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# Inventory redux: a twenty-first century adaptation

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# Inventory Redux: A Twenty-First Century Adaptation

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*With an eye toward preparing for a future integrated library management system, Seton Hall University Libraries embarked upon an inventory project that was cost effective and unique among university libraries. An effective tried-and-true inventory method has been employed and modernized with the application of sophisticated computer report functioning and programming capabilities.*

*KEYWORDS library inventories, academic libraries, Seton Hall University Library, library statistics, cataloging, shelf reading*

In the Fall of 2009, Seton Hall University's Walsh Library personnel embarked upon an ambitious, major inventory of library print collections, but due to economically difficult times were forced to scale back plans and consider a low-cost, bare-bones project. In doing so, the administration revisited procedures that had been used to conduct an inventory before the era of online catalogs. This earlier project, which had been successful, relied upon the time-consuming method of shelf-reading by the entire library staff, and the administration wondered if this same low-tech procedure might prove to be useful in a modern inventory project. Shelf reading is "the process of verifying that materials are in their correct position on the librar[y] shelves. Library staff "reads" the call number that is present on the spine of each item in an area to make sure they are in the correct ascending order" (http://liswiki.org/wiki/Shelf_reading).

After much discussion and review within the library, the associate dean directed the stack-maintenance and cataloging staff to begin an inventory

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process he jokingly referred to as "old wine in new bottles." Unlike many recent projects instituted at other academic institutions, which relied on expensive hardware such as laptops, palm pilots, and barcode readers, Seton Hall University Libraries decided to use library staff to do basic shelf-reading, aided by custom created inventory lists generated from the analysis capabilities of an Oracle database (Ex Libris Voyager) that was queried using a D-based program coordinated with Microsoft Access.

## REASONS FOR INVENTORY

There are many reasons for initiating a massive library inventory project. The ultimate goal of the project is universally acknowledged: to align the bibliographic records in the catalog (accessibility) with the physical material housed within the library (availability) in order to ensure quality service for all library patrons.

Nothing is more frustrating for library patrons than the inability to locate and retrieve a desired item that the catalog clearly states is available in the library. There may be a number of reasons as to why this occurs, but the patron is not interested in the inconsistencies, s/he just wants the item. Providing patrons with weak explanations and disguised excuses not only frustrates the patron, but ultimately the library staff as well. Such turmoil leads to job dissatisfaction on the part of the library worker, and perhaps even more detrimental, it can bias the patron and discourage future use of the library. This type of inferior service is not acceptable in any library, particularly not in an academic institution where information literacy is infused in both undergraduate and graduate courses and where research and publication are expected of the faculty.

Although effective retrieval of library materials and clean metadata within the Online Public Access Catalog (OPAC) are certainly a priority for an inventory project, other factors inevitably necessitate the need as well. At Seton Hall University Library in South Orange, New Jersey, additional reasons for the inventory involved several technological challenges that took place over the years. These included an unfinished retrospective conversion project dating back to the 1980s; a poorly conducted barcode project; and problems with MARC records that surfaced when the library converted to the library database called Geac, and still later when the library migrated to an integrated library system named Voyager. An analysis of library user behavior noted in the latest LibQual survey, as well as an extensive Asian collection that was underused and recently re-cataloged, also contributed to the necessity of an inventory. The Asian collection, consisting of over 15,000 titles (many having extensive volumes attached—several over 100) in Chinese, Japanese, and Korean languages, had been housed on the shelves for years.The launching of a new Asian Studies master's degree program in the College of Arts and

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Sciences served as an immediate incentive to get the collection more fully integrated in the catalog. Once the hidden metadata of this collection was completely transliterated, and thus became fully displayable in Voyager, statistics verified its immediate usage, which only bolstered the incentive for a complete library inventory.

## LITERATURE REVIEW

The professional literature on conducting an inventory project is relatively scant. Much of it dates to the 1970s and 1980s and focuses on low-tech methodologies such as physical shelf-reading by students and staff, the use of manual shelf readers, and a reliance on cost analysis for the economic justification of such a large expenditure of human capital (see for example, Abraham Bookstein's 1973 "Models for Shelf Reading" and William H. Kurth's 1976 "Estimating Lost Volumes in a University Library Collection"). More recent articles have discussed the use of barcode readers, laptops, Palm Pilots and other portable technologies to improve the speed and reliability of these projects (see Charles D. Emery's 1991 "The Use of Portable Barcode Scanners in Collections Inventory;" Li Chen & Yongli Ma's 2004 "Library Inventory Using Palm Pilot," and Jan A. Sung, John A. Whisler, & Nackil Sung's 2009 "A Cost-Benefit Analysis of a Collections Inventory Project: A Statistical Analysis of Inventory Data from a Medium-sized Academic Library"). Eastern Illinois University's Booth Library's cost analysis of their inventory using the Library Stacks Management System (LSMS)—an electronic shelf reading program that alerts when books are misshelved, not in the OPAC, or are in "active status"—in relation to reordering lost or misshelved items was significant. It cost Booth Library a considerable sum to purchase the LSMS.

