ARTICLES
Steve Black 283 Journal Collection Analysis at a Liberal Arts College
Lois Mai Chan and Diane Vizine-Goetz 295 Errors and Obsolete Elements in Assigned Library of Congress Subject Headings: Implications for Subject Cataloging and Subject Authority Control
Samuel Demas and Jennie L. Brogdon 323 Determining Copyright Status for Preservation and Access: Defining Reasonable Effort

NOTES ON OPERATIONS
Linda Blake and Evelyn T. Stallings 335 Arranging Roots: Classification and Subject Headings for Genealogical Collections

FEATURES
Gregory H. Leazer, Editor 347 Book Reviews
350 Letters
Edward Swanson 352 Index to Volume 41
351 Index to Advertisers
Editor and Chair of the Editorial Board JENNIFER YOUNGER
Editorial Assistant DAVID H. THOMAS

Assistant Editors:

CHRISTIAN BOISSONNAS...........................................for Acquisitions Section
JAY LAMBECHT........................................................for Cataloging and Classification Section
BONNIE MACEWAN ..................................................for Collection Management and Development Section
LEE DIRKS ...............................................................for Preservation and Reformatting Section
SYLVIA O. MARTIN ...................................................for Serials Section
GILLIAN M. MCCOMBS ..............................................Special Editor
MARGARET ROHDY ..................................................Book Review Editor

Ex-Officio Members:

ELAINE YONTZ, Delegate of the Chair, Council of Regional Groups
KAREN MULLER, Executive Director, ALCTS
DALE SWENSEN, Editor, ALCTS Newsletter

Library Resources & Technical Services (ISSN 0024-2527), is published quarterly by the American Library Association, 50 E. Huron St., Chicago, IL 60611. It is the official publication of the Association for Library Collections & Technical Services, a division of the American Library Association. Subscription Price: to members of the Association for Library Collections & Technical Services, $27.50 per year, included in the membership dues; to nonmembers, $85 per year in U.S., Canada, and Mexico, and $55 per year in other foreign countries. Single copies, $15. Periodical postage paid at Chicago, IL, and at additional mailing offices. POSTMASTER: Send address changes to Library Resources & Technical Services, 50 E. Huron St., Chicago, IL 60611. Business Manager: Karen Muller, Executive Director, Association for Library Collections & Technical Services, a division of the American Library Association. Send manuscripts to the Editorial Office: Jennifer Younger, Editor, Library Resources & Technical Services, 221 Theodore M. Hesburgh Library, University of Notre Dame, Notre Dame, IN 46556-5629; (219) 631-7790; fax: (219) 631-6772; e-mail: younger.1@nd.edu. Advertising: Todd Goldman, c/o The Goldman Group, 3418 Handy Rd., Suite 201, Tampa, FL 33618. ALA Production Services: David Epstein, Christine Squires, Raine Bascos, Gwen Ihnat, and Donavan Vicha. Members: Address changes and inquiries should be sent to Membership Department—Library Resources & Technical Services, 50 E. Huron St., Chicago, IL 60611. Nonmember subscribers: Subscriptions, orders, changes of address, and inquiries should be sent to Library Resources & Technical Services, 8 & S Computer Services, Inc., 434 W Downer, Aurora, IL 60506.

Library Resources & Technical Services is indexed in Library Literature, Library & Information Science Abstracts, Current Index to Journals in Education, Science Citation Index, and Information Science Abstracts. Contents are listed in CALL (Current American—Library Literature). Its reviews are included in Book Review Digest, Book Review Index, and Review of Reviews.

Instructions for authors appear on p. 71–72 of the January 1997 issue or visit the LRTS Web page at www.ala.org/alcts/lrts. Copies of books for review should be addressed to Margaret Rohdy, Book Review Editor, Library Resources & Technical Services, Van Pelt-Dietrich Library Center, University of Pennsylvania Libraries, 3420 Walnut St., Philadelphia, PA 19104-6206 (e-mail: rohdy@pobox.upenn.edu).

© American Library Association 1997

All materials in this journal subject to copyright by the American Library Association may be photocopied for the noncommercial purpose of scientific or educational advancement granted by Sections 107 and 108 of the Copyright Revision Act of 1976. For other reprinting, photocopying, or translating, address requests to the ALA Office of Rights and Permissions, 50 E. Huron St., Chicago, IL 60611.

The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Printed Library Materials, ANSI Z39.48-1992. Publication in Library Resources & Technical Services does not imply official endorsement by the Association for Library Collections & Technical Services nor by ALA, and the assumption of editorial responsibility is not to be construed as endorsement of the opinions expressed by the editor or individual contributors.
Museums of the World, 6th edition

There is only one authoritative directory that can assist you in your in-depth exploration of the world of museums: *Museums of the World*, 6th edition. Frequently called the “telephone book” of museums, this indispensable resource goes far beyond art, history, and science museums to provide insight into the world of aviation, textiles, toys, entomology, and other less common collections.

*Museums of the World* features completely updated information on some 24,000 museums in over 170 countries. Three comprehensive indexes speed your search by cross-referencing collections alphabetically by museum, by curator and staff name, and by subject.

August 1997 • 3-598-20605-4 • c. 750 pp. • $425.00 • First-Time Standing Order Price: $382.50

International Directory of Arts 1997/98 23rd Edition

The most renowned reference work of its kind, the *International Directory of Arts* offers in-depth access to the vast global network of artists, museums, galleries, publishers, conservation authorities, and more, that comprise today's international art culture.

Published in three volumes, this completely revised and updated Directory features over 130,000 entries in 175 states and territories, conveniently arranged by category. It also includes 7,000 U.S. entries from the acclaimed *Official Museum Directory*.

Updated biennially • 1997 • 3-598-23075-3 • 3 vols. • c 1,450 pp. • $275.00 • First-Time Standing Order Price: $247.50

Order one or both of these invaluable directories today by calling 1-888-BOWKER2 (1-888-269-5372). Or fax your order to 1-908-508-7696.
Whether they’re beloved classics, red hot best sellers or work-a-day how-to manuals, your paperback collections will last 4-5 times longer if they’re covered with Easy Cover® or Easy Cover®II self-adhesive book covers. Easy to use and easy on the budget, Easy Cover® covers protect books from abusive wear and tear, enabling your book budget to uncover buried treasure, as it were.

For free samples or a copy of our free book repair and preservation products catalog, telephone us or visit us on the Internet.

If you really treasure Treasure Island, cover its cover with the best cover in the world.
Journal Collection Analysis at a Liberal Arts College

Steve Black

An inexpensive method for analyzing the cost-effectiveness of a liberal arts college's journal collection is described. The author offers an answer to the question: "What are the criteria for determining the cost-effectiveness of a journal collection, and how can the criteria be measured?" The resulting analysis is based on measurements of journal use, journal subscription prices, and course enrollment by academic department. Journal use data are also applied to shelf space management. Data collection methods are explained, and results of collection analysis are presented. The importance and benefits of empirical analysis of journal collections are discussed, and practical applications of the analysis are described.

The selection and deselection of journals in an academic library is a complex, multifaceted process with budgetary, curricular, scholarly, and internal political implications. Given the persistently high annual inflation rate for journals, continual production of new journal titles, a never-ending stream of requests from faculty for additions to collections, and tight budgetary environments, the presence of data on journal subscription prices, shelf space, and journal use can assist in making decisions. A serials librarian with data that have been carefully collected and analyzed can make or encourage better local collection development decisions and will be in a better position to defend those decisions. In this study, I examine how staff at the College of Saint Rose addressed the question, "What are the criteria for determining the cost-effectiveness of a journal collection, and how can the criteria be measured within an existing operating budget?" In this study, the author utilizes data collection techniques and methods of analysis that have not previously appeared in the library literature. A simple, inexpensive method of marking shelf labels was implemented for measuring use. The calculation of subscription cost divided by use is enhanced with data on the number of enrolled students served by each department's journal subscriptions.

Journal Use Studies

The literature reviewed in the process of planning, executing, and reporting this journal collection analysis makes apparent the benefits of quantitative approaches to journal collection analysis and provides suggestions for conducting effective studies. Metz (1992) has written that measuring journal use is extremely useful and is an invaluable step prior to any serials cancellation project because of the peace of mind that use statistics give bibliographers. Although he recognizes the imperfection of use statistics, such statistics

Steve Black (blacks@rosnet.strose.edu) is serials, reference, and instruction librarian, Neil Hellman Library, The College of Saint Rose, Albany, NY 12203. Manuscript received April 21, 1997; accepted for publication July 7, 1997. The author wishes to thank Paula Green, whose conscientious work was essential to the study's success.
at least indicate the titles that are used and reduce the chance of nominating a critical title for cancellation. Milne and Tiffany (1991) have described the economic advantages of calculating the cost-per-use of serials, which is defined as the current annual subscription price of a serial divided by the number of calculated uses per year. Using two factors, Milne and Tiffany adjusted counted journal uses to compensate for estimated undercounting and the number of years of issues surveyed. Bensman (1985) described the application of citation analysis to determine concentrations of use in journal collections and concluded that libraries should establish systems for monitoring use of their collections to identify low-use titles.

Broadus (1985b) described how one might use the citation statistics of ISI's Journal Citation Reports for collection analysis. Broadus proposed that citation analysis might supplement or even replace journal use studies. Eckman (1988) combined a use study, citation analysis, and list checking to analyze a specialized academic library's journal collection. The goal of his use study was to employ a simple method that would measure relative levels of use. Eckman's results aided collection development decisions and informed plans for future use studies. Young (1992) described a method of using bibliographic database transaction logs to assess a journals collection and concluded that logs of database transactions can provide an approximate measure of journal use. Gossen and Irving (1995) described how a journal use study conducted at the four State University of New York (SUNY) Centers (Albany, Binghamton, Buffalo, and Stony Brook) was used to investigate the benefits of canceling low-use titles and replacing the loss with interlibrary loan (ILL) and document delivery. Kingma (1996) more fully developed the work reported by Gossen and Irving by formalizing an economic model for determining the costs and benefits of owning journals versus obtaining articles by ILL or document delivery. Kingma's calculation of the cost-per-use of a journal includes the cost of shelf space, patrons' time, binding, and reshelving. Kingma also recognized, but chose not to include, the costs of photocopying, weeding, and vandalism in the calculation of cost-per-use. All these authors implemented or applied journal use studies in their analyses of journal collections.

Journal use study methods reported in the literature include several ways of counting volumes as they are reshelved, of counting users, and of monitoring circulation statistics. As noted by Herzog (Edelman 1994, 190), the most that can be expected from most use studies is a measure of relative use. No absolute measure of journal use is possible in open stacks. It is even difficult to define precisely what constitutes a use of a journal. For instance, is browsing a table of contents and choosing not to read any of the articles a use? Should uses by persons not affiliated with the college count? For a study that relies on a count of volumes found off the shelves (sometimes referred to as the “sweep” method), the definition of a use becomes “it was found on a table or cart.” While this definition is simple and reasonable, its limits must be recognized, and results must be taken as best estimates rather than as absolutes.

However, alternatives to the sweep method, such as surveys that ask users what they have used or studies of bibliographies of papers created by library users, might not be more valid or reliable than reshelving counts. Naylor (1994) found fewer reported uses from a user survey than were recorded by reshelving counts. Analysis of bibliographies published by faculty and submitted in student papers as described by Joswick and Stierman (1997) is an interesting and valuable approach but produces a very small sample of a library's total journal use. Their method of counting citations printed from a bibliographic database is another possible approach, but it is unclear how printed citations reflect actual journal use. The method of checking references in student papers to evaluate a specific part of a collection was employed by Sylvia and Lesher (1995). They found, to their surprise, that reshelving counts did not correspond to student citations.

As is frequently pointed out in the lit-
erature, each method of journal analysis has its own strengths and weaknesses. The authors cited here have devised and employed methods of measuring journal use, calculating the cost efficiency of journals, and matching the resulting data to patron needs and economic exigencies. From these published methods of collection analysis, I adapted a method of counting journal use that best met local needs.

**Shelf Space Management**

An important aspect of the cost-effectiveness of a journal collection is the expense and availability of shelf space to house the journals. Sapp and Suttle (1994) point out that many libraries are running out of space and might not have the option of adding shelving or using remote storage. They report on a method of calculating collection expansion. Shelf space is also a component of the fixed cost of maintaining a subscription. Kingma (1996) determined the yearly fixed cost of shelf space at SUNY Albany to be $1.25 per cubic foot. The average bound volume used 0.477 cubic feet of space, so each bound volume cost $0.596 per year to maintain on the shelves.

The published work of these authors makes clear that the future availability of shelf space is a factor to consider in journal collection development decisions. The measurement and evaluation of the journal collection’s consumption of shelf space can contribute to the decision to find electronic alternatives to traditional subscriptions. When combined with use data, shelf space consumption data also support storage, weeding, and shifting decisions. The combined shelf space and use data facilitate the identification of journals that might be moved to storage with minimal disruption of patrons’ needs and maximum savings of valuable shelf space.

**Background**

The College of Saint Rose is an independent, coeducational liberal arts college located in Albany, New York. It enrolls more than 1,700 full-time and 900 part-time students in 35 bachelor’s degree programs and more than 1,300 students in 19 master’s degree programs. The college’s most heavily enrolled programs are in education, special education, the social sciences, business, liberal arts, and fine arts. Programs supported by scientific, medical, and technical journals are relatively small but are important components of the undergraduate curriculum. The college library subscribes to very few foreign language titles. The college’s 45,000 square foot Neil Hellman Library houses over 195,000 bound volumes and maintains approximately 1,050 current periodical subscriptions. Detailed information about the college and the library can be found on the World Wide Web at www.strose.edu.

The primary goal of the library’s serials collection development policy is to support the educational mission of the college, with a secondary goal of providing journals of general and cultural value to enhance students’ personal growth. The policy states that collection development is carried out in accordance with the Library Bill of Rights, which proscribes censorship and ideological favoritism (American Library Association 1980). Support of faculty research is not an explicit goal of collection development. Journal selection has traditionally been driven by faculty requests for titles to support their programs. Since 1990 the library has enforced a general policy of no new net growth in the number of subscriptions in any academic area except to support new programs. The parsimonious addition of any new titles, combined with the usual trickle of ceased and canceled titles, has forestalled any major cancellation projects. But because subscription price increases and allocations for CD-ROM databases have significantly outstripped materials budget increases, the portion of funds left for books is rapidly shrinking to unacceptable levels. Consequently, I decided to conduct an empirical analysis of the journal collection to facilitate approaches to managing the looming materials budget crisis.

**Collection Analysis Criteria**

This journal collection analysis was based
on measurements of journal use, journal subscription prices, and course enrollment. The primary goals of the analysis were to define and support criteria for determining the cost-effectiveness of the collection. The use data can also be used to support improved management of available shelf space. Cost-effectiveness criteria chosen for this study were the subscription prices per use of each journal, departmental expenditures for journals relative to academic departments’ total annual course enrollment, the number of subscriptions in each department relative to annual course enrollment, and the rate of journal use in each department. The analysis based on these criteria has been helpful as an aid both to title-level decision-making within department journal budgets and to collection-level decision-making for the allocation of funds among department budgets. As options for providing journal literature through electronic means proliferate, careful analysis of the collection by individual title, by academic department, and by the collection as a whole is important for making informed decisions on possible augmentation or substitution of the print collection with electronic access.

DATA COLLECTION METHOD
During the fall of 1995, library staff measured journal shelf-space consumption. The total number of inches of shelf space occupied by each title was measured along with the shelf space taken by 1994 volumes. The library binds and permanently retains most journals, so 1994 was chosen to represent the space expected to be added by each title per year. No attempt was made to predict future changes in volume sizes, but changes in current year only holdings were accounted for. These data, along with each title’s starting volume and year, were entered into a spreadsheet with an existing title list. These measurements indicated that, all things remaining equal, the “comfort zone capacity” of existing shelf space would be filled by 2002. Sapp and Suttle (1994) determined that 8" of empty space per 36" shelf was the “comfort zone” needed to allow for daily variations in space needs.

Given the library’s space and budget constraints as well as the benefits of quantitative analysis explained above, I decided to conduct a use study in calendar year 1996. The library’s last use study, conducted in 1981 for the sole purpose of identifying volumes to move to storage, used the method described by Shaw (1978). Lack of shelf space had again become a problem, and volumes were being moved to storage when room ran out on the shelves, with little regard for how often the titles were used. The sole purpose of the 1981 use study was to collect the data needed to rationalize the transfer of volumes to storage. The broader goal of the 1996 study was not only to identify volumes with very low use but also to provide the data needed to analyze the cost-effectiveness of each journal in the collection. Gathering the data needed to calculate subscription price per use was deemed important enough to expend the time and effort to measure all uses for a full calendar year. However, the study needed to be done within the existing budget and work schedule because no extra funds were available.

In consultation with colleagues and especially with the nonprofessional staff who would be directly involved in the project, I decided on a method of marking shelf labels each time a volume or issue was reshelved. Labels were created using word processing software, printed on standard 8½-x-11-inch paper, and sliced to size. When inserted into the existing shelf label holders, the labels provided a marking space of 1¾-inches on each side. Black fine-tip felt markers were obtained, signs were posted throughout the journal stacks asking patrons not to reshelve journals because a study was in progress, and instructions for shelvers were created and disseminated. Shelvers used the markers to put a dot to the left of the title for a volume dated before 1990; they put a dot to the right for a volume or issue dated 1990 or later. Cooperation by staff and student workers was good, and the method was readily understood. Bound volumes and individual issues were
counted equally.

The most current issues of general interest titles are kept in a separate reading room and were not counted. This resulted in an undercount of some popular titles and reduced the incidence of individual issues counting the same as bound volumes. Indexes, newspapers, and serials not housed in the journals stacks were not included in the study. Of the library's 1,050 current periodical subscriptions, the study measured the use of 1,022 journals. Reshelved volumes were marked from January 17-December 15, 1996. Counts were taken and labels replaced after the spring 1996 and fall 1996 terms. Vandalized labels and labels crowded with dots were replaced as needed. The rate of vandalism was less than 1%, but some data were lost for nine journals. In all but one case, the lost data were replaced by duplicating the count from the other semester. One journal suffered lost data for both semesters and was excluded from the study. Although the duplication of data for the nine journals from one semester to another reduced data integrity, noted similarities of recorded use between semesters for other titles made duplication more desirable than omission of the eight titles from the study.

There were four sets of reshelving counts: 1996 spring semester, pre-1990 volumes; 1996 spring semester, 1990–present volumes; 1996 summer terms and fall semester, pre-1990 volumes; and 1996 summer terms and fall semester, 1990–present volumes. The four sets of reshelving counts were added to the spreadsheet containing the shelf space data. The sum of uses for each title comprised the primary use data, but the four distinct sets were preserved in the spreadsheet.

Subscription prices paid for 1996 (including price adjustments after initial vendor invoicing) for each of the 951 journals were entered into the spreadsheet. The College of Saint Rose allocates the materials budget among twenty-two departments. Each journal is coded to indicate the department's materials budget to which the subscription is allocated. These codes were included in the original title list and were carried over into the spreadsheet created for this study.

These data, when combined with subscription cost data, were sufficient to identify low-use titles and to calculate subscription price per use. But because the majority of the college's income comes from tuition, journal use figures are more meaningful in the context of the number of students served per subscription. To make such a calculation, I contacted the college registrar, who provided a printout of the enrollment for every undergraduate and graduate course conducted in calendar year 1996. Course enrollments were tabulated for each department, and the department totals were added to the spreadsheet. The total enrollment for courses by the college's 3,726 students for spring, summer, and fall 1996 was 29,155. Because each subscription is coded by academic department, the number of students served can be measured by tallying each academic department's annual total course enrollment and comparing that to the number of subscriptions allocated to the department.

The library has a general category for journals not allocated to an academic department and a reference category for indexes and a few library journals. Journals for a department might receive significant use from students not enrolled in courses in that department, but there is no way to determine that from the data collected because the uses were counted with no attribution of users' course or department affiliation. However, estimated impact of cross-disciplinary use might be judged on a title-by-title basis.

**DATA ANALYSIS**

The spreadsheet created for this study included data for: journal title, academic department, subscription price, journal use, department course enrollment, and year subscription began. These data were used to calculate subscription price per use, subscription price per enrolled student, number of enrolled students per subscription in each department, and number of journal uses per enrolled student. These four calculations comprise the criteria for determining the cost-eff-
TABLE 1

<table>
<thead>
<tr>
<th>Department</th>
<th>Number of Subscriptions</th>
<th>Average Price</th>
<th>Total Uses</th>
<th>Price/Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Technology</td>
<td>9</td>
<td>$317.73</td>
<td>64</td>
<td>$44.68</td>
</tr>
<tr>
<td>Computer Science</td>
<td>16</td>
<td>165.20</td>
<td>205</td>
<td>12.89</td>
</tr>
<tr>
<td>Biology</td>
<td>43</td>
<td>270.92</td>
<td>1,083</td>
<td>10.76</td>
</tr>
<tr>
<td>Philosophy</td>
<td>8</td>
<td>49.13</td>
<td>41</td>
<td>9.59</td>
</tr>
<tr>
<td>Public Communication</td>
<td>49</td>
<td>78.03</td>
<td>470</td>
<td>8.14</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>7</td>
<td>36.66</td>
<td>35</td>
<td>7.33</td>
</tr>
<tr>
<td>Music</td>
<td>76</td>
<td>50.46</td>
<td>650</td>
<td>5.90</td>
</tr>
<tr>
<td>Psychology</td>
<td>44</td>
<td>255.08</td>
<td>1,933</td>
<td>5.81</td>
</tr>
<tr>
<td>History and Political Science</td>
<td>82</td>
<td>66.30</td>
<td>1,009</td>
<td>5.39</td>
</tr>
<tr>
<td>Business</td>
<td>80</td>
<td>93.76</td>
<td>1,508</td>
<td>4.97</td>
</tr>
<tr>
<td>Sociology</td>
<td>33</td>
<td>116.12</td>
<td>847</td>
<td>4.52</td>
</tr>
<tr>
<td>Religious Studies</td>
<td>26</td>
<td>65.99</td>
<td>543</td>
<td>3.16</td>
</tr>
<tr>
<td>Physics</td>
<td>14</td>
<td>86.35</td>
<td>403</td>
<td>3.00</td>
</tr>
<tr>
<td>Mathematics</td>
<td>13</td>
<td>86.00</td>
<td>393</td>
<td>2.84</td>
</tr>
<tr>
<td>English</td>
<td>116</td>
<td>49.29</td>
<td>2,023</td>
<td>2.83</td>
</tr>
<tr>
<td>Social Work</td>
<td>6</td>
<td>115.60</td>
<td>368</td>
<td>1.88</td>
</tr>
<tr>
<td>Physical Education</td>
<td>3</td>
<td>42.32</td>
<td>89</td>
<td>1.43</td>
</tr>
<tr>
<td>Education</td>
<td>153</td>
<td>84.16</td>
<td>9,861</td>
<td>1.31</td>
</tr>
<tr>
<td>Special Education</td>
<td>68</td>
<td>150.27</td>
<td>8,467</td>
<td>1.21</td>
</tr>
<tr>
<td>Art</td>
<td>46</td>
<td>41.25</td>
<td>1,713</td>
<td>1.11</td>
</tr>
<tr>
<td>General</td>
<td>71</td>
<td>47.41</td>
<td>3,835</td>
<td>0.88</td>
</tr>
<tr>
<td>Median</td>
<td>43</td>
<td>84.16</td>
<td>650</td>
<td>4.52</td>
</tr>
</tbody>
</table>

Table 1 presents a summary of the calculated data on the use of journals and the subscription price per use in each department. Medians were calculated for each column as a standard for comparison. The data presented in table 1 show the relative expense of journals, the rate of use of the subscriptions, and the subscription price per use for each department. Table 1 is sorted by departments' average subscription cost-effectiveness of the journals in the collection. The four figures were calculated for every title, then sorted by department. Although the focus in this analysis was on the department level, the figures on individual titles will be instructive for yearly renewal decisions. All four criteria of cost-effectiveness are important to consider because each criterion provides a different but important perspective on the collection.

