have never spent more than 3.72 percent of their total budgets on preservation, but they did exceed 10 percent of

their materials budgets every year from the beginning of the ARL survey in 1988 until 1999, with a peak of 13.64 percent of reported materials budgets spent on preservation in 1992. By 2008, preservation expenditures were just 8.22 percent of materials budgets. Preservation spending in ARL libraries declined steadily from its peak in 1992 until the survey was terminated in 2008. Compared to total expenditures, preservation spending declined by 27 percent during that period; compared to materials budgets, it declined 40 percent.

In 2012 and 2013, the new survey indicated that preservation expenditures had held steady as a percentage of total library expenditures, at 2.75 percent in 2012 and 2.73 percent in 2013. While it is encouraging to see that preservation expenditures did not fall dramatically during a period of financial stress for most libraries, those expenditures remain well below the minimum levels that ARL libraries attempted to establish in 1984.

Conclusion

The termination of the former ARL Preservation Statistics program demonstrates how a mission-critical function such as preservation can fall in prestige among institutional leaders, even to the point where it is no longer seen as a strategic priority. Community-based projects, like the one described in this article, can serve as a necessary corrective, preventing the essential work of stewardship from becoming invisible and serving notice as funding and support gradually erode.

Reviewing the history of the renewed ALA Preservation Statistics effort has been beneficial. The process involved revitalizing a discontinued survey program, assuring that community interest in data collection still existed, then updating the survey—both the initial pilot survey to render it in tune with the digital times and the ongoing annual assessment to make sure the survey remains a powerful, easy-to-use tool. This process, coupled with the post-survey release responsibilities for distribution, publicity, and technical support, have allowed the survey coordinators to truly understand the challenges of managing a successful national statistics program. Obstacles to achieving an adequate response rate include the ground-up nature of this program's outreach, targeting preservation practitioners rather than institutional directors, the challenge to some respondents to work beyond their units to collect data, and general survey fatigue among potential respondents. Feedback from the Pilot FY12 Preservation Statistics Survey indicated that sponsorship by an official organization was important to the project, and securing association with ALA helped solidify the survey's infrastructure. However, because of significant organizational differences in structure between ALA and ARL, it is not feasible for this survey to be mandatory, as the ARL survey was. As a result, the 100 percent response rate that the ARL survey typically achieved is not a realistic goal for this effort.

General survey fatigue seems to affect the response rate for the statistics survey. Online survey tools are simple to use and links are easily distributed to email lists, which is highly beneficial to the statistics project, but also means that institutions are asked to complete an increasing number of surveys. Feedback indicates that potential participants are simply tired of filling out online surveys.

Because preservation activities are often embedded in workflows that span multiple departments within a single organization, some questions on the survey have proved difficult for participants to answer. While this obstacle reflects the nature of the activities in question, it also reflects the challenge of establishing a national survey without the explicit endorsement of institutional directors. Preservation administrators who participate in the survey cannot require other departments to provide information about their activities. Information about expenditures, digitization efforts, and digital preservation management has proven particularly difficult to gather.

An advantage of this survey's community-based approach has been the ability to remain flexible and react nimbly to these challenges. The survey was altered significantly between FY2013 and FY2014 to reduce the time commitment required of participants and to address the difficulty of collecting information on expenditures. New outreach tactics were introduced during FY2014, including a social media presence and targeted individual emails to preservation administrators.[39] New analysis methods were implemented to accommodate variations in the pool of respondents.

The payoff from a national statistics program is great, and the need to articulate the value of cultural heritage preservation to administrators and the public has never been greater.[40] The ALA Statistics Survey has provided data to document trends in the field that were previously only anecdotally supported. Preservation professionals can cite their own observations about trends in preservation departments, but an increased emphasis on data-driven decision making in institutions has made many administrators openly skeptical of anecdotal arguments. Reliable data about preservation activities is necessary to establish benchmarks and accurately understand changes and trends. Statistics can also point out trends that are not widely discussed, such as the decreasing reliance of preservation programs on non-professional staff. Data about preservation activities is necessary both within the field and when communicating about preservation to other librarians, archivists, and the public.

While the value of the data is great, the cost of collecting the required data is also significant. ALA's Preservation Statistics program continues to evolve in search of

a sustainable balance between the value of the data and the resources available to collect, analyze, and promote it. The success of the FY2014 survey in surpassing its goal of seventy-five respondents points to a promising future for this type of community-based statistics program.

References

1. Gay Walker, Jane Greenfield, John Fox, and Jeffrey Simonoff, "The Yale Survey: A Large-Scale Study of Book Deterioration in the Yale University Library," *College & Research Libraries* 46 (1985): 111–32, accessed April 8, 2015, www.ideals.illinois.edu/bitstream/handle/2142/40786/crl_46_02_111_opt.pdf?sequence=2.
2. Association of Research Libraries, *Pilot Preservation Statistics Survey 1984–1985*, compiled by Jeffrey Heynen and Margaret McConnell (Washington, DC: 1986), accessed March 1, 2014, www.libqual.org/documents/admin/2012/ARL_Stats/1984-85pres.pdf.
3. Minutes of the ARL Statistics and Assessment Committee at the ARL Fall Membership Meeting 2009, Washington, DC, October 14, 2009, accessed March 1, 2015, www.libqual.org/documents/admin/agenda_apr_2010.pdf.
4. ARL Committee on Preservation of Research Library Materials, *Guidelines for Minimum Preservation Efforts in ARL Libraries* (Washington, DC: 1984) in *Preservation Guidelines for ARL Libraries, SPEC Kit 137* (Washington, DC: Association of Research Libraries, Office of Management Studies, 1987), accessed online March 1, 2015, https://books.google.com/books?id=qQbhAAAAMAAJ&lpg.
5. Pamela W. Darling and Duane W. Webster, *Preservation Program Planning Study: An Assisted Self-Study Manual for Libraries* (Washington, DC: Association of Research Libraries, 1982).
6. Ibid, 82.
7. ARL Committee on Preservation of Research Library Materials, *Guidelines for Minimum Preservation Efforts in ARL Libraries* (Washington, DC: 1984) in *Preservation Guidelines for ARL Libraries, SPEC Kit 137* (Washington, DC: Association of Research Libraries, Office of Management Studies, 1987), accessed online March 1, 2015, https://books.google.com/books?id=qQbhAAAAMAAJ&lpg.
8. Association of Research Libraries, *Pilot Preservation Statistics Survey 1984–1985*.
9. Association of Research Libraries, *The ARL Statistics Series* (Washington, DC: 1969–2012), accessed March 1, 2015, www.arlstatistics.org/about/Series/stats_series.
10. Association of Research Libraries, *ARL Preservation Statistics 1987–1988*, compiled by Jutta Scott-Reed and Celeste Feather (Washington, DC: 1989), accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1987-88pres.pdf.
11. Some changes include the replacement of the "minor," "intermediate" and major conservation treatment categories introduced in the *1987/1988 Questionnaire* with the level I, II, and III conservation treatment categories defined by time in the *1989/1990 Questionnaire*. Level I treatments require fifteen minutes or less to complete; level II treatments require more than fifteen minutes but less than two hours to complete, and level III treatments require more than two hours to complete.
12. *ARL Preservation Statistics 1987–1988*, compiled by Jutta Scott-Reed and Celeste Feather (Washington, DC: Association of Research Libraries, 1989): 17, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1987-88pres.pdf; *ARL Preservation Statistics 1988–1989: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled by Jutta Reed-Scott and Nicola Daval (Washington, DC: Association of Research Libraries, 1990): 25, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1988-89pres.pdf; *ARL Preservation Statistics 1989–1990: A Compilation of Statistics from the Members of the Association for Research Libraries*, compiled by Jutta Reed-Scott and Nicola Daval (Washington, DC: Association of Research Libraries, 1991): 25, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1989-90pres.pdf; *ARL Preservation Statistics 1990–1991: A Compilation of Statistics from the Members of the Association of Research Libraries* (Washington, DC: Association of Research Libraries, 1992): 23, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1990-91pres.pdf; *ARL Preservation Statistics 1991–1992: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled by Jutta Scott-Reed, Nicola Daval, and Patricia Brennan (Washington, DC: Association of Research Libraries, 1993): 33, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1991-92pres.pdf; *ARL Preservation Statistics 1992–93: A Compilation of the Statistics from the Members of the Association of Research Libraries*, compiled by Jutta Reed-Scott, Nicola Daval, and Patricia Brennan (Washington, DC: Association of Research Libraries, 1994): 37, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1992-93pres.pdf; *ARL Preservation Statistics 1993–94: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled by Jutta Reed-Scott, Martha Kyrillidou, and Kaylyn E. Hipps (Washington, DC: Association of Research Libraries, 1995): 37, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1993-94pres.pdf; *ARL Preservation Statistics 1994–95: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled by Jutta Reed-Scott, Martha Kyrillidou, [and] Kathleen P. Fleming (Washington, DC: Association of Research Libraries, 1996): 37, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1994-95

pres.pdf; *ARL Preservation Statistics 1995–96: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Martha Kyrillidou, Ken Rodriguez, [and] Joanna Newton (Washington, DC: Association of Research Libraries, 1997): 37, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1995-96 pres.pdf; *ARL Preservation Statistics 1996–97: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Martha Kyrillidou, Michael O'Connor, [and] Julia C. Blixrud (Washington, DC: Association of Research Libraries, 1998): 7, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1996-97 pres.pdf; *ARL Preservation Statistics 1997–98: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Julia C. Blixrud, Kaylyn Hipps, Martha Kyrillidou, [and] Michael O'Connor (Washington, DC: Association of Research Libraries, [1999?]): 6, accessed March 1, 2015, www.libqual .org/documents/admin/2012/ARL_Stats/1997-98pres.pdf; *ARL Preservation Statistics 1998–99: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Mark Young and Martha Kyrillidou (Washington, DC: Association of Research Libraries, 2002): 5, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1998-99 pres.pdf; *ARL Preservation Statistics 1999-2000: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Mark Young, Martha Kyrillidiou, [and] Julia Blixrud (Washington, DC: Association of Research Libraries, 2002): 5, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/1999-20 00pres.pdf; *ARL Preservation Statistics 2000-01: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Mark Young, Martha Kyrilllidou, [and] Julia Blixrud (Washington, DC: Association of Research Libraries, 2002): 5, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/2000-01 pres.pdf; *ARL Preservation Statistics 2001-02: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Mark Young [and] Martha Kyrillidou (Washington, DC: Association of Research Libraries, 2003): 5, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/2001-02 pres.pdf; *ARL Preservation Statistics 2002-03: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Mark Young [and] Martha Kyrillidou (Washington, DC: Association of Research Libraries, 2004): 6, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/2002-03 pres.pdf; *ARL Preservation Statistics 2003-2004*: *A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Mark Young [and] Martha Kyrillidou (Washington, DC: Association of Research Libraries, 2005): 6, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/2003-04 pres.pdf; *ARL Preservation Statistics 2004-05: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Mark Young [and] Martha Kyrillidou (Washington, DC: Association of Research Libraries, 2007): 6, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/2004-05 pres.pdf; *ARL Preservation Statistics 2005–06: A Compilation of Statistics from the Members of the Association of Research Libraries*, compiled and edited by Mark Young [and] Martha Kyrillidou (Washington, DC: Association of Research Libraries, 2007): 6, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/2005-06 pres.pdf; *ARL Preservation Statistics 2006–2007*, compiled and edited by Martha Kyrillidou [and] Les Bland (Washington, DC: Association of Research Libraries, 2009): 7, accessed March 1, 2015, www.libqual.org/documents/admin/2012/ARL_Stats/2006-07pres.pdf.