A common theme that emerges, however, is that university library staffs are often hesitant to undertake such a massive project because of the sheer size of their collections and the belief that the rewards are only "transitory" (Brown & Kaspar, 2006, p. 94). The projects that have been the most successful recently, such as Texas A&M University Libraries' shelf reading project in 2006; Eastern Illinois University's Booth Library collection inventory project in 2008; and Purdue University's Humanities, Social Science, and Education Library's comprehensive book inventories that have occurred annually since 2004, stress customer service and the desire to create an "honest" catalog that reflects a library's actual holdings. In some cases, such as Texas A&M Libraries, an inventory was precipitated by the results of a LibQual survey that reflected patrons' dissatisfaction with the errors in the catalog; in others, such as Purdue University's Humanities, Social Science, and Education Library (see Nixon, 2009), an inventory was successfully launched and completed because of the efforts of one person who had the drive and determination to see the project through.

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Seton Hall University Libraries' impetus for undertaking an inventory reflects some of the reasons commonly revealed in the journal literature. The uniqueness of the inventory project at Seton Hall's Walsh Library is that it was based upon the choice of an old tried-and-true inventory model of shelf reading, modernized with the application of sophisticated computer-report functioning, and programming capabilities. Costs are entirely absorbed in librarian and staff salaries alone.

## INVENTORY PROCESS

In order for an inventory to be successful, a meeting of the parties involved is essential to discuss how the inventory will be conducted and to determine the most effective methods of meeting the established goals. The head of client services met with the two catalog librarians to initiate the process, and it was determined at the outset that the work would be done almost entirely by clerks and experienced paraprofessionals to ensure efficiency and accuracy. Only one step of the process would be performed by students, who would be well trained for that procedure. Circulation staff would not be involved in the inventory so that they are not detained from their primary function of serving the library patrons. The discussion inevitably drifted to past inventory initiatives that were ultimately abandoned due to cost or to the magnitude of the project. At one time, Walsh Library staff explored subcontracting a company to conduct the entire inventory. At another time it pursued the possibility of using hand-held barcode readers or even traveling among the shelves with a laptop computer, but these were deemed not feasible; the library was required to purchase the hand-held devices, which proved to be too expensive, and the laptops were not only too cumbersome, but more importantly, required staff members to make on-the-spot decisions for which they were not qualified.

Client services and the catalog department librarians met and hashed out the details of the inventory to determine how best to separate the functions among the stack maintenance staff and the catalog department staff. It was determined that clerks in the stack-maintenance area would perform the physical inventory of self reading, while paraprofessionals in the catalog department would search and follow-up with the "problem" books. Librarians in both the client services and catalog departments would supervise the entire inventory process.

The inventory process originated with the resourceful systems librarian who generated two separate lists upon which the inventory is based: an exception list and a shelf list. These lists are created by combining the report function capabilities of Voyager, with customized Oracle and D-based programs, coordinated with Access queries which are then downloaded into an Excel file. The item-status exception list (see Figure 1) accounted for

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| ITEM_STATUS_TYPE | |
|---|---|
| **ITEM_STATUS_TYPE** | **ITEM_STATUS_DESC** |
| 1 | Not Charged |
| 2 | Charged |
| 3 | Renewed |
| 4 | Overdue |
| 5 | Recall Request |
| 6 | Hold Request |
| 7 | On Hold |
| 8 | In Transit |
| 9 | In Transit Discharged |
| 10 | In Transit On Hold |
| 11 | Discharged |
| 12 | Missing |
| 13 | Lost--Library Applied |
| 14 | Lost--System Applied |
| 15 | Claims Returned |
| 16 | Damaged |
| 17 | Withdrawn |
| 18 | At Bindery |
| 19 | Cataloging Review |
| 20 | Circulation Review |
| 21 | Scheduled |
| 22 | In Process |
| 23 | Call Slip Request |
| 24 | Short Loan Request |
| 25 | Remote Storage Request |

**FIGURE 1.** Item status exception list.

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books that are listed in Voyager as not available; these may include overdue, missing, lost or damaged books, but also titles charged out, those on hold, or those still in process (a book that has been received but is not fully cataloged). The second list was the extensive shelf list of all of the titles that should be in the main collection, but it was limited to a specific Library of Congress (LC) classification range (see Figure 2). This list included essential bibliographic information such as LC call number, barcode number, title, author when appropriate, and publisher.