RESULTS

Use data were collected for 1,022 journals. The total reshelving count was 35,433. The median number of measured uses was 16. Records for titles that had ceased or had been canceled were extracted from the use counts and excluded from the cost efficiency analysis. If a journal had changed its title and was continued by a current title, the counts for these previous titles were added to the current title. With the adjustments for title changes and journals that had ceased or been canceled, 951 titles remained for analysis. Zero uses were recorded for 81 of these 951 journals (8.5%).
TABLE 2
ENROLLMENT AND JOURNAL SUBSCRIPTIONS

<table>
<thead>
<tr>
<th>Department</th>
<th>Department Enrollment</th>
<th>Department Subscriptions</th>
<th>Department Enrollment/Department Subscriptions</th>
<th>Total Uses</th>
<th>Uses/Department Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education</td>
<td>883</td>
<td>3</td>
<td>294.3</td>
<td>89</td>
<td>0.1</td>
</tr>
<tr>
<td>Psychology</td>
<td>4,036</td>
<td>44</td>
<td>91.7</td>
<td>1,933</td>
<td>0.5</td>
</tr>
<tr>
<td>Computer Science</td>
<td>1,460</td>
<td>16</td>
<td>91.3</td>
<td>205</td>
<td>0.1</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>580</td>
<td>7</td>
<td>82.9</td>
<td>35</td>
<td>0.1</td>
</tr>
<tr>
<td>Special Education</td>
<td>5,366</td>
<td>68</td>
<td>78.9</td>
<td>8,467</td>
<td>1.6</td>
</tr>
<tr>
<td>Mathematics</td>
<td>768</td>
<td>13</td>
<td>59.1</td>
<td>393</td>
<td>0.5</td>
</tr>
<tr>
<td>Philosophy</td>
<td>360</td>
<td>8</td>
<td>45.0</td>
<td>41</td>
<td>0.1</td>
</tr>
<tr>
<td>Social Work</td>
<td>264</td>
<td>6</td>
<td>44.0</td>
<td>368</td>
<td>1.4</td>
</tr>
<tr>
<td>Business</td>
<td>2,640</td>
<td>80</td>
<td>33.0</td>
<td>1,508</td>
<td>0.6</td>
</tr>
<tr>
<td>Art</td>
<td>1,368</td>
<td>46</td>
<td>29.7</td>
<td>1,713</td>
<td>1.3</td>
</tr>
<tr>
<td>Education</td>
<td>3,622</td>
<td>153</td>
<td>23.7</td>
<td>9,861</td>
<td>2.7</td>
</tr>
<tr>
<td>Religious Studies</td>
<td>588</td>
<td>26</td>
<td>22.6</td>
<td>543</td>
<td>0.9</td>
</tr>
<tr>
<td>Public Communication</td>
<td>1,087</td>
<td>49</td>
<td>22.2</td>
<td>470</td>
<td>0.4</td>
</tr>
<tr>
<td>Music</td>
<td>1,606</td>
<td>76</td>
<td>21.1</td>
<td>650</td>
<td>0.4</td>
</tr>
<tr>
<td>Biology</td>
<td>761</td>
<td>43</td>
<td>17.7</td>
<td>1,083</td>
<td>1.4</td>
</tr>
<tr>
<td>English</td>
<td>1,950</td>
<td>116</td>
<td>16.8</td>
<td>2,023</td>
<td>1.0</td>
</tr>
<tr>
<td>History &amp; Political Science</td>
<td>1,248</td>
<td>82</td>
<td>15.2</td>
<td>1,009</td>
<td>0.8</td>
</tr>
<tr>
<td>Sociology</td>
<td>471</td>
<td>33</td>
<td>14.3</td>
<td>847</td>
<td>1.8</td>
</tr>
</tbody>
</table>

tion price per use.

Table 2 shows journal subscriptions related to course enrollment for each department. Table 2 is sorted by department enrollment divided by department subscriptions, which indicates the enrollment rate per journal in each department. The departments in the top rows of table 2 are those with a relatively high enrollment rate per journal subscription. This table addresses the cost-effectiveness criteria of enrollment per subscription and number of uses per enrollment.

Table 3 also relates subscriptions and journal use with department enrollment. Table 3 displays the same data as table 2, but it is sorted by measured uses divided by department enrollment. The order of departments in table 3 highlights the rate of journal use relative to the number of students enrolled in each department's courses. The departments in the top rows of table 3 have greater rates of journal use relative to enrollment.

DEPARTMENT ANALYSIS

The data presented in tables 1, 2, and 3 for the four criteria of cost-effectiveness reinforced some of my perceptions of the collection but also revealed some surprises. Education and special education are the College of Saint Rose's most heavily enrolled programs, and reference service and library instruction provide extensive support for those programs. As expected, the subscription price per use in special education ($1.21) is relatively low, enrollment per subscription (78.9) is well above the median, and the rate of use (1.6 uses per enrollment) is relatively high. These data suggest that the collec-
TABLE 3
ENROLLMENT AND JOURNAL USE

<table>
<thead>
<tr>
<th>Department</th>
<th>Department Enrollment</th>
<th>Department Subscriptions</th>
<th>Department Enrollment/Department Subscriptions</th>
<th>Total Uses</th>
<th>Uses/Department Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics</td>
<td>69</td>
<td>14</td>
<td>4.9</td>
<td>403</td>
<td>5.8</td>
</tr>
<tr>
<td>Education</td>
<td>3,622</td>
<td>153</td>
<td>23.7</td>
<td>9,861</td>
<td>2.7</td>
</tr>
<tr>
<td>Medical Technology</td>
<td>28</td>
<td>9</td>
<td>3.1</td>
<td>64</td>
<td>2.3</td>
</tr>
<tr>
<td>Sociology</td>
<td>471</td>
<td>33</td>
<td>14.3</td>
<td>847</td>
<td>1.8</td>
</tr>
<tr>
<td>Special Education</td>
<td>5,366</td>
<td>68</td>
<td>78.9</td>
<td>8,467</td>
<td>1.6</td>
</tr>
<tr>
<td>Biology</td>
<td>761</td>
<td>43</td>
<td>17.7</td>
<td>1,083</td>
<td>1.4</td>
</tr>
<tr>
<td>Social Work</td>
<td>264</td>
<td>6</td>
<td>44.0</td>
<td>368</td>
<td>1.4</td>
</tr>
<tr>
<td>Art</td>
<td>1,368</td>
<td>46</td>
<td>29.7</td>
<td>1,713</td>
<td>1.3</td>
</tr>
<tr>
<td>English</td>
<td>1,950</td>
<td>116</td>
<td>16.8</td>
<td>2,023</td>
<td>1.0</td>
</tr>
<tr>
<td>Religious Studies</td>
<td>588</td>
<td>26</td>
<td>22.6</td>
<td>543</td>
<td>0.9</td>
</tr>
<tr>
<td>History and Political Science</td>
<td>1,248</td>
<td>82</td>
<td>15.2</td>
<td>1,009</td>
<td>0.8</td>
</tr>
<tr>
<td>Business</td>
<td>2,640</td>
<td>80</td>
<td>33.0</td>
<td>1,508</td>
<td>0.6</td>
</tr>
<tr>
<td>Mathematics</td>
<td>768</td>
<td>13</td>
<td>59.1</td>
<td>393</td>
<td>0.5</td>
</tr>
<tr>
<td>Psychology</td>
<td>4,036</td>
<td>44</td>
<td>91.7</td>
<td>1,933</td>
<td>0.5</td>
</tr>
<tr>
<td>Public Communication</td>
<td>1,087</td>
<td>49</td>
<td>22.2</td>
<td>470</td>
<td>0.4</td>
</tr>
<tr>
<td>Music</td>
<td>1,606</td>
<td>76</td>
<td>21.1</td>
<td>650</td>
<td>0.4</td>
</tr>
<tr>
<td>Computer Science</td>
<td>1,460</td>
<td>16</td>
<td>91.3</td>
<td>205</td>
<td>0.1</td>
</tr>
<tr>
<td>Philosophy</td>
<td>360</td>
<td>8</td>
<td>45.0</td>
<td>41</td>
<td>0.1</td>
</tr>
<tr>
<td>Physical Education</td>
<td>883</td>
<td>3</td>
<td>294.3</td>
<td>89</td>
<td>0.1</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>580</td>
<td>7</td>
<td>82.9</td>
<td>35</td>
<td>0.1</td>
</tr>
<tr>
<td>Median</td>
<td>985</td>
<td>38</td>
<td>26.7</td>
<td>597</td>
<td>0.9</td>
</tr>
</tbody>
</table>

tion in special education is cost-effective. The relatively low subscription price per use and relatively high rate of use in education was also expected.

The data partially reinforced, but also modified, my perception of the medical technology department. Its high subscription price per use ($44.68) and low enrollment per subscription (3.1) make it stand out as a department that might have a collection that is not cost-effective. However, medical technology's relatively high rate of use (2.3 uses per enrollment) contradicted my impression that those journals are not used. This suggests that the inefficiency in medical technology is caused not by low use, but by high subscription prices and low enrollment, as evidenced by the $184.64 subscription expenditure per enrollment. Given this very high average price per use, alternative means of providing journal articles should be investigated even though the journals are used at a higher rate than was anticipated.

Use is, of course, affected by factors other than enrollment, such as available indexing and the nature of assignments given in each department's courses. The library currently does not have electronic
citation databases specifically for computer science, biology, physics, or mathematics, and this might lower the rate of use in these areas. Faculty might avoid assignments that require literature searches, either because online indexes are not available or because they believe that too few journals are available in the library to support such assignments. Faculty teaching methods, especially the extent of library use required in class assignments, also make a difference. One professor in religious studies crafted assignments that required students to peruse the library's religious studies journals. The professor's emphasis on journal use, made in consultation with librarians, fairly clearly made a difference in the rate of use between his area (.92 uses per enrollment) and philosophy (.11 uses per enrollment). The price per use in religious studies was $3.19; in philosophy it was $9.59, despite higher average journal prices in religious studies. This experience with one professor in a small department demonstrates that promoting increased use might make a collection more cost-effective.

What constitutes acceptable cost-effectiveness, given the wide range of average subscription prices, department enrollments, and rates of use? As long as the college is committed to supporting an academic program, students should have access to journals in their field. In practice, the already high and rapidly rising subscription prices for journals limit the number of titles a library can hold, especially for departments with relatively few students. Subscription prices are an important factor in how access is provided. If access to journal literature can be provided via ILL or document delivery in a timely manner at less cost than subscriptions, it should be considered.

But the total costs of ILL or document delivery, including the time patrons would have to wait for delivery, must be weighed against the cost of subscriptions. In his analysis of the economics of access versus ownership, Kingma (1996) formulated a decision rule for determining when it is more economically efficient to have a journal on the shelf than it is to provide access to that journal by interlibrary loan. The decision rule is to subtract the fixed cost of a journal subscription from the subscription price, divide the result by the total uses of all subscription years derived from a one-year use study, and compare the resulting cost-per-use with the cost per acquisition by interlibrary loan. The Association of Research Libraries/Research Libraries Group cost estimate for obtaining an article on interlibrary loan was $18.62 (Roche 1993). The SUNY study calculated the fixed cost of a journal subscription to be $62.96 (Kingma 1996). If the College of Saint Rose assumed the same $62.96 fixed cost per journal and $18.62 per article interlibrary loan cost, 88 of our 951 journals (9.25%) could theoretically be more efficiently provided by interlibrary loan than by owning the journals. From this evidence, the Neil Hellman Library's next steps will be to investigate the library's actual fixed costs and actual interlibrary lending cost, and determine the practical impact subscription cancellations would have on students, faculty, and library staff.

**SHELF SPACE ANALYSIS**

This study has given me acceptably reliable data for making rational decisions for moving volumes to storage. The 81 zero-use journals constituted a list of prime targets for removal to storage. The shelf space consumption measurements taken in fall 1995 were used to calculate the amount of shelf space each title would take by the year 2000, two years prior to predicted full capacity. The zero-use and shelf space data were applied in summer 1997 to move some journals to storage and to shift all the journals to allow for five years' growth for each title. The shifting of journals is intended to avoid for several years the need to move any more volumes to storage, but if the need unexpectedly arises, the use data will be available to inform the decision of which titles to move.

**DISCUSSION AND APPLICATION OF DATA**

The collection and analysis of shelf space,
use, price, and enrollment data provide valuable insights regarding the journal collection. The label-marking method of measuring journal use was a logistical success, providing reliable data for reasonable effort and with very little disruption of work by patrons or library staff. The study created more work for the serials librarian and serials staff, but its design allowed label replacement and dot counting to be performed during the quieter times between semesters. The method requires that the person in charge of the study have access to a computer with word processing and spreadsheet software as well as a printer. Marking labels slows reshelving only marginally, but label replacement and dot counting take approximately ten to fifteen minutes per journal for the full process of initial labeling, midpoint relabeling, counting twice, and finally replacing shelf labels. Applying various analytical tools to the data expands to fill the time allotted to it.

Sources of error included people reshelving their own journals, people pulling off journals they didn't use, marking errors, counting errors, and data entry errors. These are sources of error with any use study based on reshelving counts. A nice overview of the advantages and disadvantages of the reshelving count method has been provided by Broadus (1985a).

The study's acceptably reliable use figures met the purpose of providing the data needed to evaluate the collection's cost-effectiveness. The use figures combined with subscription prices yielded subscription-price-per-use data for each of the 951 journals. Reports were sent to each department head that described the study and provided a list of the department's journals ranked by subscription price per use. In the reports, it was explained that department recommendations for cancellations were welcome but not required. One fourth of the department heads responded, all with at least a few recommendations for cancellations. One department head mildly doubted the validity of the use study method (implying that students do their own reshelving), but still offered some titles for cancellation. A few department heads have indicated that they will use the data in a comprehensive review, and some have noted its value for accreditation self-assessments.

If continued subscription price inflation and restricted library materials budgets force a future cancellation project, faculty will have been given prior information about the cost and use of journals in their areas. The study's credibility and acceptance among faculty may have been improved by the absence of any immediate cancellation project. Sending reports that invited, but did not require, recommendations for cancellation avoided the hostile, negative reaction by faculty that others have reported (Millson-Martula 1988). Direct comparisons among departments were not distributed but are available to any faculty member on their request.

The use study reports sent to department heads represent a step in the ongoing journal collection development process. Based on the findings, cancellation of titles with the highest prices per use in each department, replacement of low-use titles with new titles, and reallocation of funds among departments should be considered. Other initiatives, such as working with faculty members to increase student use of journals, might also be in order. If it becomes necessary to calculate true cost-per-use—including binding, shelf space, and reshelving costs—the existing price and use data will make the task relatively easy. Future comparisons of print use before and after the availability in the library of full-text electronic journals should be informative. The library had no subscriptions to electronic journals in 1996, so this study makes a convenient pre-electronic baseline measurement of journal use.

**ACCREDITATION**

Individual academic departments seeking accreditation typically must meet library resource standards. These standards must be considered in journal collection development and can be an especially important concern for smaller departments. Continued renewal of accreditation for the college as a whole is a major driving
force in college-wide planning. The College of Saint Rose, motivated by the standards of the accreditation organization, is now placing great emphasis on assessment. The Middle States Association Commission on Higher Education, the accreditation agency for the College of Saint Rose, emphasizes assessment of learning outcomes and promotes resource-based learning. Executive Director Simmons (1992, 21) asks, “Do the grandiose statements in self-studies, periodic review reports, evaluation team reports, and other documents... really mean that faculty and students are making maximum use of library and other information resources?” This use study provides a perspective on the learning process that should help the college's accreditation process in general and address the agency's interest in resource-based learning in particular.

**CONCLUSIONS**

The data collection and analysis described here promises to be a valuable tool for improving the cost-effectiveness of the journal collection. The analysis elucidates each journal's price per use and each department's subscription expenditure per enrollment, enrollment per subscription, and rate of journal use per enrollment. Whether the value of this information will be realized depends on the collective wisdom and mutual cooperation of librarians and teaching faculty. The advent of full-text electronic journals will make serials collection development more complex because librarians will not only have to decide what can be afforded out of the growing number of increasingly expensive journals, but they will also have to choose the medium through which journals will be provided. Quantitative title- and department-level analysis based on locally collected data provide anchor points for this decision-making process. Librarians could replicate this low cost study method to improve the foundations of their own journal collection development processes.

**WORKS CITED**


Sapp, Gregg and George Suttle. 1994. A
The next level of Approval Plan management now includes breakthrough "why" technology!

Collection Manager provides immediate, web-based access to your approval profile and matching titles. Now you can easily determine why a specific approval action was taken for each title.

A new concept in approval management!

For more information contact:
Matt Nauman
1-800-547-6426
mktg@bnamf.blackwell.com


Errors and Obsolete Elements in Assigned Library of Congress Subject Headings: Implications for Subject Cataloging and Subject Authority Control

Lois Mai Chan and Diane Vizine-Goetz

An analysis of a sample of 9,442 headings assigned by the Library of Congress (LC) to bibliographic records disclosed two types of invalid headings: those that were erroneous and those that were obsolete. Each type revealed recurring patterns. Errors and obsolete elements occurring in assigned headings involve Machine Readable Cataloging (MARC) coding, terminology in main headings and subdivisions, application of subdivisions, and in mechanical elements such as punctuation and capitalization. Different headings (e.g., personal name, corporate name, topical, etc.) display different patterns as well as predominance of errors and obsolescence. Although the overall error rate is low, an awareness and understanding of patterns of errors and obsolescence in subject heading strings should contribute to improvement in subject heading assignment and subject authority control.

NATURE, SCOPE, AND HYPOTHESES

Two factors contribute to effectiveness in subject retrieval: close match between indexing terms and document content; and predictability and consistency of access points. In an earlier investigation, Svenonius and McGarry (1993) studied the question of appropriateness of subject heading assignment and their findings have been reported. The other important factor is the consistency and accuracy in the forms of the headings. In authority control, a major goal is to achieve consistency and accuracy by adhering to standards and guidelines. In the case of subject authority control, these include Library of Congress Subject Headings (LCSH), Subject Cataloging Manual: Subject Headings, USMARC Formats, and Anglo-American Cataloguing Rules, second edition, 1988 revision (AACR2R).

Because of the use of free-floating subdivisions and headings taken from name authority records, catalogers seldom derive complete subject headings from LCSH. Only a small percentage of subject headings assigned to bibliographic re-
cords come directly from LCSH. Previous studies on exact matches include those reported by Ludy (1985), Frost and Dede (1988), and Drabenstott and Vizine-Goetz (1994). Because of the need to synthesize heading strings in subject cataloging, errors do occur. Furthermore, constant changes in subject headings and heading assignment policies result in many headings becoming obsolete. Important operations in subject authority control include detecting and correcting errors and maintaining currency.

In an earlier study, Chan and Vizine-Goetz (1997) explored the feasibility of automatically generating a subject validation file with complete strings but few errors and obsolete elements from LC-assigned subject headings appearing in bibliographic records. They included an analysis of the distribution and density of subject headings by frequency of use and by type of headings as well as a calculation of the rate of errors and obsolete elements in subject headings that have been used at least twice each in the LC MARC (Machine Readable Cataloging) database.

In the current study, we analyzed the nature and patterns of incorrect and obsolete elements among subject headings assigned by LC. Although errors among these headings occur at a relatively low rate, an awareness of the nature of errors can help catalogers avoid or minimize similar errors in the future. An understanding of the recurring patterns of errors and obsolete elements can also lead to improved mechanisms for identifying and correcting errors and updating obsolete headings automatically.

**Method**

Details of the experimental methodology used in this study have been reported earlier (Chan and Vizine-Goetz 1996). They are briefly summarized below.

**Study Sample**

The Subject Heading Corrections database, developed to correct subject heading errors in the OCLC Online Computer Library Center, Inc. Online Union Catalog (OLUC), was the source of headings for this project. The database contains an entry for each unique subject heading used in bibliographic records loaded into the OCLC system through November 1992 (more than 4 million headings). A 1% sample, consisting of 20,743 headings among those assigned by LC, was extracted from the database for further processing and examination.

An early operation on the study sample was to rank headings by frequency of use. This ranking, reported earlier (Chan and Vizine-Goetz 1997), showed that 5,970 headings had each been used twice or more, and 14,503 had each been used only once. Because of the large size of the latter group (the frequency-1 group), it was decided to analyze a subset that would represent a cross section of this group; this was compiled by taking all the headings in the frequency-1 group beginning with the letters A, F, M, T, and Z, which resulted in a frequency-1 study sample of 3,472 headings. This sampling method was employed because the total 1% sample was originally taken randomly from the entire universe of assigned subject headings; and it was decided to draw the sub-sample of headings with a frequency of 1 from a cross section of the original 1% sample by taking all headings beginning with specific letters that were spread across the alphabet from A to Z. Thus, the study sample used as the basis for analyzing errors and obsolete elements in this study consisted of 5,970 headings with a frequency of use of 2 or greater, and 3,472 headings with a frequency of 1, resulting in a total sample of 9,442 headings.

