Realizing what’s essential: a case study on integrating electronic journal management into a print-centric technical services department

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Objective: To support migration from print to electronic resources, the Cushing/Whitney Medical Library at Yale University reorganized its Technical Services Department to focus on managing electronic resources.

Methods: The library hired consultants to help plan the changes and to present recommendations for integrating electronic resource management into every position. The library task force decided to focus initial efforts on the periodical collection. To free staff time to devote to electronic journals, most of the print subscriptions were switched to online only and new workflows were developed for e-journals.

Results: Staff learned new responsibilities such as activating e-journals, maintaining accurate holdings information in the online public access catalog and e-journals database (“electronic shelf reading”), updating the link resolver knowledgebase, and troubleshooting. All of the serials team members now spend significant amounts of time managing e-journals.

Conclusions: The serials staff now spends its time managing the materials most important to the library’s clientele (e-journals and databases). The team’s proactive approach to maintenance work and rapid response to reported problems should improve patrons’ experiences using e-journals. The library is taking advantage of new technologies such as an electronic resource management system, and library workflows and procedures will continue to evolve as technology changes.

INTRODUCTION

Libraries rarely have an excess of human and financial resources. In such a climate, it is essential that these resources are devoted to the tasks that best help the library achieve its mission. The following case study describes the Cushing/Whitney Medical Library’s (Medical Library) experience of redesigning the workflow of its technical services area to focus on directing scarce resources to best meet the needs of its users.

Libraries’ shift from ownership of physical collections to licensing content for electronic resources has occurred quickly in the fields of medicine and science [1]. This move has been fueled by the rapid growth and widespread acceptance of the Internet as a global information infrastructure. The Medical Library was quick to recognize the enormous potential of electronic resources to transform research and patient care. As electronic products became available, the library aggressively acquired most of the major resources in the biomedical field. The Medical Library also benefited greatly from the Yale University Library System’s interest in purchasing publisher packages (the “big deal”). Yale was an early implementer of link resolver technology and purchased Ex Libris’s SFX product, which allows linking directly from databases to the full text of electronic journals. Using unpublished data from a Yale School of Medicine survey that showed that faculty wanted access to ever more e-journals, the library began to buy backfiles as well.

Electronic access to unprecedented numbers of primary and secondary sources effectively provides a globally accessible research library on the user desk-

Highlights

- Approximately 700 print subscriptions were shifted to electronic only. A core collection of key biomedical journals is maintained in print, along with a steadily decreasing number of titles that do not yet have acceptable online access. The latter titles receive minimum processing and are not checked-in, claimed, or bound.
- Communication was key to the reorganization effort. The serials staff has weekly group meetings, and each team member has a weekly check-in meeting with the supervisor.

Implications

- A reorganization process is never easy, but staff reacted well to learning new skills. Training staff to manage electronic resources requires substantial one-on-one time with the supervisor and may take many months.
- The main library’s Electronic Collections Department was a key resource in the reorganization, and the library is planning future collaborations to manage electronic resources more effectively for the Yale University Library System.
- Migrating to electronic-only journal subscriptions is based on the premise that libraries and publishers will succeed in coming up with robust e-journal archiving solutions.
top. This paradigm shift in how information is accessed was well documented at Yale in studies and surveys by Medical Library staff [2]. Library administration realized in hindsight, however, that while the library was acquiring a wide variety of electronic resources, not enough consideration had been given to the question of integrating e-resource management into daily library operations and workflows.

While the librarians were acquiring a critical mass of e-journals, the clerical staff in technical services continued to check in and bind thousands of print journal issues. A usage study of the current unbound periodicals in the second quarter of fiscal year (FY) 2004 documented the dramatic change in usage patterns that had already taken place [3]. More than half of these titles (53%) received no use by the library's patrons over the 3-month study, while an additional 42% received only 1 to 5 uses. This usage was clear evidence that online access to the journal literature was vastly preferred over print.