It was anticipated that the inventory would progress through each LC classification range until the entire library collection was completed. It was also decided that the progression of the project would not be in LC classification order, but rather in order of necessity; what the librarians deemed were subject areas that required immediate attention due to patron feedback gathered from a recent LibQual survey. Therefore, the inventory began with the

| CALL_NO | BARCODE | TITLE | AUTHOR | PUBLISHER |
|---|---|---|---|---|
| E259 .M39 1996 | 33073100367919 | Belonging to the Army : camp followers and community during the American Revolution / Holly A. Mayer. | Mayer, Holly A. (Holly Ann), 1956- | University of South Carolina Press, |
| E259 .N45 1996 | 33073100575602 | America goes to war : a social history of the Continental Army / Charles Patrick Neimeyer. | Neimeyer, Charles Patrick, 1954- | New York University Press, |
| E259 .R67 | 33073100492840 | Politics of command in the American Revolution / Jonathan Gregory Rossie. | Rossie, Jonathan Gregory. | Syracuse University Press, |
| E259 .W37 2006 | 33073102281258 | George Washington's enforcers : policing the Continental Army / Harry M. Ward. | Ward, Harry M. | Southern Illinois University Press, |
| E259 .W5 1969 | 33073101239240 | Picture book of the Continental soldier, by C. Keith Wilbur. | Wilbur, C. Keith, 1923- | Stackpole Books |
| E259 .W720 1975 | 33073102032925 | Some notes on the Continental Army / John Womack Wright ; preface [by] Frederick P. Todd. | Wright, John Womack, 1876-1953. | Hope Farm Press, |
| E263.D3 K59 | 33073001292257 | Journal and order book of Captain Robert Kirkwood of the Delaware Regiment of the Continental line. Edited by Joseph Brown Turner. | Kirkwood, Robert, 1730-1791. | Kennikat Press |
| E263.F6 S72 | 33073100603826 | Tories, dons, and rebels : the American Revolution in British West Florida / J. Barton Starr ; sponsored by the American Revolution Bicentennial Commission of Florida. | Starr, Joseph Barton, 1945- | University Presses of Florida, |
| E263.F6 S72 | 33073100603834 | Tories, dons, and rebels : the American Revolution in British West Florida / J. Barton Starr ; sponsored by the American Revolution Bicentennial Commission of Florida. | Starr, Joseph Barton, 1945- | University Presses of Florida, |
| E263.G3 H22 2001 | 33073101446662 | Land & allegiance in revolutionary Georgia / Leslie Hall. | Hall, Leslie, 1950- | University of Georgia Press, |

**FIGURE 2.** Shelf list of Library of Congress classification section.

humanities; most specifically with English, American, and general literature (PR, PS, PZ, P, PN) followed by Asian, British, and American history (DS, DA, E–F). For the purposes of the inventory, a checklist of the possible problems with a book was created to be inserted into each monograph placed on a cart (see Figure 3). This checklist served to inform the catalog staff of the problem at hand to facilitate the resolution process.

The physical inventory process that is still in progress begins as the stack attendants carefully compare the shelf-reading list with each individual book on the shelf. If a book is missing from the shelf, it is marked as such on the shelf list; if there are any discrepancies between the book and the information

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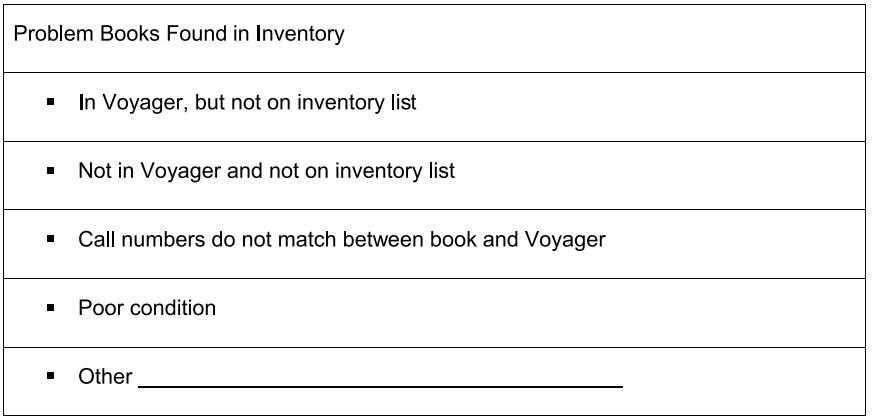


**FIGURE 3.** Inventory checklist.

on the shelf list (call number, barcode number) the book is placed on a cart that will be reviewed by the student workers before being directed to the catalog department. Due to an uncompleted retrospective conversion project, some of the books will not appear in Voyager, while others will not have a barcode or have incorrect barcodes in them. Monographs that are misshelved in the general vicinity are corrected immediately while those that are shelved out of order are placed on a separate cart to be accurately reshelved later.