**Data Analysis**

**Evaluation of Headings**

The headings were categorized according to the following types: personal name headings (MARC 600), corporate name headings (MARC 610), headings for meetings (MARC 611), uniform titles (MARC 630), topical and form headings (MARC 650), and geographic name headings (MARC 651). Table 1 shows a distribution of the sample headings by frequency of use and by type of heading.
TABLE 1

DISTRIBUTION OF SAMPLE HEADINGS BY TAG

<table>
<thead>
<tr>
<th>Frequency</th>
<th>MARC 600</th>
<th>MARC 610</th>
<th>MARC 611</th>
<th>MARC 630</th>
<th>MARC 650</th>
<th>MARC 651</th>
<th>TOTAL</th>
<th>Cum. Ct.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;500</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>401-500</td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
<td>4</td>
<td>10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>301-400</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>201-300</td>
<td>8</td>
<td>2</td>
<td></td>
<td></td>
<td>28</td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>101-200</td>
<td>20</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51-100</td>
<td>59</td>
<td>14</td>
<td></td>
<td></td>
<td>74</td>
<td>122</td>
<td></td>
<td></td>
</tr>
<tr>
<td>46-50</td>
<td>15</td>
<td>2</td>
<td></td>
<td></td>
<td>17</td>
<td>139</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41-45</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>22</td>
<td>161</td>
<td></td>
</tr>
<tr>
<td>36-40</td>
<td>23</td>
<td>5</td>
<td></td>
<td></td>
<td>28</td>
<td>189</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31-35</td>
<td>27</td>
<td>7</td>
<td></td>
<td></td>
<td>35</td>
<td>224</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26-30</td>
<td>38</td>
<td>7</td>
<td></td>
<td></td>
<td>47</td>
<td>271</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21-25</td>
<td>62</td>
<td>12</td>
<td></td>
<td></td>
<td>82</td>
<td>353</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-20</td>
<td>89</td>
<td>22</td>
<td></td>
<td></td>
<td>115</td>
<td>468</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11-15</td>
<td>184</td>
<td>43</td>
<td></td>
<td></td>
<td>246</td>
<td>714</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-10</td>
<td>563</td>
<td>169</td>
<td></td>
<td></td>
<td>792</td>
<td>1,506</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3-5</td>
<td>1,311</td>
<td>345</td>
<td></td>
<td></td>
<td>1,876</td>
<td>3,382</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1,809</td>
<td>414</td>
<td></td>
<td></td>
<td>2,588</td>
<td>4,970</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1*</td>
<td>2,424</td>
<td>463</td>
<td></td>
<td></td>
<td>3,472</td>
<td>9,442</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>838</td>
<td>363</td>
<td>5</td>
<td>62</td>
<td>6,657</td>
<td>1,517</td>
<td>9,442</td>
<td></td>
</tr>
</tbody>
</table>

*Based on 23.93% of sample

Each of the 9,442 headings in the study sample was checked for correct MARC tagging, terminology, syntax, spelling, punctuation, capitalization, etc. according to the standards and/or authority files listed below:

- USMARC Formats for authority and for bibliographic data
- Library of Congress Subject Headings (LCSH) (both the print version and the LCXR (SUBJECTS) file in LOCIS)
- Authority records in the NAMES (name authority) file in LOCIS (Library of Congress Information System)
- Free-Floating Subdivisions: An Alphabetical Index
- Subject Cataloging Manual: Subject Headings
- Revised Library of Congress Subject Headings
- AACR2R

Figures 1–5 illustrate the procedures of analyzing headings for errors and obsolete elements. In figure 1, the heading is obsolete because it carries the defunct subdivision *Addresses, essays, lectures*. In figure 2, the heading is incorrect. The subdivision should be *Rules and practice*. In figures 3 and 4, the headings are valid. In figure 5, the use of the subdivision *History* is incorrect; it may not follow the subdivision *Foreign economic relations*.

Types of Errors and Obsolescence

After verification, headings that were found to be invalid were categorized as either incorrect or obsolete. Incorrect headings were headings that contain one or more errors. Types of errors included those in coding (MARC tags or subfield codes), in main headings (errors in form, entry element, terminology, or syntax; or, in the case of free-floating phrases, im-
properly synthesized main headings), in subdivisions (including incorrect forms of subdivision and improper combinations of either Main Heading—Subdivision or Subdivision—Subdivision), and in mechanical elements such as punctuation, capitalization, spacing, etc. Obsolete headings were headings that were not
valid at the time the sample was generated but matched earlier name headings, or were valid according to previous editions (15th or earlier) of LCSH or previous editions (4th or earlier) of Free-Floating Subdivisions. Many invalid headings, particularly those with lower frequencies of use, contain personal, corporate, or geographic names, meeting names, and uniform titles that do not have corresponding name authority records in either the NAMES file or LCSH. These constitute a special type of obsolete heading, because current policy requires that each name used in or as a subject heading (except those formed by free-floating phrases) be established in the authority files. In fact, some of these unverifiable names may have corresponding authority records in the old card file kept at LC. However, to be used as authorized names in cataloging new items, it is LC policy that these names be re-evaluated and re-established in the MARC authority files. Therefore, while the headings may well be valid or correct according to AACR2R, the lack of current authority records means they cannot be considered authorized or used as models for validating assigned headings or for formulating new headings until established in the authority files. As a result, in this study the unverified name headings are considered invalid for all practical purposes.

Because AACR2R places primary emphasis on the way the names appear in the works as the basis for determining the forms of name headings, it would be impossible to determine with certainty the correct forms of the headings without having the items in hand. Therefore, no attempt was made in this study to evaluate the validity of these name headings in the same way the topical and nonjurisdictional headings were verified. Nevertheless, it was felt that because of the special nature of their invalidity these headings were worth reporting and therefore have been placed in a separate category in this study. The statistics regarding these headings are presented in the tables for obsolete headings. The reason for placing these headings with obsolete headings is that earlier LCSH editions included many more categories of unprinted headings (i.e., headings that were allowed to be used in cataloging records without being established in the list). Such headings included not only personal and corporate names but also names of chemicals, minerals, geographic features, etc. This practice is now obsolete; except for a small number of free-floating phrase headings and musical headings formed according to established citation formulae, all valid topical and name headings now have corresponding records in the name or subject authority file.

Types of obsolete elements include obsolete coding (MARC tags or subfield codes), obsolete main headings, obsolete subdivisions (including subdivisions in obsolete forms and obsolete Main Heading—Subdivision or —Subdivision—Subdivision combinations), obsolete punctuation, capitalization, etc., and unverifiable names.

A heading containing more than one type of invalid element was placed in the first category according to the order listed.
above: incorrect, obsolete. Thus, a heading that is both incorrect and obsolete was placed in the category of incorrect headings; a heading containing obsolete elements in both the main heading and a subdivision was placed in the category of obsolete main headings. Headings containing more than one error or obsolete element were counted once each.

### RESULTS

Statistical details of the results have been reported earlier (Chan and Vizine-Goetz 1996). They are presented briefly here in order to provide a context for the analysis and discussion of invalid headings presented in this paper.

### DISTRIBUTION OF INVALID HEADINGS BY TAG

Data showing the distribution of invalid headings by tag, i.e., type of heading, are presented in table 2. The combined rate of incorrect and obsolete headings, including all types of headings in all frequencies of use, was 9.16% (865 invalid headings out of a sample of 9,442 headings). The percentage of incorrect headings by type of heading, in descending order, is: MARC 611 (20.00%), MARC 630 (12.90%), MARC 610 (10.74%), MARC 600 (3.94%), MARC 651 (3.76%), and MARC 650 (2.52%). The rate of obsolete headings, including all types of headings in all frequencies of use, is 5.92% (559 obsolete headings out of a sample of 9,442 headings). The percentage of obsolete headings by type of heading, in descending order, is: MARC 611 (40.00%), MARC 630 (20.97%), MARC 610 (14.33%), MARC 651 (9.36%), MARC 600 (8.71%), and MARC 650 (4.16%). The high percentage of invalid headings among headings for meetings (MARC 611) might be due to the small size of the sample (a total of 5).

### PATTERNS OF INCORRECT HEADINGS

Table 3 shows the distribution of the 306 incorrect headings by type of heading and type of error. Overall, the largest number of errors were found in the main heading and in subdivisions (with 109 each), followed by errors in coding (73), and errors in punctuation, capitalization, etc. (15).

The patterns of occurrence of different types of errors in terms of various types of headings are summarized below. Within each type of heading, types of errors are listed in descending order of occurrence:

- 33 incorrect personal name headings

---

**TABLE 2**

**DISTRIBUTION OF INVALID HEADINGS BY HEADING TYPE**

<table>
<thead>
<tr>
<th>Tag</th>
<th>No. of Sample Headings</th>
<th>Incorrect Headings</th>
<th>Incorrect Headings - %</th>
<th>Obsolete Headings</th>
<th>Obsolete Headings - %</th>
<th>Total No. of Invalid Headings</th>
<th>Total Invalid Headings - %</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>838</td>
<td>33</td>
<td>3.94</td>
<td>73</td>
<td>8.71</td>
<td>106</td>
<td>12.65</td>
</tr>
<tr>
<td>610</td>
<td>363</td>
<td>39</td>
<td>10.74</td>
<td>52</td>
<td>14.33</td>
<td>91</td>
<td>25.07</td>
</tr>
<tr>
<td>611</td>
<td>5</td>
<td>1</td>
<td>20.00</td>
<td>2</td>
<td>40.00</td>
<td>3</td>
<td>60.00</td>
</tr>
<tr>
<td>630</td>
<td>62</td>
<td>8</td>
<td>12.90</td>
<td>13</td>
<td>20.97</td>
<td>21</td>
<td>33.87</td>
</tr>
<tr>
<td>650</td>
<td>6,657</td>
<td>168</td>
<td>2.52</td>
<td>277</td>
<td>4.16</td>
<td>445</td>
<td>6.68</td>
</tr>
<tr>
<td>651</td>
<td>1,517</td>
<td>57</td>
<td>3.76</td>
<td>142</td>
<td>9.36</td>
<td>199</td>
<td>13.12</td>
</tr>
<tr>
<td>TOTAL</td>
<td>9,442</td>
<td>306</td>
<td>3.24</td>
<td>559</td>
<td>5.92</td>
<td>865</td>
<td>9.16</td>
</tr>
</tbody>
</table>
TABLE 3
INCORRECT HEADINGS BY
TYPE OF HEADING AND TYPE OF ERROR

<table>
<thead>
<tr>
<th>Tag</th>
<th>Coding</th>
<th>Main Heading</th>
<th>Topical Form Subdivision - Application</th>
<th>Topical Form Subdivision - Terminology</th>
<th>Chronological Subdivision - Application</th>
<th>Chronological Subdivision - Terminology</th>
<th>Geographic Subdivision - Application</th>
<th>Geographic Subdivision - Terminology</th>
<th>Subdivisions - Total</th>
<th>Punctuation, Capitalization, etc.</th>
<th>Total No. of Incorrect Headings</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td>4</td>
<td>23</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>610</td>
<td>14</td>
<td>14</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>3</td>
<td>39</td>
</tr>
<tr>
<td>611</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>630</td>
<td>43</td>
<td>45</td>
<td>26</td>
<td>6</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>22</td>
<td>17</td>
<td>76</td>
</tr>
<tr>
<td>650</td>
<td>8</td>
<td>23</td>
<td>13</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td></td>
<td>23</td>
<td>3</td>
<td>57</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>73</td>
<td>109</td>
<td>44</td>
<td>12</td>
<td>6</td>
<td>26</td>
<td>17</td>
<td>109</td>
<td>15</td>
<td>306</td>
</tr>
</tbody>
</table>

with errors in main headings (23), in punctuation, capitalization, etc. (5), in coding (4), and in subdivision (1)
- 39 corporate name headings, with errors in main headings (14), in coding (14), in subdivisions (8), and in punctuation, capitalization, etc. (3)
- 1 incorrect heading for meetings, with an error in the main heading
- 8 incorrect uniform title headings, with errors in coding (4), in main headings (3) and in subdivision (1)
- 168 incorrect topical headings, with errors in subdivisions (76), in main headings (45), in coding (43), and in punctuation, capitalization, etc. (4)
- 57 incorrect geographic name headings, with errors in main headings (23), in subdivisions (23), in coding (8), and in punctuation, capitalization, etc. (3)

**PATTERNS OF OBSOLETE HEADINGS**

Table 4 shows the distribution of the 559 obsolete headings by category of heading and type of obsolete element. Overall, the largest number of obsolete elements occur in subdivisions (289), followed by unverified names (135), obsolete elements in the main heading (117), obsolete punctuation, capitalization, etc. (17), and obsolete coding (1).

The patterns of occurrence of different types of obsolete elements in terms of various types of headings are summarized below. Within each type of heading, types of obsolete elements are listed in descending order of occurrence:

- 73 obsolete personal name headings, with unverified names (44), obsolete elements in the main heading (14), obsolete elements in subdivisions (13), and obsolete punctuation, capitalization, etc. (2)
- 52 obsolete corporate name headings, with unverified names (30), obsolete elements in subdivisions (11), obsolete elements in main headings (9), obsolete punctuation, capitalization, etc. (1), and obsolete coding (1)
- 2 obsolete headings for meetings, with obsolete elements in main headings in both cases
- 13 obsolete uniform title headings, with obsolete elements in subdivisions (6), unverified uniform titles (5), and obsolete elements in main headings (2)
- 277 obsolete topical headings, with
TABLE 4

Obsolete Headings by Type of Heading and Type of Obsolete Element

<table>
<thead>
<tr>
<th>Tag</th>
<th>Coding</th>
<th>Main Heading</th>
<th>Topical/form Subdivision - Application</th>
<th>Topical/form Subdivision - Terminology</th>
<th>Chronological Subdivision - Application</th>
<th>Chronological Subdivision - Terminology</th>
<th>Geographic Subdivision - Application</th>
<th>Geographic Subdivision - Terminology</th>
<th>Subdivisions - Total</th>
<th>Punctuation, Capitalization, etc.</th>
<th>Unverified Names - Total</th>
<th>Total No. of Obsolete Headings</th>
</tr>
</thead>
<tbody>
<tr>
<td>600</td>
<td></td>
<td>14</td>
<td>12</td>
<td>1</td>
<td>13</td>
<td>2</td>
<td>44</td>
<td>73</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>610</td>
<td>1</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>1</td>
<td>30</td>
<td>52</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>611</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>630</td>
<td></td>
<td>2</td>
<td>6</td>
<td></td>
<td>6</td>
<td>5</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>650</td>
<td>41</td>
<td>33</td>
<td>12</td>
<td>2</td>
<td>41</td>
<td>127</td>
<td>215</td>
<td>8</td>
<td>13</td>
<td>277</td>
<td></td>
<td></td>
</tr>
<tr>
<td>651</td>
<td>49</td>
<td>31</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>44</td>
<td>6</td>
<td>43</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>1</td>
<td>117</td>
<td>92</td>
<td>16</td>
<td>1</td>
<td>6</td>
<td>43</td>
<td>131</td>
<td>289</td>
<td>17</td>
<td>135</td>
<td>559</td>
</tr>
</tbody>
</table>

Obsolete elements in subdivisions (215), obsolete elements in main headings (41), unverified names (13), and obsolete punctuation, capitalization, etc. (8)

- 142 obsolete geographic name headings, with obsolete elements in main headings (49), obsolete elements in subdivisions (44), unverified names (43), and obsolete punctuation, capitalization, etc. (6).

Patterns of Invalid Subdivisions

Tables 5 and 6 display data regarding invalid subdivisions only. In table 5, columns A–E present data regarding topical/form subdivisions (subfield x), columns F–J regarding chronological subdivisions (subfield y), and columns K–O regarding geographic subdivisions (subfield z). Within each type of subdivision, invalid elements are divided into incorrect or obsolete subdivisions, and each is further divided into application and terminology or syntax. “Application” refers to incorrect or improper combination of main headings and subdivisions, and “terminology or syntax” refers to incorrect or obsolete words and phrases or grammatical structure.

Taken together, 164 of the invalid headings involve topical/form subdivisions (subfield x). There appear to be few problems with chronological subdivisions (subfield y); only 17 invalid headings involve period subdivisions. Two hundred and seventeen, or more than half, of the 398 invalid headings pertain to geographic subdivisions (subfield z).

Among personal name headings and uniform title headings, all invalid subdivisions involve topical/form subdivisions. A possible explanation is that these types of headings are rarely subdivided chronologically or geographically. No invalid subdivision was found among headings for meetings. For corporate name headings, invalid elements occur in topical/form subdivisions (subfield x) (16 of 19, or 84%) and geographic subdivisions (subfield z) (3 of 19, or 16%). For topical headings, invalid subdivisions involve all three types of subdivisions, with the majority (207 of 291, or 71%) being geographic subdivisions (subfield z), followed by topical/form subdivisions (subfield x) (77 of 291, or 27%) and chronological subdivisions (subfield y) (7 of 291, or 2%). For geographic headings, the majority of invalid subdivisions involve topical/form subdivi-
TABLE 5

INVALID SUBDIVISIONS BY TYPE OF HEADING

<table>
<thead>
<tr>
<th>TOPICAL/FORM ($x$)</th>
<th>CHRONOLOGICAL ($y$)</th>
<th>GEOGRAPHIC ($z$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect</td>
<td>Obsolete</td>
<td>Incorrect</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Tag</td>
<td>Application</td>
<td>Terminology or Syntax</td>
</tr>
<tr>
<td>600</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>610</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>611</td>
<td></td>
<td></td>
</tr>
<tr>
<td>630</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>650</td>
<td>26</td>
<td>6</td>
</tr>
<tr>
<td>651</td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>44</td>
<td>12</td>
</tr>
</tbody>
</table>

sions (subfield x) (50 of 67, or 75%), followed by chronological subdivisions (subfield y) (10 of 67, or 15%), and geographic subdivisions (subfield z) (7 of 67, or 10%).

APPLICATION vs. TERMINOLOGY

Table 6 shows a summary of errors and obsolete elements in terms of application and form (terminology or syntax) of subdivisions. In all, 212 (53%) of the 398 invalid subdivisions involve application, and 186 (47%) pertain to terminology or syntax.

Among the 164 invalid topical/form subdivisions, 136 (83%), an overwhelming majority, have to do with application, and 28 (17%) pertain to terminology or syntax. Forty-four of the 136 invalid applications represent improper combination of Main Heading—Subdivision or —Subdivision—Subdivision, and only 1 reflects obsolete practice. Among the 10 invalid terms, 4 are errors and 6 reflect obsolete dates or terms.

Among the 217 invalid geographic subdivisions, 69 (32%) involve invalid application, and 148 (68%) contain invalid forms of geographic names. Twenty-six of the 69 invalid applications show incorrect combination of Main Heading—Subdivision or —Subdivision—Subdivision, and 43 reflect obsolete geographic subdivision practice. Among the 148 invalid geographic names, 17 are errors and 131 reflect obsolete geographic names.

ANALYSES OF INVALID HEADINGS

In the following section, we present and analyze the nature of errors and obsolete elements within each category of headings:

PERSONAL NAME HEADINGS

INCORRECT HEADINGS

As shown in table 3, a total of 33 incorrect
personal name headings were identified. Incidentally, all of these show a frequency of use of 1. Types of errors, in descending order by the number of occurrences, are:

1. **Errors in main headings** (23 occurrences). Kinds of errors include incorrect or missing dates, incorrect form of headings, incorrect entry elements, and incorrect uniform titles (see figure 6).

2. **Errors in punctuation, capitalization, etc.** (5 occurrences). Mechanical errors (i.e., incorrect punctuation, capitalization, etc.) among personal name headings include missing punctuation marks, incorrect punctuation, and incorrect capitalization (see figure 7).

3. **Errors in coding** (4 occurrences). Errors in coding appear in the form of missing codes, extraneous codes, or incorrect codes (see figure 8).

4. **Error in the subdivision** (1 occurrence). Only 1 error in the subdivision was identified; it involves subfield x (see figure 9).

### Obsolete Headings

As shown in table 4, a total of 73 obsolete personal name headings were identified. Types of obsolete elements, in descending order by the number of occurrences, are:

1. **Unverified names in main headings** (44 occurrences). The largest number (44 of 73, or over 60%) of obsolete personal name headings contain an unverified personal name or uniform title in the main heading. Thirty-five of the 44, or close to 80%, show a frequency of use of 1. The majority of the 44 contain unverified personal names; the rest contain valid personal name headings with unverified uniform titles (see figure 10).

2. **Obsolescent main headings** (14 occurrences). Fourteen personal name headings contain obsolete forms of names. They differ from the currently established headings in spelling, qualifier, or dates. Types of obsolete elements in the main heading include obsolete dates that have been updated or revised in current headings, missing or obsolete qualifiers, and obsolete form or spelling of personal names (see figure 11).

3. **Obsolete subdivisions** (13 occurrences). Thirteen personal name headings contain obsolete subdivisions, all involving topical/form subdivisions. Among these, 11 contain the defunct form subdivision Addresses, essays, lectures. Of the 2 remaining obsolete headings, 1 contains a subdivision which is no longer authorized and the other shows an obsolete form of subdivision (see figure 12).

4. **Obsolete punctuation, capitalization, etc.** (2 occurrences) (see figure 13).

### Corporate Name Headings

**Incorrect Headings**

As shown in table 3, a total of 39 incorrect
corporate name headings were identified. Types of errors in descending order by the number of occurrences, are:

1. **Errors in coding** (14 occurrences). Errors in coding constitute one of the two largest groups among incorrect corporate name headings. These errors appear in the form of incorrect or missing MARC codes. The majority (12) contain incorrect field tags (see figure 14). It appears that a fairly common mistake in tagging occurs among headings for denominations such as Lutheran Church, a topical heading (650) often incorrectly tagged as a corporate name heading (610). The remaining 2 headings show incorrect or missing subfield codes (see figure 14).

2. **Errors in main headings** (14 occurrences). The other largest group of incorrect corporate name headings, also a total of 14, contains errors in the main heading. Kinds of errors include incorrect spelling, incorrect or missing qualifiers, incorrect form or wording of headings, incorrect language, and incorrect entry elements (see figure 15).

3. **Errors in subdivisions** (8 occurrences). Types of errors in subdivisions are improper use or incorrect combinations of topical/form subdivisions, incorrect wording or spelling of subdivisions, and geographic subdivisions not authorized under par-
600 Forster, Albert, $d 1902-
600 Mazzoni, Marcel H
600 Mann, Heinrich, $d 1871-1950 $t Eine Freundschaft
   (unverified uniform title)

Figure 10. Unverified Names in Main Headings for Personal Name Headings.

