

Notes on Operations

Need Exceeds Space

A Serials Withdrawal Project at the University of Rhode Island University Libraries

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In 2009, the University of Rhode Island's main library, the Robert L. Carothers Library and Learning Commons in Kingston, initiated a pilot serials withdrawal project when the need for space for new services exceeded the space available in the library. A joint venture between Acquisitions and Access Services, the successful pilot led to a subsequent withdrawal project in summer 2010 to free additional space in the library. The print journals targeted for withdrawal were ones to which the library had online access through licensed journal archives. Considerations on what to withdraw, the process of identifying titles for withdrawal, and the logistics of managing the withdrawal of more than 35,000 volumes are described.

As library collections move online in the digital era, institutions are repurposing space formerly used to house collections for student use and enhanced services in support of teaching and learning.¹ As reported by Payne, “the ‘library as place’ movement has redefined what space within the library should be used for. As a result, libraries are coming to be seen primarily as centers for independent and collaborative study and learning rather than as housing for physical collections.”² Schonfeld and Housewright acknowledge that “the information/learning commons movement to create suitable learning spaces and bring new services into the library has been transforming the physical space of library after library.”³ As a result, “libraries turn to the deaccessioning of print as a key tactic for finding the needed space.”⁴

In response to plans to construct a learning commons in the University of Rhode Island's (URI) main library in Kingston and the consequent need to free space for new services, the library initiated a pilot serials-discard project during the summer of 2009. Other options for creating space to accommodate the learning commons, such as constructing an addition to the library or transferring collections to off-site storage, were beyond the library's financial resources. Furthermore, a tight schedule for construction required a timely response.

Successfully completed well before the construction deadline, the serials-discard pilot was continued in summer 2010 as a means to create additional strategic space in the library. The extension of the serials-discard pilot offered the opportunity to refine procedures and reflect on broader considerations surrounding the withdrawal of library collections in the digital era, such as the

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desirability of collaboration with faculty and other library stakeholders as well as the importance of coordination with other libraries to ensure that unique materials are not lost to the library community. The process followed can inform similar projects in other academic libraries.

Literature Review

As academic libraries face space constraints and budget pressures within the context of the mass migration of serials content to online format, many libraries have made the decision to withdraw print serials from their collections. O'Connor and Jilovsky point out that "the rate of discard of materials from academic libraries in recent years has become a fast growing statistic" driven primarily by lack of space and "new directions for library physical space."⁵ Corroborating this view is the *Ithaka S+R Library Survey 2010: Insights from U.S. Academic Library Directors*, which found that "most libraries have become comfortable with deaccessioning or moving offsite their print journal collections after they have reliable digital access to copies of these materials: 91% have already done so or are planning to do so in the future."⁶ Besides space needs, an important factor in decisions to withdraw print journals from library collections are the costs involved in the long-term storage of print format materials. Estimates of these costs vary widely on the basis of research methods, with annual storage costs in open library stacks calculated to range from \$4.26 to \$56.20 per volume per year.⁷ Montgomery and King estimate the cost-per-use for bound, print journals to be \$30, compared to \$2 for electronic journals.⁸

Despite this trend to remove legacy print journal collections from libraries, a coordinated strategy for the systemic withdrawal of print serials has largely been lacking. The *Ithaka S+R*

Library Survey 2010 found that only a minority of library directors confirmed having specific strategies and policies for deaccessioning print journals that they have access to electronically.⁹ As O'Connor and Jilovsky note, "the loss of so much material in a largely uncoordinated, unrecorded fashion is a matter of considerable long-term concern."¹⁰ Instead, libraries have tended to develop criteria for which serials to remove from their collections locally and on an ad-hoc basis.