13. The Future of Preservation in ARL Libraries Workshop Planning Task Force, "Strategic Action Agenda for Preservation in Research Libraries: Report and Recommendations to the Scholarly Communication Steering Committee, the Public Policies Affecting Research Libraries Steering Committee, and the Research, Teaching and Learning Steering Committee." *Information Services and Use* (IOS Press) 27 (2007): 65–78, accessed March 1, 2015, iospress.metapress.com/content/172031734 2l23810/fulltext.pdf.
14. Anne R. Kenney, Deirdre C. Stam, *The State of Preservation Programs in American College and Research Libraries: Building a Common Understanding and Action Agenda* (Washington, DC: Council on Library and Information Resources, 2002), accessed March 1, 2015, www.clir.org/pubs/reports/pub111/pub111.pdf; Heritage Preservation and the Institute of Museum and Library Services, *A Public Trust at Risk: The Heritage Health Index Report on the State of America's Collections* (Washington, DC: Heritage Preservation, 2005), accessed March 1, 2015, www.heritage preservation.org/HHI/HHIfull.pdf.
15. The Future of Preservation in ARL Libraries Workshop Planning Task Force, 69.
16. Ibid., 77.
17. ARL Board of Directors, *Research Libraries' Enduring Responsibility for Preservation* (Washington, DC: Association of Research Libraries, 2007), accessed March 1, 2015, www .arl.org/storage/documents/publications/preservation-respon sibility-24july07.pdf; ARL Board of Directors and ARL Preservation of Research Library Materials Committee, *The Responsibility of Research Libraries for Preservation* (Washington, DC: Association of Research Libraries, 2002), accessed March 1, 2015, www.arl.org/storage/documents/pub lications/responsibility-of-research-libraries-for-preservation -2002.pdf.

18. Association of Research Libraries, "Emory's Lars Meyer Named ARL Visiting Program Officer," ARL press release, September 11, 2007, accessed March 1, 2015, www.arl.org/storage/documents/publications/responsibility-of-research-libraries-for-preservation-2002.pdf.
19. Lars Meyer, *Safeguarding Collections at the Dawn of the 21st Century: Describing Roles & Measuring Contemporary Preservation Activities in ARL Libraries*, Washington, DC: Association of Research Libraries, 2009, accessed March 1, 2015, www.arl.org/storage/documents/publications/safeguarding-collections.pdf.
20. Lars Meyer, "Describing and Measuring Contemporary Preservation Activities in ARL Libraries," Presentation at the ARL Membership Fall Meeting 2008, Washington, DC, October 15, 2008, accessed March 1, 2015, www.libqual.org/documents/admin/agenda_oct_2008.pdf.
21. Minutes of the ARL Statistics and Assessment Committee at the ARL Fall Membership Meeting 2009, Washington, DC, October 14, 2009, accessed March 1, 2015, www.libqual.org/documents/admin/agenda_apr_2010.pdf.
22. Minutes of the ARL Statistics and Assessment Committee at the ARL Fall Membership Meeting 2009, Attachment A; Association of Research Libraries, "Emory's Lars Meyer Named ARL Visiting Program Officer."
23. "ARL Board Convenes, Takes Action" *E-News for ARL Directors*, May 2010, accessed March 1, 2015, old.arl.org/news/enews/enews-may2010.shtml#3.
24. "Preservation," ARL Statistics, accessed March 1, 2015, www.arlstatistics.org/about/series/preservation.
25. Association of Research Libraries, *ARL Preservation Statistics Questionnaire, 2008–2009* (Washington, DC: 2009), accessed March 1, 2015, www.libqual.org/documents/admin/09pinstruct.pdf; Association of Research Libraries, *ARL Preservation Statistics 2007–2008*, ed. Martha Kyrillidou and Les Bland (Washington, DC: 2013), accessed March 1, 2015, www.arl.org/storage/documents/publications/preservation-statistics-2007-08.pdf.
26. Sue Kellerman, "ARL Suspends Preservation Statistics . . . For Now Anyway," *Focus on Assessment* (Penn State University Libraries, Library Metrics and Assessment Council, February 7, 2011), accessed March 1, 2015, www.libraries.psu.edu/psul/groups/assessmentcouncil/focus_on_assessment/feb0711.html.
27. Doug Sanders, "Craig Lab Statistical Report—1st Quarter 2011," *E. Lingle Craig Preservation Lab Blog*, Indiana University Libraries, April 12, 2011, accessed March 1, 2015, blogs.libraries.iub.edu/craiglab/2011/04/12/craig-lab-statistical-report-1st-quarter-2011.
28. Tara Kennedy, "Notes from ALA, the Statistics Discussion," *Preservation and Conservation Administration News*, February 22, 2011, accessed March 1, 2015, prescan.wordpress.com/2011/02/22/notes-from-ala-the-statistics-discussion.
29. Holly Robertson, PARS Member-at-Large, e-mail to ConsDistList, June 11, 2012, accessed March 1, 2015, http://cool.conservation-us.org/byform/mailing-lists/cdl/2012/0660.html.
30. Creative Commons, "Attribution-ShareAlike 4.0 International," accessed April 8, 2015, https://creativecommons.org/licenses/by-sa/4.0/legalcode.
31. Annie Peterson, Holly Robertson, and Nick Szydlowski, *A Survey of Preservation Activities in Cultural Heritage Institutions FY2012 Report*, accessed April 8, 2015, www.ala.org/alcts/sites/ala.org.alcts/files/content/resources/preserv/presstats/FY2012/FY2012-Preservation-Statistics-report.pdf.
32. Heritage Preservation and the Institute of Museum and Library Services, *A Public Trust at Risk: The Heritage Health Index Report on the State of America's Collections* (Washington, DC: Heritage Preservation, 2005), accessed March 1, 2015, www.heritagepreservation.org/HHI/HHIfull.pdf.
33. The Heritage Health Index was featured in the *New York Times*, on National Public Radio, and beyond: www.heritagepreservation.org/HHI/news.html.
34. Annie Peterson, Holly Robertson, and Nick Szydlowski, *Preservation Statistics: A Survey for U.S. Libraries: FY2013 Report*, Preservation and Reformatting Section, Association of Library Collections and Technical Services and American Library Association, September 2, 2014, accessed April 8, 2015, www.ala.org/alcts/sites/ala.org.alcts/files/content/resources/preserv/presstats/FY2013PreservationStatistics.pdf.
35. ARL Committee on Preservation of Research Library Materials, *Guidelines for Minimum Preservation Efforts in ARL Libraries*.
36. 851,044 additional items of unspecified formats were reported as having been digitized on the FY2013 survey. For this particular analysis, those items have been excluded.
37. Annie Peterson, Holly Robertson, and Nick Szydlowski, *The FY2014 Preservation Statistics Survey Report*, Preservation and Reformatting Section, Association of Library Collections and Technical Services and American Library Association, August 10, 2015, accessed August 15, 2015, www.ala.org/alcts/sites/ala.org.alcts/files/content/resources/preserv/presstats/FY2014/FY2014PreservationStatistics.pdf.
38. ARL Committee on Preservation of Research Library Materials, *Guidelines for Minimum Preservation Efforts in ARL Libraries.*
39. Preservation Statistics, Facebook Community Page, accessed April 8, 2015, www.facebook.com/preservationstatistics.
40. Heritage Preservation, "Impact of the Heritage Health Index 2004," accessed March 26, 2015, www.heritagepreservation.org/HHI/doc/6impact.pdf; Liu, Yan Qan and Zweizig, Douglas L., "The Use of National Public Library Statistics by Public Library Directors," *Library Quarterly* 71, no. 4 (2001): 467–97.

Transforming Technical Services

Evolving Functions in Large Research University Libraries

Jeehyun Yun Davis

Technical services functions in academic libraries have evolved in response to fiscal pressures and advances in technology. In this study the author investigates how technical services in large research university libraries are adapting to support the changing roles of academic libraries. The author conducted hour-long phone interviews in early 2014 with the representatives from nineteen out of the twenty-five university libraries in the Technical Services Directors Large Research Libraries Interest Group. This paper presents the results and discussion based on the interview data: use of the name, Technical Services; new and emerging functions of technical services; organizational structure of technical services units; change drivers that are affecting technical services now, and those that will soon; and challenges in managing technical services. Five models of a technical services organizational structure were developed from participants' organizational charts and interview data. This research also highlights the skills needed among technical services personnel.

Academic libraries continually confront challenges that are primarily driven by technological innovation and budget constraints. Library administrators try to find ways to meet these challenges by transforming and streamlining workflows and prioritizing objectives through their strategic planning processes and other mechanisms. Academic libraries' strategic priorities subsequently impact every other area within the libraries, and technical services is no exception. The labor intensive processes prevalent in technical services have been negatively impacted by ongoing reductions in staffing and decreasing budgets. This phenomenon has resulted in various challenges and opportunities in technical services. There are great opportunities for current technical services operations to improve inefficient and antiquated workflows, to renew and develop proper technology skills among staff, and to transform the structure of technical services to effectively deploy staff to manage the transformation of its functions through reorganization.

The major shift from print to electronic resources (e-resources), including born-digital resources, in library collections over the last decade has impacted every area in academic libraries. While anecdotal evidence is shared with regard to the ways in which certain specific functions or areas in technical services are changing, it is much more of a challenge to grasp the big picture of the various changes transpiring in technical services.

Jeehyun Yun Davis (j.davis@austin.utexas.edu) is Head, Cataloging and Metadata Services, University of Texas Libraries, Austin, Texas

Manuscript submitted May 20, 2015; returned to author for revision July 23, 2015; revised manuscript submitted August 21, 2015; accepted for publication September 23, 2015.

The motivation for this study started from a simple question: "How is technical services changing?" Although the question itself seems naïvely simple, it led to some fundamental questions about the changing nature of technical services and helped formulate the research questions of this study:

1. What is the name of the functional area that is traditionally known as technical services?
2. What are the current and emerging functions of technical services?
3. What are the organizational structures of technical services? How often do libraries reorganize their technical services and why?
4. What are the factors that drive technical services to change?

This study revealed the complex nature of current technical services, including its functions and the dynamics of technical services in the context of other units both within and outside libraries. The author analyzed the organizational structure of nineteen large research university libraries based on the Technical Services Directors of Large Research Libraries Interest Group[1] and conducted one-hour phone interviews with representatives of these libraries to explore how technical services is changing. The research findings will provide empirical data to library administrators and technical services managers as they undertake the transformation of their technical services operations. They will also benefit by examining different models of technical services organizational structure and different names that identify technical services as they explore various ways to reposition technical services in their libraries. The findings on diversified current and emerging technical services functions will help them reexamine their own technical services functions and explore different strategies to integrate technical services functions to support libraries' new and emerging services. Additionally, technical services librarians and staff will benefit by gaining a better understanding of the types of skills that are needed to support the changing roles of technical services. This paper is divided into four sections: literature review, description of the research method, presentation of results and discussion, and a conclusion.

Literature Review

The functions and organizational structure of technical services have been frequently discussed in the literature. It is broadly agreed that technical services usually includes acquisitions and cataloging functions. In *Technical Services in Libraries*, published in 1954, Tauber observed, "Although the technical services division varies in different libraries, the general basic pattern is to combine the acquisition department with the cataloging department."[2] Some authors still support this basic pattern of technical services in the more recent literature. Evans, Intner, and Weihs in 2002 defined acquisitions and cataloging as the two traditional areas within technical services. In their view, the acquisitions section is responsible for procurement of library materials and cataloging for organizing and preparing library materials.[3]

However, it is worth noting that the composition of technical services has always varied, particularly among university libraries, regardless of period. Tauber admitted,

> It has been pointed out that so far as university libraries are concerned, there is no standard pattern in the grouping of the various departments into functional units. Such factors as tradition, personnel, physical quarters, financial support, types and distribution of collections, and the personalities, qualifications, and attitudes of administrative officers and staff have accounted for variations in organization. Most large libraries today, however, approximate a functional organization, with separate departments for acquisitions, cataloging, binding, photography, reference, circulation, and other units.[4]

Gorman made a similar observation: "Although there is broad agreement that the term *technical services* embraces acquisitions (defined narrowly) and bibliographic control (cataloging and classification), the definition of the rest of technical services varies from one period to another and from one library to another."[5] With this observation, Gorman offered quite a broad definition of technical services. He defined technical services as "all the tasks carried on in a library that are concerned with the processing of library materials to make them accessible to the users of the library."[6] Gorman's definition of technical services encompasses not only those functions related to acquisitions and cataloging but also those related to circulation and stack maintenance, preservation, and collection development.