The library's emphasis on print processes jeopardized effective management of e-resources as evidenced by the library's "electronic shelf reading" project, a systematic checking of all e-journals for the following:
- accuracy of the title's holdings in the online public access catalog (OPAC)
- accuracy of the title's holdings in the e-journals database
- ensuring that the provided link led to the optimal available page

The quantity and variety of errors uncovered clearly proved that the library was neglecting the resources most important to its users. When the library had only a small number of e-resources, the electronic resources librarian could manage them all efficiently. With the exponential increase in the number of materials available electronically, efficient handling by one librarian was no longer possible and created a bottleneck in workflow. To best serve its patrons, the library needed to devote more staff time to supporting the resources patrons used most. Library administration recognized that changing the emphasis of technical services operations from print to electronic resources was overdue.

CONSULTANTS' REPORT

Service models are generally based on "what is" rather than "what might be" [4]. Library administration felt that major organizational and operational changes needed to be implemented. These changes would significantly impact positions not only in technical services, but in other library departments as well. Library administration had a general idea of the changes that needed to occur to realign operations but doubted whether implementation could be managed without external help.

External consultants were considered for several reasons. First and foremost, they would be objective in addressing the challenges the library faced. The library staff was a close-knit group, some of whom have worked together for over thirty years. The question arose, therefore, whether the staff could critically evaluate positions, relationships, and procedures with the necessary degree of objectivity. Second, because consultants specialize in library workflow analysis and design, they would be far more aware of industry best practices and better able to identify potential opportunities. Finally, and perhaps most importantly, the consultants' recommendations would provide expert validation for the expected changes, making them more acceptable to staff.

The library employed the services of the R2 consulting group [5] to help implement changes. To ensure success, each major step in the process needed to be carefully planned and communicated. Input from all staff was solicited to help develop the best model and to generate buy-in and participation. In February 2005, two consultants interviewed the staff in technical services, as well as other key library stakeholders, to uncover and identify operational problems and opportunities for improvement. The consultants looked at peer institutions for best practices and considered which tasks would become the core functions, how they would be accomplished, and by whom.

Their report contained five major recommendations:
- reduce the amount of time spent on print monographs
- reduce the amount of time spent on print serials
- strengthen and clarify departmental management's roles and responsibilities
- establish key measures for all processes
- reorganize the Technical Services Department to better integrate e-resources into daily operations

The consultants also recommended drastic reductions in print workflows to free up as much time as possible for managing electronic resources. These key suggestions were:
- stop reviewing and editing Library of Congress and member copy cataloging
- combine the receiving, cataloging, and labeling of monographs into one workflow step
- stop checking in and binding periodicals

TASK FORCE FORMED

A task force was formed to consider the consultants' recommendations in greater depth. The task force included the library director, the electronic resources librarian, the head of technical services, the head of access and delivery services, the catalog librarian, and the education services librarian. The task force agreed that while all the recommendations had some merit, the best results could be achieved by concentrating initial efforts on periodicals.

A study of the current periodical collection conducted the previous year provided evidence of just how little print was being used, yet the library was still checking in and binding more than 1,400 print journals. Two full-time equivalents (FTEs) in the Technical Services Department were devoted to checking in and binding print journals, and an additional FTE from the Access & Delivery Services Department was
devoted to shelving them. As Anderson and Zink observed, these print tasks were no longer mission critical [6], so this was not the optimal use of staff time.

ORGANIZATIONAL CHANGES

Prior to the reorganization, the Technical Services Department consisted of eight staff members: a department head, two additional librarians (a cataloger and the electronic resources librarian), and five clerical and technical staff. All staff reported to the department head. The clerical and technical positions at Yale are divided into five categories, levels A to E, with E being the highest level. Figure 1 outlines staffing prior to the reorganization.