Before widespread electronic access to journal content was a factor in withdrawal decisions, these decisions were based primarily on anticipated low levels of use of the removed materials and availability of the material at other nearby libraries. For example, in the late 1980s, librarians at Texas A&M University developed criteria for selecting infrequently used serial titles to move to a storage area within the library.¹¹ They targeted serial titles with large back runs, especially ceased or canceled titles in science and technology and titles with outdated subject matter, outdated directories and superseded annuals, and titles duplicated in other libraries on campus. Similarly, librarians at Purdue University Libraries conducted a pilot study in which journal titles were identified for deselection using criteria that included publication date, completeness of holdings, and, primarily, the availability of the journals at specified benchmark institutions.¹²

As the availability of journal content online has become increasingly acceptable as a substitute for print, criteria for withdrawing print journals with online equivalents have focused on the reliability of the online content. A number of studies have shown that the use of print journals decreases when online versions are made available.¹³ In addition, recent surveys have found that the majority of faculty members now prefer to access journals in online format.¹⁴ In her review of the literature, Sorensen notes that

"by 2004, there is evidence that libraries were actually withdrawing print backruns, but only if the online versions met certain standards."¹⁵ At the University of Saskatchewan, JSTOR-available print journals were flagged for disposal in 2006/2007 "because of the stable, comprehensive, and secure nature of this collection of scholarly electronic journals," while publisher-available print journals were placed into storage "given that these online journals were generally complete and stable."¹⁶

The University of Arizona's Science-Engineering Library likewise decided to remove print journals as online archival backfiles that met their "standards for perpetual access and commitment to digital preservation" were purchased.¹⁷ Backfiles are "evaluated for completeness, quality, and publisher commitment to digital preservation" and "publishers must include a license that allows for perpetual access."¹⁸ In a similar vein, to solve acute space pressure, Imperial College in London devised a strategy to withdraw print holdings for which the library had "sustainable" electronic access. Sustainable meant the anticipated availability of free or affordable online access for as long as required through one of the following: perpetual access rights to the content via the web, the journal being permanently open access, or the journal being in a trusted service such as JSTOR, the Association for Computing Machinery (ACM) digital archive, or a JISC-funded archive.¹⁹

In response to this growing movement to reclaim library space by removing back runs of print journals from library collections, Ithaka released a report in 2009 titled *What to Withdraw? Print Collections Management in the Wake of Digitization*.²⁰ Schonfeld and Housewright, the report's authors, clearly define criteria for responsibly withdrawing print journals from library collections. Journals that are good candidates for withdrawal

have these characteristics: they were digitized with high standards of quality, scanning errors are being actively corrected, digital copies are reliably preserved, they are not image-intensive, and they are available through reliable license terms. The report concludes that JSTOR-digitized, text-only journals that are held in at least two print repositories meet these criteria and can be responsibly withdrawn from library collections. The conclusion that follows from Ithaka's report, as well as from the literature cited above, is that given reliable, affordable, and secure access to quality online journal content, libraries can comfortably make the decision to dispose of corresponding print volumes.

Background

The URI is a land-grant, sea-grant, and urban-grant institution founded in 1892 as the Rhode Island College of Agriculture and Mechanic Arts. It holds the Carnegie Classification of RU/H (research university with high research activity), enrolls more than 16,000 students, and employs close to 600 tenured or tenure-track faculty working in a broad range of disciplines. The University Libraries consist of the main library on the Kingston campus and two small branch libraries in Narragansett and Providence. The University Libraries are part of the HELIN Library Consortium, which is composed of eleven academic libraries, twelve hospital libraries, and one law library in Rhode Island and nearby Massachusetts. The university's main library in Kingston was built in 1964 and has had two major renovations since that time: one in 1976 and one in 1993. The building currently provides shelf space for 1.4 million volumes and seating capacity for 1,300 people. As is the case in many academic libraries, space is at a premium as collections expand and new services for library users are developed.

Growth in the URI library's collection of print periodicals has been slowing since the early 1980s as the result of ten major serials cancellation projects in which more than 3,000 subscriptions were cancelled as well as a steady shift from print to online-only current periodical subscriptions.²¹ Despite this slow rate of growth, the library's bound periodicals collection, classified and stored on the building's lower level, was overcrowded by the early 2000s. Efforts to shift material to create additional room were only minimally successful and little free shelf space remained. In many cases, shelvers had no choice but to shelve journals on top of other journals.

The opposite situation existed in the current periodicals area on the main floor. Since 2002, when the library's management team adopted a policy of converting print subscriptions to online-only format whenever practical, the number of current periodicals received in print format declined steadily to approximately 600 in 2011.²² In fiscal year 2010/11, library staff checked in 5,271 periodical issues, down from 17,227 in 2001/02, a decrease of 69 percent. Meanwhile, the number of online-only subscriptions continued to grow, reaching more than 57,000 titles in 2011, or about 90 percent of current titles. Including journals in JSTOR, online publisher backfiles, and full-text aggregator databases, the total number of paid online journals available to the URI in 2011 was 26,471.²³ As a result of this shift to online journals, the space designed in the early 1990s to house thousands of current periodicals was little-used, with the remaining print subscriptions scattered across mainly empty shelves.