Adding more complexity to the discussion of what constitutes technical services, there has been much talk about where technical services functions should reside in the library. Intner and Johnson made the following observation:

> When interpreted broadly, the technical services department is likely to be large and busy, handling many different types of tasks. To the extent that functions eligible to be administered under technical services are placed under reference/public services or are separate departments, technical services will be smaller and more focused. No one method of organization is best, nor will a good

> method remain good for all the time. It behooves administrators to be open-minded about adopting different organizational styles to improve their bibliographical outputs and the working environment.[7]

There are various factors that influence where technical services resides and how it is structured; for example, organizational culture, campus environment, campus and library leaders' vision for the library, etc. A recent article by Laskowski and Maddox Abbott observed these factors through examining the evolution of technical services at the University of Illinois at Urbana-Champaign Library over the last few decades.[8] The article focused on the Library's reorganization activities between technical services and public services that began in 1978 in an attempt to decentralize cataloging functions and to embed cataloging activities in subject areas of public services. It offered a comprehensive historical context in the course of changes that were made in both technical and public services in the Library over the years, and underscored the importance of acknowledging and cultivating expertise in both services.

Efforts to redesign and reorganize technical services divisions have actively occurred in recent years and are well documented in the literature.[9] Reviewing the organizational structure and reorganizing technical services have become common practices in libraries in recent years. Workflow efficiency, staffing shortages, and staff skills have become the dominant topics among technical services professionals in response to fiscal and technological challenges. Much effort has been made to tackle these issues and different approaches have been explored to manage technical services effectively through reorganization activities. One notable phenomenon is implementing a team-based work environment in technical services to increase communication and interaction among staff. Some technical services units in academic libraries have created a team environment that has flattened the traditionally hierarchical technical services structure.[10] In her article in 2011, Zhu concluded that "in the past 10 years, more and more technical services in academic libraries started to use teams and more than half of the survey respondents regarded the impacts of the use of teams on their technical services as at least moderately positive. It is very likely that more technical services in academic libraries will use teams in the future."[11]

Demand-Driven Acquisition (DDA) may have a significant impact on the functions of acquisitions and collection development. The DDA model, also known as Patron-Driven Acquisition, has become a popular topic at library conferences and in the professional literature. Due to the issues and challenges regarding library storage space for physical books, academic libraries started investigating the circulation and usage rate of their physical collections, weeding them to send unused or infrequently used items to remote storage facilities. After conducting a circulation analysis in her library, Cramer argued that "money and labor spent on the non-circulating books were completely wasted. For the books that circulated once, the cost-per-use is the full price of the book, plus processing costs, shelf space costs, etc."[12] According to Cramer, DDA can solve these problems and stop libraries from purchasing library resources that may never be used. Dzwig claimed that the traditional collection development model is too costly for modern libraries. New collection development models involving DDA can resolve the issues derived from the traditional model and better incorporate users' needs in the decision making process. She argued, "A modern library must be better adjusted to the users' needs. It's time for a shift toward demand driven library services."[13] It is obvious that many librarians approve of the DDA model and see it as "a fundamental mental shift" in how we select and purchase library collections.[14] However, some have expressed their concerns with this approach. Walters cautioned us: "PDA's emphasis on efficient information delivery may come at the expense of broader institutional goals."[15] Regardless of the pros and cons of the DDA model in the areas of acquisitions and collection development, the model has great potential to change the traditional ways of how libraries select and acquire library resources.

Some notable developments at the national and international levels have greatly affected academic libraries and sped up changes in technical services. In 2009, the International Federation of Library Associations and Institutions (IFLA) issued the *Statement of International Cataloguing Principles*, a new set of international cataloging principles "that are applicable to online library catalogues and beyond."[16] The purpose of this statement is to replace and broaden "the scope of the Paris Principles from just textual works to all types of materials and from just the choice and form of entry to all aspects of bibliographic and authority data used in library catalogues."[17] The Cataloguing Principles serve to "increase the international sharing of bibliographic and authority data and guide cataloguing rule makers in their efforts to develop an international cataloguing code."[18] This effort to provide universal and timely cataloging principles coincides with the development of Resource Description and Access (RDA), an international cataloging content standard, to "provide a comprehensive set of guidelines and instructions on resource description and access covering all types of content and media."[19] With these efforts to develop international cataloging principles and a content standard for bibliographic data, the Library of Congress (LC), the Program for Cooperative Cataloging (PCC), and other cataloging communities in the US, started their preparation for testing and implementing RDA as their new content standard for descriptive metadata around 2009, thereby replacing the Anglo-American Cataloging Rules that largely focus on describing textual works. These

developments were derived from the social, economic, and technological changes in how knowledge and information are disseminated and are a result of the efforts to provide new ways to manage bibliographic data in the twenty-first century.

Developments such as replacing outdated cataloging principles and codes consequently raised concerns about the absence of a technological infrastructure capable of supporting the full extent of these changes. The long-standing library practice for encoding and exchanging bibliographic records using the Machine Readable Cataloging (MARC) standard is problematic in the current web environment, where MARC data are invisible to the major search engines such as Google, Yahoo, and Bing. This is a problem for academic libraries because these search engines often are the starting point of their users' research. [20] In 2002, Tennant wrote, "The problems with MARC are serious and extensive, which is why a number of us are increasingly convinced that MARC has outlived its usefulness."[21] He proposed building "a bibliographic metadata infrastructure that likes any metadata it sees, and can easily output simple records when needed, or complex records when called upon to do so."[22]

The discussion around replacing MARC became more concrete when LC initiated the Bibliographic Framework Initiative (BIBFRAME) and hired Zepheira in 2012 to develop a bibliographic data model that would be based on linked data. The model and the feedback from the information community are expected to "eventually ensure a flexible bibliographic framework, a robust reference code, a supporting infrastructure for deployment, and an effective migration plan to support the community in making a transition from MARC to a new framework."[23] The emergence of linked data as the baseline of a new bibliographic framework has been strongly emphasized in recent years. Schreur sees the use of linked data for academic research data and bibliographic data as a revolution. He believes that "Moving to a linked data environment . . . has the power to completely alter the way academia creates, maintains, and explores data."[24] Implementing new bibliographic standards and building new technical infrastructures to take advantage of the current web technology undoubtedly impacts many functional areas of academic libraries, including technical services.

While academic libraries explore new models and technical infrastructures it is worthwhile to note the growing need to support and curate research data generated by faculty and researchers. In 2010 Carlson and Garritano anticipated,

> The changes in how research is done under the e-science paradigm will have an effect on how the library carries out its mission of supporting the research and information needs of the university. The nature of scholarly communication, for example, is already undergoing dramatic change in response to technological advances, and the spread of e-science research models will only accelerate the pace of these changes.[25]

As the nature of scholarly communication changes, academic libraries have a unique opportunity to play a major role in curating and managing research data by advancing and refining their existing expertise in the areas of information description and organization, preservation, discovery, outreach, and instruction, many of which are traditionally part of technical services. However, this opportunity is not easily achievable and presents challenges. Carlson and Garritano argued that "the traditional organizational structures and culture of academic libraries pose barriers to the library becoming more actively involved in building cyberinfrastructure and supporting e-science," and they underscored the need for rethinking and adjusting the organization and staffing models of academic libraries.[26]

Active discussions on involving technical services in the curation and management of research data have appeared in more recent literature. In 2012, the Association of College and Research Libraries (ACRL) released a research report, "Academic Libraries and Research Data Services: Current Practices and Plans for the Future."[27] This report provided a thorough analysis of the current services offered by academic libraries and the services that they plan to offer in the future to support research data management. The report identified that technical services is currently involved in providing the following research data services (RDS) or plan to offer in the future:

- Providing technical support for RDS systems (e.g., a repository, access and discovery systems)
- Deaccessioning/deselection of data/data sets for removal from a repository
- Preparing data/data sets for deposit into a repository
- Creating or transforming metadata for data or data sets
- Identifying data/data sets that could be candidates for repositories on or off campus[28]

Additionally, two consulting services, "Consulting with faculty, staff, or students on data management plans" and "Consulting with faculty, staff, or students on data and metadata standards" that are categorized under Informational/Consulting Services can be easily seen as part of technical services' purview. Hunter's study found similar results to the ACRL report and identified the following services currently provided by technical services to support academic libraries' digital publishing initiatives: metadata/cataloging, scanning/digitization, loading content into online platforms, technical maintenance of online platforms, technical maintenance

of server/hardware, working/liaising with partners outside the library, promotion/marketing, and formatting/editing.[29] Considering its expertise in information organization, preservation, discovery, and information retrieval, this kind of services related to digital resources management will continue to be developed in technical services.

It is evident that academic libraries are in the midst of a paradigm shift and are constantly assessing and reassessing their services and organizational structures to support the changing nature of scholarly communication. Constituting a major part of academic libraries, technical services inevitably stands in the middle of these changes, and efforts to transform technical services are frequently observed among academic libraries. In Ruschoff's interview with Mandel and Kurth about the creation of the Knowledge Access and Resource Management Services (KARMS), a new division that replaced NYU Libraries Technical Services, Mandel said, "We knew we needed to move forward with our Technical Services in a different way . . . We decided to reframe the expectations of Technical Services and to do it in an expansive way that allowed for growth and change. We wanted to look anew at the entire 21st century act of acquiring, managing, and providing access to content available through the Libraries."[30] The interview indicates that creating a new framework to transform traditional technical services requires a lot of effort, including:

- meticulous and thoughtful planning based on critical analysis of existing as well as future services
- clear communication and staff buy-in through staff discussion
- encouraging creative thinking, cultivating a culture of collaboration, and creating a flexible working environment
- developing strong leadership including middle management
- creating and hiring positions with both technological and operational skillsets[31]

This interview provides unique perspectives describing the approaches and thought processes at the top level behind the creation of KARMS at the NYU Libraries. The creation of KARMS is an audacious attempt to transform a traditional technical services units and to build a flexible division that offers crucial expertise in knowledge access and resource management in an academic library.

Research Method

This research was conducted between January 2013 and June 2014.[32] The goal was to study the overall functions and organizational structures of current technical services and to identify possible future directions for technical services in academic libraries. The author chose twenty-five university libraries from the Technical Services Directors of Large Research Libraries Interest Group as a "purposive sample."[33] The author chose a semiconstructed interview method for data collection. Unlike structured interviews such as a questionnaire, a semiconstructed interview provides flexibility "in terms of the order in which the topics are considered, and, perhaps more significantly, to let the interviewee develop ideas and speak more widely on the issues raised by the researcher."[34]

The research was conducted in three phases. In the first phase, the author contacted the twenty-five individuals in the sample and solicited their participation in the study via email. Participants were asked to submit their technical services organization charts and to commit to an hour-long interview. Nineteen individuals (76 percent) sent the author their organization charts and agreed to participate in a phone interview. The organization charts were reviewed before the interviews and helped the author compose interview questions.

The phone interviews—phase two of the project—occurred in January and February 2014. The participants received a set of interview questions (see appendix) before the interviews to prepare and have time to think about their responses. Based on preliminary analysis of the organization charts and depending on how the participants answered the interview questions, the author slightly adjusted the order and syntax of the interview questions as needed. Each interview was recorded for the next phase.

The third and final phase of the research consisted of analyzing the interview data. The author used a direct coding method for data coding. Instead of transcribing each recorded interview, data was coded directly from the audio files. Following the steps of the interview data management process proposed by Halcomb and Davidson helped save time transcribing the interviews and ensured the accurate recording of verbal interview data through an iterative process of data management.[35] The author used Microsoft Excel to code and manage the interview data. The coding themes were organized in the same way that the interview questions were asked (see appendix). To achieve the highest possible levels of accuracy and objectivity, the author contracted a graduate student assistant to code the recorded interviews first. Then the author personally listened to the recordings to validate and amend the interview data input by the graduate assistant. Additionally, the author constructed five organizational structure models of technical services during this phase. These models were synthesized from the interview data and the organizational charts of the nineteen participating libraries. Detailed information about the models can be found below in the Results and Discussion section.

Table 1. Names Representing Technical Services

Name	No. of Occurrence (%) (*N* = 19)
Acquisitions & e-Resource Management / Data Management & Access*	1 (5.2%)
Bibliographic Services	2 (10.5%)
Collection Development / Materials Processing*	1 (5.2%)
Collection Management and Scholarly Communication	1 (5.2%)
Information Processing Center	1 (5.2%)
Information Resources	1 (5.2%)
Knowledge Access and Resource Management Services	1 (5.2%)
Resource Acquisition & Description	1 (5.2%)
Technical Services + **	10 (52.6%)

* At these two institutions, the acquisitions department and cataloging department are not in the same division.

