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Out-of-Print Digital Scanning

An Acquisitions and Preservation Alternative

L. Suzanne Kellerman

This article describes the in-house operational procedures developed at the Penn State University Libraries to produce facsimiles of hard-to-locate, out-of-print (OP) titles using digital scanning technologies. Since the out-of-print scan (OP/Scan) reproduction service was launched in 1995, more than a hundred titles have been added to the libraries' circulating collections. This process, a collaborative effort by the Acquisitions Services Department, the Preservation Department, the Office of Interlibrary Loan, and the University's Office of Copyright Clearance, has enabled the libraries to reduce the turnaround time for acquiring OP titles from years to only several months. Operational procedures developed by the four library units, including identification and selection, copyright considerations, materials preparation, scanning, and associated costs are described.

Historically, tracking down elusive out-of-print (OP) titles could be a time-consuming and often frustrating endeavor for most libraries. The process to locate and acquire an OP title often could take from several months to more than a year. In some cases, the OP search remained an "active want" and languished in a library's acquisitions workflow for literally years as an open search. However, the advent of new digital technologies, the development and evolution of the Web, and the increased availability of Web-based and Internet sources has dramatically changed the ways in which libraries acquire these hard-to-find OP titles. A published report by Steve Johnson on the Association for Library Collections and Technical Services (ALCTS) Out-of-Print Discussion Group meeting at the 1998 ALA Midwinter Meeting attests to the impact of these new trends:

> The OP market, for years a bastion of high markup and low sales volumes, has been turned on its head. Low markup and high sales are the watchwords of the day. In pre-Internet times, many people did not attempt to search for OP books due to the slow, expensive, and cumbersome nature of the business. But the Internet has changed all of that. Locating OP "wants" is now quick, easy and inexpensive (Johnson 1998, 370–71).

Additionally, results from a 1999 survey published in *Against the Grain* on the use of out-of-print searching on the Web confirmed that the trend is definitely to use the Web, especially when trying to locate domestic titles (Fennessy, Albright, and Miraglia 1999). The survey discovered that U.S. titles were easier to find than foreign works.

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Another recent trend affecting the OP market is the increased availability and use of print-on-demand (POD) technology. For years, when books went out of print, consumers and libraries had no other recourse but to place their "want list" with an OP vendor or dealer and wait. With new revolutionary advances in the technopublishing business, print-on-demand has become a viable economic option for publishers and libraries alike (Berry 1998; *Never Out of Print* 1998; Terry 2000; Haugan 2000). Thanks to publisher print-on-demand capabilities coupled with emerging on-demand binding offered by binders (Campbell 1994), no book should have to slip to OP status again. Today, book publishers and companies such as ProQuest Information and Learning Company's Books on Demand, Ingram Industries' Lightning Source, Baker and Taylor's Replica Books, and netLibrary, Inc. will scan and produce single copies of books based on user demand.

While some publishers have only recently begun to offer on-demand books, libraries have had the capability to produce or acquire single facsimiles of books for their collections using traditional xerographic technology (photocopying). Used successfully by libraries for many years, preservation photocopying allows libraries to produce use copies of fragile originals, replace missing or damaged pages, or replace entire books (Walker 1987; Barker, Rottman, and Ng 1990; Orr 1990; Baird 1997). This technique provides the means to preserve the intellectual content of published works that might otherwise be lost. Until recently, the only methods available for creating facsimiles were to generate a black-and-white copy on a photocopying machine and print the image on alkaline paper, or to produce a Copyflo paper copy from microfilm. Now with the advent of digital capture technologies and quality production printing—the successor technology to preservation photocopying—some libraries are embracing digital print-on-demand solutions as a new means of acquiring materials, especially hard to locate out-of-print materials.

The advantages of digital imaging over traditional photocopying are profound. Not only does this technology allow for the creation of machine-readable files that can be quickly and easily accessed time and time again, but copies can also be reproduced with 100% accuracy with no degradation of quality in comparison to the originals, as would be the case with photocopies. In addition, text can be accurately aligned and registered back to front, and sophisticated editing allows for vastly improved image quality.

Background

Since the inception of the Penn State University Libraries' first digital preservation demonstration project in 1992, the Preservation Department has been actively engaged in using digital scanning to convert existing paper collections to electronic form. Digitization projects to convert sundry and disparate archival collections from Special Collections were the prevailing activities of the scanning unit for the first several years of its existence. Since then, the scanning unit, one of four units in the Preservation Department, has evolved to serve as overseer of digital imaging projects for preservation purposes and as the primary production capture center for the university libraries. Much of the unit's work today consists of creating paper reproductions of brittle books, out-of-print titles, whole periodical issues, and production of replacement pages. OP title scanning represents 5% of the unit's weekly production workflow. This unit also provides consultation to library selectors and staff on technical matters regarding digitization projects including materials preparation, image capture, Web site design, and file and server maintenance. Staff also train library personnel in digital capture methods and serve as liaison to library systems personnel. The unit currently employs 2.75 full-time employed staff.

In 1993, while the scanning unit was still in its formative stage, the libraries experienced a major water disaster that resulted in sixty-five thousand damaged volumes, of which more than one hundred were completely unsalvageable. As the library staff worked to recover the vast majority of the water-damaged volumes, library selectors reviewed the one hundred titles deemed unsalvageable and decided that many of these titles should be replaced. Replacement orders were prepared and placed with the Acquisitions Services Department's University Firm Order (UFO) Team for processing. Preliminary searching by the Acquisitions staff revealed that all of these titles were out of print. Orders were placed with OP vendors and the UFO team waited for orders to be filled. After a year, many of these titles still remained "active wants." As alternative replacement solutions were being considered, the idea arose to investigate whether in-house scanning operations could facilitate the process of replacing these lost volumes.

The basic premise was to borrow the needed title from another library location, scan each page from the borrowed volume, print the captured file to permanent paper, send the printed pages for commercial binding, and add the newly created volume to the collection. A pilot project to test the operational procedure—assessing individual unit workflow issues, turnaround time, product quality, and selector satisfaction—was initiated. After minor adjustments were made to streamline the workflow process, the procedures were adopted. Since the OP/Scan reproduction service was officially launched as a new alternative library procedure for acquiring preservation-quality OP titles in May 1995, more than one hundred titles have been added either as new titles or replacement copies of lost titles. As a result of this new procedure, the university libraries reduced

the turnaround time for acquiring OP titles from several years to several months and improved the long-term quality of the volumes being added to the collection.

The OP/Scan Process

The OP/Scan procedure described in this article was the direct result of a collaborative effort among the staffs from the UFO team, the Preservation Department's Digital Scanning Unit, the Interlibrary Loan Borrowing Unit, and the University's Office of Copyright Clearance. The responsibility and workflow activities of each of these four units are described in detail below.

Identification and Selection

Conducting traditional OP searches and placing order requests with vendors, dealers, and online booksellers remains an integral part of the acquisitions process. The first step in any OP search involves the review of each order submitted by library selectors and the identification of an appropriate vendor by the UFO team. Once a vendor is chosen, an online order record is created for tracking purposes and the order is placed. If the book is found, the vendor ships the book fulfilling the order and the order is complete. If, on the other hand, the order remains unfilled for a period of time, the UFO team reviews the request as a potential OP/Scan title. In order for the title to be considered an OP/Scan title, it must meet the following selection criteria:

- The requested title must have been placed as an "active want" with a vendor for at least two months. Internally, it was determined that a two-month search by a vendor was an acceptable amount of time for an order request to be fulfilled and that a two-month window demonstrated an ethical "good faith attempt" to try to purchase the title from a vendor or dealer.
- If the library selector initiating the order designated a title as a rush request, it must be placed as an active search with a vendor or dealer for at least one month.
- Due to the size limitations of the in-house scanning systems, the physical dimension of the volume cannot exceed 11" x 17" or 28 cm x 43 cm. Any volume exceeding these dimensions cannot be scanned using the in-house equipment and must be kept on "active want" status.

If it is determined that a requested OP title meets the required selection criteria, the Acquisitions' UFO staff annotates the existing online OP acquisitions record for the title as an OP/Scan. A copy of the original selector order request including all supplementary bibliographic search results from RLIN or OCLC, along with a completed OP/Scan Request Form, are sent to the Preservation Department for the next step of the process, which is to calculate the estimated cost to have the title scanned, printed, and commercially bound.

The Cost Factor

Once the completed OP/Scan Request Form and accompanying materials are received in the Preservation Department, staff review the paperwork to estimate the associated costs of producing a paper facsimile of the item. Since library selectors' acquisitions budgets are charged for the reproduction copy, notification of estimated costs and signed approval by the selectors are required before the OP/Scan process can continue.

Estimated costs for scanning and quality control inspection (labor costs), printing, binding, and copyright and processing fees are calculated and reported on the OP/Scan Request Form. The completed form is then returned to the UFO team. Data elements found on the bibliographic record, primarily the imprint information found in MARC-tag 300 field, are used to estimate the associated costs for scanning, printing, and binding. Calculating the costs to scan a volume is purely speculative without having the book in hand. Costs can vary wildly depending on the physical characteristics of each item. Page size, number of pages, illustrations, photographs, plates, foldouts, and maps are all variable factors that must be taken into consideration when calculating the cost and length of time needed to reproduce an item. On average, per page image costs have ranged from $.13 to $.39.

When the UFO team receives the completed OP/Scan Request Form with the estimated costs, the staff prepares and sends an interoffice memo, including estimated costs for scanning, to the library selector outlining options for acquisition of the title in question. The selector is asked to choose one of three options outlined on the form. The options are:

- to **continue** the title search as an "active want" and retain the order with the vendor or dealer. This selection option is chosen primarily when the selector desires an original publisher's copy.
- to **discontinue** the search and cancel the order. This option is selected if it is deemed by the selector that the item is no longer needed.
- to **have the item borrowed** via interlibrary loan and **scanned** to make a reproduction copy.

Selectors are given three weeks to make a processing decision. After the decision is made, the selector then returns the annotated memo to the UFO team to carry out

the selection decision. If the selector's decision is to retain the title search as is, the online order record is updated to reflect the decision and the title search remains open as an "active want" with the vendor. If the decision is returned to discontinue the OP search, the online record is updated and the request is canceled with the vendor. If the selector approves the title to be scanned, the UFO team initiates the process to seek copyright permission through the university's Office of Copyright Clearance.

Copyright Issues and Considerations

Copyright permission may not be required before producing a scanned copy depending on when the work was published or the condition or status of the first purchased copy. Replacement copies for a missing, lost, stolen, damaged, or deteriorating volume may not require copyright permission before a scanned copy is produced if the library determines by reasonable means that a copy cannot be obtained at a fair price. Additionally, published works that are considered in the public domain do not require copyright permission (Gasaway 1999). Copyright permission is pursued if either of these situations applies:

- The library never owned the title and the date the work was published is protected by copyright, or
- The library is requesting a second copy for the same location or different location, i.e., another campus location, and the work is protected by copyright

For Penn State, the university's Office of Copyright Clearance is our authorized source to pursue copyright permission for our OP titles. We rely on this office to carry out the necessary investigative work to find and locate rights holders and seek the necessary permission to reproduce a paper copy of the work. In most cases, we only seek permission to make a single reproduction copy but may on occasion request permission to display the work electronically. Extreme caution is exercised when working with titles clearly not in the public domain and restricted by copyright.

The process of seeking permission from authors, publishers, or rights holders can be an arduous task at best. In some cases, permission is granted within one to three weeks, but more often the process takes several months to a year. The copyright office gives rights holders a window of ten to twelve weeks to respond to a copyright permission inquiry. After that time limit, the office follows up with faxes, e-mails, and phone calls to elicit a response. Basically, all the office can do is wait for a response. In some cases, the office may never receive a response. Copyright fees vary. To date, the largest fee paid for a single title was $23.94. In many cases, the authors, publishers, and rights holders were so pleased that the libraries wanted a copy of their work that no fee was charged. In addition to a copyright fee, the copyright office assesses the libraries a processing fee for carrying out the copyright investigation process. This fee is calculated at one cent per page for the entire work, plus phone and fax charges. On average, a typical processing fee is $20. For legal purposes, the copyright office maintains a permanent hard copy file of all correspondence with rights holders.

Procurement and Preparation of Materials

Once permission is granted and permission fees are assessed, the copyright office forwards the permission response to the Acquisitions staff along with the copyright and processing fees.

Interlibrary Loan

The next step in the process is for the UFO team to initiate an interlibrary loan (ILL) request for the title. Using the OCLC ILL module, the ILL Borrowing Team processes the request. ILL staff annotates the request stating that the entire book is needed and that the title will be electronically scanned. In addition to the note, a contact name and telephone number are given should the lending library have questions about the ensuing process. There are occasions, however, when contacting the collection development librarian or the preservation officer directly is the preferred option when seeking to borrow special types of materials. These include:

- rare books
- books held by very few libraries
- reference materials (requiring special permission)
- books with restricted or limited access

Materials Preparation

After the title has been borrowed from another institution and delivered to the Preservation Department, scanning unit staff inspect the book to assess its "scannability." Each physical volume is carefully examined for durability, type and condition of leaf attachment, and paper flexibility. Special attention is made to discover if margins are tight, if colored plates exist, if pages are loose, or if there are fold-outs. The two-double-fold brittle paper test is conducted to detect paper strength and flexibility. If the volume is too fragile, exceeds the size limit, or has color plates, it is not scannable. The volume is returned to ILL and a new ILL request is initiated. If the volume passes the preservation assessment, it is then prepped and placed in queue for scanning. The volume is collated for completeness; pages

are counted; special characteristics of the book such as fold-outs and plates are noted; and the overall size of the volume is measured. This volume-specific information is recorded on a Digital Processing Form, along with bibliographic data, special handling or reproduction instructions from the lending library, selector notes, copyright restrictions, and the interlibrary loan due date (figure 1).