Phase two involves trained student assistants reviewing each of the books on the carts. They check every title in Voyager and determine in which category on the check-list to place the book. If they have any questions, they confer with the librarians involved in the inventory. They mark the list accordingly, place it in the monograph, and then send the carts on to the catalog department.

The catalog department receives the carts with all the "problem" books along with an envelope containing the shelf list marked by the stack attendant for that LC classification section. As the inventory process gained momentum, the carts began arriving at such a steady pace that the workflow of the catalog department was immediately affected. The four paraprofessionals had to adjust by alternating their work progress so that every other cart of books they processed was an inventory cart.

Once the carts are in the catalog department, each monograph is compared to the MARC record in Voyager, with special attention given to the item record containing specific library holdings information. Many of these discrepancies can be resolved rather easily by simply adding or changing a barcode, replacing the book label with the correct LC call number, or repairing a damaged book spine; however, multiple volume sets, as well as multiple copies, require further investigation as barcodes, volume, and copy numbers may be out of sync due to inefficient barcode application practices in the past.

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Once the carts have been completed, the catalog staff proceeds to examine the actual shelf lists with the items marked as missing by the stack-maintenance staff. To ensure that the item is truly missing, often the shelves are rechecked as to the status of the book; it was originally observed that some books marked as missing were actually on the item list as checked out and had been returned. Other "missing" books turned up in the reserve collection. These problems were brought to the attention of the systems librarian and have been resolved. The stack clerks were also confused by call numbers on the shelf list that lacked a space between the subject designation and the cutter. These call numbers were listed out of sequential order and appeared at the end of the subject listing. The stack-maintenance supervisor was informed of this discrepancy and will address the issue with his staff. Missing books are then deleted from Voyager and the OCLC library holdings.

## HISTORY OF THE COLLECTION

In the early 1980s Seton Hall's Walsh Library staff took advantage of the technological revolution that most academic libraries were embracing at the time; creating a library database to house their bibliographic records in electronic format. For inclusion in the database, bibliographic typed cards in the card catalog were converted into MARC records that were batch downloaded from the OCLC international computer database to the new local library system; at Walsh Library, the new library database was called Geac. The process was a complicated, expensive, and time consuming undertaking, but great pains to provide full MARC compliant records were taken at Walsh Library, having received a state grant and just under $100,000 from the Prudential Foundation for the conversion process. Not all of the bibliographic records in the physical library shelf list were added to Geac however, for various reasons; some were in foreign romance languages or in non-Roman languages, others were just older titles not yet cataloged, and some were just oversights. As a result of this conversion, an estimated 3% of the books on the library shelves do not appear in the library database and thus have no MARC record or a barcode. In the mid-1980s, Seton Hall University Library staff embarked upon a retrospective conversion project; the practice of uploading and processing bibliographic records not yet in MARC format into the database, but never fully completed it. Consequently, during the inventory process, these monographs did not appear on the inventory shelf list and have had to be taken from the shelf and placed on a book cart for further investigation by the catalog department staff. These books are then processed as if they were new additions to the collection.

During the time that the database conversion was taking place, smart barcodes were generated to be placed in each individual book to match the corresponding bibliographic MARC record in the database and to facilitate the

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circulation of the item. The barcodes were called "smart" because in addition to the individualized code, the strip also had the name of the library, a brief title of the book, as well as the call number imprinted on it. Adding a barcode to each and every individual book in an extensive library collection is no small task, so errors inevitably occur. Seton Hall outsourced the process to ProLibra who assigned high school students with the task of applying the barcodes as a summer work program. As a result, a significant number of books had the wrong smart barcode applied both to the monograph and to the bibliographic record, especially when a title had more than one volume. Due to the magnitude of this blunder, these discrepancies have been corrected over the years as the books were circulated, but during the inventory project, the remainder of these errors are being corrected to ensure full, accurate bibliographic representation in the online catalog.

