Last Copies: What's at Risk?*

Lynn Silipigni Connaway, Edward T. O'Neill, and Chandra Prabha

Last copies are a class of unique library materials that are at risk and warrant consideration for long-term preservation. WorldCat, the OCLC Online Computer Library Center, Inc. bibliographic database, contains 24 million records for items held by only a single OCLC member library. The characteristics of these unique materials are not well understood. This study proposes a conceptual model derived from the examination of materials held exclusively by Vanderbilt University Libraries. The libraries hold approximately 1.5 million items in WorldCat. Of these, more than 23,000 are held only by Vanderbilt University Libraries. The bibliographic records and, in selected cases, the items themselves, were examined to determine characteristics and to identify the items whose content is at risk. The last copies at Vanderbilt University Libraries fell into four broad categories: (1) unidentified manuscripts, (2) last copies, (3) duplicate records, and (4) last expressions.

Preservation of intellectual heritage for future scholars is an important contribution libraries make to society. From the time they emerged as educational and cultural institutions, libraries have assumed a curatorial role. For centuries, libraries have been preserving and providing special care to rare manuscripts and books. Preservation of large library-based collections of scholarly research value began to receive attention in the United States around the middle of the twentieth century.[1] Concurrent advances in microform technologies enabled libraries to engage in large-scale reproduction of scholarly writings. In the past decade, libraries have begun digitizing materials for preservation while, at the same time, the long-term accessibility of digitally produced materials is being discussed and debated. Preservation is a pressing national concern.

OCLC member libraries cannot know for certain which of the publications in their collections are, indeed, last copies without searching the WorldCat database title by title, a formidable task. The last copy of a book placed on open shelves and circulated like general materials could suffer from possible wear and tear. Also, it is possible that any library may unwit-

Lynn Silipigni Connaway is a Consulting Research Scientist, Edward T. O'Neill is a Consulting Research Scientist, and Chandra Prabha is a Senior Research Scientist at OCLC Online Computer Library Center, Inc.; e-mail: lynn_connaway@oclc.org, oneill@oclc.org, and prabha@oclc.org, respectively. Comments should be directed to Lynn Silipigni Connaway. *The authors would like to thank the following people for their substantive and helpful assistance with this project: Paul Gherman, University Librarian, Vanderbilt University; Flo Wilson, Deputy University Librarian, Vanderbilt University; and Carolyn Hank, Research Assistant, OCLC.*

tingly discard the last copy of a publication. Edward T. O'Neill and Wesley L. Boomgaarden conducted a study on book deterioration and loss, based on a sample of 1,935 books at Ohio libraries published between 1851 and 1939 and representing 872 distinct titles.[2] In the sample, 12 percent of the books were unavailable for physical examination because they were lost, missing, or weeded from their collections.

Literature Review

According to Ross W. Atkinson, materials selected for preservation can be divided into three classes.[3] Class 1 items are typically special or unique to the collection, such as rare books and manuscripts with both research and economic value. Class 2 items are those selected for preservation to prevent them from further deterioration due to frequent use. Class 3 materials encompass those publications that are used infrequently as research materials but must still be preserved for use by scholars. Last copies, the subject of this study, may be viewed as members of all three classes.

In most large-scale preservation and digitization projects, library materials are not selected on an item-by-item basis. Instead, decisions are made on a broad basis—physical condition; specialty collection based on such criteria as historical importance, cultural value, and national research value; and type of use. Examples of application of these criteria for preservation and digitization include brittle books in large research collections and subject-specific collections such as theology, philology, and American language and literature.[4]

Margaret S. Child reviewed a number of methods used for selecting publications for preservation.[5] The awareness of large-scale book deterioration among research collections in the latter half of the 1970s spurred a series of initiatives to prevent further deterioration of books. These initiatives included establishment of graduate programs in conservation and preservation, initiation of the Preservation Planning Program by the Association of Research Libraries (ARL), establishment of preservation programs by major research universities, and an increase in funding for preservation projects from federal and private foundations. External grants provided a financial impetus for undertaking the preservation of materials that are of national importance.