Production Scanning

After the volume is collated and prepped, and scanning instructions are reviewed, the production scanning begins. The volume is hand-placed on the flatbed scanner and gently flexed open to accommodate each page scan. Text and line-drawn illustrations are captured as 600 dpi black and white images. Half-tone photographs are generally captured in 600 dpi grayscale. Selective image editing is performed. The main goal in producing a facsimile copy is to make the text and illustrations legible. Images are edited to correct skew, eliminate or reduce print bleed-through, and remove distracting stains or marks, such as pencil or pen underlining. Margin notes or other markings that obscure the text are also erased. Scanning technicians routinely edit out the lending library's ownership markings, call number, or accession numbering.

Once production scanning is complete, each page image is inspected for quality and compared to the original text page. Using the original text as a guide, the scanning technician reviews images to check for appropriate light-to-dark contrasts of text and to improve image representation after editing. Rescanning is performed as needed to replace poor quality images with improved rescans. Following the often labor-intensive inspection process, page images are electronically transmitted in a batch mode for on-demand two-sided printing. The Xerox DigiPath scanning workstation provides the capture and image production (the only known system that can scan 600 dpi black and white documents at the speed of two to three seconds per page and has the functionality to accurately align text back to front on each page), while the Xerox DocuTech Publication Publisher system provides the printing. The Xerox DigiPath production system coupled with the DocuTech Publisher offers the maximum end-to-end book production needed to produce preservation-quality facsimile reproductions. Page images are printed on 25% cotton bond, 20-pound alkaline (permanent) paper that complies with the Permanent Paper Standard issued by

Digital Processing Form

Date received in Scanning: **5/27/98**	Date printed: **6/9/98**	Date delivered to Bindery: **6/10/98**
X out-of-print ❒ brittle book	❒ replacement pages	❒ other _____
Bibliographic Information		
Title (article, book): **Geometrical theory of diffraction for electromagnetic waves**		Volume/Edition: **3d revised ed.**
Author/Editor: **Graeme L. James**	Publisher, place of publication (copyright date): **Peter Peregrinus, Ltd. London (1986)**	
Borrowed from: **University of Pittsburgh**		ILL Due Date: **6/12/98**
Size: Width: 5.75" Length: 8.94"	Disbind? ❒ Yes ❒ No	Keep Image File? ❒ Yes (save to disk) X No (discard)
Settings: (list whether Text/Line art, Photo, Fine or Coarse Halftone, and the settings for each): **Text/Line art - 40 darkness; 0.02 edge trim**		
Special instructions: **Scanned volume to replace missing volume at Engineering Library (QC665.D5J36 1986)**		
Scanning Record		
Dates scanned: **6/8–9/98** Time spent scanning: **2 hours 2 minutes** Time spent for Quality Control: **2 hours 15 minutes** (removing stray specks, deskewing, adjusting/repairing text, etc.) Saved under filename: **geom1.rdo; geom2.rdo; geom3.rdo** On which optical disk:		
Printing instructions (if any): **Print to 8.5" x 11" 20 lb. bond alkaline paper**		

Figure 1. Digital Processing Form Used to Indicate Volume-Specific Characteristics and Instructions to Scanning Technician

the National Information Standards Organization (Z39.48-1984). As a final inspection action, each printed page is again compared to the original text pages to ensure quality and accuracy of the facsimile reproduction. When required by the terms of copyright permission, scanning staff delete the page image files from the system.

End-Processing

After the book is scanned and page images printed, the preservation scanning staff complete the OP/Scan process by reporting the actual book production costs. Costs are based on the time spent on each task involved: materials preparation, scanning, and quality control inspection of images and printed pages. These individual times are multiplied by a pre-established hourly rate. In addition, actual costs for printing and commercial binding are calculated and reported on a Reproduction Cost Sheet (figure 2).

After the cost sheet is completed, printed pages are processed for commercial binding and the original borrowed book is returned to ILL. Before binding, a Notice of Copy Statement is added as the first printed page of the volume to alert users that the volume in hand is a reproduction (figure 3).

In addition to including a Notice of Copy Statement in the physical volume, a MARC-tag 533 field is added to the bibliographic record of the title indicating that the copy is a reproduction. "Scanned" is also noted in the holdings statement to alert patrons that the item is a facsimile (figure 4).

Preservation scanning staff annotate the original OP/Scan Request Form with the cost information, the date scanning was completed, and the date that the reproduction copy was sent for binding. On receipt of the completed OP/Scan form, the Acquisitions staff encumbers the selector's collection development fund for the total cost of the scanned copy, including copyright fees and copyright office processing fees. All original paperwork associated with the OP/Scan title acquisition process is delivered to the Preservation Department for permanent retention.

OP/Scan for Math Library
New Title

TITLE	REPRODUCTION COSTS	COSTS
Lecture notes in Mathematics, no. 513 Robert Warfield; 1976		
Scanning (Labor): (# of hrs. x hourly rate)]	1.92 hrs. x $10.00/hr.	$19.20
Quality Control Inspection: (# of hrs. x hourly rate)	1.58 hrs. x $10.00/hr.	$15.80
Printing: (per-page rate x # of pages)	$0.048 pg. x 123 pgs.	$ 5.90
Binding:		$ 6.00
		Total Costs: $46.90 ($.38/pg.)

10/29/97 - to Bindery; trim to: 6.5" x 9.5"
10/29/97 - ILL volume returned

(Paid $7.50 copyright fee)

Figure 2. Completed Reproduction Cost Sheet Showing Calculated Costs for Scanning, Quality Control Inspection, Printing, and Binding

Summary Data

The OP/Scan process has proven to be a viable solution for obtaining hard-to-locate, out-of-print library materials. The data below provide brief quantitative results of the Penn State University Libraries' six-year experience:

- To date, the Preservation scanning unit has scanned 116 OP titles
- 55 (47%) have been new titles; each requiring copyright permission prior to scanning
- 61 (53%) have been replacement copies of lost volumes
- Average turnaround time for the entire OP/Scan process is two to four months
- Average per-page scanning cost: $.28
- Average total cost for reproduced OP title: $63.27

Future Trends

Clearly, not every institution is capable or inclined to purchase sophisticated, high-quality scanning and printing equipment. Recognizing the potential market for this service, some commercial binders have begun to diversify their services and now offer reproduction services (Larsen 2000). As commercial binders broaden their service offerings to include books-on-demand and on-demand binding, it will be possible for many libraries to consider these options for replacing OP titles and other reprinting needs. In the September 1999 issue of the *New Library Scene,* George Cooke noted that this trend could be carried even one step further:

> Books, journals and collections of manuscripts will become more accessible and affordable in the near future through automated on-demand binding. But today, digital copies can be produced from archival microfilm, which serves as the source for books-on-demand. Many library customers would prefer to

The University Libraries at Penn State reproduced this volume, and has done so in compliance with current copyright law. The University Libraries produced this volume using digital technology, and the copy has been printed on paper that complies with the Permanent Paper Standard issued by the National Information Standards Organization (Z39.48-1984)

[date]

Figure 3. A Notice of Copy Statement Is Added to Each Facsimile Reproduction to Alert Users That the Volume in Hand Is a Reproduction

008 ENT: 810316 TYP: s DT1: 1970 DT2: LAN: eng
010 70132918
019 MARS
040 $cPSt $dWaOLN
050 0 TN871 $b.F28
090 01 TN871 $b.F28 $cem+(scanned)*32906264
100 2 Farouq Ali, S. M., $d1936-
245 10 Oil recovery by steam injection / $c[by] S. M. Farouq Ali.
260 Bradford, Pa. : $bProducers Pub. Co., $c1970.
300 vi, 122 p. : $billus., maps. ; $c28 cm.
500 "The present book is a compilation of selected articles written by the author for the 'Producers Monthly'".
504 Includes bibliographical references.
533 **Reproduction (printout). $bUniversity Park, Pa., $cThe Pennsylvania State University, $d1998. $nE&MS copy reproduced from computerized image files.**
650 0 Thermal oil recovery.

TN871.F28
Earth & Min Sci Library, 105 Deike-
Item (scanned)
1 Available

Figure 4. Online Catalog Record Showing MARC-tag Field and Holdings Statement Alerting Patrons That the Item Is a Reproduction

> have an exact copy printed on good paper and in a sturdy binding rather than reading the text from a reel of microfilm. The combination of computers, digital technology and automated bindery equipment offers exciting prospects for the future. It has been possible for quite a few years to order relatively inexpensive photocopies from stored microfilm, but nothing we have known in the past can equal the promise offered to binders by the new technology (18–19).

Conclusion

With the unprecedented explosion of information technology and subsequent round-the-clock online access to books, journals, and other information sources, it is increasingly difficult to justify an eighteen- to twenty-four-month delay in securing OP materials requested by faculty and students. Expectations of "instant delivery" have been raised, and such a time lapse has become unacceptable to researchers and scholars. Compounding the problem is the fact that publishers no longer maintain expensive warehouses with vast stores of books that may never be requested; hence, titles become out-of-print more rapidly and with far greater frequency than was previously the case. The University Libraries identified this situation as a problem to be solved and initiated the scanning process described in this article.

Since its inception in 1995, the University Libraries' OP/Scan process has proven to be a cost-effective and process-efficient alternative for acquiring hard-to-locate OP titles. Because the University Libraries had the necessary equipment and network connectivity already in place (the Xerox DigiPath scanning workstation in-house and the Xerox DocuTech Publication Publisher located across campus at Document Services), it was possible to conceive and implement this innovative solution. As a result, the process has significantly reduced the turnaround time for acquiring OP titles and has provided a viable method for creating a high-quality preservation product for the libraries' collections.

Until commercial vendors routinely offer these services at a competitive price, academic libraries can much more quickly and efficiently fill gaps in their collections by utilizing the OP scanning/binding process. As indicated above, once the process is in place, the reproduction cost per volume is extremely reasonable. Large libraries with the necessary equipment and staff resources should seriously consider this practical approach to collection building and devote a portion of their resources to fulfilling this growing and as yet unmet need.

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Practitioner Perspectives on Cataloging Education for Entry-Level Academic Librarians

Karen M. Letarte, Michelle R. Turvey, Dea Borneman, and David L. Adams

The role of cataloging education within the library profession is a topic of considerable interest and debate. Fifty-five heads of reference and sixty-five heads of cataloging in Association of Research Librarians institutions responded to a survey based upon the Association for Library Collections and Technical Services Educational Policy Statement, Appendix: Knowledge and Skills, Intellectual Access and Information Organization, concerning the importance of cataloging competencies for all entry-level academic librarians. The survey found that practitioners agreed upon a definite set of core cataloging competencies that all entry-level academic librarians should possess. This finding holds larger implications for library education for academic librarians and for the profession as a whole.

In an age when library competencies are widely discussed and considered and increasing numbers of libraries are seeking to outsource technical services functions, where do basic cataloging competencies for new graduates stand? The first Congress on Professional Education addressed the topic of initial preparation of librarians for the field from a variety of angles, including core values, core competencies, accreditation, and stratification (American Library Association 1999).

Interest in the question of core cataloging competencies for academic librarians developed after one of the authors was involved in the recruitment process for two academic library cataloging positions at Southwest Missouri State University (SMSU). Throughout the search process, a striking variation in basic cataloging competencies was noted among the candidates. Far from being an isolated instance, this variation occurred in candidate pools for a number of searches the library has conducted to fill existing and newly created professional positions in the past five years. The occurrence of such variation in cataloging education for both cataloging and noncataloging positions raised questions concerning cataloging education in American Library Association–accredited programs. What is the current state of cataloging education for all librarians? How do practitioners view its importance in the library science curriculum?

A review of the current literature on the roles of cataloging and cataloging education further fueled the initial questions. In the literature, a number of articles have focused on the perceived divide between practitioners and educators on the role of cataloging education within the library and information science

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graduate degree program. Arguing from the practitioner's perspective, Morris and Wool (1999) assert that quality cataloging still has value today in terms of its influence on effective reference services, collection management, resource sharing, and database automation.

While Morris and Wool, as practitioners, emphasize the value of cataloging and cataloging education, Fallis and Frické, speaking as library educators, characterize cataloging as a practical skill and thus not appropriate for graduate-level education. "While much of what librarians do requires that theoretical, graduate-level education, librarians also need certain practical skills. Many practical skills of librarianship (including how to catalog books) are simply not appropriate material for graduate-level courses" (1999, 44). However, the ALA-accredited master's degree has traditionally included elements of both theory and practice for all areas of librarianship. To advocate the removal of cataloging education from the graduate curriculum due to a perception that it is limited to purely mechanical or technical elements overlooks the fact that other areas of graduate curriculum teach "how to" or basic skills and competencies as well.

The Association for Library Collections and Technical Services (ALCTS) Educational Policy Statement (1995) stresses a combination of theoretical and practical knowledge. Examples of other practical skills and competencies within the graduate curriculum include how to conduct a reference interview, budgeting in management, and the acquisitions side of collection development. Given the divergent views on the roles of cataloging and cataloging education that exist in the literature, an examination of the current status of cataloging education in library and information science graduate curriculum provides useful insights.

Literature Review

McAllister-Harper, Vellucci, and Spillane conducted three of the most recent studies addressing cataloging education. McAllister-Harper (1993) reviewed the content of cataloging and classification courses at sixteen ALA-accredited doctoral programs. While it provided some insight, the study was greatly limited by the small sample size and its focus on doctoral programs.