2009 Pilot Project

An opportunity to address the overcrowding on the lower level and the excess space in the current periodicals

area came with the departure of Robert L. Carothers, the URI's tenth president, who retired in 2009 after eighteen years. As the result of a campaign to name the University Library in his honor, the URI's main library officially became the Robert L. Carothers Library and Learning Commons in May 2009. After renaming the library, university administrators began planning the construction of a learning commons in the area of the main level, where the current periodicals were housed. Construction would begin during the summer of 2010, before which the current periodicals would need to be relocated to the already overcrowded lower level with the bound periodicals.

The dean of libraries dismissed the idea of eliminating study space to accommodate the current periodicals, so the head of Acquisitions suggested that the library withdraw bound journals duplicated online. Eliminating digital duplication would open up physical space in the library without diminishing the total content available to library users, as would, for example, withdrawing low-use periodicals not available online. Furthermore, no reliable use data were available for the library's bound journals, because they do not circulate and reshelving statistics by title are not maintained. Thus removing print volumes available online appeared to be the most rational and expedient strategy, especially given the time constraint.

After a decision was made about what to withdraw, the dean of libraries, head of Access Services, and head of Acquisitions sought to identify a suitable target area for weeding that would provide enough space for the relocated current periodicals plus additional space for study tables. They identified an appropriate space, very visible and therefore easy for library users to find, next to the main stairwell on the lower level. Because a deadline was involved and this was the first large-scale serials withdrawal project undertaken at

the University Libraries, the dean of libraries and heads of Access Services and Acquisitions decided to limit the project to the withdrawal of journals with Library of Congress call numbers beginning with Q (Science) and R (Medicine). Not only were the Qs and Rs physically close to the area that needed to be cleared to accommodate the current periodicals, but much of the library's online journal content was in the sciences, so many potential titles likely could be identified for discard. Though limited to two Library of Congress classifications, this withdrawal project could serve as a pilot for more extensive weeding in the future.

The heads of Access Services and Acquisitions chose the summer months of July and August to complete the first phase of the pilot: discarding the journals. The next phase, creating a new space for current periodicals through shifting volumes in the stacks, would take place during the fall semester. The shifting implications, according to the stacks supervisor, would be imperceptible and kept to a small area.

What to Withdraw

In deciding which titles to withdraw, the head of Acquisitions suggested specifically targeting volumes for which the library had online access through licensed journal archives or backfiles. The details of this purchasing model vary by publisher and vendor.

Targeting print volumes duplicated in online archives for withdrawal had both advantages and disadvantages. The most obvious advantage was that the material in the archives corresponded to the bound volumes that occupied the space that needed to be emptied. The online archives offer complete coverage of every issue of every title in the archive in the form of page images that can be viewed online, printed, and downloaded, thus offering a workable facsimile of the printed volumes. In addition, the library would be unlikely to cancel any

of these backfiles after having invested in the initial purchase price, especially because the annual access fees for all archives, totaling less than \$100,000, comprised a very small proportion of the library's \$3.2 million materials expenditures.

The disadvantages included the possibility of losing access to content for reasons other than nonpayment of annual access fees. A title can disappear from a publisher's online archive if the publisher sells the title to another publisher. In such cases, the library could lose access to the online backfiles of titles already withdrawn in print unless the publisher has endorsed the Transfer Code of Practice, developed by UKSG to address the challenges and implications of titles moving between publishers in the online environment.²⁴ The Transfer Code of Practice stipulates that "the Transferring Publisher must ensure continued access to its customers where it has granted perpetual access rights even if the Transferring Publisher will cease hosting the online version of the journal after the Effective Transfer Date. Either the Transferring or the Receiving Publisher, or both, could fulfill perpetual access obligations." Often ambiguous in license agreements for archives of a collection of journals is whether perpetual access applies to the collection in aggregate or to a specific, named set of titles.