** Some libraries include "Library," or "Central," in front of the name Technical Services; one library has a subtitle, "Acquisitions Resource Management" after the name Technical Services; in some libraries the name, "Technical Services" appears as part of a compound name; for example, "Information and Technical Service," "Technical Services and System," "Collections, Technical Services, and Scholarly Communication," and "Collection and Technical Services."

Results and Discussion

Use of the Name "Technical Services"

Some have questioned whether the name "Technical Services" is adequate to represent the work in a "new user environment."[36] There is a perception that the name does not convey the activities or functions that take place in technical service units, and as a result some libraries have renamed their technical services divisions in an attempt to represent their operations and responsibilities more clearly to others. Intner suggested "names that include words such as 'collections,' 'data,' 'database,' 'bibliographic control,' 'management,' 'computer,' etc."[37] as alternatives, and some libraries have renamed their technical services areas using some of these suggestions. However, many libraries still have an area named Technical Services in their organization charts.

The interview data indicate that 52.6 percent of the participating libraries either have a department or division called Technical Services, or include Technical Services as part of a compound name (see table 1). The main reason that these libraries continue to use the name "Technical Services" is because they have not found an alternative name that better describes their work. Most of the interviewees expressed that they are open to changing the name, but noted that it is difficult to find a representative name that describes the various functions of technical services as a whole. One participant responded, "For right now, we are sticking with Technical Services as our name because everyone knows what it means and we don't have to explain it." Another participant said, "We have not made any attempt at all to change the name. . . . Every time somebody says tech services I know exactly what that is and I think that's useful. There may be eventually another name that we wanna go by that we are nationally recognized, I think that will be fine. I am not opposed to changing the name. I think it just makes it a little confusing sometimes that we all call ourselves something different."

While some libraries continue to use the name "Technical Services," others have changed it as part of a broader reorganization effort or with a specific intent. One participant explained the reason: "The intent [of changing the name] was to be as inclusive as we could be, so that we could partner with as many other groups within the library as we could to help them think through discovery and access to the full range of the resources they are interested in."

As noted in the Literature Review section, what constitutes technical services also varies by library. One notable phenomenon that is in contrast to the Literature Review is the reporting structure of acquisitions and cataloging departments. It is commonly agreed that the basic composition of technical services includes both acquisitions and cataloging functions, but the interview data revealed that two of the participating libraries separate cataloging and acquisitions into different divisions and there is no collective area that represents the traditional concept of technical services composed of acquisitions and cataloging (see table 1).

Current Functions

The range of functions in technical services is extensive and varies by library. In some libraries, technical services functions are limited to acquisitions and cataloging, while in other libraries, technical services encompasses a wide variety of functions such as circulation, collection development, and remote storage management (see table 2). Technical

services functions among the participating libraries are mostly centralized, with a few exceptional cases. The following areas generally fall into these cases:

- Special collections, archives, manuscripts: Acquisitions, cataloging and managing gifts/exchanges often occur in these areas, separated from the central technical services. In addition to creating MARC records, some of these areas are involved in creating non-MARC metadata such as Encoded Archival Description.
- Special libraries (e.g. law, music, medical): Because the materials that these libraries collect require specialized knowledge and skill, they tend to operate their own technical services work independent from the central technical services. Most law libraries generally do not belong to the main library system.
- Area studies (i.e. global studies): Non-Roman language areas such as East Asian, South Asian, Middle Eastern, and Slavic Studies are likely to operate their own technical services work because they require special language skill to perform acquisitions and cataloging functions.
- Government documents/Maps: Acquiring, cataloging, classifying, and preserving these materials require somewhat different processes from general library materials, and most libraries tend to have their own government document unit to process these materials.
- Vendors: Libraries use shelf-ready services from various vendors that supply batch cataloging records and physical processing. To a certain degree, vendors are involved in the selection of library materials through approval plans. Some libraries also use contract cataloging services for their cataloging backlog.
- Digital library/IT: In some libraries, non-MARC metadata management including non-MARC metadata creation happens in the digital library or Information Technology (IT) unit.

It was difficult to categorize common technical services functions from the interview data because there was significant variation in the range of technical services functions among the participating libraries. However, the author was able to make some observations about current technical services functions in libraries. First, libraries are attempting to centralize technical services functions across their organizations while still maintaining separate technical services operations in the exception areas discussed above. The consolidation of technical services functions is being driven by the desire to increase consistency and efficiency and to reduce costs. Separate technical services operations among special libraries and library units can be costly and can cause communication issues. Reduced staffing in technical services also motivates the effort to centralize technical services.

Second, it seems to have become a routine practice in technical services to assess existing workflows to make minor adjustments or to undertake a wholescale reorganization process. Libraries often re-allocate staff to cope with staffing losses within technical services. They frequently

Table 2. Current Functions of Technical Services

Access services (including Circulation/Course reserve/Electronic reserve/Resource sharing)
Acquisitions (including Ordering, Receiving, Claiming, Serials check-in, and Invoicing/Payment)
Authority control
Batch cataloging (including Batch loading and maintenance)
Collection development
Copyright
Data curation
Data management
Digitization
Discovery tools (e.g., Summons)
E-resources management (including access and maintenance)
Gifts/Exchange
Google Books Library Project
Identity management
ILL/Document delivery
ILS management
IR management and outreach
Library systems
Licensing of e-resources (including consortia licensing)
Mail room
MARC metadata (including Copy/Complex/Original cataloging, Classification/Subject analysis, and Cataloging maintenance)
Non-MARC metadata (including metadata consultation, maintenance, policy, and practice)
Physical processing (including marking and plating)
Preservation (including Binding/Repairing and Conservation work)
Post-cataloging processes
Remote storage
Scholarly communication
Shelf-ready service
Single e-book purchase
Stack maintenance
User experience
Web archiving

Note: The italicized functions indicate newly added functions of technical services in the last three to five years.

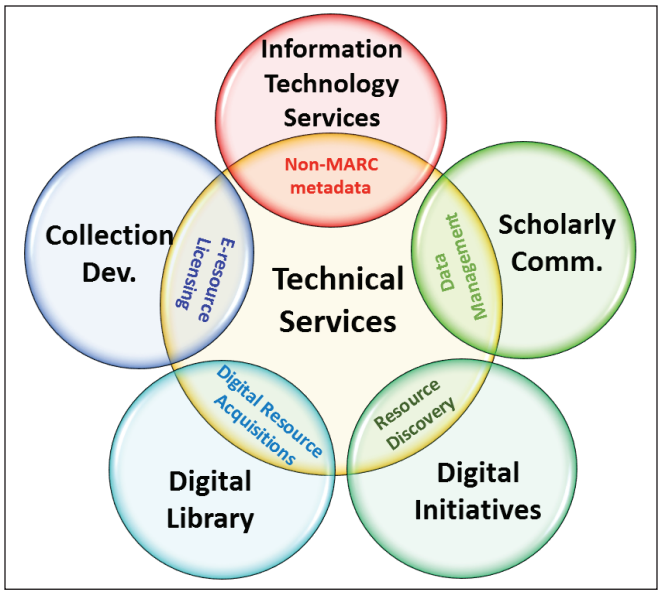


Figure 1. Technical Services Collaborative Functions with Different Library Units

review existing job descriptions and create a new position when there is an opportunity for a position opening in technical services.

Third, it is evident that most libraries have made a major shift from print to e-resources in their collections budget. However, reassigning staff to accommodate this change is occurring slowly, because library staff lack the relevant skills to manage e-resources, including licensing. Managing non-MARC metadata is another growing area where library staff often lack relevant skills, such as those pertaining to reusing existing bibliographic data through data transformation.

Fourth, new and emerging functions in technical services appear to be driven by e-resources. The italicized functions in Table 2 indicate newly added functions in technical services in the last 3–5 years. Most, if not all, are related to e-resources. These new and emerging functions of technical services—for example, managing a digital repository, building a web-archiving program, implementing linked data, and creating a digital curation program—demand technology skills that were not required in technical services in the past.

Lastly, libraries are increasingly emphasizing collaboration among units and departments within the organization. The conventional technical services functions related to acquiring, organizing, and preserving library materials no longer occur completely within technical services. Figure 1 describes some examples of technical services' functions that occur either outside of technical services or in collaboration with technical services. Library functions, such as managing non-MARC metadata, enhancing resource discovery, acquiring digital resources, providing data management, and managing e-resource licensing are complex and require specialized skills and knowledge. Depending on how a library is organizationally structured and what skills are available in technical services, these types of functions demand collaborative work across the library (see figure 1).

The trends observed above pose numerous challenges and have often resulted in technical services reorganization. Throughout the data analysis process, it was evident that fiscal constraints (due primarily to decreasing library budgets) and technology innovations are the two major factors that have prompted various changes in the functions of technical services. As a result, the organizational structure of technical services is becoming more complex and intertwined with the rest of the library as its functions evolve.

Organizational Structure

The organizational structures of the participating libraries are strikingly different, and it is almost impossible to discern a common organizational structure in technical services among them. As discussed in the previous sections, there is no consensus about what constitutes technical services and its functions. However, it is quite obvious that the areas of technical services are often being restructured to mirror the libraries' priorities and to reflect changing external factors such as the fiscal environment and technological innovations. While the core mission of academic libraries—to support research and teaching by collecting, organizing, and preserving information and making it accessible and discoverable—generally remains the same, the ways and means of fulfilling this mission have been drastically changing. Keeping up with the rapidly changing academic environment and addressing and implementing necessary changes in technical services is a big challenge for technical services administrators. The multifarious organizational structures among the libraries indeed demonstrate the microcosm of changing academic libraries in the recent years.

To better understand the organizational structures of the participating libraries, the author constructed five technical services models from the nineteen organization charts and the interview data. The intent of this modeling exercise is to explore different types of organizational structures of technical services in academic libraries. For the purpose of modeling, the author focused on the reporting pattern of the most commonly known technical services functions, "acquisitions" and "cataloging/metadata." Because the terms used in this modeling can cause confusion and have different meanings to different audiences, the following definitions were drawn:

- Division: An area that is managed by an Associate Director (AD) or Associate University Librarian (AUL).
- Department: An area that directly reports to an AD/AUL.

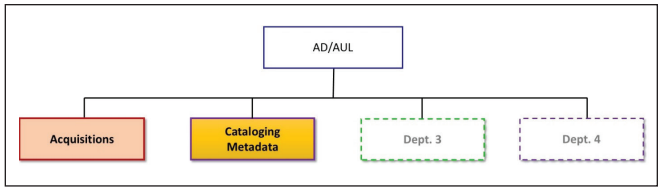


Figure 2. Model 1. AD/AUL for Multiple Departments Model: AD/AUL of the area of technical services manages additional area(s)

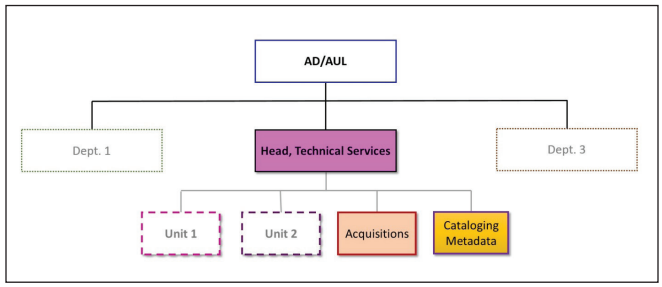


Figure 4. Model 3. Technical Services as a Department Model: Technical Services report to AD/AUL as a department along with other departments that report to the same AD/AUL

- Unit: An area that belongs to a department.
- Acquisitions: This term represents functions related to acquiring library resources, including ordering, invoicing, claiming, etc. It may or may not include the e-resources licensing function.
- Cataloging/metadata: This term represents functions related to knowledge access, bibliographic data description, control, and management.