Both Vellucci and Spillane examined the requirements for basic cataloging courses within ALA-accredited masters programs. Specifically, Vellucci (1997) studied bulletins of fifty-two U.S. and Canadian ALA-accredited library schools in order to determine the strength of cataloging in the master's level curriculum and program requirements for cataloging. Vellucci reviewed the bulletins in light of the final report of the Cataloger Training Task Group of the Cooperative Cataloging Council and the ALCTS Educational Policy Statement (1995). The findings revealed a general decline in the number of required basic cataloging courses and an increase in the number of more general courses that incorporate cataloging with indexing, abstracting, and other methods of organization. A greater variety of offerings in advanced cataloging courses were also noted.

Spillane (1999) investigated the number of required introductory cataloging courses listed in the bulletins of fifty-six ALA-accredited schools and confirmed the decline in the number of required basic cataloging courses. Although the number of required introductory cataloging courses had decreased, a greater overall number of cataloging courses was being offered. However, the increase in the overall number of cataloging courses offered could be attributed to several factors, including the growth of new formats such as DVDs, Internet resources, electronic serials, and emerging metadata standards. A significant drawback in Spillane's method was the use of the course bulletin as the primary information source. Bulletins do not necessarily represent regularly offered cataloging courses; moreover, course listings in bulletins are revised infrequently in comparison to course schedules and may not readily reflect the practices of individual faculty members. Another difficulty of using bulletins as the information source arises in relation to the definition of core cataloging courses. Each institution defines "core" somewhat differently. In some programs, a "core" cataloging course is required for all students, while in others, it is one of a number of core options. Lacking an operational definition of core, the reader is forced to guess how variations between program requirements were accounted for in the study.

Both Vellucci and Spillane demonstrate the changing nature of cataloging education and the general decline in the number of basic cataloging courses over time. This raises the question of the importance of cataloging education for all entry-level librarians, something for which, not surprisingly, catalogers have advocated for some time. "If for no other reason than the practical necessity of understanding and planning for automated catalogs, every M.L.S. graduate needs coursework in cataloging. To the noncataloger, catalog information is more a commodity than a scholarly resource" (Urbanski 1992, 58). Thus, cataloging education provides a useful framework for other library activities, not just cataloging.

Ironically, as the number of basic cataloging courses has declined in favor of a more integrated course model with cataloging as only one component, bibliographic control needs have become even more sophisticated. A key example can be found in the area of electronic resources where differing levels of granularity present new levels of complexity for bibliographic description. Alternate avenues of access for electronic resources, beyond the library catalog, are being explored through the use of various metadata schemata.

Metadata is defined as data about data. Often, particularly in the case of electronic resources, this data is embedded in the object that is being described. While traditional cataloging represents one type of metadata, the field of metadata is broader than traditional cataloging. Each metadata standard tends to reflect the needs of the particular community that created it. OCLC's Dublin Core standard, for example, attempts to create a flexible framework for describing electronic resources that may be used easily by catalogers and noncatalogers alike. But whether access to electronic resources is provided via use of embedded metadata or through the library catalog, the need for access is critical. "Without bibliographic control, librarians and other staff cannot do their work and library users cannot use the collections effectively. Without librarians and staff, the library is merely a warehouse" (Gorman 1999, 6). At a time when cataloging education seems to be declining, the need for librarians who understand cataloging is increasing.

Beyond cataloging education, research into competencies for librarians continues to be of great interest within the profession. Studies on competencies are plentiful, yet many of the topics have not been revisited in recent years. Several studies focused on competencies within particular specialties (Powell and Creth 1986; Green 1993) and on competencies that recent graduates should possess (White and Paris 1985; Buttlar and DuMont 1989). Within cataloging, various studies have examined basic cataloging competencies that entry-level catalogers should possess (CCS Task Force on Education and Recruitment for Cataloging Report 1986; MacLeod and Callahan 1995; Hill 1997). A subtopic under cataloging competencies for entry-level catalogers is the debate over the teaching of cataloging theory versus cataloging practice (Riemer 1993; Speller 1993; Vellucci 1997).

However, nothing within the competencies literature attempts to address a set of cataloging competencies that all entry-level academic librarians should possess. In light of the literature on the fluctuating state of cataloging education and the gaps in competencies research, questions arose concerning cataloging education in a broader context.

Research Problems

During the recruitment process for various library positions at SMSU, questions arose concerning the widely varying levels of cataloging education among applicants. The results from a follow-up literature survey on the topic of cataloging education raised still more questions. In order to more fully consider questions raised, the authors decided to focus on them as they relate to academic libraries. Spillane (1999) and Vellucci (1997) have documented a decrease in the number of required cataloging courses in ALA-accredited masters programs, raising the following questions as they relate to academic librarians:

- Do public and technical services practitioners in academic libraries believe that cataloging education is important for all entry-level academic librarians?
- Is there a basic set of cataloging competencies that public and technical services practitioners in academic libraries believe that all entry-level academic librarians should possess?
- Are there differences in the ways that public and technical services practitioners in academic librarians view the importance of cataloging competencies for all entry-level academic librarians?
- Do practitioners view practical cataloging knowledge as being less important than theoretical knowledge?

These research questions hold implications for users and librarians alike. The assumption is that a basic understanding of cataloging has value beyond technical services divisions, since the catalog is one of the library's primary and most expensive finding aids. The quality of the bibliographic data has a powerful impact on the functionality of library systems. A basic understanding of cataloging also has implications for library users and those assisting users with the library catalog and other tools (e.g., indexes, Internet searching, etc.).

Method

To explore the research questions, a survey was designed to elicit opinions from academic library practitioners in both public and technical services concerning the importance of cataloging competencies for all entry-level academic librarians. For the purpose of this study, entry-level was operationally defined as the first professional position following receipt of the ALA-accredited master's degree. The pool of academic librarians for this study was defined as professional librarians working in Association of Research Libraries (ARL) institutions whose primary mission is to serve the students of the parent institution.

While the ALCTS Educational Policy Statement (1995) was written specifically with technical services in mind, many of the tenets can be applied to a broader audience. "A fundamental knowledge of the ways in which information is organized, stored, and retrieved is important for librarians in all areas of the library. Intellectual access and information organization provide the structures and pattern of control found in all information-access components of libraries" (ALCTS Educational Policy Statement 1995). The document contains suggested competencies for a variety of specialties within technical services (information organization,

acquisitions and collection development, preservation). For the purposes of this study, the focus was on only those competencies related to information organization or cataloging.

Because cataloging is an area of value to the whole of librarianship, a survey was designed to gather information on the opinions of practitioners in both public and technical services. The survey was based on the competencies found in the ALCTS Educational Policy Statement, Appendix: Knowledge and Skills, Intellectual Access and Information Organization (1995). The survey sought to measure whether or not heads of reference and heads of cataloging in ARL member institutions viewed the listed cataloging competencies as important for all entry-level academic librarians, rather than simply technical services librarians.

Letters soliciting survey participation were sent via e-mail to 111 current heads of reference and 111 heads of cataloging at ARL academic libraries. Research library members with no university affiliation (e.g., Library of Congress, etc.) were omitted from the sample. The academic ARL member libraries include a wide range of institutions in a broad array of geographic settings in both the United States and Canada.

Every effort was made to identify the current heads of reference and heads of cataloging departments or their equivalents. In many instances, multiple campus libraries existed with several including more than one reference department. When this scenario was encountered, the head of the reference department in the main library with the most general collection was preferred. On occasion, a separate cataloging department was associated with a branch (e.g., medical library with separate cataloging unit). In cases where a variety of cataloging functions existed in separate units (serials, copy cataloging, original cataloging, cataloging by subject, etc.), the head of the original monographic cataloging unit was preferred.

The primary source of contact information was individual library Web pages supplemented by online faculty and staff directories. If information on a library's Web pages proved incomplete, the university's online directory was consulted. Remaining gaps were filled by consulting Hopkins (2000) or by contacting the institutions directly either by e-mail or telephone. Contact information, once completed, was then entered into a FileMaker Pro database.

Survey questions were based on the ALCTS Educational Policy Statement, Appendix: Knowledge and Skills, Intellectual Access and Information Organization (1995), addressing both broad and specific cataloging competencies. Although the statement makes no mention of specific type of library (academic, public, school, special), academic libraries were the focus of the survey. For the purposes of this study, skills and competencies are used interchangeably.

In order to prevent unsolicited participation, participants were given a user name and password to access the survey. The only required elements on the survey were the department type (public services or technical services) and e-mail address. Completed surveys arrived via e-mail and were then transferred to a secure server. Pretesting of the survey within the researchers' home institution ensured there were no technical difficulties in form submission or in survey display using different browsers and different platforms. Finally, although responses were anonymous, respondents were asked to provide their e-mail address so that duplicate responses could be detected and follow-up messages for nonresponses sent. Survey responses were analyzed using SPSS statistical software.

Results

The survey was administered to 111 heads of reference and 111 heads of cataloging in ARL libraries. Of the 222 individuals surveyed, 120 replied (55 public services, 65 technical services) for a response rate of 54%. The survey included twenty-five questions focusing on thirty-nine cataloging competencies. Participants were asked to rank the importance of the cataloging skills and competencies listed for all entry-level academic librarians, regardless of their specific area of employment. Each skill or competency was ranked according to the following four-point scale, where: 1=Essential; 2=Important; 3=Desirable, but not necessary; and 4=Unimportant.

The first research question asked whether public and technical services practitioners in academic libraries believe that cataloging education is important for all entry-level academic librarians. Results clearly indicate strong agreement among all respondents that the competencies surveyed are important, with means for all competencies falling within the range of essential to important. Table 1 displays the means for the competencies as ranked by all respondents in order from the lowest to the highest means, along with the accompanying standard deviation.

The means of all the competencies listed in table 1 fall within a relatively small range, from 1.11 to 2.80, where (1) is essential, (2) is important, and (3) is desirable, but not necessary. All of the means thus fall well below 3.0, into the range of essential to important. Furthermore, the differences between many of the means are slight, and most have relatively small standard deviations, indicating a high level of agreement among respondents. The means indicate that public and technical services practitioners in academic libraries consider cataloging education to be valuable for entry-level academic librarians.

One respondent commented, "All the competencies listed here are very important if a person is going to be suc-

Table 1. Cataloging Competencies for All Entry-Level Academic Librarians

Competency	No.	Mean	SD
Ability to read and interpret a bibliographic record in an OPAC	120	1.11	.4058
Understanding of information-seeking behaviors of users	120	1.48	.6349
Knowledge of the ways in which searching techniques affect precision and recall	120	1.53	.6208
Knowledge of the theory of information organization and intellectual access	120	1.58	.7051
Ability to evaluate information-retrieval systems in relation to user needs and information-seeking behaviors	119	1.68	.7804
Understanding of the activities that must be performed to provide the products and services users need	119	1.71	.7265
Library of Congress Subject Headings	119	1.74	.7531
Awareness of bibliographic utilities	119	1.76	.7808
MARC format	117	1.79	.8463
Library of Congress Classification	119	1.76	.6975
Understanding the relationship between classification schemes and shelf order	118	1.79	.7719
Cataloging tools: Basic knowledge of	119	1.79	.8221
Understanding the relationship of the research library's units to the provision of intellectual access to information resources	118	1.80	.7072
Knowledge of the ways in which data structures affect precision and recall	120	1.79	.6969
Classification: Knowledge of theory	118	1.86	.7270
Knowledge of the theoretical basis for retrieval	120	1.87	.7839
Knowledge of bibliographic relationships underlying database design	120	1.88	.7003
Describing, identifying, and showing relationships among materials: Knowledge of theory	120	1.89	.6835
Subject analysis: Knowledge of theory	119	1.92	.7448
Knowledge of the basic database design concepts	119	2.00	.7591
Ability to develop and apply syndetic structure and controlled vocabulary in information retrieval systems	117	2.10	.8135
Subject analysis: Knowledge of methods for	117	2.13	.7490
Describing, identifying, and showing relationships among materials: Knowledge of methods for	119	2.08	.6960
Anglo-American Cataloguing Rules	119	2.08	.8395
Knowledge of sources of bibliographic records	118	2.11	.8142
Indexing: Knowledge of theory	119	2.11	.7568
Classification: Knowledge of methods for	117	2.15	.7265
Knowledge of relevant national and international cataloging standards	119	2.15	.7438
Thesaurus creation: Knowledge of theory	120	2.21	.7436
Knowledge of principles for designing user-driven information retrieval systems	120	2.21	.7875
Cataloging tools: Working knowledge of	116	2.34	.8016
HTML	119	2.30	.8291
Indexing: Knowledge of methods for	118	2.35	.7224
Thesaurus creation: Knowledge of methods for	118	2.52	.6757
Dublin Core	114	2.61	.8038
Core Record Standard	114	2.63	.8121
Library of Congress Rule Interpretations	119	2.53	.9372
Knowledge of state-of-the art research and practice in cataloging and classification	119	2.66	.7281
Dewey Decimal Classification	118	2.80	.8529

Scale: 1=Essential 2=Important 3=Desirable but not necessary 4=Unimportant

cessful in a research library position. It's difficult to decide if one is essential or 'just' important. Many local practices and some other skills can be taught on the job, but the more prepared a new librarian is, the better for the person and the library."

The second research question concerned the existence of a basic set of cataloging competencies for all entry-level academic librarians. With such strong agreement about the importance of the competencies listed in table 1, it appears that there is a basic set of cataloging competencies that public and technical services practitioners in academic libraries believe all entry-level academic librarians should possess.