The library also could lose access to backfile content if a publisher were to go out of business. To insure against such loss, many libraries use the LOCKSS (Lots of Copies Keep Stuff Safe) or Portico digital preservation services to guarantee their ongoing access to subscribed digital content. LOCKSS, based at Stanford University Libraries, is an "international community initiative that provides libraries with digital preservation tools and support so that they can easily and inexpensively collect and preserve their own copies of authorized e-content."²⁵

Libraries install LOCKSS software on a local server and program their "LOCKSS box" to harvest subscribed content from more than 500 participating publishers, including a number of smaller publishers not archived by Portico.²⁶

In contrast to LOCKSS' distributed model, Portico (a part of Ithaka), is a centralized repository of e-journals and other electronic content that was certified in 2009 by the Center for Research Libraries as a "trusted digital repository."²⁷ Portico maintains formal preservation agreements with 135 publishers and ingests their content into its archive.²⁸ In the case of a trigger event such as cessation of a publisher's operations, discontinuation of a title by a publisher, or back issues no longer offered by a publisher, participating libraries may access preserved content through Portico.²⁹

The URI Libraries do not participate in LOCKSS or Portico, as the support required for LOCKSS and the expense of Portico are not feasible given the library's current staffing and budget levels. Since the library's purchased archives are primarily from large and well-established publishers and vendors, the head of Acquisitions concluded that losing access to content as the result of publisher failure was a small risk. If a publisher were to go out of business, the library could join Portico at a later time to regain access to lost content. At the time of the withdrawal project, content from many, but not all, of the library's backfile collections was available through Portico, though holdings in Portico were often incomplete, with numerous missing volumes and issues.

Generating a List of Titles

Before any work could begin in the stacks, the head of Acquisitions needed to identify the specific titles that were candidates for withdrawal. The first step in doing so was to generate a list of all titles available to the

Table 1. Setup of Initial Spreadsheet for Serials Withdrawal Project

Column	Column Label	Data	Data Source
A	Call no.	QA	Millennium library system
B		11	Millennium library system
C		A	Millennium library system
D		.1	Millennium library system
E		J	Millennium library system
F		.68	Millennium library system
G	Title	<i>Journal for Research in Mathematics Education</i>	Serials Solutions
H	Archive	JSTOR A&S IV	Serials Solutions
I	Archive dates	1970 to 2003	Serials Solutions
J	URI discard(ed)	1977–2003	Millennium library system
K	Remaining on shelf	v. 35(2004)–v. 39(2008)	Physical inventory
L	.c record	c1021096	Millennium library system
M	# vols w/d	20	Physical count
N	Inches	28	Physical measurement

library through licensed online journal archives. The head of Acquisitions used the library's Serials Solutions Client Center to download the titles and years available in each of the library's online journal backfiles.

Using Serials Solutions instead of vendor websites to gather title lists offered one significant advantage in addition to convenience—Serials Solutions tracks title changes and provides a separate listing, with holdings, for each iteration of a journal, while vendors and publishers often collapse the holdings of previous titles under the most recent title. When the time came to match titles and holdings downloaded from Serials Solutions with library holdings using the library catalog, which follows the *Anglo-American Cataloguing Rules*, 2nd ed., standards on successive entry cataloging, having each version of a journal's title listed would save time and avoid frustration.³⁰

The head of Acquisitions merged the titles and holdings downloaded from Serials Solutions into a single spreadsheet that contained journal titles, names of online archives, and dates of coverage. She added blank columns for call number, years to

discard, volumes and years remaining on shelf, library system record number, number of volumes withdrawn, and number of inches withdrawn.

The next step was to determine which of the 3,169 titles on the spreadsheet were held by the URI in print format. To do this, the head of Acquisitions used the library's Innovative Interfaces Millennium integrated library system (ILS) to create a review file of bibliographic records in the target call number range on the library's lower level. The resulting list of bibliographic records was sorted by title.