The consultants recommended reorganizing the department into pre-receipt processes (selection/ordering) and post-receipt processes (receiving/invoicing and description). The implementation task force considered the recommendation closely but felt that this model was not a good fit for staff with years of experience in both pre- and post-receipt functions. The department had been organized by format (monographs and serials), and the clerical staff had managed all aspects of those formats, including ordering, receipt, and payment. The electronic resources librarian had developed considerable expertise in handling license and business negotiations but, under the proposed scheme, would no longer have any responsibilities in those areas. The task force therefore decided to
preserve the existing organization of the department by format to capitalize on the staff’s strengths and to mitigate the stress of reorganizing.

In September 2005, the Technical Services Department changed its name to the Collection Development and Management (CDM) Department to reflect its new emphasis on collections and managing electronic resources. The electronic resources librarian became associate director of the department and supervisor of the serials group, which was responsible for managing electronic journals and databases and a greatly reduced number of print journals. The director of CDM was responsible for monographs, including e-books, and supervised the associate director, the catalog librarian, the copy cataloger, and the monographic acquisitions assistant. Over time e-resource work would be integrated into every position in the department (Figure 2).

**CANCELING PRINT JOURNALS**

To free up staff time to manage electronic resources, as many print subscriptions as possible were switched to online only. The main exceptions were a core collection of the most significant and historically relevant print titles [7] and a group of titles without an acceptable online substitute (i.e., journals which are only available from aggregator databases) or are only available in print. As acceptable versions of these titles become available online, the print subscriptions will be canceled.

Patrons showed little reaction to the idea of canceling print journals. At the fall 2005 meeting of the library advisory committee, which is composed of faculty and student representatives, the library presented its plans to radically reduce print subscriptions as part of its technical services reorganization plan. The committee did not object to this move, and their only questions concerned archival access to online content. The librarians present explained that while digital preservation and archiving were still open questions, the library’s policy for migrating a subscription from print to online required that the license agreement clearly state the library’s right to perpetual access for the purchased content. The Yale University Library System also participates in two existing archiving initiatives: Lots of Copies Keep Stuff Safe (LOCKSS) [8] and Portico [9]. In addition, the library monitors the marketplace for new developments in archiving online journal content. These responses sufficiently allayed the concerns of the library advisory committee regarding the cancellation of print journals.

Students and faculty were kept informed through news announcements on the library Website and email messages from their personal librarians (students) and library liaisons (departments). These email messages contained links to Web pages that explained the rationale for the cancellations and listed the core journals.
the library planned to retain in print. Again, except for a few faculty asking about preserving access to online content, the primary response was silence—a clear indication that constituents had already moved to a primarily online environment for their information needs, while the library was still catching up.

NEW JOB DESCRIPTIONS

The new organizational structure necessitated new job descriptions. The serials staff were interviewed to learn exactly what tasks they currently performed, how frequently they did them, and what training they needed to do them. The resulting table of tasks was expanded with e-resource tasks drawn from the electronic resources librarian’s experience and from job descriptions for other e-collections staff in the Yale University Library System and from other institutions.

The E-level serials staff member was reassigned to work part-time with the electronic resources librarian as a pilot project to learn the new e-journal tasks and begin to document their specific components. This approach helped ease the new supervisor’s transition into a management position and helped to develop a good working relationship between the two. These efforts led to the development of job descriptions for the two levels of staff in the serials team [10, 11].

The cohesion of the new serials team was fostered through space renovation, the restructuring of its work, new skills development, and open communication, including frequent meetings.

DESIGNING NEW SPACE

Before taking on managerial responsibilities, the electronic resources librarian had his workspace in an adjacent room. The main technical services room was redesigned so that he could sit near his staff. The department’s ancient and eclectic collection of furniture was replaced by attractive, well-designed workspaces that were a tangible symbol of the library’s commitment to the reorganization. The space was rewired to increase computer network speed, and wireless access was extended into the area. The staff were also given dual screen monitors to facilitate their new assignments, which often involved working with multiple spreadsheets.