Results indicate that the practitioners surveyed believe that a number of the competencies examined are essential for entry-level librarians. An examination of the means for competencies in table 1 reveals that a surprising 51% have means that are less than or equal to 2.00. These competencies, clearly recognized by respondents as important, could then be considered the set of core cataloging competencies. For the purposes of this study, core competencies are defined as competencies with means between 1.00 and 2.00. Of the thirty-nine specific competencies surveyed, twenty competencies have means between 1.00 and 2.00. Four additional competencies have means between 2.00 and 2.10.

Respondents substantially agreed that the most important competency, with a mean of 1.11 (SD=.4058), is the ability to read and interpret a bibliographic record in an OPAC. Respondents agreed upon the importance of this

competency more strongly than any other that was surveyed. The fact that this mean is so much lower than the others suggests that respondents view its importance extending well beyond the field of cataloging alone.

The ability to read and interpret a bibliographic record in the OPAC encompasses knowledge of many of the other competencies surveyed. It involves broad knowledge of descriptive and subject cataloging, and knowledge of cataloging tools and the standards that govern each. Competencies involving knowledge of descriptive and subject cataloging and cataloging tools include the following:

- basic knowledge of cataloging tools
- working knowledge of cataloging tools
- Anglo-American Cataloguing Rules
- Library of Congress Rule Interpretations
- MARC format
- Library of Congress Classification
- Dewey Decimal Classification
- Library of Congress Subject Headings
- knowledge of relevant national and international cataloging standards

The ability to read and interpret a bibliographic record in the OPAC also involves competencies relating to how the OPAC is created and structured to facilitate retrieval. Competencies related to the use of the OPAC itself include the following:

- knowledge of bibliographic relationships underlying database design
- knowledge of the ways in which data structures affect precision and recall
- knowledge of the ways in which searching techniques affect precision and recall
- ability to develop and apply syndetic structure and controlled vocabulary in information retrieval systems
- knowledge of methods for describing, identifying, and showing relationships among materials
- knowledge of methods for indexing
- knowledge of methods for thesaurus creation
- knowledge of methods for subject analysis
- knowledge of information organization and intellectual access theory

The means for all of the narrower competencies (means of 1.53 and higher) related to the ability to read and interpret a bibliographic record in the OPAC are all higher than the mean for the OPAC competency itself (mean of 1.11). Thus, although practitioners value the broader ability to read and interpret a bibliographic record in the OPAC over the more specific cataloging and OPAC-related competencies, all of the competencies are of value to practitioners.

One librarian stated, "New librarians need to understand the concepts of how databases are constructed, how records are constructed, and how to best retrieve information using basic searching techniques. The actual standards behind the database creation are less important as systems proliferate." Another librarian commented, "On the other hand, I do think that we should be hiring people with a pretty in-depth understanding of basic database structure, since this teaches a lot about how information is organized behind the scenes. It also helps the new hire to understand how larger data structures like the OPAC, reference databases, search engines, etc. work." Thus, while OPACs may not necessarily be the only database commonly searched by librarians, the ability to read and interpret a bibliographic record in the OPAC is still viewed as the most important of the listed competencies and encompasses numerous other competencies.

The next most important competency, with a mean of 1.48, is understanding of information-seeking behaviors of users. This competency addresses a fairly broad area of knowledge and indicates, in fact, an observable trend in the responses. The six most important competencies are also the broadest and show that practitioners believe a broad knowledge of data structures, user behavior, and information organization and access are essential for entry-level academic librarians.

The third research question asked if there are differences in the ways that public and technical services practitioners in academic libraries view the importance of cataloging competencies for all entry-level academic librarians. Results shown in table 1 demonstrate strong agreement among all respondents about the importance of the competencies surveyed. However, these results do not provide the entire picture. Respondents from both groups basically agreed in their responses overall; however, some differences in their rankings of the top ten core competencies emerge and are further discussed below.

Public Services and Technical Services Respondents: Overall Rankings

Mean responses for all items from public and technical services practitioners in academic libraries were compared to determine if there are any statistically significant differences between the two groups on how cataloging competencies are viewed for all entry-level academic librarians. The hypothesis was that there would be statistically significant differences in how public and technical services practitioners in academic libraries viewed the cataloging competencies. The null hypothesis was that there would be no significant difference between the responses of public services and technical services practitioners. A

two-tailed independent t test with the confidence interval set at 0.95 was performed, with a p-value of less than or equal to .05 indicating a statistically significant difference in response between the two groups. The results from the t test indicated that, with the exception of nine specific competencies (see table 2), respondents in both groups agreed upon the importance of cataloging competencies for entry-level academic librarians.

Public and technical services practitioners agreed on all but the following nine competencies:

- understanding of information-seeking behaviors of users
- ability to evaluate information-retrieval systems in relation to user needs and information-seeking behaviors
- Library of Congress Classification
- knowledge of the basic database design concepts
- HTML
- basic knowledge of cataloging tools
- knowledge of principles for designing user-driven information retrieval systems
- Anglo-American Cataloguing Rules
- knowledge of relevant national and international cataloging standards

Thus, the null hypothesis was rejected only for the nine competencies above. Though a significant statistical difference was found for the nine competencies, results shown in table 1 confirm that the practical significance of this slight difference is minimal. With the exception of the nine competencies in table 2, the initial hypothesis was rejected. Public and technical services practitioners did not respond differently and agreed on the importance of cataloging competencies for all entry-level academic librarians.

Public and Technical Services: Core Competencies

While there was overall agreement from both groups on the importance of all competencies, the means in tables 3 and 4 reveal slightly different priorities between public and technical services practitioners. Table 3 lists the eleven lowest means for public services respondents, and table 4 lists the ten lowest means for technical services respondents.

Though there is some agreement among the top competencies among public and technical services practitioners, the responses of the two groups did not entirely match. The view of the importance of six of the top ten competencies was commonly shared by both public and technical services respondents. The six similarly viewed competencies are:

- ability to read and interpret a bibliographic record in an OPAC
- understanding information-seeking behaviors of users
- knowledge of the ways in which searching techniques affect precision and recall
- knowledge of the theory of information organization and intellectual access
- Library of Congress Subject Headings
- understanding of the activities that must be performed to provide products and services users need

Public and technical services practitioners did not agree on the importance of the remaining four of the top

Table 2. Cataloging Competencies Viewed Differently, Public and Technical Services

Competency	All No.	All Mean	Public No.	Public Mean	Technical No.	Technical Mean	Sig.*
Understanding of information-seeking behaviors of users	120	1.48	55	1.25	65	1.68	.000
Ability to evaluate information-retrieval systems in relation to user needs and information-seeking behaviors	119	1.68	55	1.33	64	1.98	.000
Library of Congress Classification	119	1.76	54	1.59	65	1.91	.014
Knowledge of the basic database design concepts	119	2.00	54	1.81	65	2.15	.015
HTML	119	2.30	54	1.96	65	2.58	.000
Cataloging tools: Basic knowledge of	119	1.79	54	2.00	65	1.61	.010
Knowledge of principles for designing user-driven information retrieval systems	120	2.21	55	2.00	65	2.38	.007
Anglo-American Cataloguing Rules	119	2.08	54	2.31	65	1.89	.006
Knowledge of relevant national and international cataloging standards	119	2.15	54	2.42	65	1.92	.000

Table 3. Cataloging Competencies by Public Services

Competency	No.	Mean	SD
Ability to read and interpret a bibliographic record in an OPAC	55	1.05	.2993
Understanding of information-seeking behaviors of users	55	1.25	.4396
Ability to evaluate information-retrieval systems in relation to user needs and information-seeking behaviors	55	1.33	.5462
Knowledge of the ways in which searching techniques affect precision and recall	55	1.44	.6314
Library of Congress Classification	54	1.59	.6593
Knowledge of the theory of information organization and intellectual access	55	1.64	.6195
Library of Congress Subject Headings	54	1.67	.8009
Knowledge of the ways in which data structures affect precision and recall	55	1.67	.7467
Understanding of the activities that must be performed to provide the products and services users need	54	1.68	.7968
Understanding the relationship between classification schemes and shelf order	54	1.68	.7727
Understanding the relationship of the research library's units to the provision of intellectual access to information resources	54	1.68	.7479

Table 4. Cataloging Competencies by Technical Services

Competency	No.	Mean	SD
Ability to read and interpret a bibliographic record in an OPAC	65	1.15	.4754
Knowledge of the theory of information organization and intellectual access	65	1.54	.7721
Knowledge of the ways in which searching techniques affect precision and recall	65	1.61	.6045
Cataloging tools: Basic knowledge of	65	1.61	.7222
Understanding of information-seeking behaviors of users	65	1.68	.7095
MARC format	64	1.70	.8102
Awareness of bibliographic utilities	65	1.72	.7605
Understanding of the activities that must be performed to provide the products and services users need	65	1.74	.6679
Library of Congress Subject Headings	65	1.80	.7115
Classification: Knowledge of theory	64	1.81	.7741

ten competencies. The remaining top competencies of public services competencies practitioners are:

- ability to evaluate information-retrieval systems in relation to user needs and information-seeking behaviors
- Library of Congress Classification
- understanding the relationship between classification schemes and shelf order
- understanding the relationship of the research library's units to the provision of intellectual access to information resources

Technical services practitioners completed their top ten competencies with the following:

- basic knowledge of cataloging tools
- MARC format
- awareness of bibliographic utilities
- knowledge of theory of classification

One possible explanation for the disagreement on the remaining competencies could be the perspective of the respondents. It can be argued that of the top ten competencies, the four remaining ones from each group are more in line with the respondents' specific job duties. The remaining public services competencies appear to be more user-oriented and broad whereas the remaining technical services competencies are more task-oriented. To summarize, there is a good deal of agreement between public and technical services practitioners concerning cataloging competencies, though the exact ranking of core competencies varies from group to group.

The final research question concerned practitioners' views of the importance of practical cataloging knowledge compared to theoretical cataloging knowledge and whether one is more important than the other. The researchers hypothesized that respondents would rank theoretical knowledge as more important than practical knowledge, but results led to the rejection of this hypothesis. Respondents actually view theoretical and practical competencies in a similar light with theory ranking only slightly higher than practice. Respondents' views of the importance of theoretical and practical knowledge are shown in table 5. For all competencies in table 5, a greater percentage of respondents do indeed rank theoretical knowledge as more essential than practical

knowledge. However, for each of the paired theoretical-practical competencies, the number of respondents who rank practical knowledge as important is similar to the number who rank theoretical knowledge as important. In each of the paired theoretical-practical competencies, the theoretical competency has the higher percentage of respondents ranking the competency as essential, but in the important category, values for each are similar. The results suggest that both theoretical and practical competencies are of value with theoretical competencies ranking slightly higher.

Next, respondents' views of knowledge of traditional cataloging tools were analyzed in order to see whether practitioners believe this knowledge is still relevant. Rankings (by all respondents) for the traditional cataloging tools (Library of Congress Subject Headings, Library of Congress Classification, MARC format, Anglo-American Cataloguing Rules, Library of Congress Rule Interpretations, and Dewey Decimal Classification) are listed in table 6 by percentage. The N value represents the actual number of responses received for each question. In the case of all of the traditional cataloging tools, a small number of participants either skipped questions or chose not to answer.

Knowledge of Library of Congress Subject Headings, Library of Congress Classification, MARC format, and Anglo-American Cataloguing Rules are viewed by the majority of respondents as solidly in the important or essential categories. In fact, both Library of Congress Subject Headings and Library of Congress Classification are ranked as core competencies with means of 1.74 and 1.76, respectively (see table 1). Library of Congress Subject Headings are viewed as either essential or important by 83.2% of the respondents while Library of Congress Classification is viewed as either essential or important by 84.9% of the respondents. The MARC format is viewed as either essential or important by 79.4% of the respondents.

The top three tools from table 6 (Library of Congress Subject Headings, Library of Congress Classification, and MARC format) are all related to basic user tasks and browsing. They are also the only traditional cataloging competencies to appear in either the public or technical services top ten list (see tables 3 and 4). Thus, traditional cataloging tools such as Library of Congress Subject Headings, Library of Congress Classification, and the MARC format are viewed as being either essential or important by more than 75% of the respondents, suggesting that academic library practitioners in both public and technical services view knowledge of traditional cataloging tools of continuing relevance for entry-level academic librarians.

In addition to the traditional cataloging tools, competencies dealing with cataloging innovations and emerging standards were included on the survey to measure the perceptions of practitioners of the importance of knowledge of these innovations for all entry-level academic librarians. The three developing standards examined include HTML, Dublin Core, and the Program for Cooperative Cataloging Core Record Standard. Table 7 lists by percentage the three developing standards as ranked by all participants. These results clearly demonstrate that knowledge of HTML, Dublin Core, and the Core Record Standard are perceived by the majority of respondents as desirable but not necessary. However, it is important to note that among the group of public services practitioners, knowledge of HTML is ranked much higher. With a mean of 1.96 (see table 2), HTML is considered a core competency by the public services practitioners.