In the AD/AUL for Multiple Departments Model (Model 1), the acquisitions and cataloging/metadata directly report to an AD/AUL, along with other department(s) (see figure 2). In this model, the AD/AUL is responsible for other library functions beyond technical services. This is the most common structure found in the participating libraries (11 out of 19,57.8 percent). The range of the areas that the AD/AUL of technical services governs varied by library. Some AD/AULs have a wide range of responsibilities from collection management, preservation, document delivery, and access services to scholarly communication, library technology, special collections, and copyright, while others have one or two additional areas.

Model 2 describes the conventional technical services organizational structure in which an AD/AUL governs the functional areas of acquisitions and cataloging/metadata (see figure 3). This technical services structure is familiar to many library personnel and was previously the most common technical services organizational structure. Three libraries have this structure. Though the structure itself seems quite

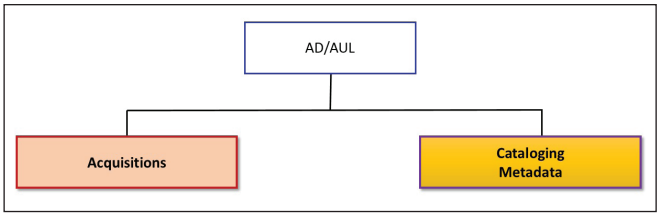


Figure 3. Model 2. Conventional Technical Services Model: AD/AUL governs the areas of cataloging/metadata and acquisitions

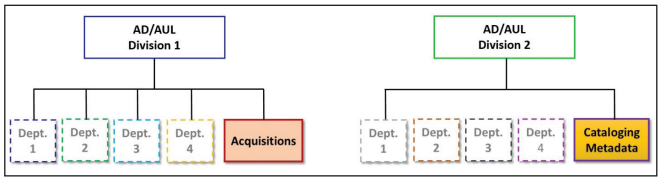


Figure 5. Model 4. Modularized Technical Services Model: Acquisitions and Cataloging/Metadata report to a different AD/AUL

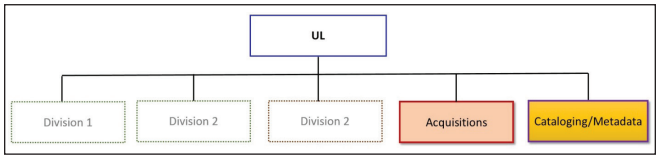


Figure 6. Model 5. Flat Reporting Model: The areas of acquisitions and cataloging/metadata report directly to University Librarian along other divisions

straightforward, in this model the functions within these two areas are much more complex and are evolving beyond traditional technical services functions, including software assessment, metadata consultation, e-resources management, etc.

There are two libraries that fall into the pattern of Model 3, Technical Services as a Department Model. In this structure, Technical Services as a whole is a department that reports to an AD/AUL along with other departments that report to the same AD/AUL. Unlike Model 1, in which the AD/AUL directly oversees technical services, there is one more layer of management that governs the functions of technical services, creating a more hierarchical reporting structure.

Model 4 is a somewhat unfamiliar structure and two libraries represent this pattern. It has long been a conventional practice that acquisitions and cataloging/metadata are closely located to each other and report to the same AD/AUL. One commonality between these two libraries is that cataloging/metadata reports to an AD/AUL who also governs the area of library technology, and acquisitions report to an AD/AUL who manages library content and collection.

The last model is found in only one library. Acquisitions/collection and cataloging/metadata report directly to the University Librarian.

Regardless of the rationale behind each individual library's organizational structure, the responsibilities of AD/AULs in general have expanded in many libraries as discussed in Model 1. The most logical explanation of this phenomenon may relate to the two major external factors, budget constraints and technology, which were discussed in the previous section. A library can reduce the number of highly paid administrators by combining divisions under one AD/AUL. New and emerging library functions, largely driven by technology innovations, create different types of work in academic libraries and provide the rationale for the organizational structure of the AD/AUL for Multiple Departments Model among the libraries. Another phenomenon that is worth noting in terms of the organizational structure of technical services is frequently occurring reorganization efforts among the libraries. Twelve out of nineteen participating libraries reorganized their technical services operations within the last five years and one library was in the process of reorganizing its technical services at the time of the interview.

When asked about a plan for reorganization in the next three to five years, fourteen libraries said a reorganization was either definite or likely. During the interviews, various reasons for reorganizing technical services were identified:

- Directive from the top
- Changes in administrative leadership positions
- Rapidly growing e-resources in library collection and the need to make a shift in staffing to accommodate this change
- Use of vendor services for certain technical services functions to save money
- Need/Desire to increase efficiency and to create a more flexible organizational structure
- Staffing changes through retirements and/or resignations
- Merge among technical services areas across the library
- Implementation of a new ILS system

The rapidly changing technical services environment provides both challenges and opportunities for libraries. It is obvious that libraries are making great efforts to meet the challenges and find ways to transform their organizational structure. One participant described a positive experience with technical services reorganization that helped create a much more "grassroots and horizontal organization" where staff have a lot more freedom to express their opinions. He described, "the reorganization kind of broke us loose from the way we had done things . . . it fostered this culture of innovation. It fostered this attitude that it's OK to change and the change doesn't have to come from the top. So, if there were things that weren't working really well, in the new model people sat down and talked to their colleagues. . . . More than anything, the ability for the staff to say 'let's find a better way to do it' has been the major outgrowth of the reorganization."

Skills

While reorganizing technical services may provide opportunities to streamline workflows and improve communication among staff, there is great need for new skills to support the evolving technical services functions. Table 3 lists desirable skills in technical services staff from the interview data. Skills such as being "detail-oriented" and "foreign language skill" are common requirements that have appeared in typical job descriptions in technical services for many years. However, many skills in the list are not necessarily traditional skills that technical services required or preferred in the past.

The skills in table 3 can be broadly divided into two categories: hard skills (i.e., skills obtained through learning that are easily quantifiable or measurable) and soft skills (i.e., interpersonal or people skills, which are subjective skills that are harder to quantify). In table 3, the italicized skills indicate soft skills, and the rest are hard skills. Many of the hard skills related to technology (e.g., database skill, linked data/semantic web skill, programming skill, discovery system skill, etc.) were frequently mentioned as the most desirable skills in technical services during the interviews. The list of the desirable hard skills shows that there is a great demand for different types of technology skills in current technical services operations. In addition to technology skills, the interviewees identified skills related to non-MARC metadata management, foreign language resources, project management, e-resource licensing, and data management as the most critical hard skills in technical services. A striking aspect of this list is the number of desirable soft skills that libraries need in technical services. In the past, certain soft skills—for example, the ability to work independently—were required in technical services, but today there are a larger number and a wider variety of soft skills that are desirable. Many technical services job responsibilities formerly involved working independently rather than in a team environment. This has changed as technical services functions have evolved, and collaboration with other units and departments is often required, as demonstrated throughout this article.

The desirable hard and soft skills in technical services are a clear indication of the changing nature of technical services' role in academic libraries. Work in technical services is becoming technology-centric, and library projects and initiatives that involve technical services have become more

Table 3. Desirable Skills in Technical Services

Ability to grow and develop
Ability to collaborate
Analytical skill
Archival description skill
Challenge status quo
Communication skill
Creativity
Data management skill
Data-savvy
Detail-oriented
Digital preservation skill
Digitization skill
Flexibility
Foreign language skill
Interpersonal skill
Knowledge of business practices
Knowledge of discovery system
Knowledge of intellectual property law
Knowledge of licensing
Knowledge of publishing business
Knowledge of scholarly communication issues
Knowledge of system functionalities (facts, batch loads, indexing, etc.)
Knowledge of system integration
Knowledge of traditional cataloging
Knowledge of vendor management
Leadership skill
Management skill
Non-MARC metadata skill
Proactivity
Problem-solving skill
Project management skill
Technology skill
Technology skill, Database
Technology skill, Linked data/Semantic Web
Technology skill, MarcEdit
Technology skill, Programming
Technology skill, System
Training skill
Video description skill
Willingness to learn
Willingness to take a risk

Note: The italicized skills indicate *soft skills*.

complex in recent years. Dealing with the growing number of digital resources in library collections requires skills such as data management, streaming media, linked data, and data transformation. Managing complex and large-scale projects that require collaboration among library units or with other libraries demands leadership and management skills, particularly in project management. Licensing of e-resources requires knowledge of intellectual property and licensing management. It is clear that there is a gap between the skills that are held by current technical services personnel and the skills that are needed for new and emerging technical services functions.

Table 4. Change Drivers of Technical Services

By Economy
Batch purchase in collection development
Change in scholarly communication model
Declining library budget
Increase in Demand-Driven Acquisitions
Increase in outsourcing
Reliance on vendors and publishers for certain library functions (collection development, cataloging, software development, etc.)
By Social Behaviors
Change in user information seeking behavior
Increase in collaborative projects and initiatives
Baby boomer retirement
Emphasis on collaboration
Open Access
Copyright issues
Shift from print to digital/electronic resources in library collection
By Technology
Authority work on the web
Big data management
Change in metadata models
Change in serials life-cycle
Emphasis on access and discovery
Metadata automation
Move toward cloud platform
Reuse of bibliographic data
Shift to BIBFRAME/Linked Data model for library bibliographic data
Technological tools to help increase efficiency (e.g., workflow efficiency tool)
By Academia
Emphasis on access and discovery of special collections
Metadata consultation
Research data management
Data curation
Evolution of teaching and research
Emphasis on local research collection and repository services

Change Drivers and Challenges

Many trends and developments in academic libraries were identified during the interviews. These trends and developments are likely the driving factors that are bringing changes to technical services. The author calls these factors "change drivers." Table 4 describes the author's attempt to organize these change drivers based on originating sources—that is, whether they originate in the economy, in technology, in social behaviors, or in academia. It is worth noting that these drivers are not mutually exclusive. For example, "Change in user information seeking behavior" is categorized in By Social Behaviors, but this could easily fit into the By

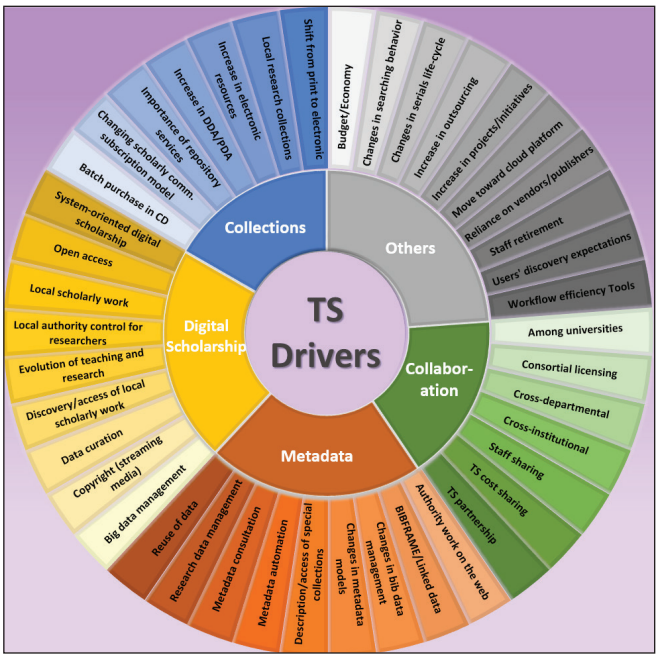


Figure 7. Technical Services Change Drivers by Topical Areas in Academic Libraries

Technology category. Many of these drivers also have cause-and-effect relationships. For example, "Declining library budget" can easily be the main cause of all other drivers in the By Economy category plus some change drivers in other categories. Arranging the trends and developments in academic libraries in this way not only provides comprehensive information concerning many external factors that affect technical services, but also reveals the wide range of external factors that have an impact on academic libraries.

When organizing the change drivers based on topics, as shown in figure 7, the result demonstrates some areas in the libraries that greatly impact technical services. Trends and developments in library collections, digital scholarship, and metadata are likely to be the main change drivers of technical services in academic libraries. One of the participants who identified digital scholarship as a major change driver pointed out, "The way that faculty and other scholars are creating knowledge has changed tremendously, to much more systems oriented, data mining. The way they collaborate with each other has changed. They use different tools. What this means in term of technical services is 'how do we develop our responsibility to facilitate discovery in ways that promote/support teaching and research in this whole new environment?'"