REORGANIZING THE WORK

The flexibility of the staff and their receptiveness to change contributed greatly to the success of the reorganization, as did library administration’s effective leadership in bringing all levels of staff into the reorganization process. As noted earlier, most staff were eager to shed or reduce routine print tasks like checking in and binding in favor of new assignments. New responsibilities allowed the lowest level clerical staff person to receive a level (and pay) increase after a job audit showed the higher level of his new job responsibilities. Job levels did not change for the other staff members, whose jobs were already at a higher level and comparable to similar e-resource staff positions in the Yale University Library System. Not all staff accepted the changes equally well, however, and the D-level monographic acquisitions assistant opted to take early retirement before the reorganization was implemented.

Communication has been key to the success of the reorganization. The serials team has a weekly meeting (time varies with the agenda), and team members have weekly half-hour check-in meetings with their supervisor. Team meetings are used for training, discussion of current and future projects, review of e-resource problem reports, and general information purposes. The individual meetings serve as placeholders to discuss work issues in more depth and to assign and prioritize new projects.

All serials staff received training at the Learning Center at Yale, including several levels of Microsoft Excel and Access and other productivity software, including email and scheduling applications. They also attended library-wide instructional sessions on activating e-journals given by the electronic resources librarian and staff from the central Electronic Collections Department. The timing of these training activities coincided with new library policies on performance evaluation and development for clerical staff, which required all library staff to identify areas for development to support departmental and library goals.

Business guru Peter F. Drucker once observed, “Everybody has accepted by now that change is unavoidable. But that still implies that change is like death and taxes—it should be postponed as long as possible and no change would be vastly preferable” [12]. It is human nature to avoid change by reverting to familiar tasks. To safeguard against this tendency, the staff was given specific schedules for working on print and electronic journals. Staff would focus on print tasks, such as checking in journals and binding, during the earlier part of the day and concentrate on the new electronic tasks later in the day. The need for this clear delineation waned as staff gained mastery of the electronic portions of their jobs. After years of checking in, binding, and claiming print journals, the staff was ready for change and eager to take on new electronic assignments.

DEVELOPING DOCUMENTATION

Staff need the right tools for the job to perform assigned tasks. Fortunately, the reorganization occurred just as new tools for more effectively managing e-resources were being developed and marketed. Documentation, however, remains the most crucial tool. The electronic resources librarian spent much of the first year adapting existing documentation and developing new procedures. Troubleshooting procedures, for example, were adapted from documentation developed by Ellen Duranceau and her colleagues at the Massachusetts Institute of Technology Libraries [13]. New procedures were developed for a range of tasks, including registering online journals for access with var-
ious electronic printers (e-journal hosting services such as Highwire), updating the link resolver knowledgebase, and entering data into the e-journals database. These documents are organized in a shared directory so that all serials team members can access them.

The shared online directory is also used as a storage area for ongoing projects, most of which use MS Excel. In general, the serials team creates and modifies spreadsheets to manage descriptive, administrative, and financial metadata for electronic resources. Portions of these data move into three different data sources: the link resolver knowledgebase (Ex Libris’s SFX), the library’s homegrown electronic resource management tool (ERM) known as Yale Electronic Library Modules (YELMO), and the integrated library system (Endeavor Voyager).

THE DEPARTMENT TODAY

FY 2006 witnessed a dramatic reduction of the Medical Library’s print journal holdings from 1,200 to 474 titles, with 265 core journals receiving the full treatment of check-in, binding, and claiming and 209 journals, available only in print, which go directly into the journal stacks without check-in. Binding shipments were reduced from weekly to once a month. The time released from print work was invested in managing the e-journal collection of approximately 6,800 biomedical titles.

The amount of time required to manage the e-journals collection has not been easy to measure, because precise benchmarks for electronic tasks did not exist at the start of the reorganization. The eventual development of such benchmarks is needed to track productivity; however, such tracking was not the goal of the reorganization. The reorganization was implemented to better support the library’s e-journal collection and to focus staff energy on these heavily used resources instead of the underutilized print collection.

One example of the library’s improved focus on e-collections is the increased number of records added to the e-journals database. As of early November 2006, the serials team had added 517 records to the e-journals database, as opposed to the 333 records added in all of 2005 by the electronic resources librarian. Although the electronic resources librarian now spends considerable time managing staff in the reorganized department, he has been able to use his time more effectively on higher-level tasks, such as coordinating the implementation of the new ERM system.