The selection of important works in specific fields proved costly as scholars spent time identifying significant titles within the specified subject areas. Identified titles had to be gathered or requested by the library pursuing the preservation project in that area for examination of the physical condition of the item. The selection of specific genres, such as Americana or American language and literature, was criticized as a "vacuum cleaner" approach because this method included books that were in good condition.[6] Selection decisions based solely on date and place of publication also were found to be restrictive and wasteful because these attributes did not consider the physical condition of the book.

After World War Two, there was an increasing interest in the United States in the study of international relations. Publications from less familiar regions around the world were not readily available to scholars in the United States. Information sources from these countries were viewed as materials that libraries could share, as needed, by acquiring them cooperatively and storing them centrally, freeing libraries from obtaining several copies of publications that might be used occasionally. The Farmington Plan, a voluntary plan sponsored by the ARL, was initiated in 1948 and continued through the 1960s. It was one of the first major efforts to promote cooperative collection development of international materials.[7] Several other organizations and programs for cooperative collection development were established. These programs include the Center for Research Libraries (CRL), which is a consortium that acquires and

preserves resources[8]; the Social Science Research Council, which "builds interdisciplinary intellectual networks"[9]; and the Association of American Universities (AAU)/ARL Global Resources Network, which supports the coordinated acquisition of international resources.[10] Although long-term preservation was not the primary motive of these programs, the research library community ultimately benefited from storing and maintaining these global resources.

A renewed interest in the preservation of paper-based U.S. publications is expressed in the Council of Library and Information Resources (CLIR) publications, *The Evidence in Hand: A Report of the Task Force on the Artifact in Library* Collections and *Access in the Future Tense*.[11] This interest in identifying libraries' last copies for preservation, digitization, and remote storage decisions was reiterated by OCLC Members Council in October 2002.[12]

Sonia Bodi and Katie Maier O'Shea state that librarians' knowledge of collections is often intuitive and urge librarians to make data-supported collection decisions.[13] The conceptual model proposed in this paper was developed for the identification of last copies whose content is at risk, based on a collection analysis of a research library. Identifying last copies provides good initial data for remote storage, preservation, and digitization decisions.

Background

Materials can be lost either through physical deterioration or by removal from the collection intentionally through weeding or accidentally by theft, loss, or natural disasters. When multiple copies of an item exist, the material is relatively secure. Multiple copies in diverse locations is the principle behind LOCKSS (Lots of Copies Keep Stuff Safe) approach to digital preservation.[14] Conversely, rarely held items are at a greater risk; unique materials in circulating collections are at the greatest risk.

In January 2005, WorldCat included 24 million records held by only one library. These uniquely held materials can be either first copies, only copies, or last copies. Some library has to be the first to acquire, or at least to catalog, a new item. For most materials, life as a first copy is brief, ending when another library acquires and catalogs the item. For this reason, first copies are of little interest to this study and are not seriously considered.

Only copies are primarily manuscripts and other special materials that were never mass produced or widely distributed. Although multiple copies of manuscripts may have been produced (dittoed or mimeographed material, for example), manuscripts were never widely available. *Anglo-American Cataloguing Rules* defines a manuscript as "writings … made by hand, typescripts, and inscriptions on clay tablets, stone, etc."[15] Excluding digital materials, manuscripts are the typical "only copy." These only copies pose a different problem than do last copies. Manuscripts, at least on examination, are readily identifiable and frequently are related to the holding library. Most libraries are very aware of the uniqueness of manuscripts in their collections. As a result, manuscripts, as only copies, were considered to be beyond the scope of this study.

The materials of primary interest are the last copies; nonmanuscript material for which only a single known copy remains. A limitation of this study is that the *known* universe is limited to OCLC's WorldCat. It is certainly possible, probable in many cases, that copies of the materials exist in collections of non-OCLC libraries. However, a comprehensive search of these other collections is difficult. This is particularly true for libraries that do not adhere to *Anglo-American Cataloguing Rules*. Despite its limitations, last copies as identified in WorldCat are a rich source of at-risk materials.

The simple solution of identifying and moving these last copies to rare book rooms or other secure locations is impractical because of the huge number of uniquely held items. Identifying materials for preservation and digitization is

an expensive and labor-intensive process. Deteriorating materials are identified through a number of avenues, including circulation, shelf reading, bar coding, and security taping. In practice, selectors for preservation and digitization consider additional factors, including uniqueness of content and rarity of production attributes.