A graduate student employee compared the spreadsheet with the list of bibliographic records, both of which were sorted by title, and identified matching titles. When she found a matching title, she recorded on the spreadsheet (table 1, row L) the record number in URI's Millennium library database where holdings information for each title was stored. This would allow the database record for each title to be retrieved quickly after the withdrawal project was complete to update holdings. She also entered the journal's call number into the spreadsheet, using a separate row for each segment of the call number

to facilitate sorting. The student then compared the journal holdings in the online archive with the physical holdings listed in the catalog, recording overlapped years on the spreadsheet as volumes to discard. Table 1 presents a sample record with complete data for one title recorded on the spreadsheet. The head of Acquisitions made sure that the graduate student understood that if the library held bound volumes that were published after the volumes available in the online archive, only the volumes included in the archive should be discarded.

After the student finished matching titles in the library catalog with titles available through the online archives, she deleted spreadsheet rows containing online archive titles not held by the library in print format. This resulted in a spreadsheet (see figure 1, which displays an excerpt) containing 314 titles with one or more volumes to be withdrawn, only 10 percent of the titles originally listed. The student sorted the spreadsheet by call number and created a duplicate copy in a large, bold font for printing that would allow adequate space for her to write down the number of volumes and inches discarded and

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	BACK FILES OWNED BY URI													
2	Last updated: 6/29/09													
3														
4	Call no						Title	Archive	Archive dates	URI discard(ed)	Remaining on shelf	c. record	# vols w/d	inches
5	Q	1	N	.2			Nature	Nature.com	1869-1996	1869-1996	v.385(1997)-v.443(2006)	c1050345	335	631
6	QA	1	A	.18			Acta mathematica	Springer OJA	12/28/1882 to 12/31/1996	1975-1996	v.176-179(1996/97)	c1023251	27	38
7	QA	1	A	.51			American journal of mathematics	JSTOR A&S I	1878 to 2003	1927-2001	0	c1025636	96	186
8	QA	1	A	.515			American mathematical monthly	JSTOR A&S I	1894 to 2005	1894-2005	v.113(2006)-v.115(2008)	c1026288	135	256
9	QA	1	A	.6			Annals of mathematics	JSTOR A&S I	1884 to 2003	1884-2003	v.159(2004)-v.162(2005)	c1028182	142	272
10	QA	1	A	.522			Transactions of the American Mathematical Society	JSTOR A&S I	1900 to 2003	1921-2003	v.356(2004)	c1128139	269	600
11	QA	1	C	.6			Rendiconti del Circolo Matematico di Palermo	Springer OJA	01/01/1952 to 12/31/1996	1952-1988	v.48(1924)-v.58(1934)	c1033864	26	46
12	QA	1	I	.92			Israel Journal of Mathematics	Springer OJA	03/26/1963 to 12/31/1996	1967-1996	v.104(1997)-v.156(2006)	c1043201	69	55
13	QA	1	J	.85			Journal d'Analyse Mathématique	Springer OJA	12/23/1951 to 12/31/1996	1954-1996	v.71-73(1997)	c1043225	32	55
14	QA	1	J	.9763			Journal of the American Mathematical Society	JSTOR A&S I	1988 to 2003	1998-2003	v.17(2004)	c1530938	7	15
15	QA	1	M	.426			Mathematical gazette	JSTOR A&S VII	1894 to 2003	2001-2003	0	c1694820	26	35
16	QA	1	M	.767			Mathematical Systems Theory	Springer OJA	03/01/1967 to 11/01/1996	1967-1996	0	c1011492	26	35
17	QA	1	M	.86			Mathematische Annalen	Springer OJA	03/21/1869 to 12/31/1996	1960-1995	0	c1047899	101	180
18	QA	1	M	.88			Mathematische Zeitschrift	Springer OJA	01/01/1918 to 12/31/1996	1928-1996	v.224-226(1997)	c1047929	76	95
19	QA	1	N	.35			Mathematics magazine	JSTOR A&S II	1947 to 2005	1963-2005	v.79(2006)-v.81(2008)	c1047851	42	51
20	QA	1	S	.73			Journal Of The Society For Industrial And Applied Mathematics	JSTOR A&S I	1953 to 1965	1953-1965	0	c1429048	10	20
21	QA	1	S	.73			SIAM Journal on Applied Mathematics	JSTOR A&S I	1966 to 2003	1966-2002	0	c1059294	66	143
22	QA	1	S	.2			SIAM review	JSTOR A&S I	1959 to 2003	1959-2002	0	c1058782	43	76
23	QA	1	Z	.37			Zeitschrift für Angewandte Mathematik und Physik (ZAMP)	Springer OJA	01/01/1950 to 12/31/1996	1962-1996	v.48(1997)-v.53(2002)	c1064393	36	84