WORKFLOW

The staff currently performs tasks in the following areas: preorder support, ordering, activation, maintenance, and troubleshooting. The last three areas were completely new to staff, and new workflows had to be developed because electronic tasks can be integrated into specific positions but usually require separate workflows [14].

Preorder support

Acquiring e-journals requires more preorder investigation than ordering traditional print journals. It is not enough to know that a resource is available online; one must know if the form of access control is acceptable to one’s institution, if there are license terms to review and negotiate, and what information is needed for the publisher to provide a price quote. The E-level team member is the point person for ordering and works primarily through a serial agent to obtain this information. She contacts the publisher directly if there are remaining questions or if the serial agent is unable to find the needed information. Someone must also check the library’s existing package agreements to make sure that new resources are not already covered under one of them. Currently, this assignment falls to the electronic resources librarian.

Ordering

The staff continues to place orders through a serial agent and to create brief bibliographic records that are used to create purchase orders in the integrated library system. This part of their job has changed the least.

Activation

One of the difficulties in acquiring electronic resources is lack of timely notification when a subscription has been activated. The staff maintains files of ordered items and checks them periodically to see if access is yet available and, if not, follows up with email messages to the vendor or serial agent. Activation may involve obtaining a customer number or activation code from the serial agent or vendor to register the subscription. One must also check to ensure the product is complete. Multiple emails and telephone calls to the serial agent or directly to the publisher can be necessary to work out these issues. Finally, staff must ensure that the resource is turned on as a target in the link resolver and added to the e-journals database and that the cataloger is notified so the resource can be added to the catalog.

Maintenance

Publisher title lists must be reviewed systematically for title changes, additions, transfers and canceled publications, and library systems must be updated accordingly. The redesigned serials team now has the staff resources to check publisher title lists and monitor publisher mailing lists so that “missing” or “lost” titles can be identified. The staff also proactively identifies “problem” journals that have a history of lapsing at subscription renewal time and contacts the publisher to prevent any future interruptions of service.

A staff member has been trained to run updates on Yale’s SFX link resolver knowledgebase on an established schedule. These updates have contributed to a significant decrease in Yale’s link resolver error rate since early 2006. In April 2006, the error rate (defined as number of times the link resolver incorrectly shows a full-text link, a full-text link is broken, or a full-text
Troubleshooting

One of the serials team’s goals is to respond quickly and effectively to e-journal problem reports. Users and staff can report problems to a mailing list using the Report an Access Problem forms on the Medical Library Website. Team members are scheduled to respond to reports on certain days, and the mailing list is included in all replies so that staff are aware of problems.

This process has required a new level of customer service from the clerical staff. The electronic resources librarian monitors the list and provides assistance with more complex problems, such as diagnosing remote access problems. He also continues to teach the staff about the library’s various package agreements, because much of that information is not yet readily available in the electronic resource management system. The public services staff has already been favorably impressed by the team’s quick response to e-journal access problems, as evidenced by anecdotal comments.

Outreach activities

Outreach activities performed by the electronic resources librarian include promoting new e-resources to the user community and educating users about the current state of scholarly publishing and new publishing initiatives, such as open access.

While the staff still needs to consult the electronic resources librarian about complex problems, considerable progress has been made in empowering staff to deal with e-journals. All serials staff are engaged in some aspect of managing e-journals and have gained new skills and confidence in applying them. The days when all e-journal work flowed through one person are over.

NEXT STEPS

Although significant progress has been made over the past year, much remains to be done and the department is still experimenting and making course corrections as necessary. It has taken the library one year since the consultants’ initial assessment and report to make most of the significant changes reported in this paper (Table 1). Most of the effort to date has been directed toward repurposing the serials team. The next concerted effort will be to familiarize the remaining staff with the workflow for electronic books and other e-resources. The electronic resources librarian continues to look for ways to measure work productivity and prevent backlogs for materials in electronic formats.