Discussion

This survey demonstrates the existence of a definite set of core cataloging competencies for entry-level academic

Table 5. Importance of Theoretical and Practical Knowledge

Competency	Percent of All Respondents Ranking Tool As: Essential (1)	Important (2)	Desirable but not necessary (3)	Unimportant (4)
Subject analysis: Knowledge of theory (*N*=119)	29.4	49.6	19.3	1.7
Subject analysis: Knowledge of methods for (*N*=117)	19.7	50.4	27.3	2.6
Thesaurus creation: Knowledge of theory (*N*=120)	18.3	43.3	37.5	0.8
Thesaurus creation: Knowledge of methods for (*N*=118)	6.8	37.6	52.5	3.3
Indexing: Knowledge of theory (*N*=119)	22.7	44.5	31.9	0.8
Indexing: Knowledge of methods for (*N*=118)	11.9	43.2	42.4	2.5
Classification: Knowledge of theory (*N*=118)	33	48.3	17.8	0.8
Classification: Knowledge of methods for (*N*=117)	18.8	47.9	32.5	0.8
Describing, identifying, and showing relationships among materials: Knowledge of theory (*N*=120)	29.2	52.5	18.3	0.0
Describing, identifying, and showing relationships among materials: Knowledge of methods for (*N*=119)	19.3	53.8	26	0.8
Cataloging tools: Basic knowledge of (*N*=119)	44.5	33.6	20.2	1.7
Cataloging tools: Working knowledge of (*N*=116)	16.4	37.9	41.4	4.3

Table 6. Importance of Knowledge of Traditional Cataloging Tools

Competency	Percent of All Respondents Ranking Tool As: Essential (1)	Important (2)	Desirable but not necessary (3)	Unimportant (4)
Library of Congress Subject Headings (*N*=119)	43.7	39.5	16.0	0.8
Library of Congress Classification (*N*=119)	38.7	46.2	15.0	0.0
MARC format (*N*=117)	44.4	35.0	17.1	3.4
Anglo-American Cataloguing Rules (*N*=119)	28.6	37.0	31.9	2.5
Library of Congress Rule Interpretations (*N*=119)	17.6	25.2	43.7	13.4
Dewey Decimal Classification (*N*=118)	6.8	28.0	44.1	21.2

Table 7. Knowledge of Cataloging Innovations

Competency	Percent of All Respondents Ranking Tool As: Essential (1)	Important (2)	Desirable but not necessary (3)	Unimportant (4)
HTML (*N*=119)	20.2	32.8	43.7	3.4
Dublin Core (*N*=114)	10.5	27.2	52.6	9.6
Core Record Standard (*N*=114)	9.6	28.9	50.0	11.4

librarians as perceived by public and technical services practitioners in academic libraries. There is also a strong agreement between public and technical services practitioners on the competencies themselves. These results appear to refute the argument made by Fallis and Frické (1999) that cataloging education is inappropriate for graduate level education. The researchers conclude that academic libraries, in particular, need librarians with a basic understanding of cataloging in order to provide the best possible service for students, faculty, and the larger community.

Intner (1989) describes the prevailing myth about cataloging education that only students who desire cataloging careers apply for cataloging jobs. In reality, entry-level academic librarians possess varying degrees of knowledge and may not necessarily accept a position in an area corresponding to their coursework. As results of this research suggest, cataloging education is needed for all academic librarians, not just catalogers. Hence, to overlook cataloging education in graduate education is shortsighted and does not reflect the views of the practicing academic librarians surveyed, who clearly believe that a definite set of core cataloging competencies exists for all entry-level academic librarians.

The cataloging competency most highly valued by both public and technical services practitioners is the ability to read and interpret a bibliographic record in an OPAC. The survey examined both broad and narrow cataloging competencies. While practitioners view the broad competency of the ability to read and interpret a bibliographic record in an OPAC as essential, it does not mean that the narrower competencies encompassed by the ability to read and interpret a bibliographic record in an OPAC are of lesser value. One librarian commented, "I'm teaching an introductory reference course this fall and it's very difficult when the students haven't had a basic cataloging course (which is not required), as they don't understand concepts such as MARC record, field, subject heading, descriptor, corporate author, etc. Knowledge of cataloging is essential to knowing how to retrieve information." Consequently, the narrower, more specifically cataloging-focused competencies and OPAC-related competencies are also needed in order to successfully read and interpret a bibliographic record in an OPAC.

Beyond the ability to read and interpret a bibliographic record in an OPAC exists the realm of electronic resources. With their unique characteristics, they are altering the traditional landscape for both public and technical services. Emerging models for the provision of access to this complex and dynamic group of resources suggest that though the creation of resource descriptions has, until recently, been highly centralized within technical services units, this will no longer be the case in the future. The creation of resource descriptions, so long the province of the catalogers, will be shared among various players in the library community, including selectors, reference staff, acquisitions staff, cataloging staff and information technology staff (Calhoun 2000). Thus, it will become increasingly important that librarians in all areas of the field possess basic cataloging competencies as it is likely that the creation of resource descriptions will become everyone's responsibility.

The need for authority control, for standardized description, and for effective strategies to deal with both dynamic resources and resources that embody the same intellectual content in multiple formats, will become increasingly important (Huthwaite 2000). Thus, there will be a continued need for librarians to understand such basic

cataloging concepts as the controlled vocabulary, creation of controlled headings for names and titles and methods for standardized resource description. The end product may look quite different from a traditional MARC cataloging record, but there will continue to be a great need for librarians who understand these underlying concepts.

Finally, the results demonstrate that practitioners view both theory and practice as important within the list of cataloging competencies. In general terms, theory was valued only slightly higher than methodology or a working knowledge. Thus, practitioners do not appear to view theory as operating in a vacuum apart from practice or vice-a-versa; they recognize the need for practical as well as theoretical knowledge.

The survey contains some limitations as a result of the relatively narrowly defined sample. Only large academic libraries with membership in the ARL were surveyed. The study focused on academic librarians, omitting large research libraries without formal academic affiliation (e.g., Library of Congress). Also, among the ARL academic members, only heads of reference and heads of cataloging were contacted. The results might have been quite different had those in other specialties been contacted (systems librarians, bibliographers, etc.). And finally, academic librarians at smaller two-year and other four-year institutions were omitted from the sample.

Areas for future study of core cataloging competencies for all entry-level academic librarians appear promising. One avenue is to expand the pool to include academic librarians beyond the ARL institutions initially surveyed (two-year institutions, colleges, non-ARL institutions, etc.). Another possible direction is to survey groups beyond heads of reference and heads of cataloging to see how other specialties within academic libraries view core cataloging competencies for all entry-level academic librarians. Of these, perhaps the most interesting direction for future study is to administer the survey to library educators to see if they believe it is important for students going into academic librarianship to possess a definite set of core cataloging competencies.

Conclusion

The survey and the discussion of the findings demonstrate the importance of cataloging education for all entry-level academic librarians and the existence of a basic set of core cataloging competencies as viewed by public and technical services practitioners in academic libraries. As noted in the literature review, Spillane (1999) documented a general decrease in the required number of cataloging courses offered in ALA-accredited programs. However, a distinct gap exists between the state of cataloging education in ALA-accredited programs as reported by Spillane and the views of the public and technical services practitioners in academic librarians surveyed in the study. The public and technical services practitioners in academic libraries view cataloging education and core cataloging competencies as valuable for all entry-level academic librarians. The quality of preparation of entry-level practitioners is a vital issue for the profession, with much at stake for both educators and libraries. The quality of preparation bears a direct relation to the costs of training and the effectiveness of the newest members of the profession. How should educators approach the apparent gap between the existing cataloging curriculum and the needs of public and technical services practitioners in academic libraries as expressed in this survey? How should educators prepare entry-level academic librarians? This study suggests that basic cataloging education continues to be valuable for all entry-level academic librarians. Perhaps the time is ripe for renewed dialogue between practitioners in academic libraries and library educators on the role of cataloging education in the graduate curriculum, and the content of cataloging courses. Clearly, a closer partnership between library educators and library practitioners is essential as the profession wrestles with the questions of how best to prepare librarians to serve in an increasingly complex information environment.

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Cataloging Efficiency and Effectiveness

Cheryl McCain and Jay Shorten

Efficiency and effectiveness of technical services units are difficult to measure, analyze, and compare, partly because operations are complex and vary substantially from one library to another. Cost studies have been widely conducted as a means of measuring the cost efficiency of specific technical services tasks. Since data on costs are not necessarily comparable among institutions, other quantifiable measures of efficiency and effectiveness would enhance managerial decision-making. This article reports the analysis of data compiled from a survey of twenty-six academic libraries. It seeks to supplement the findings of cost studies by providing measures of efficiency and effectiveness for cataloging departments based on reported productivity, number of staff, task distribution, and quality measures such as backlogs, authority control, and database maintenance. Benchmark productivity levels for six libraries with "best practices" are identified.

Efficiency and effectiveness of technical services procedures are difficult to analyze, partly because operations vary substantially from one library to another. Serials check-in may be performed in acquisitions at one library, by a separate serials department at another library, or delegated to staff at branch libraries. The selection and import of bibliographic records may be performed entirely by cataloging staff at one library, while acquisitions staff may perform a large percentage of this task at another library. Responsibility for the performance of other technical services functions (such as marking, security tagging, and bindery) also varies among libraries' cataloging, serials, and acquisitions departments.

One strategy for quantifying operations has been to complete cost studies, which identify specific tasks and compute the cost of those tasks. These studies can be illustrative of technical services efficiency: the greatest amount of output that can be achieved with the least amount of full-time equivalent (FTE) staff input. However, they fail to capture any information about effectiveness, which is quality processing completed in a timely manner.

Cost studies are not intended to reveal whether or not the current workflow is keeping up with incoming materials. A technical services manager can calculate the cost of processing a monograph without factoring in the existence or growth of a backlog. The cost of performing database maintenance tasks can also be calculated without considering whether or not these activities are thorough enough to insure that withdrawals, serial holdings, and other catalog corrections are up-to-date.

One major drawback to cost studies is the time and resources required to conduct them. While it may be helpful to know another library's average costs of performing various tasks, a comparison of costs across libraries should be based on studies that utilize the same methodology. Few technical services managers conduct their own cost studies, but some make outsourcing decisions by assuming that their costs are comparable to those published in the most recent cost study.

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A survey instrument was designed to obtain benchmarking data that may help technical services managers analyze the efficiency and effectiveness of their own operations in comparison to other libraries' operations. Information about distribution of work among departments, total staffing, backlogs, perceptions of efficiency, and total volumes processed was solicited and analyzed through a survey of academic libraries that are members of the Association of Research Libraries (ARL). This article reports the survey results that focus specifically on cataloging activities during fiscal year (FY) 1998–99.

Literature Review

In the past two decades, much attention has focused on the costs of technical services operations in academic libraries. According to Kantor (1986), more than one hundred academic libraries were involved in cost studies between 1981 and 1984. Analyzing the 1982–83 ARL statistics, he found that those libraries having the lowest processing costs ranked highest in the number of volumes added per year. The inverse was also found: libraries with the highest processing costs added the fewest volumes.

This significant correlation between low cost and high productivity gives credence to the value of conducting cost studies as one measure of the efficiency of a library's technical services operations. In her discussion of technical processing costs, Bedford (1989) maintains that managers should continually obtain and analyze cost information in order to redesign workflows effectively and to reallocate resources and personnel.

Resources and examples are available to help librarians conduct cost analyses at their institutions. In 1991, the Association for Library Collections and Technical Services (ALCTS) Technical Services Costs Committee prepared a guide that outlines the steps to follow when calculating the unit costs of acquisitions and cataloging functions. Articles reporting the results of cost studies offer various methods for obtaining, analyzing, and interpreting cost data. Morris (1992) has detailed a longitudinal study at Iowa State University (ISU) that investigated the impact of automation on cataloging costs. Osmus and Morris (1992) applied this method to the serials and monographs cataloging sections at ISU and found that it cost less to catalog a monograph than a serial.

Rebarcak, Zager, and Morris (1996) described the longitudinal study again, including the methodology for investigating staffing costs for monographs acquisitions. Morris, Rebarcak, and Rowley (1996) then looked at the impact of automation on acquisitions staffing costs. They found that the cost of acquiring a monograph remained high relative to the cost of cataloging it, because, unlike automation of cataloging tasks, automation of monograph acquisitions had really only mechanized processes that were previously performed manually.

Results of the ongoing longitudinal time and cost study at ISU continue to be reported in the professional literature. In a recent article Morris et al. (2000) report that the average cost of cataloging a title at ISU fell from $20.83 to $16.25 per title between 1990–91 and 1997–98. The authors credit much of this savings to the increasing availability and quality of shared catalog and authority records via national utilities. The results of the study continue to prompt adjustments in cataloging workflow and staffing in order to maximize efficiency and effectiveness.

Time and cost studies conducted in 1982–83 and 1997–98 at the University of Oregon revealed a shift in the percentage of time spent on certain acquisitions functions. In reporting the findings, Slight-Gibney (1999) states that she would like to see other libraries conduct studies that could be compared and developed into benchmarks or "best practices" (56). Longitudinal comparison of one library's costs and workflow would become more valuable if supplemented by comparable or complementary data from other libraries.

The wealth of research conducted to determine the costs of acquiring and cataloging materials has applied to specific tasks, staffing costs, and the impact of automation. But it is difficult to find data on how many staff it takes to handle a defined workload, and how productivity and staffing compare among institutions. Informal questioning of technical services managers can reveal a dramatic difference in the number of personnel at libraries that appear to process a similar number of items through acquisitions and cataloging.

In their comparative cost study of three medium-sized research libraries, Getz and Phelps (1984) found that variations in technical services organization and workflow among their small sample were dramatic. They suggested that future research be applied "to a larger group of libraries so that characteristics of costs can be compared with other characteristics of the libraries" (219). The objective of this article is to provide a step in that direction.

Method

Attempts to gather data from individual institutions' Web sites proved futile, as most libraries posted few or no productivity statistics. Some general data were obtained from published ARL statistics, but more detailed information was needed. Therefore, a survey was designed to identify staffing levels, the amount of work performed by departments, and distribution of tasks within three common subdivisions: acquisitions, cataloging, and serials.