The conceptual model developed by the International Federation of Library Association's (IFLA) Study Group, commonly known as Functional Requirements for Bibliographic Records (FRBR), provides a very useful perspective in which to view last copies.[16] The FRBR model clarifies the definitions of terms used in cataloging—work, expression, manifestation, and item—by showing a relationship among bibliographic entities. A work is an abstract concept that the creator wants to convey; when the work is realized it becomes an expression, and when that expression is published it becomes a manifestation of the work. At least in general terms, the expression represents the content and manifestation is the expression of that content in a physical form.

Cataloging traditionally has dealt with manifestations, not expressions. When we say that something is at risk, is the "something" we are referring to the content (expression) or the particular manifestation of that content? For example, in his application of the FRBR model to Tobias Smollett's *The Expedition of Humphry Clinker*, Edward T. O'Neill identified one expression with forty-three different manifestations.[17] Twelve of these manifestations, including the 1841 manifestation published by S. Johnson in Manchester, England, were held by a single library. However, collectively, the expression is held by 371 libraries so that the expression itself is not at risk. Except for very minor differences introduced in publishing, which would only be noticed after a detailed examination, the content of all forty-three manifestations is identical and is not at risk. Although some of the manifestations may be worth preserving as an artifact, it's unnecessary to preserve them for their content.

Using FRBR concepts, it is helpful to extend the last copy concept and define a *last expression*. The last expression represents the last known manifestation of the expression, the only remaining copy of specific intellectual or artistic content. The concept of last expression is centered on identifying items with unique content. Cataloging rules focus on describing distinct manifestations. As seen with *Humphry Clinker*, it is not uncommon for the same expression to be embodied in many different manifestations. Another common example would be the British and American editions of a novel. From the cataloging perspective, each of these editions is a distinct manifestation and should be cataloged separately. Hardcover, paperback, large-print, and facsimile editions are other common instances of distinct manifestations of the same expression or content.

Analysis of the Bibliographic Records

An important component of the OCLC WorldCat database is its holdings data, which indicate the material each member library holds. As of January 1, 2005, OCLC WorldCat had 54 million bibliographic records, indicating holdings at more than 953 million library locations. Twenty-four million, or 44 percent, of these bibliographic records, represent items that are held by only a single member library. Even allowing for bibliographically related publications, a significant percentage of records in WorldCat possibly represent the last remaining copies of published materials. If this is indeed the case, the sheer volume of last copies should be a national concern.

In an attempt to identify and categorize last copies, the Vanderbilt University Libraries served as a pilot case. Vanderbilt University, located in Nashville, Tennessee, is a private university with an enrollment of more than ten thousand

students.[18] It has the Carnegie Classification of Institutions of Higher Education's highest ranking, Doctoral/Research Universities—Extensive.[19] According to WorldCat, there were 1.5 million items in Vanderbilt University Libraries' collections in July of 2003. Of these items, 23,267 were held exclusively by Vanderbilt University Libraries.

The focus of this study is on books, which are defined as monographic language materials, excluding manuscripts. Bibliographic records showing Vanderbilt University Libraries as the one library possessing the item often include "first copies" of publications that may be in cataloging queues at other member libraries. For this reason, bibliographic items dated 1995 or later were removed from the sample. This reduced the number of last copies to 18,740 books from the initial set of 23,267. The types of materials held only by Vanderbilt University Libraries are shown below:

Total bibliographic records:	23,267
Pre-1995 books:	18,740
Manuscripts:	10,151
Vanderbilt University theses:	9,274
Other theses:	856
Other manuscripts:	21
Pre-1995 books, excluding manuscripts:	8,589