As discussed in the Current Functions section above, collaboration has become a common practice among libraries, and the range of collaboration is quite broad. Some libraries have extensive collaboration among units and departments within the libraries and/or on campus. Others participate in collaborative consortial licensing, collection development, or cataloging. Although the degree of involvement among the libraries in terms of collaboration may vary, it is clear that libraries seek opportunities to collaborate whenever possible.

The change drivers pose both threats and opportunities to technical services. Flat or decreasing library budgets can be a great threat to rigid and inflexible technical services that sustains a status quo. However, these constraints can become the motivation and inspiration for creative and innovative ideas to reconsider and transform antiquated workflows and labor-intensive processes. Lack of technology skills among technical services personnel can be an obstacle for technical services to implement and adapt to new technology, but it can also provide an amazing opportunity to develop a systematic training program for continuing staff development in technical services. The ambivalent nature of these change drivers reflects the current micro-landscape of academic libraries. It is interesting to see how leaders of some academic libraries are seizing these change drivers as opportunities to transform functions and services, including in the area of technical services, in this rapidly changing environment.

Conclusion

This study found that budget constraints and rapid technological innovations are the major driving forces that have been bringing change to technical services, and these trends are likely to continue into the near future. Efforts to reduce costs result in resolutions to improve existing workflows, which lead to increased efficiency and greater collaboration within the library, on campus, and among universities. Over the last decade, there has been a large shift in expenditures from academic libraries' collection budgets away from print and toward electronic formats. As a result, describing and providing access to e-resources have become one of the major roles of technical services. The rapidly evolving scholarly communication landscape in the digital era and the changing nature of academic libraries' roles also have a significant impact on the functions and organizational structures in technical services. This study revealed that these fiscal and technological challenges can pose threats hindering the progress that we need in technical services, but at the same time they represent tremendous opportunities for us to strengthen technical services' ability to serve our users.

Academic libraries' efforts to transform their technical services functions are evident and libraries are repositioning themselves to support the changing nature of scholarly communication in the midst of fiscal constraints and technological innovation. This study found that a vision

for strategic directions, and investment in staff resources, including new positions and staff training to bring new skill sets, are key for the successful transformation of technical services. Mandel advised us, "Once your vision is in place, you can start shaping expectations for the staff according to that vision. It is very difficult to do because sometimes you have to resist the temptation of getting the transactions done while you design your new infrastructure. But if you can resist the urge, you will be rewarded with a well-thought-out staffing model and with a strong set of skill sets to support the organization."[38] Academic libraries need innovative and audacious leadership that encourages library staff to experiment and explore new kinds of library services. They need leadership that inspires innovation and that encourages us to learn from both our successes and mistakes. It is exciting to witness how academic libraries evolve in the midst of this vigorously changing digital age and how leaders at all levels in academic libraries are transforming their libraries to better support research and teaching and to become a crucial strategic partner on campus.

References and Notes

1. The membership of the Technical Services Directors of Large Research Libraries Interest Group is composed of the twenty-four largest university libraries in Association of Research Libraries (ARL), plus one non-ARL university library, two public libraries, and three national libraries. For the purpose of this study, the author only contacted the twenty five university libraries. They are Columbia University Libraries, Cornell University Library, Duke University Libraries, Harvard Library, Indiana University Libraries, New York University Libraries, Ohio State University Libraries, Penn Libraries, Penn State University Libraries, Princeton University Library, Stanford University Libraries, Texas A&M University Libraries, University of Alberta Libraries, UC Berkeley Library, UCLA Libraries, University of Chicago Libraries, University of Illinois at Urbana-Champagne Library, University of Michigan Library, University of Minnesota Libraries, University of North Carolina at Chapel Hill Libraries, University of Texas Libraries, University of Toronto Libraries, University of Washington Libraries, University of Wisconsin-Madison Libraries, and Yale University Library.
2. Maurice F. Tauber and Associates, *Technical Services in Libraries: Acquisitions, Cataloging, Classification, Binding, Photographic Reproduction, and Circulation Operations* (New York: Columbia University Press, 1954): 11.
3. G. Edward Evans, Sheila S. Intner, and Jean Weihs, *Introduction to Technical Services*, 7th ed. (Colorado: Libraries Unlimited, 2002): 4.
4. Tauber and Associates, *Technical Services in Libraries*, 9.
5. Michael Gorman, ed., *Technical Services Today and Tomorrow*, 2nd ed. (Colorado: Libraries Unlimited, 1998): xv.
6. Ibid., 3.
7. Sheila S. Intner with Peggy Johnson, *Fundamentals of Technical Services Management* (Chicago: American Library Association, 2008): 13.
8. Mary S. Laskowski and Jennifer A. Maddox Abbott, "The Evolution of Technical Services: Learning from the Past and Embracing the Future," *Technical Services Quarterly* 31, no. 1 (2014): 13-30.
9. Bradford Lee Eden, ed., *Innovative Redesign and Reorganization of Library Technical Services: Paths for the Future and Case Studies* (Westport, CT: Libraries Unlimited, 2004); Bradford Lee Eden, ed., *More Innovative Redesign and Reorganization of Library Technical Services: Paths for the Future and Case Studies* (Westport, CT: Libraries Unlimited, 2009).
10. Rosann Bazirjian and Rebecca Mugridge, ed., *Teams in Library Technical Services* (Lanham, MD: Scarecrow, 2006).
11. Lihong Zhu, "Use of Teams in Technical Services in Academic Libraries," *Library Collections, Acquisitions, & Technical Services* 35, no. 2–3 (2011): 81.
12. Carol Joyner Cramer, "All bout Demand-Driven Acquisition," *Serials Librarian* 65, no. 1 (2013): 88.
13. Zofia E. Brinkman Dzwig, "Innovative Collection Development for E-books at the TU Delft Library," *Information Services & Use* 33, no. 1 (2013): 38.
14. Christian Burris, "Demand-Driven Acquisitions: The New Frontier for Technical Services," *Technicalities* 33, no. 4 (2013): 11-14.
15. William H. Walters, "Patron-Driven Acquisition and the Educational Mission of the Academic Library," *Library Resources & Technical Services* 56, no. 3 (2012): 210.
16. International Federation of Library Associations and Institutions, *Statement of International Cataloguing Principles* (Hague, Netherlands: International Federation of Library Associations and Institutions, 2009): 1, www.ifla.org/files/assets/cataloguing/icp/icp_2009-en.pdf.
17. Ibid.
18. Ibid.
19. Joint Steering Committee for Development of RDA, "Strategic Plan for RDA, 2005-2009," accessed February 7, 2015, www.rda-jsc.org/stratplan.html
20. Cathy De Rosa et al., *Perceptions of Libraries and Information Resources: A Report to the OCLC Membership* (Dublin, OH: OCLC, 2005), www.oclc.org/content/dam/oclc/reports/pdfs/Percept_all.pdf
21. Roy Tennant, "MARC Must Die," *Library Journal* 127, no. 17 (2002): 26, http://lj.libraryjournal.com/2002/10/ljarchives/marc-must-die/.
22. Roy Tennant, "A Bibliographic Infrastructure for the 21st Century," *Library Hi Tech* 22, no. 2 (2004): 176.
23. Library of Congress, "The Library of Congress Announces Modeling Initiative (May 22, 2012)," accessed February 8, 2015, www.loc.gov/bibframe/news/bibframe-052212.html.
24. Philip Evan Schreur, "The Academy Unbound: Lined Data

as Revolution," *Library Resources & Technical Services* 56, no. 4 (2012): 236.

25. Jake R. Carlson and Jeremy R. Garritano, "E-science, Cyberinfrastructure and the Changing Face of Scholarship: Organizing for New Models of Research Support at the Purdue University Libraries," *Research Publications*, Paper 137 (Jan. 2010): 8, accessed February 9, 2015, http://docs.lib.purdue.edu/lib_research/137.
26. Ibid, 11.
27. Carol Tenopir, Ben Birch, and Suzie Allard, "Academic Libraries and Research Data Services: Current Practices and Plans for the Future," white paper, Association of College and Research Libraries, 2012, www.ala.org/acrl/sites/ala.org.acrl/files/content/publications/whitepapers/Tenopir_Birch_Allard.pdf.
28. Ibid, 19.
29. Ben Hunter, "The Effect of Digital Publishing on Technical Services in University Libraries," *Journal of Academic Librarianship* 39, no. 1 (2013): 84-93.
30. Carlen Ruschoff, "A New Framework for Technical Services: Interview With New York University's Carol A. Mandel and Martin Kurth," *Technicalities* 33, no. 5 (2013): 1, 4–7; Carlen Ruschoff, "A New Framework for Technical Services: Part II: Interview With New York University's Carol A. Mandel, Dean and Martin Kurth," *Technicalities* 33, no. 6 (2013): 1, 3–5.
31. Ibid.
32. The author was a fellow of the 2013–14 ARL Leadership and Career Develop Program and this research opportunity was provided as part of the program. The preliminary findings of this research were presented at the Technical Services Directors of Large Research Libraries Interest Group during the 2014 ALA Annual Conference, Las Vegas. The author would like to express her gratitude to the ARL Leadership Development Program for this opportunity.
33. A purposive sample is "chosen by the researcher to include representatives from within the population being studied who have a range of characteristics relevant to the research project." G. E. Gorman and Peter Clayton, *Qualitative Research for the Information Professional: A Practical Handbook*, 2nd ed. (London: Facet, 2005): 128.
34. Martyn Denscombe, *The Good Research Guide: For Small-scale Social Research Projects*, 4th ed. (Maidenhead, England: McGraw-Hill/Open University Press, 2010): 175.
35. Elizabeth J. Halcomb and Patricia M. Davidson, "Is Verbatim Transcription of Interview Data Always Necessary?," *Applied Nursing Research* 19, no. 1 (2006): 38–42.
36. Bradford Lee Eden, "The New User Environment: The End of Technical Servies?," *Information Technology & Libraries* 29, no. 2 (2010): 93–100.
37. Sheila S. Intner, "A Technical Services Makeover," *Technicalities* 27, no. 5 (2007): 1, 14–15.
38. Carlen Ruschoff, "A New Framework for Technical Services, Part II," 5.

Appendix. Interview Questions

The Name, Technical Services

1a. Have you thought about changing Technical Services to some other name?
1b. When and why did you rename from Technical Services?

Technical Services Functions

1. What functions are currently included in the Technical Services area?
2. Which of these functions are new or changed in the last 3–5 years?
3. Are there functions related to the acquisition, organization, and enabling discovery of content that are actively and routinely occurring elsewhere in the organization?
4. Do you have any functions or areas that you want to change in the future?

Reorganization

1. When was the last time you restructured the Technical Services area?
2. What was the reason for the last reorganization?
3. What is the rationale behind the current structure of the Technical Services area?
4. Do you plan for restructure in near future (next 3 to 5 years)?

Looking Ahead

1. What positions have been created in the Technical Services area in the last 3–5 years?
2. What are some skill sets you are looking for in the Technical Services area?
3. Would you identify some trends and developments that will impact the functions of the Technical Services area?
4. What are things that you want to do or need to do, but can't do; what prevented you from doing it?

Book Reviews

Elyssa M. Gould

Cataloging and Managing Film and Video Collections: A Guide to Using RDA and MARC 21. By Colin Higgins. Chicago: ALA Editions, 2015. 225 p. $85.00 paperback (ISBN: 978-0-8389-1299-7).

The change in cataloging standards to Resource Description and Access (RDA) has had most catalogers stocking up on physical and digital resources to aid in the interpretation and implementation of this new standard. Higgins's contribution to these resources, *Cataloging and Managing Film and Video Collections: A Guide to Using RDA and MARC 21*, aims beyond RDA guideline interpretation and MARC field help by seeking to fill gaps in knowledge of film creation and distribution. His premise is that for catalogers to successfully describe and provide access to film and video collections, the cataloger must understand the various rolls of filmmakers, means of film distribution, and technical aspects of film and video formats. The book also covers aspects of film and video collection management, which support Higgins's comprehensive approach to the topic.