In the 1990s, Seton Hall University Library migrated from the Geac database to the Endeavor Voyager library system with an Online Public Access Catalog (OPAC) interface. This was in line with a major shift academic libraries were taking to make their library resources accessible to a broader research community while increasing bibliographic control. It also coincided with the expansion of the World Wide Web and Internet access by the general population. In the transfer process, however, many fields and tags essential to the MARC records for both accuracy and authority control were missing. In order to rectify the situation, Walsh Library staff contacted the mid-Atlantic library network, known as Palinet at that time, to assist in mending the limited Seton Hall University bibliographic records to full MARC format. Palinet technicians were fortunately able to create a "patch" using Walsh Library archival tapes to align the incomplete records with full MARC OCLC records.

In the 1990s, it was estimated that 14% of the entire library book collection was missing due to a number of possibilities: unreturned books, failure to notify faculty and administrators of overdue books, stolen items, and discarded damaged texts that were not de-accessioned from the catalog. The Walsh Library history of technological challenges has lead to some discrepancies between what is in the OPAC and what is actually on the library shelves, which the catalog department staff must reconcile while tackling the present inventory. It is quite an undertaking, but with patience, perseverance, knowledgeable staff, and an eye to the future of integrated library management systems, it certainly is manageable.

## LESSONS LEARNED

During the initial planning discussion for the inventory, the process required of the catalog department staff appeared to be quite clear and straightforward; the staff would review the checklist inserted in each book to identify

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the problem, correct it rather easily, and move on to the next title. However, the actual effort involved in resolving the various discrepancies noted over the years is much greater than originally anticipated. For example, if a title has several copies, several volumes or even several copies of multiple volumes, all the books involved have to be inspected to ensure the correct barcode matches the correct volume or copy number. Mismatched barcodes contribute to this dilemma, but to complicate matters, the inventory shelf list does not include volume or copy numbers, but rather just lists several barcodes for the same title. This proved quite tricky during the deletion of missing monographs. To ensure that the book or copy or volume of a series is definitely missing from the shelf and not in the library, the catalog staff often double check the barcodes with the books on the shelves before actually deleting the monograph from Voyager and the Seton Hall University Libraries holding from OCLC. The work effort is high, but recognizing the importance of the outcome makes the effort worthwhile.

To account for the activity of certain books (those checked out, those returned), it was determined that it is best to not generate a new LC classification shelf list until just before initiating that classification section of the inventory. To create the list too far in advance of the inventory process does not account for the activity of books on the exception list and causes unnecessary problems for the catalog department personnel.

During the inventory, it was also discovered that an oversize collection should be established. There is presently a limited section of oversized books, but it is not a designated location featured in Voyager. There are small signs located among the art and architecture book shelves, which have already been adjusted to house larger texts, noting that oversize books may be in a particular area. A specific oversize collection would better serve the library patrons. To that end, an oversize collection was formed and a permanent location assigned in Voyager.

The actual progress of the inventory, despite the initial learning-and-adapting stage, is quite impressive; over the first three-month period, 70,000 titles have been inventoried. It was determined at the launching of the project that this would be a multi-year undertaking that would be absorbed into the workflow of the library on a continuous basis. Speed is not of the essence; rather the inventory requires effective productivity, accuracy, and cost effectiveness.

## CONCLUSION

Embarking upon a major inventory project is rarely embraced with enthusiasm; rather it is more often viewed as a necessary evil with only "transitory" rewards. However, it doesn't have to be viewed so negatively if the attitude of those involved remains focused on the goal at hand: an improved catalog

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based upon reparation of past technological challenges and with an eye toward preparation for a future integrated library management system. At Seton Hall University Library, the stack maintenance and catalog department personnel, the only sections of the library truly affected, have seamlessly adapted the inventory process into their workflow and go about their jobs with their usual determination and resolve. The project itself was initiated by a tenacious yet insightful administrator determined to see the inventory through. Past library administrators were reluctant to tackle the inventory challenge and often cited budgetary constraints as the reason for not supporting it. But even during a national fiscal crisis that has forced reduced educational budgets, Seton Hall University Libraries has found an evolutionary manner of transforming an archaic yet effective inventory method for a medium-sized academic library and adapted it to the twenty-first century.

Libraries are still the center of the university, despite the gloom and doom forecasts of the media, and are needed now more than ever to meet the demands of the digital and information revolutions. To remain a vital epicenter, to provide outstanding service, a massive inventory project was launched at Walsh Library with the realization that it would take several years to complete. But it is the innovative adaptation of technological advances coupled with the tried-and-true method of a previous era that make the undertaking not only unique, but effective.

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