600 Altmann, Adolf, $d 1879-
   (current heading: 600 Altmann, Adolf, $d 1879-1944)
600 Muḥammad, $d d. 632 $x Cult
   (current heading: 600 Muḥammad, $c Prophet, $d d. 632 $x Cult)
600 Temple, Frederick, $c Abp. of Canterbury, $d 1821-1902
   (current heading: 600 Temple, Frederick, $d 1821-1902)
600 Zegeer, David A. $q (David Abraham), $d 1922-
   (current form: 600 Zegeer, David Abraham, $d 1922-)

Figure 11. Obsolete Main Headings for Personal Name Headings.

600 Aristophanes $x Influence $x Jonson
   (further subdivision under $x Influence by person no longer authorized)
600 Acquaviva d’Aragona, Giovan Francesco, $d 1569. $x Portraits, caricatures, etc.
   (current subdivision: $x Portraits)

Figure 12. Obsolete Subdivisions for Personal Name Headings.

600 Tennyson, Alfred Tennyson, $c baron, $d 1809-1892
   (current heading: $c Baron capitalized according to AACR2R)
600 Millin, Sarah Gertrude (Liebson), $d 1889-1968
   (current heading: 600 Millin, Sarah Gertrude Liebson, $d 1889-1968)

Figure 13. Obsolete Punctuation, Capitalization, etc. for Personal Name Headings.

4. Errors in punctuation, capitalization, etc. (3 occurrences). Errors occur in the form of missing or extraneous punctuation marks (see figure 17).

The unverified elements occur in main headings, subheadings, or uniform titles in main headings (see figure 18).

2. Obsolete subdivisions (11 occurrences). Types of obsolete subdivisions include defunct form subdivisions (e.g., Addresses, essays, lectures; Collected works; or Yearbooks) subdivisions representing aerial maps, and obsolete form of geographic subdivisions (see figure 19).

3. Obsolete main headings (9 occurrences). Types of obsolete elements in main headings include missing
qualifiers, obsolete form of qualifiers, obsolete uniform titles, obsolete entry elements, and obsolete spelling (see figure 20).

4. **Obsolete coding** (1 occurrence). One heading contains an obsolete subfield code, because the subheading under the corporate main heading has been changed to a geographic subdivision (see figure 21).

5. **Obsolete punctuation, capitalization, etc.** (1 occurrence). One heading contains obsolete punctuation for the qualifier (see figure 22).
HEADINGS FOR MEETINGS
The sample contains a total of 5 headings, all showing a frequency of use of 1. Three of the headings are invalid, all involving the main heading.

INCORRECT HEADINGS
As shown in table 3, only 1 incorrect heading for meetings was identified; it contains an extraneous date (see figure 23).

OBsolete HEADINGS
As shown in table 4, only 2 obsolete headings for meetings were identified; they contain obsolete forms of qualifier, both lacking the additional geographic qualifier of a larger place required by AACR2R (see figure 24).

UNIFORM TITLES

INCORRECT HEADINGS
As shown in table 3, a total of 8 incorrect uniform title headings were identified. Types of errors, in descending order by the number of occurrences, are:

1. Errors in coding (4 occurrences). Four headings contain errors in coding, which appear in the form of incorrect codes or missing codes (see figure 25).

2. Errors in main headings (3 occurrences). Errors in main headings occur in entry elements or qualifiers (see figure 26).

3. Error in the subdivision (1 occurrence). The error involves an incorrect form of a topical/form subdivision (see figure 27).

OBsolete HEADINGS
As shown in table 4, a total of 13 obsolete uniform title headings were identified. Types of obsolete elements, in descending order by the number of occurrences, are:

1. Obsolete subdivisions (6 occurrences). All except one of the obsolete subdivisions involve the use of the defunct form subdivision: Ad-
610 Thomas Road Baptist Church
(current heading: 610 Thomas Road Baptist Church (Estill County, Ky.))

610 Manila. $b Health Dept. $x History
(current main heading: 610 Manila (Philippines))

610 Cincinnati Bengals (Football club)
(current qualifier: (Football team))

610 Freiburg i. B. $b Universität. $b Medizinische Fakultät
(current heading: 610 Universität Freiburg im Breisgau. $b Medizinische Fakultät)

The remaining obsolete main heading contains an old corporate name heading which, according to a note in the name authority record, has not been updated:
610 Auctiones A.G.

**Figure 20.** Obsolete Main Headings for Corporate Name Headings.

610 Freemasons. $b Argentina
(current heading: 610 Freemasons $z Argentina)

**Figure 21.** Obsolete Coding for Corporate Name Headings.

610 Texas. $b Constitutional Convention, 1974
(current heading: 610 Texas. $b Constitutional Convention (1974))

**Figure 22.** Obsolete Punctuation, Capitalization, etc. for Corporate Name Headings.

611 American Chess Congress (1857- ) $n (6th : $d 1889 : $c New York, N.Y.)
(correct heading: 611 American Chess Congress $n (6th : $d 1889 : $c New York, N.Y.)

**Figure 23.** Incorrect Headings for Meetings.

611 Asian International Trade Fair $n (3rd : $d 1972 : $c Delhi)
(current qualifier: $c Delhi, India)

**Figure 24.** Obsolete Headings for Meetings.

630 Mothers’ pensions $z Australia
(correct field tag: 650)

630 Puranas. Bhavisyapurāṇa
(subfield code $p missing before subheading Bhavisyapurāṇa)

**Figure 25.** Errors in Coding for Uniform Title Headings.

dresses, essays, lectures. The remaining heading represents an obsolete application of a subdivision (see figure 28).

2. **Unverified uniform titles** (5 occurrences). All 5 headings containing unverified uniform titles that do not have corresponding authority records show a frequency of use of 1 (see figure 29).

3. **Obsolete main headings** (2 occurrences). These differ from the currently established headings in spelling or in the qualifier (see figure 30).
As shown in table 3, a total of 168 incorrect topical headings were identified. Types of errors, in descending order by the number of occurrences, are:

1. **Errors in subdivisions** (76 occurrences).
   a. Geographic subdivision (39 occurrences). Errors in geographic subdivisions occur in application or form of geographic names (see figure 31).
   b. Topical and form subdivision (32 occurrences). Errors in topical and form subdivisions occur in application or terminology (see figure 32).

2. **Errors in main headings** (45 occurrences). Errors in main headings occur as incorrect form, incorrect spelling, or incorrect entry elements (see figure 34).

3. **Errors in coding** (43 occurrences). Errors in coding include incorrect field tags or subfield codes and missing subfield codes (see figure 35).

4. **Errors in punctuation, capitalization, etc.** (4 occurrences). Errors in punctuation appear as incorrect or missing punctuation marks (see figure 36).
As shown in table 4, a total of 277 obsolete topical headings were identified. Types of obsolete elements, in descending order by the number of occurrences, are:

1. **Obsolete subdivisions** (215 occurrences). Types of obsolete subdivisions include obsolete terminology or syntax and obsolete Main Heading—Subdivision or —Subdivision—Subdivision combinations. They involve all types of subdivisions:
   a. Geographic subdivision (168 occurrences). Types of obsolete geographic subdivision include obsolete form of names, obsolete practice (e.g., direct subdivision where current policy requires indirect subdivision), and obsolete citation order (i.e., placement of the geographic subdivision within the string) (see figure 37).
Topical or form subdivision (45 occurrences). Types of obsolete topical or form subdivision include obsolete combinations, obsolete forms of subdivision, and defunct form subdivisions, such as *Addresses, essays, lectures; Collected works;* and *Yearbooks* (see figure 38).

Chronological subdivision (2 occurrences). The two obsolete chronological subdivisions involve obsolete forms of dates and previously open dates that have been closed (see figure 39).

b. Obsolete main headings (41 occurrences). Types of obsolete elements in main headings include terminology, form of main headings, and syntax (see figure 40).

c. Unverified names (13 occurrences). Unverified names include geographic names in subdivisions and fictitious names in main headings (see figure 41).

2. *Obsolete punctuation, capitalization, etc.* (8 occurrences). Obsolete punctuation, capitalization, etc. occur in
the use of parentheses, hyphen, and capital letters (see figure 42).

**Geographic Name Headings**

**Incorrect Headings**

As shown in table 3, a total of 57 incorrect geographic name headings were identified. Types of errors, in descending order by the number of occurrences, are:

1. *Errors in main headings* (23 occurrences). Errors appear in the form of incorrect or missing qualifiers in local place names, incorrect spelling, or incorrect form of headings (see figure 43).
2. *Errors in subdivisions* (23 occurrences).
650 Children $x$ Care and hygiene  
(current heading: 650 Children $x$ Health and hygiene or 650 Child care)

650 Australian aborigines $z$ Australia $z$ Tasmania  
(current main heading: 650 Tasmanian aborigines)

650 Agriculture, Primitive $z$ China  
(current main heading: 650 Traditional farming)

650 Pest control, Integrated  
(current heading: 650 Pests $x$ Integrated control)

650 Creativity in art  
(current main heading: 650 Creation (Literary, artistic, etc.))

650 Recruiting of employees $z$ Pakistan  
(current heading: 650 Employees $x$ Recruiting $z$ Pakistan)

**Figure 40. Obsolete Main Headings for Topical Headings.**

650 Desertification $z$ Sudan $z$ Umm Kaddada Region  
(unverified name in subdivision: $z$ Umm Kaddada)

650 Fishes $z$ Louisiana $z$ Delta National Wildlife Refuge  
(unverified name in subdivision: $z$ Delta National Wildlife Refuge)

650 Mammals, Fossil $z$ Iraq $z$ Palegawra Cave  
(unverified name in subdivision: $z$ Palegawra Cave)

650 Zippy (Cartoon character)  
(unverified fictitious name heading)

**Figure 41. Unverified Names for Topical Headings.**

650 Election law $z$ Germany, West  
(current subdivision: $z$ Germany (West))

650 Folk-songs, Italian $x$ Texts  
(current main heading: 650 Folksongs, Italian)

650 Agriculture $z$ France $z$ Caen region $x$ Maps  
(current subdivisions: $z$ France $z$ Caen Region $x$ Maps)

**Figure 42. Obsolete Punctuation, Capitalization, etc. for Topical Headings.**

1. Topical or form subdivision (16 occurrences). Errors occur in the form of improper or unauthorized combination of subdivisions with main headings or with other subdivisions and in incorrect terminology (see figure 44).
2. Chronological subdivision (5 occurrences). Types of errors include wrong dates and unauthorized use of subdivisions (see figure 45).
3. Geographic subdivision (2 occurrences). Both incorrect geographic subdivisions involve application (see figure 46).
4. Errors in coding (8 occurrences). Errors include incorrect field tags and incorrect subfield codes (see figure 47).
5. Errors in punctuation, etc. (3 occurrences). Errors include incorrect punctuation and missing space (see figure 48).
651 Arrowhead, Lake, Region (Calif.) $x Maps
(correct main heading: 651 Arrowhead, Lake, Region (San Bernardino County, Calif. : Lake))

651 Aschersleben $x Buildings, structures, etc.
(correct main heading: 651 Aschersleben (Germany : Landkreis))

651 Mexico, Valley of
(correct main heading: 651 Mexico, Valley of (Mexico))

651 Winhoek (Namibia) $x Maps
(correct main heading: 651 Windhoek (Namibia))

651 Pacific Ocean Region $x Foreign relations $z Soviet Union
(correct main heading: 651 Pacific Area)

**Figure 43.** Errors in Main Headings for Geographic Name Headings.

651 Asia, Southeastern $x History $x Japanese occupation
(use of $x Japanese occupation not authorized)

651 Europe $x Kings and rulers $x History $y 19th century
(subdivision $x History may not follow $x Kings and rulers)

651 Europe $x Social conditions $x History
(subdivision $x History may not follow $x Social conditions)

651 Toledo (Ohio) $x Pictorial views
(correct subdivision: $x Pictorial works)

**Figure 44.** Errors in Topical or Form Subdivision for Geographic Name Headings.

651 India $x Politics and government $y To 1000
(correct subdivision: $y To 997)

651 Mediterranean Region $x History $y To 146 B.C.
(chronological subdivision $y To 146 B.C. not established)

**Figure 45.** Errors in Chronological Subdivision for Geographic Name Headings.

651 Prague (Czechoslovakia) $x Streets $z Zlatá ulička
(name of street Zlatá ulička not valid as geographic subdivision; also obsolete form of qualifier)

651 America $x Discovery and exploration $z Spain
(incorrect subdivision: $z Spain) (correct subdivision: $x Spanish)

**Figure 46.** Errors in Geographic Subdivision for Geographic Name Headings.

**Obsolete Headings**
As shown in table 4, a total of 142 obsolete geographic name headings were identified. Types of obsolete elements, in descending order by the number of occurrences, are:

1. **Obsolete main headings** (49 occurrences). Obsolete elements occur in the forms of geographic names (approximately half involving the former Soviet republics) and in qualifiers (see figure 49).

2. **Obsolete subdivisions** (44 occurrences).
651 Ferrocarril del Cobre (Cuba) $x Maps
(correct field tag: 610)

651 Metz (France) $x History $x Siege, 1870
(correct subfield code: $y Siege, 1870)

651 Africa, East $x Description and travel $y 1981- $z Guidebooks
(correct subfield code: $x Guidebooks)

**Figure 47.** Errors in Coding for Geographic Name Headings.

651 Manti-La Sal National Forest (Utah and Colo.) $x Guidebooks
(correct main heading: 651 Manti-La Sal National Forest (Utah and Colo.))

651 Meredith, Lake Region (Tex.) $x Maps
(correct main heading: 651 Meredith, Lake, Region (Tex.))

651 Turkey $x Foreign relations $y Mogul Empire
(correct subdivision: $z Mogul Empire)

**Figure 48.** Errors in Punctuation, etc. for Geographic Name Headings.

651 Leningrad Region (R.S.F.S.R.) $x Maps, Tourist
(current main heading: 651 Saint Petersburg Region (Russia))

651 Emilia-Romagna $x Road maps
(current main heading: 651 Emilia-Romagna (Italy))

651 Maui $x Maps
(current main heading: 651 Maui (Hawaii))

651 Santa Cruz, Argentine Republic (Province) $x Maps
(current main heading: 651 Santa Cruz (Argentina: Province))

651 Anacostia, D.C. $x Exhibitions
(current main heading: 651 Anacostia (Washington, D.C.))

**Figure 49.** Obsolete Main Headings for Geographic Name Headings.

a. Topical or form subdivision (34 occurrences). Types of obsolete elements include obsolete Main Heading—Subdivision and —Subdivision—Subdivision combinations, and obsolete terminology or syntax of subdivisions (see figure 50).

b. Chronological subdivision (5 occurrences).Obsolete elements include obsolete chronological subdivisions with open dates, obsolete application, and chronological subdivisions no longer authorized for use under the particular headings (see figure 51).

c. Geographic subdivision (5 occurrences).Obsolete geographic subdivisions include both form of geographic names (all involving the former Soviet Republics) and application (see figure 52).

3. **Unverified geographic names** (43 occurrences). Thirty-five, or over 80%, of the 43 headings containing unverified geographic names show a frequency of use of 1 (see figure 53).

4. **Obsolete punctuation, capitalization, etc.** (6 occurrences).Obsolete elements include pre-AACR2R punctuation for forms of qualifiers and obsolete capitalization (see figure 54).
651 India $x Nonalignment
   (current heading: 650 Nonalignment $z India)

651 Contra Costa County (Calif.) $x Occupations $x Periodicals
   (current heading: 650 Occupations $z Contra Costa County (Calif.) $x Periodicals)

651 North Carolina $x Description and travel $y 1981- $x Views
   (current heading: 651 North Carolina $x Pictorial works)

651 Hong Kong $x Yearbooks
   (defunct subdivision: $x Yearbooks)

651 Torredembarra (Spain) $x Description
   (current subdivision: $x Description and travel)

Figure 50. Obsolete Topical or Form Subdivision for Geographic Name Headings.

651 Sicily (Italy) $x History $y 1870-
   (current subdivision: $y 1870-1945)

651 Germany (West) $x Foreign relations $y 1945-
   (current heading: 651 Germany (West) $x Foreign relations)

The following heading, with a high frequency of use of 258, shows an obsolete open date that has been closed: 651 South Africa $x Politics and government $y 1978-
   (current subdivision: $y 1978-1989)

Figure 51. Obsolete Chronological Subdivision for Geographic Name Headings.

651 Middle East $x Library resources $z North America $x Congresses
   ($x Library resources no longer further subdivided by place)

651 Tamil Nadu (India) $x Relations $z Bengal $x Congresses
   (current subdivision: $z India $z Bengal)

651 Asia $x Study and teaching $z Russian S.F.S.R. $z Moscow
   (current subdivision: $z Russia (Federation) $z Moscow)

Figure 52. Obsolete Geographic Subdivision for Geographic Name Headings.

651 Belleville-sur-Meuse, France $x Maps

651 Lake Manyara National Park (Tanzania) $x Road maps

651 Norton, Eng. (Rural district) $x Guidebooks

651 Mont Blanc Tunnel

Figure 53. Unverified Geographic Names.

651 Malakoff, France $x Maps
   (current form of qualifier: 651 Malakoff (France))

651 Korea $x History $y Japanese invasions, 1592-1598
   (current subdivision: $y Japanese Invasions, 1592-1598)

Figure 54. Obsolete Punctuation, Capitalization, etc. for Geographic Name Headings.
Among the invalid headings, certain types of errors and obsolete elements occur repeatedly. These are summarized and discussed below.

**Errors**

The most frequently occurring errors are found in main headings (35.62%) and in subdivisions (35.62%) (cf. table 3). Errors in MARC coding account for 23.86% of the incorrect headings. Mechanical errors in punctuation, capitalization, etc. are relatively few.

Kinds of errors among different types of headings, in descending order of occurrence, are:

- Personal name headings: main heading, mechanical errors, coding, and subdivision
- Corporate name headings: coding, main heading, subdivision, and mechanical errors
- Headings for meetings: main heading
- Headings for uniform titles: coding, main heading, and subdivision
- Topical headings: subdivision, main heading, coding, and mechanical errors
- Geographic name headings: main heading, subdivision, coding, and mechanical errors

In MARC coding, a common error is the use of the field tag 610 (corporate name heading) to code a topical heading, which should be assigned the code 650. This occurs particularly frequently when a topical heading representing a Christian denomination or religious group, such as Lutheran Church or Mennonites, is assigned the field tag 610 instead of the correct tag 650. On the other hand, religious orders, such as Franciscans, which should be coded 610, are sometimes tagged 650. Errors in subfield coding consist of missing or misapplied codes. One recurring error was found in the combination $z United States $z States, where the correct subfield code for States is subfield x.

Errors in main headings are mostly typographical in nature, such as misspelled words or alternate word forms or, in the case of personal name headings, incorrect numbers in dates.

The most common errors in subdivisions involve the application of topical/form subdivisions and geographic subdivisions. One possible explanation is that most of these subdivisions are free-floating, and the headings were not synthesized properly.

Among topical/form subdivisions (subfield x), a common type of error is the improper use of the subdivision $x History as a further subdivision under certain topical subdivisions. LC policy indicates that a number of subdivisions “that are historical in nature” or “that have traditionally been regarded as being explicitly or implicitly historical” (Library of Congress 1984–, H1647, 3) should not be further subdivided by $x History. These include:

- $x Antiquities
- $x Courts and courtiers
- $x Foreign relations
- $x Kings and rulers
- $x Military policy
- $x Social conditions

Thus, combinations such as $x Courts and courtiers $x History and $x Social conditions $x History are not valid. A complete list of these subdivisions appears in Library of Congress (1984–, H1647, 5).

Relatively few errors were found in chronological subdivisions, possibly because few of them are free-floating. Almost all period subdivisions are enumerated in LCSH. Where errors do occur, they usually involve typographical errors or improper use of a chronological subdivision under a topical or geographic name heading where the subdivision is not authorized or has not been established.

Geographical subdivisions are used most frequently under topical headings. Errors occur when a heading is subdivided by place where the geographic subdivision is not authorized or when a heading is subdivided directly where indirect subdivision is required.

Overall, errors in punctuation, capitalization, etc. are relatively few, and con-
sist mainly of extraneous or missing punctuation marks and incorrect capitalization or recurring spacing. There is no clear pattern of recurring errors.

Obsolescent Elements

Among obsolete headings, the most common obsolete elements are found in subdivisions (51.7%) (cf. table 4). The second largest group of obsolete headings contains unverifiable names (24.15%), particularly personal and geographic names. The third group of obsolete headings contains previous forms of main headings (20.93%). There are relatively few obsolete mechanical elements (3.04%), and only one instance of obsolete MARC coding was found (0.18%).

Kinds of obsolete elements among different types of headings, in descending order of occurrence, are:

- Personal name headings: unverifiable names, main heading, subdivision, and mechanical elements
- Corporate name headings: unverifiable names, subdivision, main heading, coding, and mechanical elements
- Headings for meetings: main heading
- Headings for uniform titles: subdivision, unverified names, and main heading
- Topical headings: subdivision, main heading, unverified names, and mechanical elements
- Geographic name headings: main heading, subdivision, unverified names, and mechanical elements

LCSH is a dynamic system that changes continuously. When a heading is revised, it is the policy of LC and most other libraries to update all headings in the bibliographic records that are affected by the change. It appears that in some cases the required changes have not been made or are in the process of being made. At any particular time, it is to be expected that the database would contain obsolete headings. The sample used in this study represents a snapshot of the LC MARC database at a specific point in time. As a result, some of the obsolete elements might be recurring phenomena, while others might not be typical. The following discussion summarizes some of the more commonly recurring obsolete elements.

In recent years, many inverted topical headings such as Impersonators, Female have been converted to natural word order. The study sample contains a fair number of headings that have not been updated to agree with the current form. A large proportion of obsolete main headings involve the qualifier for name headings, including personal, corporate, and particularly geographic names. In many cases, the different form or addition of the qualifier is due to the changes in the descriptive cataloging rules in AACR2R. For geographic names of local places, the obsolete headings often lack the qualifiers in the form of the larger geographic entities as required by AACR2R and revised subject cataloging policies. This addition of the name of a larger geographic entity also affects corporate name headings and headings for meetings qualified by place.

In the sample used in this study, the obsolete forms of many geographic names used in both main headings and in geographic subdivisions were due to the political changes occurring in the former Soviet Union, the former East Germany and West Germany, and Eastern European countries such as Yugoslavia and the former Czechoslovakia. These changes necessitated revision of the forms of the names. One possible reason for the large number of such headings identified here is the fact that the sample headings were generated shortly after the many changes mentioned above took place, and LC was in the process of revising headings relating to these places.