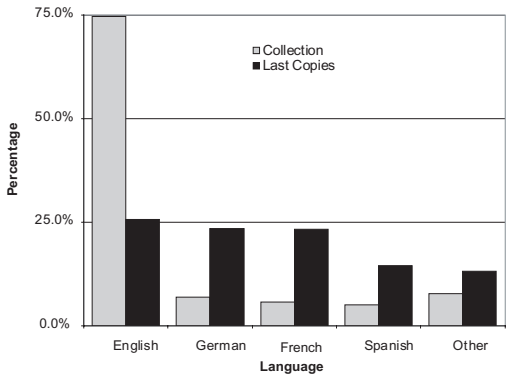
More than half of the last copies were manuscripts, primarily theses. Manuscripts were identified by checking the "Type of Record" (Leader, byte 6). All theses, identified by the presence of a 502 thesis note, were also considered to be manuscripts. As it is not surprising that manuscripts are only held by a single library, these materials were excluded from further analysis leaving a collection of 8,589 books held only at Vanderbilt University Libraries.

Not surprisingly, Vanderbilt University Libraries, which include the main library, law library, and medical library, originally entered the cataloging for more than 98 percent of the last copies. The records cataloged by other institutions seem to be cases where another library had cataloged the book but had later either withdrawn the book from the collection or revised the cataloging. For example, Vanderbilt University Libraries held a set of teacher workbooks that appear to have been removed from the original cataloging institution's collection.

Very few of the last copies were locally published. Just 3 percent of last copies were produced at Vanderbilt University, including publications attributed to the George Peabody School of Education. Eight percent of the last copies were published in Tennessee. Three percent of last copies were government publications—2 percent were federal government publications and less than 1 percent were state government publications. Numbers of local or foreign government publications were insignificant. If there is an intuitive expectation that a significant percent of last copies may be locally produced publications, or that state and local government publications may account for a substantial number of local materials, the findings of this study show otherwise.

In all, forty-six languages are represented among the last copies. Figure 1 shows the language distribution for the last copies in contrast to Vanderbilt University Libraries' book collection as a whole. The major languages represented are English (26%), German (23%), French (23%), and Spanish (15%). This is in sharp contrast to the language distribution in the collection as a whole where almost 75 percent of the books were in English. The last copies were published in eighty-two different countries. The share of last copies from each of these countries—the United States (18.9%), France (20%), and Germany (20%)—was far greater than the share from any other country. Vanderbilt University Libraries has a long history of collecting material from Colombia and it is the only other country with a significant proportion of last copies (8%).

FIGURE 1
Distribution by Language

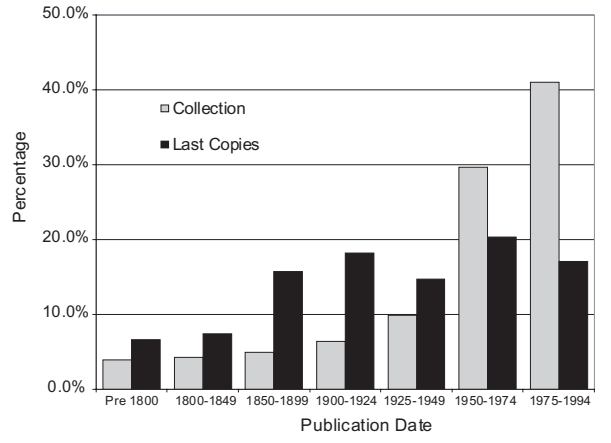


The importance of place of publication and language is that, despite a growing number of international members, the holdings of libraries outside North America are underrepresented in WorldCat. Although a significant amount of material may not yet be part of WorldCat, it is still a comprehensive database of North American and English-language materials. However, coverage of non-North American, non-English materials is weaker. Last copy in these cases should be thought of as "last North American copy." There may be multiple copies of these materials in the country or region where they were published. For example, a German-language book held by a single OCLC member may be held by several European libraries so that it is neither the last copy nor at risk, at least from the worldwide perspective. Compared to the collection as a whole, the last copies exhibited a very strong foreign influence in both language and place of publication.

The last copies also were significantly older than the collection as a whole. Figure 2 shows the distribution publication dates for the last copies in contrast to Vanderbilt University Libraries' book collection as a whole. Date 1 from the 008 field (fixed-length data elements) was used as the date of publication. Records without a valid publication date were excluded from the analysis. The median date of publication of the last copies was 1928 compared to 1970 for the collection as a whole. The last copies are significantly older than Vanderbilt University Libraries' collection as a whole.