Survey questions focused on staffing levels, the number of items processed, the presence and size of a backlog, the automation system in use, and perceptions of efficiency. A grid that listed several tasks was designed to help identify whether cataloging, acquisitions, serials, or other units were performing various tasks typically associated with technical services units. Respondents were asked to identify which unit(s) performed each task by indicating the percentage of each task performed in each of the various technical services units. They were also asked to list any additional duties performed by these units that would have an impact on interpretation of the data.

Three technical services supervisors at different ARL institutions reviewed a preliminary draft of the survey. Revisions were made based on their feedback, and a final review by local acquisitions and cataloging department heads helped insure clarity and reliability. Surveys were mailed to technical services managers (administrative titles varied) at each of the 111 ARL academic libraries in the United States and Canada (Association of Research Libraries 2000).

Twenty-seven completed surveys were returned and reviewed, for a response rate of 24%. Telephone and e-mail correspondence with respondents helped clarify responses that were unclear or questionable. One survey lacked the above-mentioned grid information but provided all other data, which was included in the survey results. In all other cases information was clarified and all 27 surveys were deemed acceptable. Of the 27 respondents, 25 libraries were located in the United States and two in Canada.

Findings

The number of total volumes held in FY 1998–99 by responding libraries ranged from 1.8 million to 5.3 million, with an average of 2,838,845 and a median of 2,449,366. Total library materials expenditures for responding libraries ranged from $2.5 million to $12.8 million, with an average of $6,109,636 and a median of $5,264,739. Comparing the respondent pool to all ARL academic libraries reveals that survey respondents are more representative of smaller and medium-size ARL libraries (see figures 1 and 2). The number of total volumes held by all ARL academic libraries ranged from 1,762,898 to 14,190,704, with an average of 3,589,357 and a median of 2,772,663 million (Kyrillidou and O'Connor 2000). The total library materials expenditures for all ARL academic libraries ranged from $2,501,940 to $21,225,368, with an average of $7,027,039 and a median of $5,991,177.

The survey asked respondents to name the library automation software in use during FY 1998–99. No significant correlations (using Pearson's r) between productivity measures and software were found. However, six respondents indicated that their libraries had either been or were now in transition to new catalog software. The implementation of new software would certainly have an initial impact on cataloging productivity, but survey questions and data did not provide information that would lead to any clear conclusions.

Survey respondents were asked to estimate the FTE of all technical services staff that also performs some public services duties. The survey did not ask that specific public services duties be identified or that separate numbers be reported for cataloging and acquisitions staff. Thirteen of 27 technical services units reported that none of their staff perform additional duties in a public services area. Of those that indicated some staff do have duties outside of the unit, 8 libraries reported an FTE of 0.5 or less, 4 reported this FTE to be between 0.5 and 3, and 2 reported an FTE greater than 3. Two of the responding libraries provided written comments indicating that their answers pertained only to acquisitions and serials staff. These responses indicate that staff having to perform additional duties in a public services area does not significantly affect the cataloging units represented in this study.

Task Distribution

Table 1 summarizes survey responses about where selected duties are performed in various technical services units. For example, 24 libraries indicated that some percentage of authority record updating was performed in their cataloging department. The mean of all of the reported percentages was calculated for an average of 77%. An average of 20% of the total of all 24 libraries' authority work was outsourced (only 8 of the 24 libraries reported outsourcing some of their authority work).

In another example, table 1 shows the average percentage of bibliographic record import performed in each of the various library departments. For all reporting libraries, an average of 47% of record import was performed in cataloging, 39% in acquisitions, 2% in serials, 7% in other units, and 6% through outsourcing.

Information on the distribution of technical services tasks provides insights that might help explain variations in libraries' cataloging efficiency and effectiveness. In general, the task distribution (table 1) reveals that cataloging departments have the majority of the responsibility for the first six tasks listed. The responsibility for importing bibliographic records, marking and labeling, and security tagging is shared across departments. It is also interesting to note that fewer than half (n=13) of the respondents reported performing union list maintenance.

Number of Volumes and Titles Cataloged

Twenty-five libraries reported the total number of volumes cataloged during FY 1998–99, ranging from 24,585 to 171,912. The average number of volumes cataloged was 53,364, the median was 45,996, and the standard deviation was 30,233.

The total number of titles cataloged (24 libraries reporting) ranged from 10,140 to 120,511. The average number of titles cataloged was 40,376, the median was 31,036, and the standard deviation was 26,226.

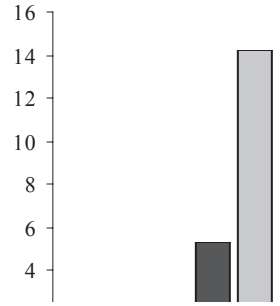

Figure 1. Comparison of Survey Respondents to All ARL Academic Libraries

Outsourcing

Of the 26 respondents who provided information about the distribution of tasks among technical services units, 16 (61.5%) reported outsourcing a portion of at least one task. The tasks reported most often as being outsourced by cataloging departments were: authority control, selection and import of bibliographic records, marking/labeling, security tagging, and original cataloging. As can be seen on table 1, the overall percentage of tasks handled through outsourcing is quite low, with authority work being the exception. If libraries outsource authority work, the savings of time and personnel should allow them to achieve increased efficiency in other tasks. The more cataloging they do with the same number of in-house personnel, the more efficient they will be.

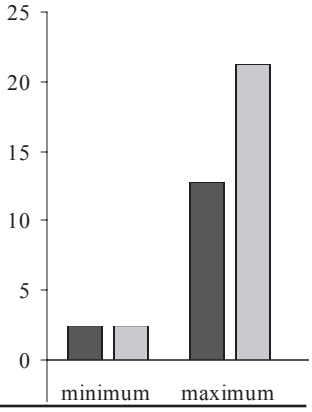

Figure 2. Comparison of Survey Respondents to All ARL Academic Libraries

Database Maintenance

Table 2 depicts the productivity of two staff-intensive tasks usually associated with cataloging units. The numbers of authority record updates and holdings updates per FTE staff are shown, revealing that some libraries place more emphasis than others on these tasks. The FTE for student employees was included in the calculations because students often perform some aspect of these tasks. Calculations excluded the responses from two libraries that provided one combined total for both tasks.

Fourteen respondents reported the number of updates made to their authority records, and 13 respondents left the question blank. However, 5 of the 13 indicated elsewhere on the survey that they outsource a large percentage of their authority work, which might explain why they did not have a number to report. The average number of authority

updates per FTE was 1,999; the median was 966 and the standard deviation was 2,831.

Thirteen institutions reported the number of holdings updates made to their catalogs per FTE during FY 1998–99, with an average of 4,057, a median of 635, and a standard deviation of 8,132. As with authority updates, several respondents indicated that their institutions do not collect this data, while others left these questions blank. No libraries reported outsourcing this task.

Table 1. Average Distribution of Tasks among Technical Services Departments

	% Cataloging	% Acquisitions	% Outsourced	% Serials	% Other
Original cataloging	95	0	4	<1	<1
N=26	*(26)*		*(4)*	*(2)*	*(3)*
Copy cataloging	81	10	1	2	6
N=26	*(26)*	*(8)*	*(4)*	*(4)*	*(5)*
Authority records	77	1	20	<1	2
N=24	*(24)*	*(2)*	*(8)*	*(2)*	*(4)*
Holdings maintenance	71	6	0	13	10
N=25	*(24)*	*(5)*		*(9)*	*(9)*
Union list maintenance	66	8	0	27	0
N=13	*(9)*	*(1)*		*(5)*	
Theses and dissertations*	64	20	0	0	15
N=25	*(20)*	*(9)*			*(7)*
Import of bib records	47	39	6	2	7
N=26	*(23)*	*(20)*	*(4)*	*(2)*	*(5)*
Marking/labeling	36	14	4	8	38
N=26	*(13)*	*(7)*	*(4)*	*(7)*	*(15)*
Security tags	27	24	5	7	37
N=26	*(10)*	*(9)*	*(5)*	*(5)*	*(15)*

Notes: N=the total number of libraries that provided information for the task
Figures in parentheses represent the number of libraries that reported performing some percentage of the task in that department.
**Receipt, processing, binding, creation of catalog records, etc.*

Original Cataloging

Twenty-four respondents returned data on the volume of original cataloging performed, with a minimum of 353 and a maximum of 10,099 volumes cataloged. The average number of titles requiring original cataloging was 2,826; the median was 2,288 and the standard deviation was 2,383. Table 3 shows the amount of original cataloging performed per FTE, by library. Calculations of the FTE for original cataloging included both professional and paraprofessional staff. The FTE for students was excluded, as they were considered unlikely to perform any aspects of this task.

Table 3 also includes a column showing the percentage of original cataloging that each library outsourced. The library with the highest number of original titles per FTE outsourced 3% of its original cataloging, while the library that outsourced 75% of its original cataloging ranked twelfth in comparison to the other libraries.

One would assume that libraries that outsource some of their original cataloging would show the most efficiency, since "hidden" personnel resources would be available to perform some of that task. However, the findings did not show this. Perhaps outsourcing libraries increase their effectiveness by eliminating or reducing backlogs. Another explanation may be that outsourcing of original cataloging frees personnel to address other quality tasks, such as authority control or database maintenance.

Table 2. Database Maintenance Efficiency

Library	No. of authority record updates per FTE*	Rank (authority record updates)	No. of holdings updates per FTE*	Rank (holdings updates)
N	9,268	1	‡	
G	7,228	2	16,349	2
P	2,826	3	2,229	4
Y	2,501	4	545	8
T	1,831	5	‡	
J	1,531	6	‡	
A	966	7	‡	
L	912	8	‡	
U	494	9	130	12
C	180	10	3,188	3
AA	113	11	706	6
X	111	12	26,871**	1
I	25	13	138	11
E	§		§	
S	§		§	
K	0	14	‡	
M	‡		182	10
O	‡		27	13
R	‡		635	7
V	‡		1,244	5
W	‡		499	9

*Notes: *FTE includes student employees for both tasks.*
***High due to completion of a special project.*
Libraries not listed did not provide responses for either task.
§=provided a combined total for holdings and authority updates;responses were treated as incomplete and not used for these calculations.
‡ not reported.

Backlogs

Twenty-two of 27 libraries (81.5%) reported having a backlog (items held more than 30 days before being processed) of materials in their technical services departments. Survey questions did not differentiate between

backlogs in acquisitions and cataloging units. However, comments written on the survey indicate that the numbers refer primarily to cataloging backlogs. Table 4 summarizes responses to the open-ended question of how the backlog could be eliminated given the necessary resources. For most libraries, that resource appears to be more staff to do the work. Ten indicated they would hire more staff, seven stated they would utilize outside staff (outsource), and two needed to fill vacant positions.

The survey asked for the number of items in the backlog and an estimate of how many months it would take to eliminate the backlog with existing staff if no other materials were received during that time. The sizes of backlogs reported ranged from 500 to 59,000 items; the average was 9,474 items, the mean was 5,000 items, and the standard deviation was 12,707.

Estimates for the length of time it would take to eliminate the backlogs ranged from 1 to 45 months. A comparison of each library's estimate to its number of titles cataloged per month per FTE revealed that over half of the estimates were two or more times greater than the cataloging rate for regular materials. This may be due to the difficult nature of some materials in the backlogs, such as foreign language materials, titles requiring original cataloging, etc.

If it is assumed that libraries that outsource some of their tasks apply their remaining personnel to reducing backlogs, then one would expect to find that those libraries have smaller or no backlogs. Library I outsources 95% of its authority work, which is the highest percentage of outsourcing for any task. Notably, library I has no backlog.

Table 3. Original Cataloging Efficiency

Rank	Library	No. of titles per FTE*	% Outsourced	FTE Para-professionals	FTE Catalogers
1	A	242	3	38.0	3.8
2	W	234		6.0	2.0
3	AA	233		9.0	3.0
4	S	231		22.0	11.5
5	G	231		16.0	6.0
6	Z	208		9.0	3.0
7	X	194		10.5	4.0
8	R	174		11.0	9.0
9	N	156		12.5	8.0
10	F	153	5	28.0	6.0
11	Q	123		4.8	3.0
12	L	119	75	13.0	3.0
13	Y	117		15.1	8.0
14	M	95		17.0	5.0
15	U	90		40.0	19.0
16	K	80		8.0	1.0
17	O	80		10.0	6.0
18	B	62		20.0	6.5
19	I	59		4.0	2.0
20	V	58		16.0	9.0
21	E	57		28.0	16.0
22	J	55		6.0	8.0
23	T	42		15.0	9.0
24	P	20		13.0	5.0
	C	‡		10.0	5.0
	D	‡		6.2	6.0
	H	‡	20	12.0	6.0

*Notes: *FTE includes student employees for both tasks.*
‡ not reported.

Table 4. Backlogs

Reasons for or proposed solutions	No. of responses*
Hire more staff	10
Outsource some task(s)	7
Need money or grants	3
Fill vacant positions	2
Due to migration	2
Gifts done in summer	1
Need more workstations	1
Reduce public service duties	1
Restructure workflow	1
Not concerned about it	4

Notes: 22 out of 27 libraries responded.
**Some libraries gave more than one response.*

Discussion

Efficiency

Despite the prevalence and size of backlogs, most survey respondents seem to feel that their technical services units are productive and efficient. Eleven chose the statement "We are efficient and have enough staff to do all our processing in a timely and efficient manner," and ten chose the statement "We are efficient, but need more staff to get materials processed in a timely manner." Five respondents selected the statement "We could be more productive, but we compare favorably to our peers." One library did not respond to this question, and no libraries selected the statement "We need to make changes to equal the productivity and effectiveness of our peers."