In the case of personal names, many of the headings lack the death dates that have been added since the headings were first established.

Although form subdivisions such as Addresses, essays, lectures; Collected works; and Yearbooks were declared defunct a few years ago, many headings, particularly those with low frequency of use, still carry these subdivisions. One explanation could be the lack of monitoring in retrospective conversion.

Since the Future of Subdivisions Conference was held in 1991, LC has em-
barked on a rather extensive review of free-floating subdivisions for the purpose of simplification. Many of the free-floating topical subdivisions have been converted to topical main headings, and a large number of topical/form subdivisions have been eliminated, combined, or consolidated with other subdivisions representing similar concepts. For example, the previously authorized subdivisions Portraits, caricatures, etc. and Portraits, etc. have been replaced by Portraits. In an effort to update existing headings, some headings with these obsolete or defunct subdivisions were probably not captured due to the fact that LC’s automated system does not yet have the global change capability.

The most common type of obsolete chronological subdivision occurs in headings carrying an open date that has been closed in current usage. When new historical periods are established under headings, particularly headings relating to history, the previous periods are closed with an ending date, and existing headings with an open date require updating with the addition of the closing date.

In geographic subdivision, a fairly common type of obsolete element is the direct geographic subdivision involving local places, for which current policy requires indirect subdivision. In addition to the changed geographic names mentioned above, another recurring obsolete element involves the use of previously authorized forms of names in indirect subdivision, particularly in the case of the former Yugoslavia, Czechoslovakia, and East and West Germany. For example, while Germany (East) and Germany (West) are valid main headings and geographic subdivisions per se, in indirect subdivision involving local places in either Germany, the current form of the intervening geographic subdivision is Germany (e.g., $z Germany $z Munich not $z Germany (West) $z Munich).

Nearly one-fourth of all obsolete headings contain unverified names. As explained in the section on types of errors and obsolescence, while some of these headings may be valid according to current rules and policies, they cannot be used as authority for validation purposes. Over 80% of these headings show a frequency of use of 1 (Chan and Vizine-Goetz 1996). Many of these probably have corresponding name authority records in the card file at LC, which have not been converted into MARC records. When the names involved are needed for future cataloging, it is reasonable to expect that name authority records will be established and included in the NAMES file.

CONCLUSION

The purpose of this research project was to collect and analyze data regarding assigned subject headings, which could help improve the quality and efficiency in subject authority control. Although errors occur at a relatively low rate, an understanding of the nature of errors and obsolete elements in assigned subject headings and of their patterns of occurrence and preponderance might be helpful in efforts to develop or enhance automatic error correction mechanisms. Errors in mechanics (i.e., punctuation, capitalization, etc.) and in terminology or grammatical forms of main headings as well as enumerated subdivisions lend themselves to automatic correction. Likewise, obsolete elements that are predictable are also amenable to automatic updating. Correction and updating can be effected by matching assigned headings against those in LCSH and the name authority file. One exception is names used in subject headings that do not have corresponding name authority records. These include many personal and corporate names as well as some jurisdictional geographic names. They occur pervasively among headings with low frequencies of use, particularly those with a frequency of 1 or 2.

Currently, correcting errors in free-floating subdivisions both in terminology and in application requires human intervention. The proposed subject validation file based on frequency of use and with complete strings and high rate of accuracy (Chan and Vizine-Goetz 1997) could help to reduce the number of cases of subdivision usage requiring human review. Even
in cases requiring manual validation, data
gathered in this study could serve to alert
subject authority control personnel to fre-
quently occurring errors and obsolete ele-
ments.

The results of this study might also be
useful for those engaged in the training of
subject catalogers. Instructors of subject
cataloging might also find the data help-
ful. Being aware of the nature and pat-
terns of errors is a step toward improving
quality in subject header assignment. In
original cataloging, it is a common prac-
tice for catalogers to examine and use
headings that have been assigned to exist-
ing records for items on similar subjects.
Indiscriminate use of assigned heading
strings might result in perpetuating er-
rors. The data compiled in this study pro-
vide a statistical measurement of re-us-
ability based on the number of postings
for each heading as a gauge of accuracy
and currency among existing headings.

FURTHER RESEARCH

The findings from this study lead us to
suggest the following areas for further re-
search:

1. It would be interesting to determine
whether any correlation exists be-
tween the length of the subject head-
ing string and the probability of error.
The question is whether the complex
syntax of headings with multiple sub-
divisions lend themselves to errors.

2. One finding in this study that war-
rants further investigation is the large
number of headings that were as-
signed only once each. The 1% sam-
ple of 14,503 headings with a fre-
cuency of use of one in the initial
sample database translates into over
1,450,300 headings in the full bibli-
ographic file. Even with the exclusion
of approximately 240,000 invalid
headings based on the 16.45% error
and obsolescence rate (Chan and Viz-
ine-Goetz, 1997), there are still over
1.2 million headings that have been
used only once each. This pheno-
menon poses the questions of what ef-
fects the large number of unique
headings has on browsing and re-
trieval, particularly in terms of recall;
and what its implications are for sub-
ject authority control. In terms of re-
call, it means that using these head-
ings as search terms in retrieval will
result in only one hit each. In brows-
ing, the question is, What problems
does the large number of headings
create in both display and in identify-
ing specific headings? With regard to
authority control, it means that over
one million authority records would
be required to maintain control over
headings that have been used only
once. Since these headings affect
only a small percentage of bibliog-
raphic records, the question is one of
cost-effectiveness. It is recom-
mented that a further investigation
be carried out with focus on headings
with a frequency of use of 1, analyz-
ing their patterns and composition,
i.e., the percentage of newly estab-
lished headings among them, their
lengths, specificity, use of free-floating
subdivisions, and their effect on
display, retrieval, and subject author-
ity control.

WORKS CITED

Anglo-American Cataloging Rules. 1988. 2d
ed., 1988 rev. Prepared under the direc-
tion of the Joint Steering Committee for
Revision of AACR, a committee of: the
American Library Association, the Austra-
lian Committee on Cataloguing, the Brit-
ish Library, the Canadian Committee on
Cataloguing, the Library Association, Li-
brary of Congress, ed. Michael Gorman
and Paul W. Winkler. Chicago: American
Library Association.

Chan, Lois Mai, and Diane Vizine-Goetz.
1996. Feasibility of a computer-generated
subject validation file based on frequency
of occurrence of assigned Library of Con-
gress Subject Headings: Phase II, nature
and patterns of invalid headings. In Annual
review of OCLC research, 1996. Dublin,
Ohio: OCLC.

——. 1997. Feasibility of a computer-gener-
ated subject validation file based on fre-
cuency of occurrence of assigned Library
of Congress Subject Headings: Phase I,
statistical analysis. Report on a research
project sponsored by OCLC, Dublin, Ohio
(submitted January 6, 1997).


Determining Copyright Status for Preservation and Access: Defining Reasonable Effort

Samuel Demas and Jennie L. Brogdon

Alternative procedures were investigated for determining the copyright status of brittle monographs to be scanned as part of the national preservation plan for agricultural sciences literature. Copyright searches were conducted both in Washington in the files of the U.S. Copyright Office and at Cornell University in the printed Catalog of Copyright Entries (CCE). Results were compared to determine the most efficient procedure. Search procedures (averaging 7 minutes per title) in the CCE were 97% in agreement overall with the results obtained from considerably more time consuming (13 minutes per title) searching at the Copyright Office. CCE searches were 100% in agreement concerning instances of renewal of copyright. This finding calls into question the assumption that it is necessary to conduct such searches at considerable cost in the complex files of the Copyright Office. The resulting CCE search procedure is suggested as a standard of reasonable effort for copyright searching, which demonstrates a legally responsible reasonable effort to respect the rights of copyright holders while advancing preservation aims and converting carefully selected print materials to build the digital library.

Librarians hope to reformat large numbers of books in the coming decades to preserve and enhance access to a selected part of the published record. Some portion of the existing printed record in each discipline will be selected for scanning to become part of the emerging digital library, and some portion will be selected for conversion to less flexible, but more stable formats for preservation purposes. Similarly, a portion of the record—both print and digital—will be privileged by selection for digital archiving. By and large, current selection methodologies for this mammoth task are primitive, disjointed, serendipitous, and opportunistic. Regardless of the selection methods used and the technologies employed for converting books and making copies of them, this multi-generational challenge of

Samuel Demas (sgdl@cornell.edu) is Head of Collection Development and Preservation at Albert R. Mann Library, Cornell University. Jennie L. Brogdon is retired from the National Agricultural Library. The authors are deeply indebted to Jan Kennedy Olsen and Wallace C. Olsen. The authors are also grateful for the assistance of Stephanie Lamson, preservation technician. The authors appreciate the comments and suggestions of reviewers: Stephen Chapman, Rich Entlich, Carl Fleischhauer, Anne Kenney, Ellen R. McCrady, and Robert L. Oakley. Manuscript received July 16, 1997; accepted for publication August 28, 1997.
building the digital library will involve an immense task in copyright clearance for U.S. works published in the past 75 years. To conduct large-scale conversion projects, librarians will need cost-effective, legally responsible procedures for determining the copyright status of works, finding the address of copyright owners of materials still protected, and seeking permission to make and distribute multiple copies.

A curious lack of systematic investigation of these tasks by the library community has effectively stymied large-scale library-based efforts to preserve brittle U.S. books and journals published in the past 75 years and that may therefore still be protected by copyright. While private sector enterprises such as UMI have established successful copyright permissions mechanisms, most library preservation projects are carefully designed to avoid the issue by largely ignoring U.S. imprints published after 1920. The library, publishing, and author communities must eventually come to agreement on a set of procedures that will allow libraries to proceed responsibly with the preservation of deteriorating twentieth century U.S. publications. To that end, we propose a procedure for the first steps in any copyright investigation: determining the copyright status of a work and, if the work is still under copyright protection, finding the address of the copyright owner listed in the copyright registration.

In the course of preserving the core historical literature of the agricultural sciences for the time period from 1860 to 1950, librarians at the Albert R. Mann Library, Cornell University, conducted a pilot project to develop scalable, cost-effective, and legally defensible procedures for determining the copyright status of U.S. monographs published between 1920 and 1950. The 1950 cutoff date corresponds to the parameters of the body of literature selected for conversion. Procedures for searching monographs published between 1950 and 1978 are not specifically treated in this paper, though they are very similar to those for works published between 1920 and 1950. The procedures developed in this project are presented here as a standard of reasonable effort for use by the library community in national cooperative preservation efforts.

**IDENTIFYING AND PRESERVING CORE HISTORICAL LITERATURE**

The copyright investigation that is described here was an outgrowth of a project conducted at the Mann Library to identify and preserve the Core Historical Literature of the Agricultural Sciences. Gwinn (1993) identified the broad heritage groups of agricultural literature, which included various publications that were both in and out of copyright. At the heart of this national heritage literature was the Core Historical Literature of the Agricultural Sciences, which constituted the most significant scholarly books and journals in the field.

The core project at the Mann Library was conducted from 1988 to 1993 to identify specific titles that constituted this core; that project, titled the Core Agricultural Literature Project, was directed by Wallace C. Olsen. The selection of titles in this project involved citation analysis of the literature coupled with an evaluation of the resulting lists by panels of experts in each of seven disciplines. Over 600 scientists and scholars worldwide participated in the evaluation of the lists. The methodology for selecting both the contemporary (post-1950) and historic (1860-1950) literature was developed by Olsen with funds from the Rockefeller Foundation, the Cornell Agricultural Experiment Station, and the National Agricultural Library. The bibliographies that resulted from this project were published by the Cornell University Press in a seven-volume set, *The Literature of the Agricultural Sciences*, Wallace C. Olsen, Series Editor.

In each volume, the literature of a specific discipline is analyzed and evaluated. Each volume includes a chapter that lists the historical monographs and serials given top priority for preservation by the panels. For a discussion of the selection method that was used, see Olsen (1991); Thompson and Hall (1992); and Murphy and Wright (1993). The seven disciplines
TABLE 1.

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Monograph Titles</th>
<th>Journal Titles</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Engineering</td>
<td>676</td>
<td>42</td>
<td>718</td>
</tr>
<tr>
<td>Animal Science</td>
<td>625</td>
<td>72</td>
<td>697</td>
</tr>
<tr>
<td>Crop Improvement and Protection</td>
<td>1,074</td>
<td>81</td>
<td>1,155</td>
</tr>
<tr>
<td>Food Science and Human Nutrition</td>
<td>572</td>
<td>38</td>
<td>610</td>
</tr>
<tr>
<td>Forestry</td>
<td>349</td>
<td>41</td>
<td>390</td>
</tr>
<tr>
<td>Soils</td>
<td>414</td>
<td>27</td>
<td>441</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,494</td>
<td>339</td>
<td>4,833</td>
</tr>
</tbody>
</table>

and a count of the core historical monographs and serials are presented in table 1.

Thus, within the wider framework of the national preservation plan outlined by Gwinn (1993), Mann Library has accepted responsibility for preserving this Core Historical Literature, which includes 4,833 titles in over 18,000 volumes. The premise of the current project is that selection for preservation must systematically address the literature of disciplines, rather than focus on the holdings of specific libraries (Demas 1994).

The entire corpus will be reformatted in three forms: paper facsimiles, archival microfilm, and digital files. Where possible, existing microfilm will be scanned, and titles not yet filmed are being scanned. Raster computer output microfilm will then be produced from the digital files.

A key goal of this project is the not-for-profit digital distribution of the complete heritage literature to land grant and other interested libraries. In this way, the entire Core Historical Literature will be preserved in one project and all libraries can share the results. This coordinated approach will allow other agricultural libraries to target their limited preservation resources to other parts of the literature.

Scanning and distributing copyrighted materials require that permission be obtained; therefore, it is essential first to determine whether or not a work is copyrighted. While the potential market for and expected revenues from all but a very few pre-1950 copyrighted works is small, the law grants copyright holders the exclusive right to make multiple copies of their works. A successful national preservation effort, however, will involve making multiple copies of protected works, and will therefore require negotiations with authors and publishers for certain rights in the use of digital or microfilm copies. We believe these discussions should be informed by empirical data and systematic investigation, and hence, we initiated this pilot project.

HOW TO DETERMINE COPYRIGHT STATUS

Generally speaking, books published prior to the Copyright Act of 1976 received an initial 28-year copyright and could be renewed for an additional 47 years, for a total of 75 years of copyright protection (Oakley 1990). (This is an oversimplification of the law, but an accurate statement nonetheless. No attempt is made here to provide detailed explanations of the copyright law. Readers interested in the nuances and complexities of copyright law are encouraged to read Oakley (1990), which provides an excellent overview of the copyright law in relation to preservation.) A copyright search is necessary to determine whether a work was ever registered for copyright, and, if so, whether the copyright was ever renewed. According to a 1961 Copyright
Office report, 90.5% of copyrights on all forms of materials copyrighted during the study period were not renewed (Guinan 1961). In this same study, the renewal rate on the subset of copyrighted books and pamphlets was found to be only 4.1%. So while permissions must be sought on only a fraction of the titles, how does one identify the specific titles still copyrighted, and how does one find the names and addresses of the copyright owners?

Oakley's (1990) detailed analysis of the U.S. copyright scheme and its relation to preservation, and his thoughtful discussion of possible solutions were extremely useful in understanding the broader context of the problem we faced. However, Oakley offered little guidance on the specific issue of how best to determine copyright status on a large body of works. The U.S. Copyright Office (1994, p.3) recommends three methods of determining copyright status:

1. Examine a copy of the work for such elements as a copyright notice, place and date of publication.
2. Make a search of the Copyright Office catalogs and other records; or
3. Have the Copyright Office make a search for you.

Copyright investigations often involve more than one of these methods. It is further explained that copyright searches can be conducted in the records housed in the Copyright Office and in the printed Catalog of Copyright Entries (CCE). The CCE, sold by the Government Printing Office and held in many U.S. libraries (including Cornell University), is an authoritative record of copyrights. This tool seemed ideal for the purposes of our preservation project. However, the introductory instructions in the article are immediately followed with the caution that “Even if you follow all three approaches, the results may not be conclusive” (Library of Congress 1994, p.3).

It was unclear to us from the instructions under what circumstances searching the CCE was an acceptable alternative to searching the catalogs and other records located in Washington, and we were puzzled by the caveat that even after trying all three approaches the results may not be conclusive. Phone calls to the Copyright Office revealed a strange puzzle: no one could (or would) say that it was acceptable to search only the CCE for purposes of determining copyright status on monographs published between 1920 and 1950. There appeared to be no evidence forthcoming from the Copyright Office on which to base a clear and authoritative ruling on the reliability of the CCE for our purposes (i.e., whether it was comprehensive enough to serve as a sole source for copyright status searches). We soon discovered that Oakley (1990, p.14) reflects the common wisdom on procedures for determining copyright status:

[W]orks published prior to 1915 can be presumed to be in the public domain. Similarly, works published after 1978 can be presumed to be protected. For works published between those dates, some research at the Copyright Office is likely to be necessary to determine whether the work was registered, by whom, and whether or not it was renewed. (emphasis added)

Some context for this quotation is important: 1915 is 75 years before 1990, the date of Oakley's report. What Oakley meant, in more general terms, is that works published more than 75 years ago—the duration of copyright protection for published works—are in the public domain. For example, on January 1, 1995, we can safely assume that works published before January 1, 1920 are in the public domain.

A literature search turned up no publications on procedures for determining copyright status on a large scale. Phone inquiries to colleagues in the preservation community yielded little in the way of practical guidance for determining copyright status and indicated considerable uncertainty about the topic. Given the general uncertainty surrounding what constitutes a sufficient copyright search and a reasonable effort, Oakley suggested in a February 1, 1994 phone interview with us that at the beginning of a project such as ours contingency funds be set aside for the purpose of settling claims if we wrongly assumed that copyright had lapsed on a title scanned for distribution.
We weren't sure how to proceed. Sending a staff member to Washington to search thousands of titles in the complex files of the Copyright Office seemed an unreasonable burden. We investigated paying the Copyright Office to have the work done by their staff (and waiting months in their queue) or contracting with a commercial search firm. These approaches were prohibitively expensive and time consuming. We concluded that while it seemed likely to us that one could reliably determine whether a work is protected by copyright without research at the Copyright Office in Washington, D.C., it seemed imprudent to rely on the CCE alone, without strong evidence to support this decision. In view of the size and national scope of our project, we felt obliged to take a legally scrupulous course, clearly demonstrating reasonable effort to comply with the law. In the absence of a standard of reasonable effort specifying the nature and extent of a reasonable and sufficient copyright search for our purposes, we decided to develop one ourselves.

To address the issue empirically, we conducted our own careful study of the problem by devising a pilot project, conducted in 1994, with the following objectives:

1. Obtain estimate of the percentage of titles which remain under copyright protection;
2. Find the most efficient and legally sufficient procedures for:
   a. determining copyright status of U.S. monographs published between 1920 and 1950, and
   b. finding the names and addresses of copyright holders; and
3. Assess the level of effort and cost required for these procedures.

Based on the data and experience gained in the pilot investigation, we developed a legally defensible, cost-effective procedure to use in this preservation project.

**METHOD**

**SAMPLE**

The materials selected for the project included a total of 4,494 monographic titles.

Of these, 42% were published before 1920, are now in the public domain, and were excluded from the study. The remaining 2,608 monographs published between 1920 and 1950 were the focus of our investigation. A random sample of 370 titles from agricultural economics and rural sociology was selected for intensive, comparative copyright searching to determine the optimal search procedures.

**SEARCHING BACKGROUND**

The method employed in this pilot investigation was to search each of the 370 titles twice: first at Cornell in the published CCE, and then in the various catalogs and registers located in the Copyright Office itself. A careful comparison of the results of both searches would reveal the adequacy of simply searching the CCE.

The technique for searching copyright status at the Copyright Office was developed during two preliminary visits there by Brogdon. Professional staff of the Reference and Bibliography Section of the Copyright Office were most helpful in explaining the search procedures, answering questions, and explaining additional procedures as the searching progressed.

Searching in the CCE at Cornell was conducted by a combination of student assistants and preservation technicians. The searched lists were then sent to Brogdon for extensive searching at the Copyright Office. The search methods used in each approach are outlined below.

**PRELIMINARY SEARCHING IN THE PUBLISHED CCE AT CORNELL**

The CCE is available in printed form to 1979. Since then it has been issued in microfiche and online. The CCE is divided into parts according to the classes of works registered; for the publications in this study, the class was "Books." Each volume of the CCE contains entries for registrations made during a particular year, with the renewals in a separate section.

Works in the study could have been copyrighted at any time during the first 28
years. However, for this preliminary searching, the author and title were searched in the CCE only for the year of publication, the rationale being that the subsequent 27 years could be searched faster in the copyright card catalogs. Later comparison of the local search results with those at the Copyright Office revealed how often works are registered late (i.e., after publication), and how much later.

If the work was located, the copyright number was recorded and a search was made for a renewal in the volume 28 years after the date of the copyright. Lists were annotated to show whether a work had been copyrighted and renewed, or copyrighted but not renewed, or whether no entry was found at all.

**SEARCHING COPYRIGHT RECORDS AT THE COPYRIGHT OFFICE**

The files searched at the Copyright Office to determine copyright status were:
1. copyright card catalogs through 1977,
2. an online catalog of records created from 1978 forward,
3. the official copyright registers, and
4. the assignment files.

In addition, for titles determined to have been renewed, the renewal applications were searched for addresses of copyright holders. Time spent searching renewal applications was subtracted from total searching time to make it comparable with time spent searching the CCE.

The copyright card catalogs are divided into the time periods 1898 to 1937, 1938 to 1945, 1946 to 1954, 1955 to 1970, and 1971 to 1977. The 1898 to 1937 catalog is divided into author (with some titles included) and claimant (copyright holder) files. All other catalogs combine entries for author(s), titles, and institutions (which includes publishers). The author cards are filed first, followed by titles and institution cards. Each card contains the copyright registration number for the work, date of registration, and the claimant's name. Reference staff at the Copyright Office stated that all possible bibliographic entry points should be searched; i.e., author(s), title, and institution.

The official copyright register is arranged by copyright number and by various time periods. If a copyright is renewed, the renewal number is added to the original record. The register must be searched to verify that a copyright was not renewed.

The assignment files contain information on transfer of copyright. There is an assignor catalog for 1870 to August 15, 1941, assignor/assignee catalog for August 16, 1941 to 1977 and a title catalog for 1928 to 1977. Because there is no legal requirement for reporting transfers, these files are not complete.