Figure 1. Spreadsheet Extract Listing URI Backfiles to Be Withdrawn

which volumes, if any, would remain on the shelves. With the spreadsheet of titles to withdraw completed, the student proceeded through the stacks in call number order to mark volumes for discard. After trying various techniques, including round stickers and colored paper taped to the volumes' spines, she found that the most effective method was to mark the spine labels of the volumes with fluorescent, oil-based paint markers. The student noted the total count of volumes to be withdrawn for each title and recorded it on the spreadsheet. She measured the shelf length in inches of each run to be withdrawn to track progress toward the goal of clearing the approximately four ranges of shelf space required to accommodate the current periodicals. Volume numbers and years of any holdings to retain (or lack thereof) were recorded. The student noted any irregularities, such as missing volumes, problems, or questions about a title, and reported them to the head of Acquisitions for investigation. This entire process, from populating the spreadsheet to marking, counting, and measuring 10,805 volumes, took approximately six weeks.

Disposing of Withdrawn Volumes

Members of the HELIN Library Consortium have agreed that libraries will

offer withdrawn materials to other consortium libraries before discarding them. Though time was short, the head of Acquisitions e-mailed the spreadsheet with titles and volumes to be discarded to all academic and research libraries in Rhode Island so that they might fill gaps in their serials collections, with a one-week deadline to respond. In response to requests from 3 libraries, the graduate student coordinator shipped 236 volumes from 8 journals. Most of the volumes sent were from the journal *Nature*. The student marked these volumes with a "No Longer the Property of University of Rhode Island Library" stamp and sent them to the receiving libraries through the state-wide library delivery service.

To dispose of the withdrawn volumes, the university's recycling and solid waste coordinator made arrangements with a local recycling company to accept the bound volumes for recycling with the covers still on. This had been a concern because another library in the HELIN Consortium had been required by their recycler to remove front and back covers from the text block of every withdrawn volume, which would have been an unmanageable task given the volume of material to discard at the URI.

Although the process of transporting the volumes to be discarded from the lower-level stacks to a main

floor staging area commenced before the one-week deadline given to other Rhode Island libraries for indicating interest in the discarded volumes, the expectation was that any volumes requested could be easily located if they were stacked on the floor of the staging area in orderly piles. Given the large volume of material moved, this assumption proved to be unrealistic. Fortunately, the graduate student received only one request for two volumes after the physical moving process began. In total, the pilot project resulted in recycling 10,805 bound volumes weighing 8.65 tons and freeing 1,604 feet of shelf space.

Updating the Library Catalog and Shifting the Stacks

The final records work was updating the holdings statement in the library catalog for each discarded title. Some bound volumes remained in the library's collection for slightly more than half the 314 titles withdrawn. The graduate student was able to update holdings information for these 161 titles in her final week working on the project. All volumes for the other 153 titles had been discarded, and the holdings for these titles were deleted from the catalog and from OCLC by an Acquisitions staff member during the next month.

The second phase of the project—shifting volumes in the stacks to create space for the new current periodicals area—began immediately after the targeted volumes were removed from the shelves. The process of shifting was slow because the withdrawn volumes had been removed from 55 ranges and 5,998 shelves; each of the remaining volumes and others shelved near them had to be moved. As a result, the shift was not completed until the winter intersession of 2009–10, at which time two empty ranges, consisting of twenty-one double-sided shelving units, remained to house the current periodicals. An additional two empty ranges were removed to create a seating area near the current periodicals that accommodated three study tables. Most important, the twelve ranges on the main floor of the library that had formerly held the current periodicals were removed, allowing construction of the new learning commons to begin.

2010 Project

After gaining experience in 2009 with the pilot withdrawal project, the dean of libraries and heads of Access Services and Acquisitions were eager to extend the withdrawal process to the entire collection during the summer of 2010. The goal for this larger project was to relieve space pressure in the serial stacks on the lower level and potentially create storage space for special collections or other materials.