Analysis (Pearson's *r*) of these responses in comparison to actual cataloging efficiency (table 5) revealed no significant correlation between perceptions of efficiency and actual productivity based on the number of volumes cataloged per FTE. Some of the most efficient libraries did not see themselves as efficient and timely, but rather as efficient but understaffed. The respondent with the lowest number of volumes cataloged per FTE rated itself as efficient and timely.

Table 5 shows the efficiency of each library according to the number of volumes cataloged and the number of titles cataloged. Efficiency was calculated by dividing each library's reported number by the FTE of its cataloging staff, excluding student positions. The FTE for student employees was

not included because they are not likely to be involved in any higher level cataloging procedures.

Based on the number of volumes cataloged, the most efficient cataloging department processed 5,056 volumes per FTE. The least number of volumes processed per FTE was 866. For the number of titles cataloged, the most efficient library cataloged 4,460 titles per FTE. The least number of titles cataloged per FTE was 786.

The number of volumes or titles cataloged per FTE should not be considered the sole indicator of efficiency. Variations in workflow can either raise or lower the efficiency rate of technical services units. Factors such as special projects, migration to a new automated system, staff vacancies, and personnel changes would be likely to cause temporary reductions in efficiency. Other factors, such as outsourcing or shifting some tasks to other units, could result in increased efficiency of volumes and titles cataloged. The decision not to perform certain tasks, such as union list holdings maintenance, could free personnel to perform other tasks at a higher efficiency rate. Libraries may also vary in the level of descriptive cataloging they perform, resulting in more or less time spent on each record. The additional responsibilities that librarians with faculty and professional status have will affect the amount of time they spend cataloging materials. This study is not intended to account for all of these circumstances, and consideration of this data as a benchmark for efficiency should be viewed with those limitations in mind.

Table 5. Cataloging Efficiency

Library	Volumes Cataloged per FTE*	Rank	Titles Cataloged per FT	Rank
F	5,056	1	3,544	3
I	5,028	2	4,460	1
Q	4,989	3	4,265	2
W	4,140	4	2,691	8
R	3,931	5	‡	
H	3,334	6	‡	
L	3,174	7	1,702	15
J	3,008	8	2,781	5
N	2,956	9	2,902	4
K	2,732	10	1,127	21
Z	2,686	11	2,149	11
O	2,674	12	1,761	13
X	2,314	13	2,155	10
G	2,297	14	1,619	16
P	2,187	15	2,448	9
M	2,133	16	1,746	14
D	2,118	17	1,865	12
E	1,920	18	1,259	19
V	1,881	19	1,155	20
Y	1,604	20	1,344	18
S	1,582	21	786	24
B	1,532	22	1,517	17
T	1,510	23	1,018	22
C	1,383	24	‡	
U	866	25	870	23
A	‡		2,737	7
AA	‡		2,773	6

*Notes: *FTE includes only professionals and paraprofessionals.*
‡ not reported

Effectiveness

Defining effectiveness for a technical services department is not easy. As mentioned earlier, a department may appear efficient if its ratio of items processed per FTE is high. However, the same department may have a backlog that delays the timely processing of materials. Another possibility is that a department may lower the catalog quality by not maintaining authority control. In their article on the benefits of outsourcing authority control, Tsui and Hinders (1998) reinforce the importance of authority work: "Authority control—consistency of bibliographic record headings—is the most important quality of any library catalog since it has direct impact on the effectiveness of searching and retrieval" (44). Authority control is a necessary component of cataloging effectiveness.

Another indicator of effectiveness is the timeliness and frequency of catalog updates. Regular updates insure catalog currency by accurately reflecting transfers, withdrawals, and other status changes. A multitude of other factors related to good workflow design can reduce duplication of effort, eliminate procedures no longer needed, and maximize technological capacity that enhances accuracy. A complete picture of effectiveness for any library should include several measures. Three factors included as measures of effectiveness for this study were the presence, nature, and size of backlogs; the practice of authority control; and holdings maintenance.

Conclusion

Review and comparison of all the tables can provide an overall perspective for technical services managers. However, establishing a useful benchmark should take into account "best practices." Specifically, selecting an efficiency goal based on a library that does no authority control would be a poor choice. Benchmarks should be established by focusing on those libraries that are efficient and effective: those libraries that fully update their catalogs, consistently maintain authority control, and do not have unmanageable backlogs.

Table 6 depicts six libraries, all of which meet "best practices" as defined in this paper. These libraries maintain authority control and holdings records and have moderate or no current backlogs. As can be seen in table 6, library G and library I perform most of these tasks in cataloging,

except that library G performs only 10% of its security tagging in cataloging and library I outsources 95% of its authority control. Library G's cataloging department handles 100% of thesis and dissertation processing, while at library I this responsibility is delegated to a department other than cataloging. As another example of variations in task distribution, library P performs a portion of security tagging and marking in cataloging while the cataloging departments of Libraries X and Y do not perform any percentage of these tasks.

Libraries U, X, and Y reported "n/a" for union list maintenance. Union list activities were not included as a best practice measure, since union list participation may not always be a choice for libraries but may be a function of their location and consortium agreements. However, union list participation is notable in that it can affect the workload of cataloging departments considerably.

In table 7, the same libraries are shown with their productivity per FTE staff and efficiency rankings. Library I clearly processes the most volumes and titles per FTE, but it should be remembered that library I has "hidden" resources in that it outsources a major portion of its authority work. Library G ranked second in efficiency for authority and holdings work. Its backlog is relatively small and was attributed to temporary staffing vacancies. As can been seen from tables 6 and 7, each of these "effective" libraries varies somewhat in task distribution and volume of work.

Selection of one library as the most efficient and effective is difficult, because all cataloging departments do not perform the same percentages of the same tasks. It seems that library U is the least efficient, but this could be due to 1.25 FTE of its technical services staff having some public services duty. Library P has a large backlog, but it is static and related to a special collection and gifts; its currently received materials are not backlogged. Library X appears to be relatively efficient, with a backlog related only to gifts. However, its cataloging department lacks the responsibility that others have for marking, tagging, and union list updating.

Table 6. Percent of Tasks Performed in Catalog Department by "Best Practices" Libraries

Task	Library G	Library I	Library P	Library U	Library X	Library Y
Original cataloging	100	100	100	92	100	100
Copy cataloging	100	100	99	60	100	100
Authority control	100	5*	100	90	100	100
Holdings updates	100	100	100	15	88	100
Union listing	65	100	100	‡	‡	‡
Theses/dissertations	100	0	50	100	0	100
Import bib records	35	100	50	60	82	80
Marking/labeling	100	100	50	80	0	0
Security tagging	10	100	40	45	0	0

*Notes: * 95% of authority control is outsourced*

Table 7. Efficiency of Libraries with "Best Practices"

Task	Library G	Library I	Library P	Library U	Library X	Library Y
Volumes cataloged per FTE (rank)	2,297	5,028	2,187	867	2,314	1,604
	(14)	(2)	(15)	(25)	(13)	(20)
Titles cataloged per FTE (rank)	1,619	4,460	2,448	870	2,155	1,344
	(16)	(1)	(9)	(23)	(10)	(18)
Authority updates per FTE (rank)	7,228	25	2,826	494	111	2,501
	(2)	(13)	(3)	(9)	(12)	(4)
Holdings updates per FTE (rank)	16,349	138	2,229	130	26,871*	545
	(2)	(11)	(4)	(12)	(1)	(8)
Original cataloging per FTE (rank)	231	59	20	90	194	117
	(5)	(19)	(24)	(15)	(7)	(13)
Total no. of volumes cataloged	52,830	30,169	46,810	59,792	38,184	39,148
No. of items in backlog	3,000**	0	16,000†	5,000	5,000‡	847

*Notes: * high due to completion of a special project*
*** due to staff vacancies*
† longstanding backlog of special collection titles; no currently received items in backlog

A review of all the variables is necessary before a manager can select a peer comparator as a reasonable benchmark. Considering all the variables, it seems that library G may be a library worthy of aspiration. However, technical services managers wishing to compare themselves with library G should carefully review its task distribution and size of workload. If dissimilar, a manager should pick another best practice library and consider the range of productivity between library G and a more similar peer.

Any benchmark should be used with some caution, as multiple variables can dramatically affect productivity factors that were not included in the survey. Still, this information can be useful to technical services managers. Finding a library with similar task distribution and comparable efficiency rate can provide an informed perspective of what may be realistic expectations for productivity. The information can also be used to supplement the findings of cost studies for a combined perspective of cost efficiency and cataloging effectiveness.

As more studies are completed, managers may be able to refine preliminary benchmarks such as these into better models that account for numerous variables. Until that time, these figures present a range of benchmarks, with qualifying variables. These results serve as a beginning analytical tool that may eventually evolve into a more accurate model for measurement.

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Book Reviews

Margaret Rohdy, Editor

Proceedings of the Bicentennial Conference on Bibliographic Control for the New Millennium. Ed. Ann M. Sandberg-Fox. Washington, D.C.: Library of Congress, Cataloging Distribution Service, 2001. 536p. $45 (ISBN 0-8444-1046-2). LC 2001-029952. Also available at www.loc.gov/catdir/bibcontrol.

In England between 1847 and 1849, a Royal Commission held hearings during which Antonio Panizzi defended the use of cataloging rules to create a catalog for the British Library because people in the British government and in the general public were unable to believe how expensive it was to create a catalog, how long it took, and how much bibliographic expertise was involved. The *Proceedings of the Bicentennial Conference* provides evidence, if it were needed, that with regard to the education of noncatalogers about cataloging, we are still living in the nineteenth century.

The authors of these papers, delivered at an invitational conference at the Library of Congress (LC), advance and debate a number of controversial positions. The first is that people who have not been trained or educated as catalogers can create resource descriptions (i.e., metadata or cataloging records). Karen Calhoun suggests that authors could create these for their own works, or that noncataloger librarians could do so; Priscilla Caplan and Michael Kaplan suggest that publishers and vendors could create these for libraries; Regina Reynolds opines that "there may come a day when information is self-indexing" (440); and Clifford Lynch points out that "anyone can become a describer of information," but then wisely notes that "metadata itself is information, and we need to be able to decide when we choose to trust it" (xxxiv). It was unclear how catalogs built from such records would ensure that users looking for a particular work, author, or subject would be shown every edition of a particular work, every work by a particular author, or every work on a particular subject. However, conference discussion group 6 did recommend that a metadata authoring tool for naive users be constructed that would "interact" with online authority schemes (names, subject thesaurus, classification), with a software agent that would "enforce" the schemes (481). Subsequent to the publication of these proceedings, LC has published an action plan that includes plan 4.3, "Develop specifications of a metadata creation tool for authors." It remains to be seen whether noncataloging librarians, authors, publishers, and vendors are willing to devote the necessary time to becoming educated, or at least trained, catalogers.

The second controversial position from the conference is that MARC is obsolete, and we need new standards to deal with cataloging electronic resources. Martin Dillon and Carl Lagoze reject MARC without any discussion, and even Michael Gorman refers to MARC as "the electronic version of the catalogue card" (xxiv). Caroline Arms, Liz Bishoff and Bill Garrison, Caplan, Thomas Downing, and Jane Greenberg all describe the recent proliferation of competing metadata standards—all this at a time when the library world is undergoing the painful reconciliation of CANMARC, UKMARC, and USMARC because of an earlier proliferation of competing MARC standards! Caplan observes that in the midst of this proliferation of metadata standards "there was no general consensus that common content rules were either necessary or desirable" (68). I believe she is right that "in all of these cases . . . what we have been seeing, if we've been paying attention, is the reinvention of cataloging" (72). What is not clear is why it needs reinventing.

The third controversial position is that it would be possible to harness software and telecommunications technology in order to achieve "semantic interoperability," or "seamless interconnectivity." Lagoze suggests that "libraries should promote the catalog as a mapping or interoperability mechanism, . . . amongst individual descriptions that are distributed across the Web" (277). Calhoun describes this as the abandonment of "the notion of a single monolithic, all-encompassing global authority file in favor of a system of linked interoperable files" (371). Barbara Tillett suggests that "Many systems include the authorized form of the name as a text string and may have an associated authority record number for the entity represented by the text string. Through either the text string or the record number link, one can navigate to associated authority records with different languages and cataloging rules to display [the user's] chosen form" (213).

The idea of linking files across the Internet may be the most fruitful idea advanced at the Bicentennial Conference, but there is a lot of wishful thinking here. For one thing, we will have to wait many years before telecommunications and client-server technology is powerful enough to support such approaches at a reason-

able speed. For another, one hesitates to trust the design of such a complex system to library systems people who currently cannot figure out how to provide access to authority records for users who do keyword-in-record searches within a single file. (No current online catalog software can do this.) For "semantic interoperability" to work without confusion to the user, it is essential that the user's preferred form for a sought author, work, or subject appear everywhere that author, work, or subject is identified for selection by the user or offered as an ostensible match for his or her search, whether it be in single record displays, multiple-record displays, or heading displays. That would require complex software design indeed, especially if the user's preferred form is being drawn from an authority record across the world from the catalog being searched!

In the meantime, LC action plan 2.1 is to "define requirements for a common interface for searching, retrieving, and sorting across a range of discovery tools." If the resultant interface does not find and display together the editions of a work, the works of an author, or the works on a subject, we will wind up with "portals" that cost a good deal more money than Web search engines and don't provide any added value. Educated users would be likely to prefer the catalog (if it is still available for searching separately) to such a portal because of the catalog's greater precision and predictability.