**RESULTS**

Analysis of the results of the two search processes is divided into two parts: determining copyright status of monographs, and securing addresses of copyright holders.

**DETERMINING COPYRIGHT STATUS OF MONOGRAPHS**

The results of searching performed in the records of the Copyright Office are summarized in table 2.

We found that of the 370 titles in the sample, 24% were never registered for copyright, 58% were copyrighted but not renewed, and 18% were copyrighted and renewed. For the 68 titles still protected, we assume that permission must be sought to scan and distribute them. Conversely, 82% of the titles are in the public domain and may be reformatted and distributed without further concern about copyright infringement. As expected, the percentage of copyrights renewed decreases substantially as the books get older (11% for titles published in the 1920s versus 39% for titles published in the 1940s).

The 68 titles renewed constitute 24% of the subset of 283 titles that were originally registered for copyright (370 minus the 87 that were never copyrighted), compared with the Copyright Office finding (Library of Congress 1994) of a 4.1% renewal rate for books and pamphlets. We believe the discrepancy between our findings and those of the Copyright Office
TABLE 2

<table>
<thead>
<tr>
<th>Time Period</th>
<th>No.</th>
<th>Never Copyrighted</th>
<th>Copyright and Not Renewed</th>
<th>Copyright and Renewed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
</tr>
<tr>
<td>1920-29</td>
<td>179</td>
<td>37</td>
<td>21</td>
<td>123</td>
</tr>
<tr>
<td>1930-39</td>
<td>99</td>
<td>27</td>
<td>27</td>
<td>59</td>
</tr>
<tr>
<td>1940-49</td>
<td>82</td>
<td>20</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td>1950</td>
<td>10</td>
<td>3</td>
<td>30</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>370</td>
<td>87</td>
<td>24</td>
<td>215</td>
</tr>
</tbody>
</table>

study can be explained by two factors.
1. The Copyright Office data lumps two separate categories, pamphlets and books, into one renewal category. It is entirely possible that the renewal rate on pamphlets is considerably lower than that of books alone.
2. The renewal rate on a group of qualitatively selected, core scholarly monographs might reasonably be far higher than that of books and pamphlets as a whole.

We believe the results obtained in searching the records of the Copyright Office are authoritative. Searching was conducted in strict accordance with the instructions of the staff of the Copyright Office by a highly experienced, meticulous library professional. A total of 81 hours of professional search time was spent determining the copyright status of 370 monographs, an average of 13 minutes per title.

Initial searching at Cornell on the same set of titles was conducted by a combination of student assistants and preservation technicians. A total of 31 hours was spent in preliminary searching at Cornell of the CCE, an average of 5 minutes per title.

Comparing the initial search results for the same 370 titles in the print CCE at Cornell with the results obtained at the Copyright Office allowed us to evaluate the accuracy of the CCE searching. We were able to identify changes in search procedures that would improve the accuracy of the CCE searches. When these procedural changes were implemented and the searches showing discrepancies were repeated in the CCE, we found a 97% agreement overall between the results obtained in searching at the Copyright Office and those obtained in CCE searching at Cornell. The procedural changes added an average of 2 minutes per title to the search time, bringing the final search time to 7 minutes per title.

What follows is a detailed analysis of:
1. the original discrepancies in the results of the two search procedures,
2. the reasons for those discrepancies, and
3. what we learned in the process and how we adjusted searching procedures on the basis of this experience.

Discrepancies in the initial search results were found in 22% of the cases (81 of 370 titles). The CCE search was repeated for each of these 81 titles by a preservation technician experienced in bibliographic searching to determine whether the correct information was actually included in the CCE and to account for each discrepancy in search results.

Discrepancies were categorized, and each case and category of discrepancy was studied to determine whether and how it could be eliminated through procedural changes when searching the CCE. We found that 69 of the 81 discrepancies (85% of all discrepancies in searching) could be easily explained and corrected in the CCE searching (see table 3). Another 12 discrepancies in searching were determined either to be uncorrectable or to take such an extreme effort to correct as to be unreasonable (see table 4). Note that two categories of discrepancies (pamphlets and author problems) appear on
TABLE 3
SEARCHING DISCREPANCIES—EASILY CORRECTED.

<table>
<thead>
<tr>
<th></th>
<th>Year Earlier</th>
<th>Year Later</th>
<th>Human Error</th>
<th>Pamphlets</th>
<th>Serials</th>
<th>Author Problems</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copyright</td>
<td>0</td>
<td>20</td>
<td>5</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td>36</td>
</tr>
<tr>
<td>Renewals</td>
<td>29</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.3</td>
<td>33</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>20</td>
<td>5</td>
<td>14</td>
<td>4</td>
<td>1</td>
<td>69</td>
</tr>
</tbody>
</table>

both tables 3 and 4, indicating that certain types of problems in these categories are easily correctable, while others are not.

Table 3 presents those categories of search discrepancies where a second search of the CCE yielded correct information. Thus, the information found in the Copyright Office was found to be in the CCE, and could be located with reasonable and affordable procedural changes. Discrepancies are divided into two categories: those concerning information about original copyright, and those concerning information about renewal of copyright. Frequency of occurrence of each discrepancy is expressed as a percentage of the 370 titles searched.

Of the 69 correctable discrepancies, 36 (10% of all searches conducted) concerned the determination of original copyright, and 33 (9%) concerned whether or not the original copyright on a title was renewed.

The two largest categories, “Year Earlier” and “Year Later,” are easily remedied. In searching at the Copyright Office it was found that in 29 cases, renewals (13% of all renewals) were registered in the 27th year after copyright rather than the 28th year. Similarly, 20 titles were found to have been registered for copyright a year later than the date appearing on the publication. These combined 49 cases (60% of all discrepancies) are easily corrected by changing CCE search procedures to accommodate early renewal and late registration (i.e., by searching for copyright a year later than date of publication, and by searching for renewals on the 27th and 28th year after registration). This change added about one minute per title to the CCE search procedure.

Human error was found to be the source of 14 discrepancies in search results (4% of all searches), with 10 of these instances occurring in relation to the determination of original copyright rather than renewal. These errors included oversight (due, we believe, to the use of insufficiently experienced student searchers) and spelling errors on the lists from which searches were conducted (correctable by searching from the book in hand). We are confident that searching from the book in hand and using only highly experienced searchers would correct these errors.

Six discrepancies were due either to searching in the wrong class of materials in the CCE (i.e., titles weren’t recognized as pamphlets rather than books) or to searching under the wrong author heading. We discovered that these discrepancies can be corrected by using only highly experienced searchers. As an additional safeguard, we also revised the searching procedure to include a review of the searching results by a librarian highly experienced in bibliographic searching. This change required complete double checks of searching on possible renewal of titles with complicated authors (e.g., corporate entries) and titles that might possibly be pamphlets or parts of a serial. The addition of these checks by a professional librarian added another minute per title on average.

Table 4 summarizes those categories of discrepancies where the “correct” information either was not included in the CCE, or where finding it would necessitate procedural changes that would take work well beyond what could be consid-
TABLE 4
SEARCHING DISCREPANCIES—UNAVOIDABLE OR NOT WORTH EFFORT.

<table>
<thead>
<tr>
<th>2 or More Years Later</th>
<th>Pamphlets</th>
<th>Author Problems</th>
<th>Unexplained</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>Copyright</td>
<td>3</td>
<td>0.8</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td>Renewals</td>
<td>0</td>
<td>0.0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3</td>
<td>0.8</td>
<td>3</td>
<td>0.8</td>
</tr>
</tbody>
</table>

We considered reasonable effort.

Searching at the Copyright Office identified 3 titles out of the 370 that were registered for copyright two or more years after the date of publication. We had been warned by the Copyright Office staff that a work published in this time frame (1920 to 1950) could be registered at any time within 28 years of its publication. Searching through 28 annual volumes of the CCE for a yield of less than 1% (none of which, it turns out, was later renewed) is beyond the level of effort that can be reasonably expected in determining copyright status.

For reasons we could not fathom, three titles turned out to be registered as pamphlets, although they did not fit any normal definition of a pamphlet. Similarly, three titles were registered under author entries which could not reasonably be anticipated (e.g., one title was entered under the name of the publisher). Three other titles (“Unexplained”) were found to be copyrighted by searching the various files at the Copyright Office, but there was no registration found under any entry we tried in the CCE. This latter category seems to be a measure of the actual discrepancy in information contained in the CCE and that held in the files of the Copyright Office: 0.8%.

We feel strongly that there is no reasonable remedy available to overcome these inevitable deficiencies and vagaries in an enormous and complex record keeping system. In fact, we are amazed at the high degree of accuracy and agreement found in the various records, published and unpublished, of the Copyright Office.

Thus, a final overall agreement in search results was achieved in 97% of all titles searched by our revised search procedures, and 100% agreement in the case of renewals. None of the discrepancies resulting from the 3% of anomalous cases concerned actual renewal, and therefore would not affect anyone’s copy rights.

The revisions we made to the CCE search procedure raised costs somewhat by:
1. requiring the use of more experienced search staff,
2. adding a professional staff review of results, and
3. adding a few more search points (e.g., a year earlier and a year later).

With these changes the average search time for determining copyright status by searching the CCE increased from 5 to 7 minutes per title.

SECURING ADDRESSES OF COPYRIGHT HOLDERS

The addresses of copyright holders are found only in the renewal records located in the Copyright Office and are not included in the CCE. Addresses for the copyright holders were obtained from renewal applications for the original works or renewal applications for later works by the same claimant if such were located in the online file. A number of these latter applications were filed by heirs of the original claimants. Finding and transcribing addresses took an average of 5 minutes per title. The addresses on the renewal applications ranged from 1947 to 1994 with half being 20 years or older. Only 17% of the addresses found were from the period 1990–94.
CONCLUSIONS

Searching the same set of materials in both the widely available CCE and the files located in the U.S. Copyright Office indicates a 97% agreement in results between the two. Careful analysis of the discrepancies reveals that none of the differences involves the question of renewal of copyright. Thus our investigation demonstrates that the CCE is 100% accurate (compared with the files of the Copyright Office) in recording copyright renewals for agricultural sciences monographs. In a sense, this finding simply confirms the statement that “The CCE is in effect the Card Catalog published in book form (and since 1979 in microfiche), but it may contain more comprehensive information and should be consulted in problematic searches” (Library of Congress 1993, p. 2). But it goes beyond this to provide solid data on which to base a procedure for efficient copyright searching on large numbers of monographs in other disciplines as well. While there may well be variations by discipline in the rate of renewal of copyright, it seems highly unlikely that the degree of accuracy of the CCE as an official record of copyright information will vary by discipline.

We believe this study clearly establishes that one can reliably determine the copyright status of books published before 1950 without traveling to Washington, or contracting with the Copyright Office or a commercial search company to undertake time-consuming searches in the complex files of the Copyright Office. A standard of reasonable effort in this area must rely on authoritative and widely available sources, such as the CCE, the official published record of the Copyright Office. It must also be based on a large enough sample to take into account varying situations. Our 14% sample represented the range of problems encountered in the monographs of the core historical literature of agricultural sciences. With a finding of 100% agreement in renewal searches in the CCE and 97% agreement overall, we assert that the CCE is an authoritative source for determining the copyright status of monographs published before 1950. The procedure detailed in Appendix A is presented as a generalizable standard of reasonable effort for libraries to use in determining the copyright status of books.

By spending an average of 7 minutes per title searching locally in the CCE, we were able to replicate the results of nearly twice the time searching in the Copyright Office. (If the CCE from 1920 to 1978 were made available online, searching time could be reduced considerably and access to the CCE improved.) We determined that 18% of the sample are still copyrighted. Thus a fairly modest local searching effort reduced the size of our copyright permissions problem by 82%. Assuming this is a reliable estimate of the percentage of core historical agriculture monographs still under copyright, we now face the challenge of contacting copyright holders and securing permissions for the approximately 469 titles (18% of 2,608 monographs published between 1920 and 1950) that are still protected.

We hope these findings will help to alleviate some of the confusion about how to proceed with systematic preservation of brittle books published in the past 75 years, and with scanning of older materials for inclusion in digital libraries. However, this is only one of many copyright and preservation issues in need of clarification. Ultimately the Copyright Office may decide to issue guidelines on copyright and preservation, or Congress may amend the copyright law. In any case, such guidelines or statutory changes will stem from discussions among the legal, library, author, and publishing communities. We believe verifiable results from carefully constructed pilot projects are needed to inform these negotiations. Hard data from systematic library and publisher investigations of the issues will help keep this essential process of give and take rational and constructive. In the end, we believe such data will help to secure terms which will facilitate, rather than impede, the national preservation effort.

TOPICS FOR FURTHER INVESTIGATION

Having developed guidelines for deter-
Determining copyright status of U.S. monographs published before 1951, we must now work out reasonable effort procedures for contacting copyright holders and seeking permissions. We are currently in the process of contacting all rights holders, and based on our experience we plan to develop a standard for locating copyright holders and seeking permission to convert protected materials for preservation and access. Finally, we hope to establish precedents for negotiating royalty payment amounts and mechanisms. In addition, we must address the problem of copyright on the 339 serial publications in the core historical literature of the agricultural sciences. Given the complexity of copyright searching and the large number that have already been filmed commercially, we are likely to employ a very different strategy for serials.

The findings reported here were made after intensive analysis of a body of agricultural sciences literature. It would be interesting to investigate variations by discipline in the rate of renewal of copyright. We hope others will replicate, adapt, and improve on our procedures in other disciplines, and publish the results.

We urge librarians to conduct replications of our study and to undertake pilot investigations for determining the copyright status of other forms of intellectual property, such as pamphlets, sound recordings, visual arts, maps, and motion pictures and film strips. Work is also needed to determine copyright status of foreign imprints targeted for preservation.

**Works Cited**


Procedure for determining copyright status of monographs published in the U.S. before 1950, using the Catalog of Copyright Entries

Sources Of Copyright Information
The Catalog of Copyright Entries is the official record of the U.S. Copyright Office. The CCE has been found to be a reliable tool in determining the copyright status of a work and the name of the claimant at the time of original registration and renewal. However, the CCE does not include the addresses of copyright holders or any information about later assignments or transfers of copyright.

The CCE is available in printed form to 1979, after which it was issued in microfiche form only. The CCE is divided into parts according to the classes of works registered (e.g., Books). Each volume of the CCE contains entries for registrations made during a particular year, with the entries for renewals in a separate section. For copyright records beginning in 1978, an online catalog is available through LC Marvel gopher://muvel.loc.gov:70/lI/copyright.

Before commencing a copyright search process, read Circular 22 of the Copyright Office “How to Investigate the Copyright Status of a Work.” The Copyright Office has available a series of other useful circulars on various aspects of copyright. Questions about copyright searching can be answered by the staff of the Reference and Bibliography Section of the U.S. Copyright Office (202-707-6737).

Staffing Level And Logistics
Searching should be done by experienced, accurate bibliographic searchers with knowledge of forms of entry, corporate authors, and characteristics and variations in the forms of monographic publications. The results of all searches should be reviewed by a librarian experienced in bibliographic searching.

The “Books” portion of the CCE for 1920–77 takes 24 linear feet of shelf space. Efficient searching of a large number of titles requires that the entire set be shelved together in proximity to a table and chair which can be used for concentrated, quiet searching. Ideally, searching should proceed from the books in hand (or from a photocopy of the title page and verso) rather than from a list of publications. Results of prior bibliographic searches (e.g., in RLIN and OCLC), placed in the books for convenience, can provide useful clues for complex titles.

Procedure
1.0 Works published more than 75 years ago are in the public domain and do not require copyright searches.

2.0 Examine the book carefully.
2.1 Look for a copyright symbol and date. Lack of a notice of copyright is a fatal defect, so publications with no copyright notice may be presumed to be in the public domain.
2.2 Look for evidence that the book may be part of a series, multivolume work, or serial. Search the appropriate sections of the CCE (e.g., Pamphlets or Serials) if necessary.

3.0 Search the correct CCE volume indexes under both author and title to find an entry indicating that the work was registered for copyright. If there are multiple authors, search all of them. Note that the arrangement of volume indexes varies over time.

If you have difficulty finding any copyrighted titles for a year, be suspicious and look through the volume again to be sure you have found all the indexes.

If no copyright registration is found for the year of publication (usually the same as the date by the copyright symbol in the book), search as above in the volume for the following year.

If a copyright registration is found, note the month and year it was copyrighted and the copyright number.

4.0 When a copyright registration is found, add 28 years to the year of initial copyright and search the author(s) and title in the renewals index of that year (i.e., if a book was copyrighted in 1922, search 1950 for a renewal). If no renewal is found in the 28th year, search as above in the 27th year after initial registration.

If a copyright renewal is found, note the renewal number and the name of the copyright holder.

5.0 Have an experienced professional librarian review search results. In this review, titles with the following characteristics should be re-checked in the appropriate volume(s):
1. published in multiple editions;
2. corporate or multiple authors;
3. may be part of a serial publication, or may be a pamphlet.

6.0 Works for which no renewal was found using these procedures may be presumed to be in the public domain.
Notes on Operations

Arranging Roots: Classification and Subject Headings for Genealogical Collections

Linda Blake and Evelyn T. Stallings

Because genealogical researchers find ancestors by looking for them by place and not subject, the Dewey Decimal Classification (DDC) was not fulfilling the needs of researchers. After investigating possible manipulations of DDC to fit genealogical collections, a new system was developed at Rowan Public Library. The classification system in its entirety is given and the narrative is illustrated with examples. Also given are suggested additions to the Library of Congress Subject Headings to provide geographic orientation.

The Edith M. Clark History Room of Rowan Public Library (hereinafter referred to as the History Room) in Salisbury, North Carolina, attracts family historians from across the nation as well as avid local researchers. The current History Room librarian, Cherry (1996), notes that “history and geography combined to make Rowan County a nexus for genealogical research.” Two major thoroughfares of early America, the Pennsylvania Wagon Road and the Indian Trading Path, crossed there (Brawley 1953). Those migrating on these passages to the frontier often left records of their sojourn in Rowan County, which—combined with research files, abstracts, and later publications—have made the History Room one of the finest family research collections in the South. The History Room draws nearly 9,000 visitors a year. One librarian and one paraprofessional staff the room along with a group of volunteers, an arrangement that makes it possible to maintain evening and Sunday hours.

The collections consist of nearly 12,000 items including monograph and periodical volumes, microfilm, maps, software, and manuscript and file collections. The service area was expanded in 1989 from a small room to an area four times its previous size. Two collections of note are the family histories contained in the Mamie McCubbins files and the Archibald Henderson Collection of books and pamphlets. The Henderson Collection presented some interesting classification problems described later.

The Problem

Stallings, Cherry’s predecessor, recognized the need for genealogists to approach their investigations by geographic

Linda Blake (linda.blake@ivv.nasa.gov) is information services librarian, West Virginia University/NASA IV&V Facility, Fairmont, West Virginia, and was formerly technical services supervisor, Rowan Public Library. Evelyn T. Stallings (stallingse@aol.com) was history room librarian, Rowan Public Library, and is now retired. Manuscript received January 30, 1997; accepted for publication April 7, 1997; revised manuscript received July 8, 1997.
location. Finding information about one's forebears is extremely difficult without some knowledge of the places in which they settled or through which they passed. Records of life events such as births, deaths, and marriages trace the existence of individuals and are recorded in specific locales. According to the Reference and Adult Services Division of the American Library Association (1996, p.74), one of the first steps in genealogical research is to “focus on one locality where ancestors lived, and identify it in terms of the jurisdictions to which it belongs (county, state, district, province, etc.).”

Moreover, Stallings had reached the same conclusion as had many other local history room librarians: the Dewey Decimal Classification (DDC) and the Library of Congress Subject Headings (LCSH) do not meet the needs of family history researchers (National Society Daughters of the American Revolution 1996; DeBoer 1992). In a collection of any size, the DDC numbers for genealogy (929.1-929.3) are soon long and unwieldy or redundant after being applied to almost every item in the collection. In DDC, court records, wills, birth and death records, and land records are all classed in 929.3, with the addition of four digits for the county where records originated. Supervisors of genealogical collections and their technical services counterparts, including those at the State Library of North Carolina, had managed to twist and extend DDC numbers through the use of geographic notation to group some of the materials geographically. However, the call numbers that result are long, unwieldy, and make materials difficult to locate on the shelf. For example, the DDC number for Anson County, North Carolina, deed abstracts would be classed in 929.376753, and court records for Powell County, Kentucky, would be classed in 929.3769585. The fact that location is specified only at the end of the number also eliminates any possibility of grouping items first by location on the shelves.

Until 1990 History Room materials from all states and counties were classified according to subject. The censuses were classed in 317, deeds were in 333, wills were in 347, some abstracts were in 929 with family histories, and local histories were in 97x.xxx. A family historian would ask, “Where are your Rowan County (or Buncombe County, or Virginia) records?” The only answer was, “All over the place.” With only two paid staff members providing most of the expertise and assistance in the Room, something had to be done to refer patrons more quickly to materials from their antecedent's geographic area. The increase in use of the Room exacerbated the problem.

**Classification by Location**

When Stallings learned of an ingenious classification system for the small genealogy collection at the Arlington Public Library in Texas (Arlington Public Library 1996), she knew she had found a system that could be modified and used for the History Room’s larger collections. In the Arlington system, materials were basically classed according to two-letter postal abbreviations for states and then subdivided numerically by material type. Stallings felt that expansion to county level and further development for specific types of records would provide Rowan Public Library with a workable genealogical classification.

Discussions at regional conferences in the late eighties did not reveal an existing system suitable for adoption. Lee Albright, supervisor of the Genealogy Room at the North Carolina State Library, sent a complete description of her system, but its geographic orientation was too limited because it arranged only abstracts, not other materials or records, by geographic location. Other local schemes were adaptations of DDC that more often than not consisted of adding geographic notations to already long call numbers. And the Arlington Public Library scheme did not support geographic location at the county level. Every librarian who visited the Rowan Public Library from 1988 to 1990 was queried about possibilities. While some seemed to think we were delusional to even try, they all saw the possibilities.

**History Room Genealogical Classification**

The resulting classification system (cur-
rently known as the RPL History Room Classification, was developed by Stallings after consultation with experienced genealogists and local history librarians. The classification affords arrangement of materials first by geographic area, then by subject content, followed by cutting by author and time period. Such a system is more in consonance with genealogical methodology, which must begin with place, no matter what subject is being pursued. While it might seem logical to most library users to place all of the deed books or will abstracts together no matter where they originated, that practice scatters the evidence genealogists seek. All types of History Room materials, except the manuscript collections, are cataloged according to the classification system described here.