In 2010 the heads of Acquisitions and Access Services realized that the withdrawal process could be streamlined by gathering and disposing of materials incrementally instead of in one big push at the end of the summer. This would allow for the withdrawal of a far greater amount in the same period of time because disposal of some titles could begin while additional titles were being marked and measured. The criteria for withdrawal remained the same—volumes for which the library

had online access through licensed journal archives to a workable facsimile of the printed edition. In 2010, the head of Acquisitions compared the library's physical holdings against the same set of online journal archives that had been used in 2009 with the addition of some newly purchased backfiles. She decided that any art journals (Library of Congress Classification N) would be carefully evaluated before withdrawal, as the illustrations in the online versions might be inadequate for user needs. Art titles with significant image content would be retained in print, following the recommendations of Ithaka's *What to Withdraw?* report, which was released in September 2009 after the library's pilot project was completed.³¹ The previous year, the heads of Acquisitions and Access Services had not been attentive to this consideration and therefore had not applied the same scrutiny to image-intensive scientific and medical journals. This may have been a mistake; however, the library has not received complaints from users about lost access to print titles that were withdrawn. The quality of the scanned digital versions also was not taken into account either year in deciding what to withdraw, with one exception: the historical *Moody's Manuals*. The head of Acquisitions determined that these would be retained in print, despite the fact that the library had access to the complete online archive because some of the earlier digitized material was of poor quality and unreadable.

The graduate student returned at the end of June to manage the project; her experience in 2009 greatly increased her efficiency in 2010. She followed a similar process to the previous year's, with minor improvements. The most significant differences in 2010 were the incremental gathering and disposing of materials and improved staging for the recycler that required each volume to be handled fewer times.

By the end of August 2010, the

URI library withdrew an additional 24,130 print journal volumes from 808 titles throughout the entire collection, clearing 3,674 feet of shelf space in the serial stacks. As a result of subsequent shifting, which had consolidated the remaining volumes in the serial stacks, the dean of libraries and head of Access Services identified an additional five to six ranges of freed space for future use.

Discussion

The withdrawal project at the URI was consistent with the practice of many other college and university libraries facing space pressures. As recommended in the Ithaka report *What to Withdraw?*, the titles withdrawn are available through reliable license terms, offering ongoing access rights to all content discarded.³² As the report also recommended, the library was sensitive to the level of quality of the digitized materials, avoiding the withdrawal of image-intensive art titles and the *Moody's Manuals*, though a more extensive survey of the library's online backfiles could have been undertaken to look for other exceptions.

Because of the limited timeframe of the initial withdrawal pilot (summer 2009), library managers were unable to consider several issues as thoroughly as might otherwise have been desirable. The first was the input of faculty: the library did not consult with faculty about the withdrawal project or announce it before it took place. Besides expedience, one reason for the library's silence was an assumption based on experience that the majority of faculty prefer online access to the journal literature over print. For example, URI faculty regularly complain that the library does not have a journal when in fact the library has a print-only subscription.

Corroborating faculty preference for online journals on a national level, Ithaka's *Faculty Survey 2009*

concluded that “in the eyes of faculty, electronic versions of journals are now utterly mainstream. While print journals may continue to play a limited role for faculty with specific needs that are otherwise poorly met, digital versions are clearly the medium of choice for most faculty members, even among humanists.”³³ The Ithaka survey does acknowledge, however, that “faculty attitudes toward backfiles are somewhat more mixed.”³⁴ In 2009, only half of all faculty responded at least somewhat positively to the statement that they would be “happy” to see hard-copy collections of scholarly journals discarded and replaced entirely by electronic collections, yet fewer than 40 percent believed that it will always be crucial for their own library to maintain hard-copy collections of journals. Ithaka concluded that, “while faculty continue to value print preservation, they seem to be feeling less of a need to have immediate access to print journals locally.”³⁵ Ithaka’s findings are consistent with those of Newby, who determined that the withdrawal of print journals available through JSTOR from the University of Arizona Libraries did not in any way affect the teaching and research of most mathematics faculty and graduate students, and that the majority of survey respondents preferred electronic access to journals.³⁶ Similarly, Dubicki reported that Monmouth University Library’s success in expanding online access to journal titles after a mold problem had eliminated access to all print periodicals led to a decision to migrate the periodical collection to electronic format.³⁷ Indeed, as predicted, the URI Library did not receive any complaints after the withdrawal of print volumes.