The last copies also had far fewer pages than did the collection as a whole. The pagination was taken from the Extent subfield of the 300 field (Physical Description). Records with the extent expressed in volumes and cases where the pagination was missing or could not be identified were excluded from the analysis. Pagination was identified and extracted from over 93 percent of the records. When multiple pagination numbers were included in the extent, the pagination was taken as the sum of the numbers, including those expressed as roman numerals. For example, "33 p., 74

FIGURE 2
Publication Periods



leaves of plates" was interpreted as 107 pages and "xi, 128 p." as 139 pages.

The mean length of the last copies was 161 pages compared to 260 pages for the collection. The median length of the last copies was 111 pages compared to 230 pages for the collection. Much of this difference was due to a disproportionate number of pamphlets among the last copies. Using the definition of pamphlet from *Harrod's Librarians' Glossary and Reference Book as a* "non-periodical publication of at least five but not more than 48 pages, exclusive of the cover pages," 30 percent of the last copies were pamphlets.[20] Only 10 percent of the of book collection as a whole consisted of pamphlets.

Analysis of Selected Books

To better understand the characteristics of these last copies, the investigators visited Vanderbilt University Libraries to examine some of the last copies. A subsample of records was selected for this detailed examination. These items were selected because they were considered "interesting"—items whose characteristics were not obvious from their bibliographic records—and are not representative of the larger sample. Vanderbilt University Libraries' staff pulled many of these items to make them readily available. Using FRBR concepts, each item is viewed as a unique manifestation. However, it is the expression (the content) and not the manifestation itself that's of primary interest.

It is also recognized that these books are also artifacts, valued more for their physical characteristics (binding, paper, printing, etc.) or historical significance (first editions, autographed copies, etc.) than for their content. At least at Vanderbilt University Libraries, there was little evidence that there are a significant number of valuable, but unrecognized, artifacts. Although the investigators did not systematically search for artifacts, there was no indication that there were artifacts that were not being cared for in an appropriate way.

As a result, the focus of the analysis centered on identifying books with unique content rather than just identifying the last copy of a particular manifestation. As mentioned above, cataloging rules focus on describing distinct publications—manifestations in FRBR terminology. It is not uncommon for the same expression to be embodied in many different manifestations. A common example would be the British and American editions of a novel. From the cataloging perspective, each of these editions is a distinct manifestation and should be cataloged separately even when their content is identical. Hardcover, paperback, large-print, and facsimiles are other common instances of distinct manifestations with identical content. Typically, one of the manifestations (the large-print edition, for example) may end up being held by only a single library. However, the hardcover may be held by many libraries, ensuring the continued availability of the expression.

The unique materials at Vanderbilt University Libraries fell into four broad categories: (1) unidentified manuscripts, (2) last copies, (3) duplicate records, and (4) last expressions. An attempt was made to ensure that items from each of the broad categories were included in the sample. Because the items examined were selected to include as much variety as possible, the sample cannot be used to estimate the relative size of each category.

Unidentified Manuscripts

All records coded as manuscripts were previously excluded. However, records for manuscripts are frequently miscoded as non-manuscript-language material. We observed several cases where typescripts had been coded as type 'a' (non-manuscript-language material) rather than 't' (manuscript-language material). Although it can be difficult to reliably identify manuscripts from their bibliographic record, they were readily identifiable on examination.

Last Copies

Unique manifestations fell into two groups: instances where the expression had been republished, and instances where multiple expressions have been aggregated into a new manifestation. As with *Humphry Clinker*, we observed several cases where the same expression was published in many different manifestations. Whereas one particular 1773 edition of a hymnal, John Newton's *Olney Hymns*, is held only by Vanderbilt University Libraries, numerous other editions are available. Vanderbilt University Libraries' edition may be valuable and deserving of preservation as an artifact, but its hymns are not at risk.

Several unique aggregates of nonunique expressions were observed, typically in the form of collections of journal articles. One manifestation examined was a bound collection of five articles from the journal *Archives de Psychologie*. The bound volume was then cataloged as a monograph. In another case, a single issue of a journal was bound and cataloged as a monograph.