The book is organized into nine chapters. The chapters that contain cataloging instruction include RDA guideline references and inline examples of the MARC fields that help solidify the bibliographic instruction explained within the context of the chapter content. Each chapter concludes with a list of references. There is also a section at the end of the chapters of resources that expand on the topics covered in the text, including resources on film, cataloging, and collection development. Sample MARC records for film and television recordings in DVD and Blu-Ray formats are included in an appendix, and an additional appendix explains the symbols found on disc surfaces and their cases. An index is also included. The organization of the chapters is arranged based on the author's holistic approach to understanding video cataloging and management. This means that although the guide covers RDA elements encoded in MARC fields, it is not arranged by MARC field order.

The first chapter covers a brief history of film and film formats. It is in this chapter that Higgins introduces the video formats present in most library collections. Several formats for videos have emerged over the years, from U-Matic to Blu-ray, and the author covers the history of each and explains the technology behind them.

Chapters 2 through 4 contain the bulk of the descriptive cataloging instruction with the focus on DVD and Blu-Ray disc formats. These chapters explain the rolls of individuals involved in making films, from the producer to the dolly grip, as well as the corporate entities involved in the production and distribution of films, the artistic and intellectual content in films, and the technical features of DVD and Blu-Ray discs. These are the chapters where the cataloger learns how to make decisions on data to include in the bibliographic record, and the author does a good job of relating the filmmaking content to the record creation.

There is a separate chapter devoted to material produced on television. This chapter includes a brief history of television, popular formats of television on optical discs, and the cataloging instruction that differs from the material covered in the previous chapters. The next two chapters look at past formats and cataloging standards. Recognizing that library collections may include non-DVD or Blu-Ray formats, chapter 6 provides instruction for cataloging films in older or unusual formats. Chapter 7 is a very brief chapter on MARC 21 and AACR2 cataloging instruction that can be used to help edit copy cataloging records in AACR2 or to create original records for libraries that have not yet implemented RDA.

Management of the film collections is addressed in chapter 8. This chapter provides resources for purchase decisions, classification of film collections, storage and handling of different formats, and some of the issues and legalities of owning, copying, and making film collections available to patrons. Chapter 9 looks to the future of DVD and Blu-ray discs in the wake of streaming media, the collection management issues in providing streaming services to library patrons, and cataloging instruction of streaming video and the respective MARC encoding for this format.

Throughout the text, Higgins's approach to the topic supports his initial argument that a lack of understanding of films leads to inadequate description and access. *Cataloging and Managing Film and Video Collections* contains the content to fill in the gaps in understanding films and knowledge in providing descriptive cataloging using RDA guidelines in a MARC environment. This knowledge translates well to creating better bibliographic records that will help patrons access library video collections. However, the organization of the book as a cataloging how-to guide may not be as accessible as other resources, and full MARC record examples for different video content is lacking. Additionally, the collection management content fails to address in any real detail the issues of copyright and reproduction at a time when many libraries are concerned with the preservation of their VHS collections.

These omissions aside, as an obvious film lover (his blogs include *Libraries at the Movies*), Higgins produces

sound content and enough passion and film references to make this a good read for anyone who wants to learn about all that goes into, and onto, the video being added to the library collection. This short and approachable text could also be easily incorporated as reading material for cataloging courses.—*Lucy Ingrey (lji1@humboldt.edu), Humboldt State University, Arcata, California*

Preserving Our Heritage: Perspectives from Antiquity to the Digital Age. Edited by Michèle Valerie Cloonan. Chicago: ALA Neal-Schuman, 2015. 736 p. $98.00 softcover (ISBN: 978-1-55570-937-2).

Weighing in at a significant three and a half pounds of not quite Bible-thin permanent paper, *Preserving Our Heritage* is the long-awaited anthology of fundamental preservation literature curated by Michèle V. Cloonan, Simmons College Professor and Editor-in-Chief of the journal *Preservation, Digital Technology, and Culture*. The impressive tome chronicles preservation through the earliest evidence of its conceptualization in historical works to examinations of the philosophical underpinnings of pressing contemporary issues such as risk management in times of both natural hazards and social unrest; the challenges of managing time-based media and digital materials; government policy in the area of preservation; ethics; the intersection of conservation, multiculturalism, and globalization; and sustainability.

Preserving Our Heritage includes three new pieces (Karen F. Gracy's "Preservation in a Time of Transition: Redefining the Stewardship of Time-Based Media in the Digital Age;" Ellen Cunningham-Kruppa, "Exploring Cultural Policy at Humanities Texas;" and Rebecca Meyer et al., "Sustainability: A Review"), hard-to-find conference papers such as Paul N. Banks's "A Library is Not a Museum," and author-contributed post-scripts to their earlier pieces (Nicholas Pickwoad's 1994 "Distinguishing Between the Good and Bad Repair of Books" and Anne J. Gilliland's 2000 "Enduring Paradigm, New Opportunities: The Value of the Archival Perspective in the Digital Environment"). As valuable as the collected works are, they are ably supplemented by Cloonan's introductions to each chapter, which weave the purpose, context, and relationship of one article to the next, and her notes, brimming with citations for further exploration and innovative works published too recently to be included in this volume.

Working from suggestions gathered from the field and with an Advisory Board whose members represent the fields of librarianship, archives, museum studies, and historic preservation, Cloonan has compiled a truly interdisciplinary work on cultural heritage preservation. The breadth of the collection is nowhere more obvious than in the book's longest section, "Chapter 3: Preservation in Context," which examines preservation practices and philosophies in each of the field's four settings. As a librarian and administrator of the Preservation Statistics Survey (a project with a goal to document and share the preservation activities of all cultural heritage institutions), I found the readings on areas outside of my natural library habitat and in the context of archives, museums, and historic/architectural preservation fascinating, imparting a better understanding of the activities, values, and challenges of these diverse settings.

While the entire anthology was a delicious if strenuous read for my mid-career, overtaxed-by-multi-tasking intellect, "Chapter 11: Sustainability" did the most to impart new understandings about that currently ubiquitous buzzword. Particularly, the selection "Sustainability: A Review" by Rebecca Mayer, Shannon Struble, and Phyllis Catsikis is an accessible, practical exploration of the three aspects of sustainability—environmental, economic, and social—known as "The Triple Bottom Line" (637). Of late, grant programs, program planning documents and policies, as well as job descriptions tout the jargon of "sustainability;" I expect that this chapter will be a highly cited, effective clarification for our field.

Comparisons between *Preserving Our Heritage* and Banks and Pilette's *Preservation: Issues and Planning* will surely come to mind; whereas the goal of *Preserving Our Heritage* is to examine preservation with attentive respect to each of the four cultural heritage settings (libraries, archives, museums, and the built environment), *Preservation: Issues and Planning* focused primarily on preservation in libraries and archives.[1] In the Preface, Banks and Pilette cite the popular aphorism that preservation is a "technical problem in search of managerial solutions;" while their anthology was far from a how-to manual, with its attention to practical issues (environment, emergency preparedness, conservation, etc.), *Preservation: Issues and Planning* was far more in the weeds of the daily work of a preservation practitioner than the steeped philosophical tone of *Preserving Our Heritage*. And whereas the focus on practical considerations in *Preservation: Issues and Planning* meant that some of the content was outdated not long after its publication date (the move from set environmental standards to localized, sustainable approaches; the epic decline of library binding in the wake of electronic journal access; the shift from microfilming to digital reformatting), *Preserving Our Heritage* offers a self-awareness that, though the selected works present "seminal thinking" on issues fundamental to the field, particularly in "Chapter 7: Frameworks for Digital Preservation," new terminology may "emerge by the time the ink in this volume has dried" (379,381). Indeed, while five of the eight pieces included in the "Frameworks for Digital Preservation" chapter were published in the 1990's, it is a nod to the foresight of early leaders like Paul Conway. In his 1996 essay "Preservation in the Digital World" (excerpted in this section), Conway envisioned "applying fundamental preservation concepts, derived from the best present practices of paper

and film, to the world of digital image documents so that the highest level of responsible preservation planning, management, and action can continue" (408).

By bringing new scholarship on emerging issues and hard-to-find works to publication as well as compiling a frame of reference timeline, pertinent ethical codes, and pieces that give us context on where we've been and where we've yet to go, *Preserving Our Heritage* will serve well as a textbook for graduate study in cultural heritage or as a reference work for professionals in that field. However thorough and timeless this work may prove to be, it is on us—the current and emerging body of preservation professionals—to stand on the collective shoulders of this compiled work and see further. In the *Preservation Imperative* podcast discussion of this publication, Cloonan notes, "We're in a period of transition: we don't have a Commission on Preservation and Access, ARL [Association of Research Libraries] has backed away from their preservation commitments, CLIR [Council on Library and Information Resources] . . . has other focuses, . . . and NEH [National Endowment for the Humanities] never gets more money . . . , IMLS [Institute of Museum and Library Services] as well. Who is going to address these big issues about our collections?"[2] In the Epilogue, Cloonan is generous with ideas for "new and potential research foci," sketching out topics in digital media, science (particularly transboundary conservation and taphonomy, the study of decaying organisms over time), and personal archiving and citizen-created content, as well as teasing out potential dancing partners for interdisciplinary research (657). I would argue that, in close competition to the glory of research, the daunting but necessary task of advocacy should be positioned as a focus of our field. We are so often told, these days, to do more with less. It is hard to read an anthology of exemplary scholarship like *Preserving Our Heritage* without imagining how we could do more . . . with more.—*Holly Robertson (hollyrobertson21@gmail.com), Preservation Consultant, Washington, DC*

References

1. Paul N. Banks and Roberta Pillette, ed., *Preservation: Issues and Planning* (Chicago: American Library Association, 2000).
2. Michele Cloonan, interview by Keven Driedger, *Preservation Imperative*, podcast audio, March 29, 2015, accessed April 10, 2015, www.preservationimperative.com/2015/08/5-michele-cloonan-preserving-our.html.

Library Analytics and Metrics: Using Data to Drive to Drive Decisions and Services. Ed. Ben Showers. London: Facet, 2015. 176 p. $95.00 softcover (ISBN: 978-1-85604-965-8).

Libraries have long been consumers of data, relying on it to inform services and collection management decisions, a fact acknowledged by the authors. The shift has come, Editor Ben Showers says in his introduction, with an "analytics turn," or a renewed interest in the questions we ask and the data they yield. This new focus on collecting data and analyzing it with purpose is where the authors see the future of library analytics. With libraries and cultural institutions increasingly being asked to prove their value in the digital information environment or being asked to do more with the same or less, analytics and metrics can play a role both in showing value and in helping libraries make data-driven decisions with precious time and resources while meeting users' needs and expectations.

A compilation of chapters written by twenty-six contributors, *Library Analytics and Metrics* covers a lot of ground. Chapter topics include: library data; data-driven collections management; using data to demonstrate library impact and value; qualitative research; web and social media metrics; the risks of analytics; and a data-driven future. The intellectual layout of the book is pleasant. It reads naturally with chapters in digestible chunks that are semi-independent of each other, which lends itself well to the disjointed reading that sometimes happens in a busy work-life. While each chapter covers a different aspect of analytics, all follow a similar format. First, background on the topic is provided with context and definition of terms or theory. This is followed by one or more case studies employing the method just described, along with any descriptions of tools or systems they are developing. Many of the projects have online blogs or websites allowing interested readers to investigate further. The chapters unfold not unlike a story, and this format simultaneously informs users and aids in understanding.

Library Analytics and Metrics is an excellent introduction to library analytics. It provides scope and context for emerging trends in the field and backs this up with case studies contributed by information professionals currently undertaking projects in libraries or cultural institutions in the US and UK. It does not assume a deep prior knowledge of the field, nor would it be too elementary for an individual with more exposure to research and practice in the area. Most of the contributors are at academic libraries or institutions affiliated with such libraries (i.e. OCLC or JISC), so the focus skews toward academic institutions. It is not necessarily a technical services book either, although the case studies do have elements of technical services work, such as e-resource and content management, collection management, and user interaction with interfaces. But, the underpinning theories, projects, and tools that are covered would be helpful to anyone hoping to take on analytic or metric projects with a more in-depth focus on technical services projects. Additionally, having a working knowledge of analytics as covered by this book would allow technical service librarians to lend their expertise, and thus show the value of technical services, should a similar project develop locally.