Other notable developments at the Bicentennial Conference include the recommendation that LC make the Library of Congress Classification and Library of Congress Subject Headings available at no cost on the Internet (which is now LC action plan 2.5). Sally McCallum provides a valuable delineation of the principles behind MARC and a clear explication of the issues involved in a possible future migration of our bibliographic data from MARC to XML. Thomas Mann supplies his usual clear-headed description of the myriad ways in which heading displays that include syndetic structure (cross references) drawn from authority files help users and reference librarians navigate through the catalog; as always, he provides many concrete and illustrative examples of real research questions posed to real catalogs. He also includes a delightful discussion on the importance of seams.

And finally, discussion group 4A recommends that systems work out methods to separate records at the global level but combine them for display at the local level, in order to solve the multiple versions problem in a way that supports our current methods of sharing cataloging and at the same time helps catalog users select among all the available manifestations of a particular expression of a work. Accordingly, LC action plan 2.4 is to "define functional requirements for systems that can manage separate records for related manifestations at the global level and consolidate them for display at the local level." As chair of a CC:DA task force that recommended that AACR2 solve the multiple versions/Rule 0.24 problem as a record-display problem without regard to the number of separate records that actually underlie the display (similar to Melissa Bernhardt's 1988 recommendations for the solution of problems users have with successively entered serials), I find this action plan from LC most encouraging.

Discussion group 4A also recommends that AACR2 and MARC 21 be restructured to support display of hierarchical relationships between records for a work, its expressions, and its manifestations, which LC has adopted as action plan 3.4. Panizzi lives!—*Martha M. Yee (myee@ucla.edu), UCLA Film and Television Archive, Los Angeles*

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Sorting Out the Web: Approaches to Subject Access. By Candy Schwartz. Westport, Conn.: Ablex, 2001. 169p. $32.95 paper, (ISBN 1-56750-519-8); $72.50 hardcover, (ISBN 1-56750-518-X). LC 00-22370.

The World Wide Web has been compared to a library where all the books are in a pile on the floor. Librarians have long sought ways to bring the Web, or at least parts of it, under the same kinds of bibliographic control that they have for their print collections. Schwartz presents an overview of the various methods that are available and in use today for providing subject access to material on the Web. The first area she considers is metadata. This chapter is a valuable survey of various metadata projects and how they relate to one another. In the chapter on classification, she begins with a bit of classification theory and then describes and analyzes a number of projects that organize Web resources according to various classification schemes. While the use of classification to organize information appeals to a librarian's sensibilities, it can be a labor-intensive

process; most projects are limited to a relatively small set of resources. The same can be said for the use of controlled vocabularies, such as Library of Congress subject headings, which are treated in the next chapter. Another chapter is devoted to search engines, probably the most commonly used method of searching the Web. Schwartz describes and evaluates the various kinds of search engines that are available, including metaengines. A sign of how quickly a book in this field can become dated is that there is no mention of Google, which has rapidly become one of the most popular search engines. In the final chapter, Schwartz looks to the future and considers the possibilities of machine-aided indexing, automated text processing, text mining, and visualization.

This book is most useful as an overview and an update on subject access to the Web. The focus is not so much on original scholarship as on synthesis of various trends and developments. In the end, it is clear that we are far from achieving truly satisfactory subject access to the Web. The more structured methods, such as metadata or classification, require too much intellectual effort to be applied comprehensively, and the more comprehensive methods, such as search engines, have too little structure for really precise scholarly research.

Each chapter includes a review of the research related to various approaches to subject access. Though a multitude of projects for providing subject access to the Web are cataloged and described, this is not a how-to book. Of course, as with any book of this nature, it started becoming dated almost as soon as it appeared. Each chapter is accompanied by a list of references as well as the URL of a Web page that the author maintains for each chapter on her Web site at Simmons. She promises in the introduction to maintain these Web pages throughout her working life, but the server address has changed already (there is an automatic redirect), and the individual file names are no longer valid. In some cases, but not always, the appropriate page can be deduced from links on her homepage. The text is accompanied by numerous illustrations, including screen shots, and author and subject indexes are included.—*John Hostage (hostage@law.harvard.edu), Harvard Law School Library, Cambridge, Mass.*

Copyright in Cyberspace: Questions and Answers for Librarians. By Gretchen McCord Hoffmann. New York: Neal-Schuman, 2001. 264p. $55 (ISBN 1-55570-410-7). LC 00-67869.

Recent changes in the copyright laws intended to accommodate the ongoing proliferation of electronic resources require that librarians reeducate themselves in this important area to appreciate its impact on the delivery of library services. The author, who has experience as a reference librarian as well as a recently earned law degree, is associated with a large law firm with a significant intellectual-property practice. She approaches the problems to be considered by developing what is essentially a reference work, using the popular question-and-answer format typical of works on law-related subjects intended for the layman or the occasional legal practitioner. While the overall arrangement of the book is intended to allow use as a quick reference on specific topics, it is written in a style that is also adapted to cover-to-cover reading.

Hoffmann does an excellent job of answering questions that are likely to be uppermost in librarians' minds concerning application of the copyright laws to online information, specifically the fair-use concept and liability for Web content. She also considers in some depth the difficulties posed by interlibrary loan and other forms of resource sharing, including downloading from the Web, printing rights, problems presented by hyperlinks on local Web pages, and the public display and performance of audio and video on the Internet. Hoffmann also examines trademark law and the use of words and symbols as logos, links, and in metatags on Web sites.

The question-and-answer format works best for specific answers to fairly narrow inquiries—that is, when one wants a quick reference guide rather than a comprehensive, detailed treatise. Much of Hoffmann's subject fits this format well; however, the limitations of the method become apparent in expositional passages on the origins and nature of copyright where a general question is used to introduce a wealth of specific material that might not be expected to have flowed from the question. Frequently, in situations where a fairly lengthy text answer to a general question is presented, Hoffmann provides special Q&A boxes to address subquestions suggested by the main question. These questions within a question are helpful and are usually specifically library-oriented inquiries with practical and understandable answers. This approach does not completely make up for the book's only major shortcoming, the overly general nature of its index. As it is for any reference work, the key to its usefulness is the reader's ability to go quickly to exactly what he or she is seeking. The table of contents is very good, including each main question and numerous subheadings from the answers, but a more comprehensive index, given the generalized nature of a fair number of the questions, would have been helpful in ensuring efficient usefulness of the book.

The first part of the book contains an excellent short history of copyright laws in the United States with reference to the British legal tradition from which United States copyright was developed. From there Hoffmann moves to an overview of

basic copyright concepts, including those surrounding the key fair-use principle, and then proceeds to the basics of how information is provided through the Internet as well as a summary of recent copyright legislation. This section provides a good foundation for understanding many of the complex issues presented in the remainder of the work, where some of the more pressing issues involving copyright from a librarian's point of view are addressed. The comprehensive detail in this section alone is sufficient to warrant having this book on your personal reference shelf.

Part 2 of the work provides more specific discussion of the application of the copyright principle to cyberspace, describing in detail the major issues that result from the application of copyright concepts to electronic materials, a different problem from those previously involved with print sources. Especially interesting are those portions dealing with potential legal liabilities that librarians may face when simply "doing their jobs," providing information to readers. No one wants to go to jail, and everyone wants to know the best path to follow in order to avoid it. Here Hoffmann, like any good lawyer, notes that there are few absolutes and that the existing legal precedents may be problematic as analogies to the librarian's cyberspace-related copyright dilemmas. She does help allay fears in this regard, however, and endeavors to make clear that a draconian enforcement of the letter of copyright law is not a matter within the purview of the librarian.

In part 3, Hoffmann moves on to a number of specific applications of copyright in the cyberspace environment, among them interlibrary loan, electronic-reserve systems, and distance education. She provides numerous helpful hints, but sometimes where the librarian would hope for specific solutions to knotty problems, Hoffmann frankly notes that they are just not always available at the present time. With little relevant case law, we have to fall back on sometimes all too opaque statutory language, language that was usually derived from the print context and has to be analogized. But all is not lost—or should not be—and Hoffmann's forthright stand for librarian involvement in revising the laws to reflect the electronic realities suggests the most rational and principled way out of the confusion. Whether working on the front lines of the UCITA (Uniform Computer Information Transactions Act) battles in each state, promoting a revision of the Federal copyright law more fair to users, or simply standing up for the rights of local information users exercising their fair-use rights, librarians serve their profession best today, as they always have, by continuing to ensure the right of their readers to know. The cyberspace environment does not change that obligation.

Overall, *Copyright in Cyberspace* is a valuable contribution to the literature in the field and is fairly unique in that the insights of the reference librarian and the lawyer are combined, much to the reader's benefit. The lawyer's preference for authoritativeness does give rise to one potential quibble, however. The fourth section of the book is really an appendix containing a selection of primary legal resources dealing with copyright, most of which are referred to in the preceding sections of the work. These sources take up 105 pages of a 264-page work, and their ready availability elsewhere, especially on the Web, suggests that it might have been better simply to provide appropriate references or URLs to many of the materials in question rather than reproduce them all in this book, especially in view of the fact that each chapter contains its own bibliography. Certainly the librarians for whom the work is intended will be able to locate copies of these materials from their citations. On the other hand, their inclusion does make ready reference to them considerably more convenient than might otherwise be the case, especially when a cross-reference is included in the main text.—*Vicki L. Gregory (gregory@luna.cas.usf.edu), School of Library and Information Science, University of South Florida, Tampa*

The Map Library in the New Millennium. Eds. Robert B. Parry and Christopher R. Perkins. Chicago: ALA Editions, 2001. 267p. $75 (ISBN 0-8389-3518-4).

How must map libraries change to have a role in the digital era? Does networked spatial data put the traditional map curator out of business? Should map libraries refocus their collection development to emphasize access rather than acquisition? How should spatial-data librarians employ technologies such as geographic information systems (GIS), digitization, and the Web to provide better services? These are some of the questions addressed in this collection of seventeen essays. Editors Parry and Perkins provide an international venue for practitioners in the field to express their views on how technology is affecting map librarianship and the cartographic publishing industry.

This work has the familiar ring of what have by now become new genres in our professional literature—*library-identity crisis* and *technology-issues angst*. It is, however, unique in focusing on the technical and specialized realm of geospatial data, whose image-based documents are arguably even more fundamentally challenged by technology than is printed text. In a larger context, it is worthwhile to note that Mary Larsgaard, the doyenne of this specialty, acknowledged in her third edition of *Map Librarianship: An Introduction* (1998), that she will not revise this standard text again.

Map libraries are indeed at a fork in their road. It is time to refocus, or perhaps re-engineer—but how, and to what end? The editors, and many of the essayists, point out that map

libraries are a supply-side, post–World War II phenomenon, engendered by the explosion of map publications by military and government agencies during this era. Some note that with the curve of this rise demonstrably headed downward, map libraries are redundant intermediaries because users now turn directly to the Internet for interactive mapping tools. Most, however, envision a hybrid role for the map library, increasingly using GIS, digitization, and spatial data storage technologies. One author offers a dissenting voice—and a little common sense to the debate. Alan Godfrey, in his essay, "A Map User's Perspective," upholds the continuing value of printed maps, while pointing out the poor quality, limited scope, and lack of portability of computer-generated maps. His point is clear to anyone who has compared a MapQuest printout from the Internet to a good road atlas or the informative, customized Trip-tiks provided by the American Automobile Association.

At the other end of the spectrum, one of the editors, Perkins, in "Access to Maps and Spatial Data," calls for the immediate refocusing of map libraries from fixed paper toward access to spatial data via the Web. He maintains that socio-economic and political forces, "stemming from the technological transition in mapping, lead relentlessly towards access, rather than acquisition" (173). While I found myself agreeing with much of his argument, I grew weary of the exclusionary paper versus digital scenario. All media formats have a place in the information universe, and, on balance, tend to compliment rather than replace one another. Budgetary restrictions inevitably force tradeoffs, but libraries, like other services in our society, will gravitate toward offering patrons more rather than fewer choices.

In an essay about the changing role of GIS, Jennifer Stone Mullenberg presents the results of a survey about GIS use in map libraries. GIS on campuses has expanded from the traditional users—geography, geology, forestry, urban planning—to include business, health care, education, and even some humanities. Not surprisingly, 90% of the respondents reported using the ESRI software, ArcView, in their libraries. Greater numbers of users who are becoming literate in multiple cartographic format may use combinations of paper maps, CD-ROM atlases, and online mapping in the library. Mullenberg concludes that the importance and use of GIS in libraries will continue to grow. Carol Marley, in an essay about the changing profile of map users, examines the challenges and problems that map librarians face in providing geospatial services. She surveys the new skills and old concepts that library staff will need to achieve the spatial literacy necessary to help users with their geographic needs. While recognizing that the road ahead is daunting for the profession, she sees no decline in users' needs for cartographic information and a healthy future for map libraries.

It would be a mistake to conclude from the preceding discussion that this book is narrow in scope, focusing chiefly on the print versus digital question. Topics covered in the other essays include cataloging issues, metadata and standards, organizational change, storage technologies, Internet mapping, virtual map libraries, the digitization of historical maps, and partnerships with the new commercial mapping sector. One area, the regional role of the map library, could have been treated more thoroughly. Map libraries have a distinct relationship to state, county, and community needs, a reason for their existence particularly in publicly supported institutions. This shortcoming notwithstanding, these essays should provide welcome reading and perhaps direction for policy makers and a technological update for spatial data librarians.—*Michael Manoff (mmanoff@mail.utk.edu), Knoxville, Tenn.*

Works Cited

Larsgaard, Mary L. 1998. *Map librarianship: An introduction,* 3rd ed. Englewood, Colo.: Libraries Unlimited.