In both the 2009 pilot and the 2010 withdrawal project, library managers did not consider alternatives to recycling the withdrawn volumes, such as storing them in an off-site repository, selling them through vendors such as B-Logistics or Periodicals Service Company, or offering them to other

libraries (beyond the HELIN Library Consortium) through back issues online discussion lists, like BACKSERV, BACKMED, or the Association for Library Collections and Technical Services Duplicates Exchange Union. The library lacks the resources to establish an off-site storage repository, and it does not have access to a shared storage facility like those run by the Research Collections and Preservation Consortium (ReCap) in New York/New Jersey, the Five Colleges in Massachusetts, or the Western Regional Storage Trust (WEST) in California, for example.

In addition, the library did not check OCLC or consider the holdings of local or regional libraries as a factor in the decision about what to discard. The library managers assumed that because all the materials to be discarded were available through JSTOR or backfiles provided by major publishers, no unique or rare material would be withdrawn and that the material discarded would be widely held in other library collections. However, as more libraries withdraw print volumes duplicated online, efforts to coordinate disposal and preserve a minimum number of print copies is becoming increasingly important. Schonfeld and Housewright, in *What to Withdraw?* explain that preservation in print of digitized material is important to fix scanning errors and improve scanning quality of digitized versions, serve as a backup in the case of digital preservation failure, ensure access in cases when the digital version is subject to restrictive licensing terms, and provide for unique scholarly needs requiring access to printed materials.³⁸ Yet without coordination between libraries, “there is a very real risk that so many copies may be discarded as to threaten the availability of certain materials in their original format.”³⁹ To this end, Ithaka has developed a Print Collections Decision-Support Tool to help librarians determine “which JSTOR-digitized journals meet the criteria

outlined in the *What to Withdraw?* report and therefore may be responsibly deaccessioned in print from any library.”⁴⁰ In the coming years, Ithaka plans to add additional, non-JSTOR titles to the tool. Similarly, Malpas at OCLC has noted that the absence of a shared infrastructure for disclosing print preservation commitments is an obstacle to libraries’ ability to cooperatively manage legacy print collections and withdraw redundant print serial holdings.⁴¹ To address this problem, OCLC is developing methods for libraries and repositories to record the condition and print archiving status of local journal holdings.⁴²

The URI library has no definite plans for additional serials withdrawal projects in the near future, though such efforts are inevitable in the coming years as more archival print content becomes available digitally and additional demands are made on the library’s space. The authors hope that by the time of URI’s next withdrawal project, the library community, along with organizations such as OCLC and Ithaka, will have further developed shared archival repositories of print journals as well as online tools for verifying the preservation status of specific titles. Checking volumes to be withdrawn against such databases will be worth the additional effort and permit contributing needed volumes to shared collections. In this way the URI library would be able to participate in the shared responsibility for preserving legacy materials and prevent the loss of unique items.

Conclusion

At the end of the two-year process, the library had withdrawn 35,729 volumes and cleared 5,277 feet of shelf space—almost one mile. The URI began with a pilot project in 2009, which focused on the need to create space for a learning commons. This project identified titles in the Q and R classification ranges

because these titles were close to the area in which the learning commons was planned and much of the library's online content was in the sciences. The library used its Serials Solutions Client Center to identify titles and years for which online backfiles were available. This list was compared to a file of bibliographic records extracted from its ILS. Ultimately, 10,805 volumes from 314 titles were withdrawn and either recycled or sent to a HELIN Library consortium member.

The success of the pilot project and the processes developed gave the URI the confidence to implement a larger project in 2010, which reviewed all serials across the collection for volumes that could be withdrawn using the same criteria—those volumes withdrawn had to be reliably available online. Lessons learned in the pilot prompted the library to be attentive to materials with significant image content, which were retained. In this larger project, an additional 24,130 print volumes from 808 titles were withdrawn. The URI heads of Acquisitions and Access Services carefully documented every step taken and developed specific strategies and policies for the withdrawal of print journal back volumes held by the library electronically. The procedures developed and the lessons learned will serve as a guide for staff at the URI and, the authors hope, for other libraries to follow when the question of space for services versus collections is raised. As collections continue their migration to digital format and academic libraries further evolve to meet user needs, the deaccessioning of print collections is likely to continue, resulting in more freed space that can be redesigned for other purposes.

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