In addition to geographic arrangement of genealogical materials, the classification system also facilitates inclusion of genealogical materials not confined to a geographic area, local history materials, and collections of miscellaneous materials. Even though the system exhibits an eastern coastal state orientation that reflects the History Room collection, it can be adapted to accommodate the special needs of any region or collection. For example, the classes for the colonial wars and Revolutionary War (.42 and .43) could be adapted by Western states to accommodate the Indian wars. The list of religious groups in .5 could be modified to reflect the groups specific to an area.

The primary arrangement of genealogical materials in the new system is geographic, with the two-letter postal abbreviations for states being term 1 and the first three letters of the county name being term 2. For example, terms 1 and 2 for Rowan County, North Carolina, are NC and ROW. The three-letter abbreviation used for counties allows the county materials to be filed alphabetically. If more than one county for a state starts with the same three letters, the rule for determining a county abbreviation is to use the first and second letters and the first different consonant and make necessary adjustments to retain alphabetic order. Therefore, terms 1 and 2 for Henrico County, Virginia, are VA and HEC; and terms 1 and 2 for Henry County, Virginia, are VA and HEY. If the material is related to several counties, then AAA is used for term 2. Terms 1 and 2 for the book Tennessee Towns: From Adams to Yorkville are TN and AAA. If the material is related to several counties, and recounts historical facts, but is not genealogical (i.e., does not contain listings of names or family lineage), then ZZZ is used for term 2. Terms 1 and 2 for the book Crosssets through the Carolinas are NC and ZZZ.

County abbreviation decisions are recorded in a copy of The Handy Book for Genealogists (Everton 1981), which contains a complete listing of all U.S. counties and their original boundaries.

Term 3 (see table 1) of the call number is a decimal number and is determined by form of material (directories, bibliographies, indexes, periodicals, etc.); subject matter (heraldry, commerce and labor, culture and social life, etc.); type of record (marriage, cemetery, land, etc.); time period based on war records (colonial wars, Revolutionary War, Civil War, etc.); church records by denomination (Baptist, Catholic, Quaker, etc.); and ethnic group (Celtic/Gaelic, African-American, Teutonic/Germanic/Scandinavian, etc.).

Some examples of classification numbers consisting of terms 1, 2, and 3 are shown with the titles they represent in table 2.

Term 4 of the call number is based on the first three letters of the author's last name. There are noted exceptions. For example, with census data, the date of the census is inserted to enable chronological arrangement and then is followed by the first three letters of the author's last name. These instances occur infrequently and are specifically noted in the classification schedule.

Sometimes there is no primary author for a work according to the Anglo-American Cataloguing Rules, 2d ed. 1988 revision (AACR2R), but there is an abstractor, compiler, indexer, or transcriber. Although AACR2R does not generally afford main entry to abstractors, compilers, indexers, or transcribers, because of their importance in genealogical research, the
librarians decided to assign term 4 letters to these individuals. Many valuable genealogical tools are the work of compilers who provide abstracts of public documents that are difficult for most historians to decipher. These individuals are often noted by historians and are important access points. Several examples of full call numbers, including terms 1–4, are shown in table 3.

**CLASSIFICATION NOT BY LOCATION**

Despite the primary emphasis on location in genealogical research, not all materials have a geographic orientation. Therefore, in addition to those source materials (and compilations) that are geographical in nature, the classification system has to accommodate the nongeographically oriented resources. These include historical and instructional materials, family histories, biographies, church and ethnicity histories, items on historic preservation, and other materials. Also, items that have no obvious genealogical significance have to be accommodated, as these are retained in the History Room due to provenance or relevance in understanding an ancestors' time period.

A special sub-scheme was needed to accommodate these materials. It was decided to construct this part of the classification system so that nongeographically oriented materials would not only be shelved together but also so they would be shelved before the beginning of the geographically oriented numbers. Because term 1 listings for all geographically oriented materials run from AK to WY (as per state postal abbreviations), the letters AA through AJ were selected as the term 1 designations for all nongeographical materials. Table 4 delineates this section of the classification system; the table shows how the letters AA through AJ are used in term 1 and subdivided by various three-letter combinations in term 2.

As with the geographically oriented numbers, the use of multiple terms brings out various aspects of the cataloged materials. Term 3 (see table 1) further subdivides the topic and term 4 arranges the title by author. Following are two examples drawn from the AA category:

- **AA HER.1 ELL**
  - *Who Are You?: The Romance Of Your Name* / Ruby Haskins Ellis

- **AA INS.13 BOY**
  - *How to Publish and Market Your Family History* / Carl Boyer.

For a biography (whose term 1 is AB), term 2 is constructed out of the first seven letters in the name of the individual profiled. This method corresponds with the classification used for fiction and biography in the library's other collections. AB SCHOOLF KIN is the call number for Robert Addison Schoolfield (1853–1931): *A Biographical History of the Leader of Danville, Virginia's Textile Mills During Their First Fifty Years*, by Robert E. King. The KIN in term 3 is for the author of the biography.

In categories such as church history (whose term 1 is AC), historic preservation (term 1, AD), or ethnic and immigration (AE), a term 2 of AAA is used as an alternative to the usual term 2, which designates a state or county location. The use of AAA as term 2 is based on the Arlington Public Library system and places materials relating to more than one county at the beginning of each division of the classification. This serves as a place holder to which the the cataloger can attach a term 3 (table 1), including decimal numbers for specific denominations, types of buildings, or ethnic groups.

Several examples follow. The call number for *Presbyterians in the South* by Ernest Trice Thompson is AC AAA.58 THO.

- **The Care and Identification of Nineteenth Century Photographs**, by James M. Reilly, is classified in AD AAA.13 REI with AD AAA designating the preservation of documents and .13 indicating "how to."

The call number for *The 1884 Hester Roll of the Eastern Cherokees*, compiled by Barbara Crumpton, is AE AAA.67 CRU. AE AAA designates ethnic and immigration materials and .67 indicates the Native American ethnic group.

Family histories are subarranged under AF by the first seven letters of the family name. Thus, the call number for *The Saunders Family of Lincoln County,*
### TABLE 1

<table>
<thead>
<tr>
<th>Term 3</th>
<th>Decimal</th>
<th>Subject</th>
<th>Decimal</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>.1</td>
<td>General information charts</td>
<td>.45</td>
<td>World War I</td>
<td></td>
</tr>
<tr>
<td>.12</td>
<td>Directories</td>
<td>.49</td>
<td>World War II</td>
<td></td>
</tr>
<tr>
<td>.13</td>
<td>How to</td>
<td>.491</td>
<td>Late 20th century</td>
<td></td>
</tr>
<tr>
<td>.14</td>
<td>Bibliographies</td>
<td>.5</td>
<td>Church records and histories</td>
<td></td>
</tr>
<tr>
<td>.15</td>
<td>Immigration/emigration</td>
<td>.51</td>
<td>Baptist</td>
<td></td>
</tr>
<tr>
<td>.16</td>
<td>Indexes</td>
<td>.52</td>
<td>Catholic</td>
<td></td>
</tr>
<tr>
<td>.17</td>
<td>Sources (i.e., guides to holdings)</td>
<td>.53</td>
<td>Quaker</td>
<td></td>
</tr>
<tr>
<td>.18</td>
<td>Not used</td>
<td>.54</td>
<td>Episcopal</td>
<td></td>
</tr>
<tr>
<td>.19</td>
<td>Gazettes, atlases, and maps</td>
<td>.55</td>
<td>Lutheran</td>
<td></td>
</tr>
<tr>
<td>.2</td>
<td>Collective biography</td>
<td>.551</td>
<td>Reformed Church of Christ</td>
<td></td>
</tr>
<tr>
<td>.21</td>
<td>Heraldry and name dictionaries</td>
<td>.56</td>
<td>Methodist</td>
<td></td>
</tr>
<tr>
<td>.22</td>
<td>Compiled genealogies</td>
<td>.57</td>
<td>Moravian</td>
<td></td>
</tr>
<tr>
<td>.23</td>
<td>Travel description and geography</td>
<td>.58</td>
<td>Presbyterian</td>
<td></td>
</tr>
<tr>
<td>.24</td>
<td>Education, training, and apprenticeships</td>
<td>.59</td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>.25</td>
<td>Commerce and labor</td>
<td>.6</td>
<td>Ethnic records—general information about ethnic character of the United States</td>
<td></td>
</tr>
<tr>
<td>.26</td>
<td>Culture and social life</td>
<td>.6</td>
<td>Celtic/Gaelic/Scots</td>
<td></td>
</tr>
<tr>
<td>.27</td>
<td>Arts and sciences (further divided under AJ AAA by DDC)</td>
<td>.61</td>
<td>English/Anglo-Saxon</td>
<td></td>
</tr>
<tr>
<td>.28</td>
<td>Law and legislation, politics and government</td>
<td>.62</td>
<td>Teutonic/Germanic/Scandinavian</td>
<td></td>
</tr>
<tr>
<td>.29</td>
<td>Architecture</td>
<td>.63</td>
<td>Baltic/Slavic</td>
<td></td>
</tr>
<tr>
<td>.3</td>
<td>Censuses (date comes before the author designation)</td>
<td>.64</td>
<td>Latin/Romance countries</td>
<td></td>
</tr>
<tr>
<td>.31</td>
<td>Vital statistics combined records (i.e., death and birth records)</td>
<td>.65</td>
<td>African-American</td>
<td></td>
</tr>
<tr>
<td>.31</td>
<td>Vital statistics combined records (i.e., death and birth records)</td>
<td>.66</td>
<td>American Indian</td>
<td></td>
</tr>
<tr>
<td>.32</td>
<td>Bible records</td>
<td>.67</td>
<td>Semitic</td>
<td></td>
</tr>
<tr>
<td>.33</td>
<td>Court records</td>
<td>.68</td>
<td>Other (e.g., Melungeons)</td>
<td></td>
</tr>
<tr>
<td>.34</td>
<td>Marriage, divorce, and cohabitation records</td>
<td>.69</td>
<td>County and area histories</td>
<td></td>
</tr>
<tr>
<td>.35</td>
<td>Cemetery records</td>
<td>.7</td>
<td>Heritage books</td>
<td></td>
</tr>
<tr>
<td>.36</td>
<td>Wills and estate records</td>
<td>.71</td>
<td>Eastern Standard Time Zone, North</td>
<td></td>
</tr>
<tr>
<td>.37</td>
<td>Deeds and land records</td>
<td>.72</td>
<td>Eastern Standard Time Zone, South</td>
<td></td>
</tr>
<tr>
<td>.38</td>
<td>Tax records and voter registrations</td>
<td>.73</td>
<td>Central Standard Time Zone, North</td>
<td></td>
</tr>
<tr>
<td>.39</td>
<td>Newspaper abstracts, obituaries, etc.</td>
<td>.74</td>
<td>Central Standard Time Zone, South</td>
<td></td>
</tr>
<tr>
<td>.4</td>
<td>Military records and pension lists</td>
<td>.75</td>
<td>Mountain Standard Time Zone, North</td>
<td></td>
</tr>
<tr>
<td>.41</td>
<td>Pre-discovery wars</td>
<td>.76</td>
<td>Mountain Standard Time Zone, South</td>
<td></td>
</tr>
<tr>
<td>.42</td>
<td>Colonial wars</td>
<td>.77</td>
<td>Pacific Standard Time Zone, North</td>
<td></td>
</tr>
<tr>
<td>.421</td>
<td>Add 1 to any two numbers to indicate materials that fall between designations</td>
<td>.78</td>
<td>Pacific Standard Time Zone, South</td>
<td></td>
</tr>
<tr>
<td>.43</td>
<td>Revolutionary War</td>
<td>.79</td>
<td>Preservation</td>
<td></td>
</tr>
<tr>
<td>.44</td>
<td>War of 1812</td>
<td>.8</td>
<td>Historiography</td>
<td></td>
</tr>
<tr>
<td>.45</td>
<td>Mexican War</td>
<td>.81</td>
<td>Oral history</td>
<td></td>
</tr>
<tr>
<td>.46</td>
<td>Civil War</td>
<td>.82</td>
<td>Documents</td>
<td></td>
</tr>
<tr>
<td>.461</td>
<td>Reconstruction</td>
<td>.83</td>
<td>Photographs</td>
<td></td>
</tr>
<tr>
<td>.47</td>
<td>Spanish-American War (1898)</td>
<td>.84</td>
<td>Buildings</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>.85</td>
<td>Periodicals</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>.9</td>
<td>Genealogical and other society records</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>.91</td>
<td>Community development</td>
<td></td>
</tr>
</tbody>
</table>

By Dwight G. Saunders, is AF SAUNDERS SAU. The family name spelling is that used by LCSH, not the spelling in the work, unless there is no listing in LCSH. In that case, the spelling in the work being cataloged is used. A discussion of the family name used as a subject heading appears later in this article.

Likewise, a three-letter code for a location larger than a state (e.g., USA, EUR,
TABLE 2
SAMPLE CLASSIFICATION NUMBERS

<table>
<thead>
<tr>
<th>Classification number</th>
<th>Title</th>
<th>Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>WV WYO.16 (Index)</td>
<td>Genealogical index and gazetteer for Bowman’s reference book of Wyoming County history</td>
<td></td>
</tr>
<tr>
<td>TN ROB.29 (Architecture)</td>
<td>Robertson County’s heritage of homes</td>
<td></td>
</tr>
<tr>
<td>KS KIN.34 (Marriage, divorce etc.)</td>
<td>Kingman County marriage records</td>
<td></td>
</tr>
<tr>
<td>KY MON.43 (Revolution)</td>
<td>List of known soldiers of the Revolution buried in Montgomery County, Kentucky</td>
<td></td>
</tr>
<tr>
<td>VA CHA.58 (Presbyterian)</td>
<td>Cub Creek church and congregation 1738–1838</td>
<td></td>
</tr>
<tr>
<td>NC CAB.66 (African-American)</td>
<td>History of African Americans in Cabarrus County</td>
<td></td>
</tr>
<tr>
<td>SC YOR.7 (County..history)</td>
<td>City without cobwebs: A history of Rock Hill, South Carolina</td>
<td></td>
</tr>
<tr>
<td>PA AAA.9 (Periodicals)</td>
<td>Pennsylvania genealogical magazine</td>
<td></td>
</tr>
</tbody>
</table>

AFR) is used to classify general genealogies (term 1, AG). The call number for Twenty-one Southern Families, by Elizabeth Pryor Harper, is AG USA.73 HAR, with .73 indicating the Eastern Standard Time Zone, South, of the United States.

These three-letter codes for locations larger than a state are also used to classify general histories (term 1, AH). The call number for The Story of the Irish Race: A Popular History of Ireland, by Seamus MacManus, is AH EUR.61 MAC, with .61 indicating Celtic/Gaelic. The object of the latter two classifications is to continue the geographic grouping on a more generalized scale.

A MISCELLANY CATEGORY

AJ AAA was added later to classify all of the miscellaneous materials that are not genealogical, historical, or geographical but that are housed in the History Room because of provenance or known interest to genealogical researchers. Textile Unionism and the South, by Sinclair Mitchell, is classified in AJ AAA.273 MIT. Its decimal numbers come from the term 3 list (see table 1). In this call number, the .27 is for arts and sciences. The third digit (3) is added to represent the first level (social sciences) of the DDC. This expansion of the new classification using the AJ class was devised in order to keep all materials in the History Room in the same system. Although it would have required less work for the cataloging staff to accept and use DDC numbers found on existing records, it was felt that expanding the single classification to all the room’s col-

TABLE 3
SAMPLE CLASSIFICATION INCLUDING THE FOURTH TERM

<table>
<thead>
<tr>
<th>Classification number</th>
<th>Title with author</th>
</tr>
</thead>
<tbody>
<tr>
<td>TN ROB.29 HEN</td>
<td>Robertson County’s heritage of homes / Deborah Kelley Henderson</td>
</tr>
<tr>
<td>VA CHA.58 GAI</td>
<td>Cub Creek church and congregation, 1738–1838 / Elizabeth Venable Gaines</td>
</tr>
<tr>
<td>SC YOR.7 BRO</td>
<td>City without cobwebs: A history of Rock Hill, South Carolina / Douglas Summers Brown</td>
</tr>
<tr>
<td>NJ AAA.3 1774–85 STR</td>
<td>Revolutionary census of New Jersey: An index based on ratables of the inhabitants of New Jersey during the period of the American Revolution / Kenn Stryker-Rodda</td>
</tr>
</tbody>
</table>
TABLE 4

NON-GEOGRAPHICAL ORIENTATION

Term 1: Use the following when material does not relate to a state

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA-</td>
<td>General information subdivided by type</td>
</tr>
<tr>
<td>BIB-</td>
<td>Bibliographies</td>
</tr>
<tr>
<td>DIC-</td>
<td>Dictionaries</td>
</tr>
<tr>
<td>DIR-</td>
<td>Directories</td>
</tr>
<tr>
<td>HER-</td>
<td>Heraldry and name dictionaries</td>
</tr>
<tr>
<td>IND-</td>
<td>Indexes</td>
</tr>
<tr>
<td>INS-</td>
<td>Instructional</td>
</tr>
<tr>
<td>AAA-</td>
<td>Everything else genealogical; decimal number (term 3) narrows location to specific time period, ethnic group, or region</td>
</tr>
<tr>
<td>ZZZ-</td>
<td>Everything else historical not genealogical; decimal number (term 3) narrows location to specific time period, ethnic group, or region</td>
</tr>
<tr>
<td>AB-</td>
<td>Individual biographies followed by the name of the subject and a three letter designation for the author</td>
</tr>
<tr>
<td>AC-</td>
<td>Church histories national; decimal number indicates denomination (see .5 in term 3)</td>
</tr>
<tr>
<td>AD-</td>
<td>Historic preservation of documents, buildings, artifacts, and oral histories</td>
</tr>
<tr>
<td>AE-</td>
<td>Ethnic and immigration/emigration materials; decimal number indicates ethnic group (see .6 in term 3)</td>
</tr>
<tr>
<td>AF-</td>
<td>Family histories followed by the family name</td>
</tr>
<tr>
<td>AG-</td>
<td>Genealogies not specific to any state subdivided by location (e.g., USA, EUR, AFR, ASI, etc.); decimal number narrows location to specific time period, ethnic group, or region (See .4, .6, and .7 in Term 3)</td>
</tr>
<tr>
<td>AH-</td>
<td>General history subdivided by location (e.g., USA, EUR, AFR, ASI, etc.); decimal number narrows location to specific time period, ethnic group, or region (See .4, .6, and .7 in Term 3)</td>
</tr>
<tr>
<td>AJ-</td>
<td>Miscellany: Neither genealogical nor geographical</td>
</tr>
</tbody>
</table>

AAA with .27 and the first subdivision of DDC number

| .27 | Generalities |
| .271 | Philosophy and psychology |
| .272 | Religion |
| .273 | Social sciences |
| .274 | Languages |
| .275 | Natural science and math |
| .276 | Technology and applied science |
| .277 | Fine and decorative arts |
| .278 | Literature |
lections would prove the easiest way to explain (or not to explain) the system to genealogical researchers. The staff also recognized that by making the system all-inclusive, online catalog users in other parts of the library would immediately identify materials as being located in the History Room and restricted to in-house use.

The class A has been particularly useful in accommodating the arrangement of the library's largest special collection of books and pamphlets, the Archibald Henderson Collection, which contains more historical than genealogical materials. Dr. Henderson was a scholar of Bernard Shaw, historian and mathematician, and the contents of his collection reflect his varied interests. An example from this collection is the book *Is Bernard Shaw a Dramatist?* It is classified in AAA.278 HEN where the 8 represents literature from DDC.

**SUBJECT HEADING ACCESS**

Stallings also found that LCSH limited access to genealogical materials when the geographic location was the main subject heading. LCSH provides few subdivisions that are appropriate to genealogical materials and authorized for use under geographic headings. She decided to define and add local geographic subject headings (tag 691) that enable researchers to access genealogical records at the county level more easily. The new headings generally follow the format: County name, (State)—Type of genealogical record. These locally created subject headings are simple to construct and do not require changes as extensive as those made in setting up a new classification system.

For those items where the assigned subject heading begins with the topical subject followed by geographic location, Stallings likewise felt the system was cumbersome for genealogical researchers seeking data by county location. For example, “Marriage records—North Carolina” fills many screens before a searcher comes to “Marriage records—North Carolina—Wilkes County.” However, the locally devised subject heading “Wilkes County (N.C.)—Marriage records” provides quick access to the area the patron needs and mirrors the geographic emphasis of the classification. As such, these local subject headings permit researchers to find records from one area under a single heading. The starting point on screen is the local geographic location rather than the topic or larger geographic location. With its local subject headings, the classification system allows for the consolidation of materials from specific geographic locations on the shelf, as well as in the online catalog.

Every book containing genealogical material for a particular county is assigned a geographic subject heading with the subdivision “genealogy,” which is a free-floating term authorized for use under geographic names. For example, the book *Maury County Remembers World War II* receives the heading “Maury County (Tenn.)—Genealogy” because it provides names that might be of significance to the genealogy researcher. The genealogy subdivision is used freely so that all materials for a specific county are listed in the catalog together under county name.

In copy cataloging at the Rowan Public Library, LCSH headings occurring in the record are retained; in our own original cataloging, we assign them to maintain national standards. In addition, the locally defined subdivisions (see table 5) are added to the established form of geographic headings from the national authority file or are established locally if not found.

The following examples indicate the combination of appropriate LCSH headings entered in the 65x MARC (Machine-Readable Cataloging) tags and locally created headings entered in 69x tags assigned to genealogical materials. For the *List of Known Soldiers of the Revolution Buried in Montgomery County, Kentucky*, several subject headings were assigned:

- Montgomery County (Ky.)—Cemetery records
- Cemeteries—Kentucky—Montgomery County
- United States—History—Revolution, 1775–83—Registers
- Montgomery County (Ky.)—Genealogy

Family names used as subject headings are taken from LCSH with references
made to and from variant spellings according to national cataloging practices. For example, the LCSH heading for the Klutz family is "Klotz family." All materials about this family are found in the online catalog under "Klotz," with cross-references from Clutts, Clutz, Klutts, and Klutz. If there is no listing, then the spelling of the name in the work being cataloged is used. In addition to the primary family, subject headings are added for all other family names listed in a work's table of contents; family names in indexes are often included, as are names of particular local importance identified by Rowan Public Library staff and genealogical researchers frequenting the library. The additional entries represent other families, not variant spellings of the primary family name.