New tools

The Yale University Library System, with active support from the Medical Library, is implementing a commercially produced ERM, Ex Libris’s Verde system. One of the goals of this move is to consolidate data sources. The ERM will be able to feed information to the link resolver for improved link resolution to full text, as well as generate the A to Z and subject display pages for the library’s e-journals. The net effect should be reduction of staff time and errors from dual entry of data in the link resolver and the local ERM, YELMO.

The commercial ERM holds other advantages as well. Yale’s homegrown ERM, although tailored to display electronic resources in many highly customized views, does not contain robust staff input tools. The Web-based, commercial ERM is easy to access and granular enough to limit different groups of users to specific functions in the system, so that more library

| Dates                      | Activity                                                                 |
|----------------------------|--------------------------------------------------------------------------|
| October–December 2003      | Current periodical usage study identifies low and no-use titles          |
| November 2004              | Library administration decides to hire consultants to review              |
| February 2005              | technical services organization and processes                            |
| March 2005                 | Consultants conduct site visit                                           |
| April–August 2005          | Consultants present report to staff and administration                   |
| June 2005                  | Technical services task force meets to review and implement consultant   |
| September 2005             | recommendations                                                           |
| November 2005              | Current periodical usage study published                                 |
| January 2006               | The Technical Services Department is renamed Collection Development      |
| February–March 2006        | and Management (CDM); electronic resources librarian begins regular      |
| August–September 2006      | serials team staff meetings for training and project assignments         |

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staff can be allowed access to create or update e-resource metadata. In contrast, using Yale’s local ERM as a “power user” requires open database connectivity (ODBC) connections to a Microsoft SQL server and Microsoft Access to create queries and view data tables, thereby limiting users to a select few. The Verde ERM broadens the pool of qualified staff who can enter and modify electronic resource data.

Increased collaboration

The advent of electronic collections has led to greater collaboration in the Yale University Library System. The need to share the same tools and manage the same resources with limited financial and staff resources is drawing the CDM Department, and especially the serials team, into a cooperative work environment with the Electronic Collections Department in the main library. The libraries have begun dividing up large e-resource projects, such as journal activation, between the medical and central campuses and have a shared troubleshooting team. These kinds of collaborative activities allow the library system to accomplish its work more efficiently and effectively.

At this point in time, how far such collaboration may go is uncertain. The ubiquitous nature of e-resources creates management challenges for a library system built around its physical locations. Currently, collaboration on e-resource work across the Yale University Library System is conducted primarily on a “good will” basis. Discussions about greater centralization of e-resource management have been known to stall over trust and control issues. For the Medical Library to contribute funds and staff to a truly centralized e-resource management department, it would need a signed service agreement with clear performance guidelines to ensure that the Yale University School of Medicine and the Medical Library’s other user groups would continue to receive the same high level of service they currently enjoy.

CONCLUSIONS

Change is never easy, but careful planning and good communication can improve the process. To keep the library vital in an electronic age, library staff must be willing to make fundamental changes to traditional library roles and to take on new roles. Relatively static work processes are no longer effective. In the coming five to seven years, Yale librarians can expect to continue to redesign workflows and procedures as new tools such as the ERM go into production and the electronic publishing marketplace continues to evolve.

The transition from print to electronic resources has meant better service to library patrons and helps advance the research and patient care missions of the Yale University School of Medicine and its affiliated hospital. The challenges of managing electronic resources have forced library staff throughout the Yale University Library System to work together more collaboratively and have created a more cooperative work environment, but this work is still far from being centralized.

Yale University is moving into a global educational and work environment with increasing numbers of its faculty and students teaching and doing research throughout the world. The move by many institutions to online courses also requires innovative library support. Staying one step ahead of the changing culture of scholarly communication and learning brought about by the move to electronic resources will continue to challenge librarians and require even more change from libraries. With change as the only constant in the library environment, library staff will need to continue to exhibit creativity, flexibility, and agility in adapting to meet the challenges of the future.

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