Attention is also paid to concerns that readers may have regarding a long held tenant of librarianship: that of user privacy and protection of their information seeking behavior. Indeed, several contributors point to this as a unique niche of expertise for library professionals to take up in the field of analytics. For example, in "Using data to demonstrate library impact and value" one contributor says, "As analytics becomes an important strategic driver for institutions, so the library finds itself ideally placed to lead and contribute in this area. And nowhere is this expertise and knowledge more important than in the legal and ethical implications of collecting and exploiting impact data" (50).

Overall, contributors do a good job of explaining terms and concepts (i.e. big data versus small data and analytics versus metrics), which makes the narrative accessible to the novice. However, one drawback is that not every acronym is explained upon its introduction (i.e., OCLC, Copac CCM, JISC) by contributors. Given that about half of the contributors are based in the UK and the other half in the US, this will be confusing for readers less familiar with corporations and library acronyms in the contributors' location and may send them scurrying for the nearest smart device. There are also a few word uses, such as student attainment (UK) verses student retention (US) that may cause a slight pause for readers, which could perhaps have been attended to in editing.

Library Analytics and Metrics is not a step-by-step guide to undertaking a complex analytics project. But it is a good read for those wanting to increase their knowledge of the current trends and methods in the analysis of data, systems and services. Also important is its call for libraries to dedicate increasing amounts of resources and time in developing skills in the area of analytics and metrics as it becomes an increasingly important part of the digital information landscape.—*Emily Sanford (esanford@msu.edu), Michigan State University Libraries, East Lansing, Michigan*

Rethinking Library Technical Services: Redefining our Profession for the Future. Ed. by Mary Beth Weber. Lanham, MD: Rowman & Littlefield, 2015. 206 p. $55.00 softcover (ISBN: 978-1-4422-3863-3).

The last ten to twenty years has evidenced transformational changes for technical services in libraries across the spectrum (academic, public and special). Keeping up with these various changes provides a challenge for librarians, directors and administrators. Determining where technical services is going, and what technologies, work flows, and job descriptions for library personnel should be adopted, is a challenge in a time of constant change.

Recent works on technical services, such as Bradford Lee Eden's *Innovative Redesigns and Reorganizations of Library Technical Services* (2004) and *More Innovative Redesigns and Reorganizations of Library Technical Services* (2008), have produced extensive quantitative research and described the many changes now occurring (with some rather negative forecasts as to the demise of technical services). Editor Mary Beth Weber of *Rethinking Library Technical Services* has collected the personal experiences and analyses of technical services librarians in nine chapters from ten academic, public, special technical services librarians, directors and supervisors.

Changes to technical services have been many and varied, depending on its configuration in a library. Cataloging, acquisitions, ordering and processing services, serials and databases, and electronic resources generally, make up today's sections in technical services. Weber defines technical services as a previously stable set of services that obtain, organize and make accessible information resources in support of library public services. New job descriptions point to new skills where technical services is changing "as we face an uncertain future and constant change" (xxvii). She notes that technical services have evolved rapidly with the arrival of the internet; jobs are reconfigured and made more electronic-based; shrinking library budgets have adversely affected technical service budgets; cataloging departments seemingly lost their value as an essential function that is the foundation of libraries; new roles and creative challenges demand new skills. An example of a new role would be Crosetto's description of the management of electronic resources through electronic resource managers (ERM) which provide a means to reign in the unwieldy scope of electronic journals, databases and related resources, and provoked changes in work flow. She noted: "Once in place, the ERM and the substantial increase in the number of resources contained therein drove the need to revise responsibilities in library positions . . . established new positions dedicated to electronic resources" (75).

Alternatively, Moore and Weinheimer argue that even with growing number of digital resources, technical services retains ongoing and necessary functions to bring digital, analog, monograph and print resources together for patron access. These older resource types will not disappear, and what will be a mix of resource formats will demand creative solutions from technical services. They observe that "resources will continue to need to be selected, collected, acquired, and cataloged, and there will be a continued need for authority control, even more in the future than right now" (15).

Cataloging has undergone many changes during this period. Hall-Ellis describes how bibliographic description (cataloging and classification) has been transformed with the implementation of web-based electronic resources and the concurrent transformations in standards and proposed linkage schemes to the semantic web. Catalogers must now include ~~in~~ various metadata schemas in their skill sets. She traces these changes and details the new demands on catalogers to adapt to the new non-MARC based formats, summarizing major developments in cataloging descriptive

standards that have moved from AACR2 to RDA (preparing for an interlinked digital future) and changes from MARC to a still experimental BIBFRAME. Weiss offers an essay addressing a variety of previously mentioned issues such as e-books, patron drive acquisitions, metadata, BIBFRAME, and the recent debates in cataloging and the future of bibliographic control in a web-based and interlinked universe of information. She identifies avenues of professional development including knowing cataloging standards, developing programming and data competencies, and enhancing communication skills.

Weber points to the importance of vendor relationships and the how librarians can participate in the creation of standards, guidelines, codes of practices through creative conversations by librarians, thereby bringing the best library services to users. Luesebrink addresses acquisitions departments, where academic libraries are moving from a bureaucratic to a market- and user-driven model, changing from print-centric to an electronic-centric, user-centric resource model.

Changes demand new skills. Boyd and Gould provide a useful guide to the new skills and competencies needed in the technical services of the future. Creativity, initiative, communication and advocacy are positive attributes for those currently in or considering technical services librarianship. Weber focuses on negotiation for services and pricing are skills that need to be developed by librarians. Luesebrink outlines the skills needed in 21st century acquisitions librarianship: moving from simple clerical skills to fund-accounting competencies; developing relations with vendors; IT skills include database management and competencies in ILS modules; and better communication skills. Vellucci focuses upon the new field of research data as a potential area for technical service librarian contributions. She notes that these librarians are best situated to become research data librarians who can support the research projects of faculty. Her suggestions focus on models of new skills development, examples of research data/librarian projects, such as starting with student and faculty working in small research projects.

Advocacy is essential to the future of technical services. Weber points out the need for strong advocacy by technical services librarians beginning with one's own colleagues, administrators, and users. As technical services librarian needs to demonstrate the value of their work, Weber promotes advocacy of technical services by the librarians themselves in working with the Association for Library Collections & Technical Services (ALCTS). She advises that "a first step is to promote their work so that others fully understand what they contribute to the library overall and the implication of what would happen should their work cease to be provided" (25).

The book ends with Weber's survey of thirteen questions and answers from six technical services librarians of varying backgrounds. The answers are variable and some are provocative, giving an insightful mosaic of views and choices providing further helpful data from the profession.

Rethinking Library Technical Services offers positive outlooks originating from the technical services profession itself. It provides an extensive and detailed picture of the current states of affairs and complex functions found in the many aspects of current technical services departments, but best of all it provides positive suggestions, and hopeful advocacy for the profession rather than dismal forecasts of doom, or continuing the folly of policies that blindly propose cutbacks and downsizing. The book could see a few improvements: a more detailed index; linked data and BIBFRAME could use more coverage; serials, databases and discovery services need more attention. The focus has been in large academic university libraries, rather than small academic and public libraries. However, this book is useful for librarians in all types of libraries, and especially for students in library and information science considering a career in technical services.—*William Shakalis (wshakalis@worcester.edu), Worcester State University, Worcester, Massachusetts*

Cultural Heritage Information: Access and Management. Eds., Ian Ruthven and G.G. Chowdhury. Croydon, UK: Facet, 2015. 253 p. $99.08 softcover (ISBN: 978-1-85604-930-6).

As stated in the preface by Chowdhury and Ruthvan, "this book provides a snapshot of current research and development as well as outlining the various challenges and trends of research in relation to the creation, access and management of digital cultural heritage information systems and services" (xvi). In the first chapter, the editors define cultural heritage as falling into two main categories: tangible (such as paintings antiquities, artefacts, buildings, or monuments) or intangible (such as dance, plays, music, stories, etc.). When either of these two types are digitized, they become digital cultural heritage (1). With such a broad scope, those wishing to begin their scholarly inquiry into digital cultural heritage information management or those wishing for a snapshot of various issues facing digital curation professionals will find this book very useful. Additionally, this book will also appeal to those hoping to learn ideas and strategies implemented outside of the United States. All of the authors except two hail from outside of the United States, providing a different perspective for American curators.

The book begins with overview chapters on policies and infrastructures, and then moves "to considerations of interaction, access to objects, [and] concrete system implementations" (7). In reality, the eleven chapters discuss: an introduction to managing cultural heritage; the history of digital humanities; policy considerations in providing access to cultural heritage information (such as intellectual

property concerns); best practices in digitization standards and technologies; metadata issues in information systems; design considerations in information systems architecture; usability studies on digital information systems, user needs for digital information systems, knowledge organizational systems; projects that support multiple access paths for users of digital cultural heritage systems; and the sustainability of digital cultural heritage information systems.

The chapter formats include think pieces, analysis of past literature, and case studies. With only one or two chapters dedicated to one concept, the book feels a bit disjointed for those hoping for an in-depth analysis of a particular aspect of managing cultural heritage information systems (for instance, digitization standards, metadata issues, or usability studies). The chapters are very focused on one aspect of cultural heritage information and the book lacks a comprehensive conclusion integrating the various concepts together, leaving the reader feeling a bit shell-shocked at the end. Additionally, none of the chapters layers on or connects with each other. However, for those looking for a broad overview of concerns and issues, this book provides a great first step in considering various aspects of managing cultural heritage information.

The focus on international systems is very useful for documenting a global perspective on preserving digital cultural heritage resources. Most of the chapters focus on European institutions, but South Africa, Japan, and Canada are also represented. Many authors in this book refer to Europeana (www.europeana.eu/portal) in their analysis and case studies of digital cultural information systems. Similar to the Digital Public Library of America (http://dp.la), Europeana is a hub that brings together digital cultural heritage items from across multiple institutions together to one web portal. The analysis of the same project from multiple perspectives and with a focus on very different aspects of cultural heritage management is very interesting and helpful in synthesizing the concepts. Additionally, it is very worthwhile to learn about projects not heavily used or advertised in the United States. Such studies not only broaden perspectives, but can also assist managers of cultural heritage better understand user needs and perspectives on an international scale.

Some of the chapters are much stronger than others. The chapter focusing on managing information architecture; starts as a thought piece, and then concludes with a brief case study of two institutions. The authors might have been better served to integrate the case study into the rest of the chapter, so that the case study doesn't feel like an afterthought. The digital humanities chapter feels a little out of place in a book focusing on access and management of cultural heritage information, but is very well written and interesting. The author argues for a broader approach to thinking of the history of digital humanities scholarship, and chronicles the merging of different fields and scholarship angles to form our current understanding of digital humanities. The chapter on sustainability of information systems provides some concepts and ideas not usually discussed relating to not only the energy use of digital information systems, but also the accessibility of such systems to those international populations with limited access to the Internet. If we are truly digitizing information to provide information to everyone, we need to address issues of disparity in our populations.

Although not addressed in the book, one problematic issue with "cultural heritage" is that it means different things to different groups. This book strives to define cultural heritage in the first chapter, but authors of specific chapters define it differently. For instance, some refer to LAM (Libraries, Archives, and Museums), while a different articles use the acronym GLAM (for Galleries, Libraries, Archives, and Museums). Perhaps in and of itself, it is an admonition to our community that the definition changes from chapter to chapter; but nevertheless, it makes determining the intended audience difficult. In the introductory chapter on "cultural heritage," the editors strive to establish a definition, but individual chapter authors conceptualized it in varying ways, rarely using synonyms when discussing "cultural heritage," which would've helped further clarify their own definition. As a community, we need to assess what we mean by cultural heritage and be more consistent in our own literature so those outside our discipline can better follow our ideas and projects.

Overall, this book provides a global overview of issues related to cultural heritage information access and management. The eighteen authors span six countries and the diversity provides a welcome change in perspective from most texts that focus on American institutions. With the broad scope of "cultural heritage information access and management," the book feels unconnected, but also brings up many important and critical issues as we continue to develop and implement digital cultural information systems.—*Nicole Garrett Smeltekop (nicole@msu.edu), Michigan State University Libraries, East Lansing, Michigan*

ALCTS
Association for Library Collections & Technical Services
a division of the American Library Association
50 East Huron Street, Chicago, IL 60611 • 312-280-5038
Fax: 312-280-5033 • Toll Free: 1-800-545-2433 • www.ala.org/alcts