A German novel, Augusta von Wallenrodt's *Das Mädchen Wunderhold,* was published in Leipzig in 1810. Based on the information in WorldCat, this 1810 edition is the only known published manifestation of the novel. However, the novel has been microfilmed and the microfiche are held by multiple libraries. A note in the bibliographic record for the microfiche indicates that the copy filmed was originally held by the Bayerische Staatsbibliothek in Germany. It is likely that it is also available in other European libraries. Because of its age and rarity in North America, it may be desirable to preserve this novel as an artifact; its content is not at risk.

Duplicate Records

Duplicate records are defined as two or more records representing the same bibliographic item. Edward T. O'Neill, Sally A. Rogers, and W. Michael Oskins discuss the characteristics of duplicate records and identify a variety of causes for duplicate records including typographical, tagging, and subfield coding errors.[21] Cataloging and transcription errors (misspelling, typographical errors, mistagging, etc.) are a common cause of duplicate records. Records with errors of this type usually will not be used for copy cataloging. A common characteristic of duplicate records is that they are held only by a single library; therefore, it is not surprising that there is a high proportion of duplicate records among records for the uniquely held items. Duplicate bibliographic records and bibliographic records for unique manifestations of nonunique expressions appear very similar, and distinguishing between them can be difficult. Fortunately, because neither contains unique content, for the purpose of identifying "last copies," the distinction is not important. As a result, there was no attempt to distinguish between them and the duplicates have been grouped together with the records for unique manifestations of nonunique expressions.

Last Expressions

This is a very eclectic group that can be broadly characterized as old, short, and foreign. These books probably were never widely held, at least by North American libraries. Although the books examined were not a representative sample, the material generally appeared to be older than typical for a research collection.

The material also seemed to have a disproportionate number of pamphlets or pamphlet-length items. Some examples of these items included an article extracted from a French journal (fifteen pages), a course syllabus from a Colombian university (nineteen pages), and a French satire (fifteen pages). Books in the less common languages, particularly translations, also were common. Included in this group was *Á Flækingi,* an Icelandic translation of Mark Twain's *Tramp Abroad,* and *Pařížsky Spleen*, a Czech translation of French poems and prose.

The physical examination of selected items revealed the limitations of relying

only on a single holding symbol as an indicator of at-risk material. Without additional analysis, many items would have been erroneously categorized as being at risk. For example, the set of records representing items held only by Vanderbilt University Libraries included items that were bound together creating unique physical items, but not unique content. None of these items contained content that was at risk.

Conclusion

The importance of preserving and digitizing unique items has been widely acknowledged in library literature and funding initiatives. Although libraries have been automating several facets of library operations since the 1960s, identification of items for preservation and digitization continues to be a manual task, yet a task of great importance to libraries.

With more than 24 million items held by a single library, the task is still immense, even ignoring the first copies and the only copies. Fortunately, after examining the last copies, it was clear that only a portion of the last copies—the last expressions—contained content that was at risk. This is a very eclectic group that was characterized as old, short, and foreign but appears to be relatively small when compared to all the last copies.

The present study employed the OCLC WorldCat database to identify and retrieve records of last copies. However, any group catalog that represents the holdings of a large number of libraries can be used to identify last copies within the group. An example of this is the Association of Southeastern Research Libraries' (ASERL) virtual storage and preservation concept. This is an attempt "to create a national system of virtual storage collections by developing inventories of current monographic storage collections" to enable libraries to discard books that are already held in other storage facilities.[22] However, it would be an excellent opportunity also to identify the last copies held by this group of libraries. Other studies limited to a consortium of libraries, such as the Committee for Institutional Cooperation (CIC) or OhioLink, merit consideration for comparative analyses.

The Vanderbilt University Libraries may be representative of the members of the ARL. However, the results of this analysis cannot be generalized. Further studies of last copies, based on a representative sample, are needed to estimate the relative size of the four categories with a focus on estimating the number of at-risk expressions. Development of an algorithmic procedure to identify manifestations embodying unique expressions also will be necessary. With more than 24 million uniquely held records, manual identification of at-risk expressions is impractical. It also would be helpful to understand how the unique expressions are distributed by type of library.

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