**CATALOGING WITH A LOCAL SYSTEM**

This classification system is an organic one. Many decisions have been made as the system was applied, and call numbers have been changed after careful deliberation. Close consultation, mutual respect for individual expertise, and collaborative decision making have made this possible. For example, genealogical reference materials, which are classified in AA with subarrangement by type (directory, handbook, etc.), are cuttered according to the author chiefly responsible for the text as determined by the rules of AACR2R. However, the History Room librarian has wanted all annuals, alumni directories, handbooks, and the like to be shelved in all cases by the institution. With this collection, a primary factor in its shelving has been the concern to maintain ready access by the public and the collection librarian, who also knows and represents the needs of these end users. This concern led therefore to these materials being cuttered under the name of the institution, even in the presence of a personal author.

When deciding to use this system, or any locally created system, there are practical implications to be considered as well. Variations from national cataloging rules subsequently require continual modification of bibliographic records incorporated from other sources, and these local variations make it less feasible to outsource subject cataloging. Cataloging done externally will not carry your classification system or additional subject headings. Catalogers at an external cataloging source will need time to learn the system, which is simple enough to learn quickly, but such outsourcing also eliminates the cooperative effort between the information and technical services specialists that allows special consideration of unique problems on the spot. Perhaps this latter consideration is of primary importance in a developing system, but we envision ongoing revision and hence foresee the need for ongoing collaboration. Discussions can, and do, take place between an outside contractor and the library information specialists, but collaboration is greatly enhanced by the physical proximity of reference and cataloging.

Above all, it should be noted that we
did not consider embarking on this project without careful investigation of possibilities and problems. From the beginning, the idea was the product of many minds. The system was first mentioned to Stallings by Dr. Elizabeth Drake, who directed the genealogical division of the Mississippians Collection at the University of Southern Mississippi. Patricia Rosenthal, former librarian in charge of the History Room, was consulted and gave excellent advice, especially about breaking down the religious denominations. Shirley Hoffman, a staff member who had worked with visitors to the collection for ten years, also gave valuable advice. Members of the Genealogical Society of Rowan County had often stated the need for a better shelf arrangement, and they agreed that organization by geographic location would facilitate research. Edith M. Clark, the former director of the Rowan Public Library and esteemed librarian for whom the History Room was named, gave her approval to the project.

**Getting Started**

Before the system could be applied, Stallings needed the approval of Philip K. Barton, director, Rowan Public Library, who had to consider whether the benefits of a more accessible system would outweigh the disadvantages of it being locally created. However, Barton understood that the better arrangement of materials in the History Room would improve access to the collection for the thousands of patrons who used the room every year. This was especially important because the History Room staff has limited time to spend with each researcher. With retrospective conversion of the History Room collection forthcoming, the time was opportune to migrate to a more functional classification system and to create local subject headings that would expedite access to materials for genealogists.

By the time the retrospective conversion of History Room materials started, the catalog for the library’s main collection had been converted to machine-readable records and the materials had been barcoded. The History Room catalog had never been merged with the main collection’s catalog in previous retrospective conversion projects and therefore, it still remained in card form. Additionally, whether or not the director decided to adopt a new classification, the entire collection of the History Room had to be recataloged because the cataloging itself was inadequate. The old catalog cards often consisted of only author, title, one subject heading, and a call number. No additional name or subject access points were included. After two years of considering local processing requirements in the context of an easier-to-use collection, the decision was made to proceed with this massive and unconventional project.

Blake, the technical services supervisor, and her staff gave their full cooperation. Cataloging staff, not familiar with the research methodology of genealogists, did not initially understand the reason for such a wide divergence from the standard classification and subject heading systems. However, as the project advanced, the logic began to appear, and positive feedback from the vast majority of users helped propel the tedious process. Even those most averse to moving away from a standard classification system could not deny the logic and the simplicity of the system in its final form.

The long process began with the Virginia materials for several reasons. The moderate number of items, the fact that it included a broad range of records and materials (not only books), and its location in an area that facilitated easy retrieval made it an ideal group for the test run. Stallings did the cataloging for those materials. Conversion was accomplished using the Bibliophile automated system for the MARC format. The new records were then uploaded to the Rowan Public Library’s automated online catalog. The flexibility of the MARC system, with its room for multiple fields, allowed for local call numbers and subject headings, and eased the conversion.

After the Virginia section was completed, the technical services staff joined the effort and the process moved along efficiently. Some copy for genealogical materials was found in the Bibliophile da-
database and needed only an added local call number and local subject headings. The in-house printed barcode sets included a call number label so the new call numbers and barcodes could be applied at the same time. Over a three-year period, the staff, with some volunteer assistance, attached barcodes and spine labels to approximately 90% of the books. Approximately 70% of the records being converted were not in the Bibliophile database, however, and required original cataloging. The other collections (maps, microfilm, and pamphlets) are still being entered into the database.

**RESULTS**

According to interviews with local genealogists and volunteers staffing the History Room, the new classification system was easy to use and patrons were pleased that materials for one county are all together. Although the History Room has a limited staff, local genealogists and volunteers regularly use the collection and often are able to assist others, especially novices, in starting preliminary research until the staff can provide more assistance. The only patrons who seem to have difficulty with the system are those who try to understand how it works before they begin to use it, which might happen when one tries to understand exceptions as well as general rules. To users not familiar with the LC alphanumeric classification system, the call numbers looked especially strange. Once they realized that the classification brought everything together by geographic location, their problems disappeared.

When entering the History Room, users are invited to register and provide their names, addresses, and comments. This list of names and address was subsequently used to conduct a survey of out-of-county users (RPL 1997). The survey, which gathered information relating to the economic impact on the local community of these visitors as well as information on possible future use, was mailed to every fourth name on the list. In the survey, users were also asked whether assistance was sought and whether the services received were satisfactory. Although the questions did not specifically inquire about the new classification and arrangement of materials in the History Room, some users nevertheless praised the system in their comments. Some comments received were:

- Liked the way you organized resources.
- The accessibility of material and the helpfulness of the staff are two [of] its strongest points.
- The arrangement of materials by state and county is so much easier that [sic] by author! Thank you.
- Your library is the most well organized of any library I visit.
- I particularly like the fact the books are organized by states, wars, etc. rather than the Dewey decimal system.

In addition, members of the Western Piedmont Local History Room Supervisors Association expressed a wish that their collections could be so arranged.

**CONCLUSION**

The implementation of a new classification system and the reclassification of the History Room collections has been a major undertaking, one that is not yet completed. Volunteers are still correcting old call numbers and new decisions call for subsequent changes as well. However, both History Room users and staff have enthusiastically welcomed a system they perceive as easy to use, and that reception has made the project well worth the effort. All parties involved in the decision to employ a locally developed system have worked cooperatively and productively with one goal in mind: to serve the public using the History Room collections better. That goal has been reached.

The History Room assisted visitors from thirty-nine states in 1995, and the number of researchers who are trying to find a little piece of the larger story of their family histories continues to grow.
Librarians are well advised to provide access to collections through a classification system whose basic structure expedites this research process. As Cherry (1996, p.5E) said regarding genealogy research and tourism for the area, "You need only to stop and look at the number of campers in the library parking lot each summer to know that genealogy is one of the most popular hobbies in America, and it's expected to grow in the next several years."

WORKS CITED
Cherry, Kevin. 1996. History Room draws researchers (and tourists) from all over. Salisbury post, 30 June: 5E.
Book Reviews

Gregory H. Leazer, Editor

Cataloger’s Desktop. Washington, D.C.: Cataloging Distribution Service, c1994. System requirements: IBM 386 or higher; Microsoft Windows 3.1 or OS/2 version 2.1. Subscription price: $870; each additional user: $16 (ISSN 1 073-4929).

The Cataloger’s Desktop is one of the most significant tools to come to the aid of catalogers since the appearance of online cataloging utilities. Produced by the Cataloging Distribution Service (CDS) of the Library of Congress (LC), the 35 MB of information-rich online publications distributed on a single CD-ROM includes most of the essentials for contemporary catalogers, including the Library of Congress Rule Interpretations, subject cataloging manuals, US MARC format publications, and music cataloging decisions from LC. The 1.1 version (1995, issue 2) is reviewed here, but later issues have expanded to cover archival moving images, loose-leaf publications, CONSER documentation, graphic materials, map cataloging, rare books, authority records, children’s subject headings, cutter tables, LC filing rules, and the NACO manual. A companion disk (not reviewed here) includes the classification schedules.

Installing the Cataloger’s Desktop on a Pentium 75 system with 32M of memory took less than a minute. The program was loaded under Windows 95, for which there are no specific instructions (only OS/2 and Windows 3.1 are covered), but this did not present a problem. A version tailored for Windows 95 would ease some of the anxieties of installation. The user is informed of the file changes during installation, but there is no advanced warning in the documentation.

Once installed, the program loads very quickly—in a matter of seconds on the system tested with a 2X CD drive. Calling up documents is also very quick, and multiple documents can be held open simultaneously. Since most documents are not loaded in their entirety, load times are typically very fast.

An extremely powerful search engine recalls every word indexed in an impressively short time. Nested, Boolean, proximity, and stem searching, among others, are possible. However, the program does not index every word in a document. This occurs most frequently in words that contain special characters or diacritics not in the standard ASCII character set. CDS chose to convert most such words to graphic images, which cannot be searched. Thus, when using the LC Rule Interpretations, one is unable to retrieve the example for “Poly-a-amino acids,” nor even the cataloger-interpolated form that also appears as “Poly-[alpha]-amino acids” because the entire string has been rendered as a graphic, along with the Greek alpha character. Unfortunately, it is often the example that a cataloger will remember and try to search. There is some unevenness in how LC chose to execute this character-to-graphic conversion. In some examples, one finds that only a single character has been rendered as a graphic, giving one at least some chance of retrieving the example it is embedded in. For instance, the heart symbol in the example “I ♥ a piano” is a graphic, but not the surrounding words or the cataloger interpolation that follows. In other cases, the entire example (as in the amino acids case above) has been converted as a graphic image, effectively blocking them from being searched.

Templates are used to help the user
refine a search to a particular category within a document (e.g., query only the scope notes in the subject manual). This can help to focus a search. However, for categories with long names (e.g., "geographic headings and subdivisions") there is no way to see the number of matches, if any, because the dialog box cannot be sized.

The software includes provision for operation from a network. This option was not examined for this review, but not only is this a cost-effective means of implementing the program for large cataloging departments, it also makes uniform management easier since customized annotations to the documents can be shared across workstations. CDS has very aggressive pricing for multiple users.

Little printed documentation comes with Cataloger's Desktop—a 21-page booklet and a reference card are all that is supplied to get one started. There are extensive help files online, including a "tour" for an overview of the program's features, but the tutorial is static and unengaging. For the user accustomed to the structure of Windows help files, the mechanics of following a topic may require some experimentation. At least one path in the tutorial ends up as a blind "jump not found" message and bounces one back to the beginning.

Rather than writing custom software, CDS elected to develop Cataloger's Desktop in the "infobase" environment of Folio Views. This has made the product available much sooner than it would have been otherwise, and at considerably less expense. The tradeoff is that the program must work within a pre-existing structure, even allowing for the flexibility that is built into the Folio Views development environment. For example, to follow a link, one must click twice—an ergonomic difference from some Windows help systems and most Web browsers that may require some getting used to on the part of users. Many of the conventions of Windows programs do not exist in Cataloger's Desktop. The occasional user of Folio may have some difficulty remembering certain concepts, such as the distinction between the "previous," "backtrack," and "trail" icons.

The software does permit a certain degree of customization—e.g., the toolbar can be placed horizontally or vertically, individual icons can be selected for the toolbar, the number of lines of text can be specified to display in the table of contents window, etc. If one wishes to display icons with both text and pictures, the result will likely force the images to run off the edge of the screen. This happens even in the default configuration when using an 800 x 600 display, with no way to scroll through to view them all. The alternative is to display either text or pictures (but not both), or to reduce the number of icons on the toolbar. The choice of some icons in the toolbar is rather idiosyncratic, such as the apple for the tutorial session. There are no popup sensitive areas of the screen or implementation of the right-mouse button to explain features or access properties as one finds in many Windows programs. The toolbar preferences are applied across all documents and help files, but, curiously, not to the tutorial session, which is a bit disconcerting. Few of the dialog boxes have help buttons to explain the options. Those that do (such as the query dialog box) take the user directly into an infobase for help, bypassing the familiar Windows style help screens.

A particularly useful feature of the software is its ability to create "shadow files," which permit one to highlight text, add notes, create links, etc., without affecting the integrity of the original text. Multiple shadow files may be used and individual copies can be tailored in a workplace where the program is shared. There are tools to reconcile shadow files if later versions of the software are distributed so that one's previous notes are not lost—welcome news to those libraries still laboriously transferring notes from earlier volumes of LC subject headings—although in some cases this will prove impossible to implement because the underlying structure may change. Security can be set so that others do not inadvertently alter notes in a shared copy. According to the CDS Web page, a most serious deficiency—the inability to cut and paste documents—is remedied in the Decem-
ber 1996 issue.

In spite of the criticisms, *Cataloger’s Desktop* is a very important product that deserves to be in every library with anything beyond a minimal cataloging operation. The wealth of documentation either already available or in the planning stages, the convenient and rapid access to cataloging tools, and the ability to personalize and mark up documents will be a boon to productivity and quality. At this point, the only significant omission from *Cataloger’s Desktop* is the Anglo-American Cataloguing Rules.—John K Duke, Virginia Commonwealth University, Richmond, Virginia.

---

**OCLC’s Retrospective Conversion Options Meet Your Needs**

Get a fast, accurate retrospective conversion with OCLC.

With over 20 years of experience, OCLC meets your needs with seven conversion options and a highly skilled staff. Approximately 95% of the records are found in the OCLC database, reducing the need for costly, time-consuming creation of new records. Call today for more information.

OCLC 1-800-848-5878, ext. 6476  www.oclc.org

---

FURTHERING ACCESS TO THE WORLD’S INFORMATION
Letters

To the Editor:

I would like to point out an error that I discovered in the article “Chemistry Journal Use and Cost: Results of a Longitudinal Study” by Tina E. Chrzastowski and Brian M. Oleisko. On page 107 in the section “Cost of the Top Journals,” the authors make the statement that the annual cost of purchasing the top 10 journals rose 159% in eight years, which they assert represents a nearly 20% per year increase in the cost of these journals.

In making this assertion they are ignoring the cumulative effect of yearly cost increases. In fact, the cumulative annual increases of 20% over an eight-year period would result in a total increase of approximately 330% over the initial cost, not the 159% increase the authors reported. The increase they noted would result from an annual cost increase of about 12.9%. Similarly, the 66.9% increase in the cost of the entire chemistry journal collection does not represent an annual increase of 8.4% as the authors state, but rather an increase of about 6.6% per year. —Mark Crotteau, Washington State University, Holland Library Bibliographic Control Unit, Pullman, WA 99164-5910; crotteau@wsu.edu

The author replies:

Mr. Crotteau correctly notes that our application of the data in Table 4 (page 106) does not allow for the cumulation of annual price increases. The data presented in Table 4 are accurate, however, and support our point that journal titles with high local use are more likely to inflate at rates higher than the collection as a whole. We regret the error in computing cumulative percentages and thank Mr. Crotteau for a careful reading of our paper. —Tina E. Chrzastowski, Chemistry Librarian, University of Illinois; at Urbana-Champaign

To the Editor:

Allyson Carlyle’s otherwise very useful article on bibliographic relationships (“Fulfilling the Second Objective in the Online Catalog”) in the April 1997 issue of LRTS contains a serious error regarding serials cataloging records. Carlyle states that “added entries for an earlier and later title are mandated, thereby partially grouping records under both old and new titles in the catalog . . .” (p. 91). AACR2 does not mandate such entries, but rather gives such relationships in notes (rule 12.7B7b-c). Rule 21.30J directs the cataloger to make an added entry for any version of the title that does not constitute a change in the title proper (italics added).

The USMARC Format for Bibliographic Data includes fields (767-787) known collectively as linking entry fields, where related titles are recorded in catalog-entry form. While some libraries have indexed these fields in their online catalogs, in effect making them catalog entries, the intent of the fields was not to create added entries. The linking entry fields were designed to display a note in the record in which the linking entry appears and to provide machine linkage between the record for the target item and the record for the related item. As Carlyle notes, Melissa Barnhart (Beck) has offered a model for constructing catalog displays utilizing the linking entry fields for serials. Other systems make hypertext links to facilitate navigation among the records. Nonetheless, these fields and strategies are not included, much less mandated, in today’s cataloging code. —Crystal Graham, Digital Information and Serials Cataloging Librarian, University of California, San Diego

The author replies:

I would first like to thank Crystal Graham
for her correction of my error regarding serials records. I am guilty indeed. My statement regarding added entries for earlier and later titles for serials was justified, incorrectly, as follows. AACR2 rule 21.30G for added entries for related works closely related to the work being cataloged. Rule 21.30G refers to rule 21.28 (Related works) for guidance. Because rule 21.28 includes “continuations and sequels,” I assume that serials would also require added entries for title changes.

Second, please note that an important reference is missing in the published article:


This reference should follow the reference to Svenonius. Thanks are due to John M. Cys, Moffett Library, Midwestern State University, for pointing out this omission.—Allyson Carlyle, Graduate School of Library and Information Science, University of Washington.

### INDEX TO ADVERTISERS

<table>
<thead>
<tr>
<th>Advertiser</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackwell’s</td>
<td>294</td>
</tr>
<tr>
<td>EBSCOdoc</td>
<td>cover 4</td>
</tr>
<tr>
<td>Kapco</td>
<td>282</td>
</tr>
<tr>
<td>Library of Congress</td>
<td>cover 2</td>
</tr>
<tr>
<td>Library Technologies</td>
<td>cover 3</td>
</tr>
<tr>
<td>OCLC Forest Press</td>
<td>277</td>
</tr>
<tr>
<td>OCLC</td>
<td>349, 356</td>
</tr>
<tr>
<td>Reed Reference</td>
<td>278, 281</td>
</tr>
</tbody>
</table>
Index

Volume 41, 1997

Compiled by Edward Swanson

General Procedures Used in Compiling the Index
The following types of entries are included:

a. authors—of articles, reviews, and letters
b. titles—of articles and of articles about which letters were published
c. subjects—of articles and of books reviewed

Subject entries for individuals are identified by “(about)”; letters are identified by “(c)”. Reviews are indexed by name of reviewer and by subject of the work reviewed, identified by “(r)”. They are also listed by title under the heading “Books reviewed”.

Entries are arranged word by word following the “file-as-spelled” principle. Numbers are arranged before alphabetical characters; acronyms without internal punctuation are arranged as words.

Paging of Volume 41:
Pages 1–72 = Number 1 (January)
Pages 73–172 = Number 2 (April)
Pages 173–276 = Number 3 (July)
Pages 277–356 = Number 4 (October)

A

“A Comparison of Pre- and Post- Cataloging Authority Control” 39–49
Academic libraries
Mutilation of materials in: 7–16
Academic libraries
Use of paraprofessional staff members in: 205–18
Acquisition of library materials
Management of: 136–38, 143–45, 155–57
“The Adequacy of the Structure of the National Library of Medicine Classification Scheme for Organizing Pharmacy Literature” 123–35
“Analyzing Search Styles of Patrons and Staff: A Replicative Study of Two University Libraries” 219–35
“Arranging Roots: Classification and Subject Headings for Genealogical Collections” 335–46
Art materials
Mutilation of: 7–16
Author records
Arrangement of: 79–100
Authority management: 39–49

B

Ball State University Libraries: 39–49
Bibliographic relationships: 79–100
Bibliographic works
Arrangement of in online catalogs: 79–100
Black, Steve: 283–94
Blake, Linda: 335–46
Boissonnas, Christian M.: 147–54
Books reviewed
Digital Imaging Technology for Preservation (RLG Symposium, 1994; Elkington, ed.): 158–62
Enhancing a New Design for Subject Access to Online Catalogs (Drabenstott): 60–67
Geographic Information Systems and Libraries (Annual Clinic on Library Ap-
Applications of Data Processing, 32d; Smith and Gluck, eds.): 67–70
Information Services for Innovative Organizations (Maguire, Kazlauskas, and Weir): 58–60
Preservation Management (Feather, Matthews, and Eden): 162–64
RLG Digital Image Access Project (RLG Symposium, 1995; McClung, ed.): 158–62
Scholarship in the New Information Environment (RLG Symposium, 1995; Hughes, ed.): 158–62
Selecting Library and Archive Collections for Digital Reformatting (RLG Symposium, 1995; Erway, ed.): 158–62
Serials Management (Chen): 164–66
Testing a New Design for Subject Analysis to Online Catalogs (Drabenstott and Weller): 60–67
Using Subject Headings for Online Retrieval (Drabenstott and Vizine-Goetz): 60–67
Brogdon, Jennie L.: 295–306

C
California Newspaper Project: 236–53
Call, J. Randolph: 155–57
Call numbers
Acceptance of on cataloging copy: 29–38
Carlyle, Allyson: 79–100, 273 (c)
Cataloging
By paraprofessional staff: 205–18
Costs: 29–38
“Celebrating C. Sumner Spalding” 274–75
Chan, Lois Mai: 307–34
Chang, Sherry S.: 50–57
“Change and Decay” 143–45
“Changing Acquisitions at Detroit Public Library” 155–57
“Changing Roles: Original Cataloging by Paraprofessionals in ARL Libraries” 205–18
“Chemistry Journal Use and Cost: Results of a Longitudinal Study” 101–11, 347 (c)
Chemistry materials
Costs: 101–11
Use studies: 101–11
Christzowski, Tina E.: 101–11, 347 (c)
City University of New York, Baruch College: 139–42
Classification
Genealogical materials: 000–00
Pharmacy materials: 123–35
Collection analysis: 50–57
“Consortium Use of the OCLC/AMIGOS Collection Analysis CD: The SUNY Experience” 50–57
“Converting Wade-Giles Cataloging to Pin Yin: The Development and Implementation of a Conversion Program for the Australian National CJK Service” 254–63
Conway, Paul: 158–62 (r)
Cooperative cataloging
Saudi Arabia: 264–72
“Cooperative Cataloging: Prospects and Problems for Libraries in Saudi Arabia” 264–72
Copyright status
Determining for preservation purposes: 000–00
Cornell University: 147–54
Croteau, Mark: 347 (c)
“Cutting Cataloging Costs: Accepting LC Classification Call Numbers from OCLC Cataloging Copy” 29–38

D
“Data Entry and the Economy of Offshore Information Production” 112–22
Data entry industry: 112–22
“Database Design for Preservation Project Management: The California Newspaper Project” 236–53
Daugherty, Robert Allen: 172 (c)
Demas, Samuel: 295–306
“Determining Copyright Status for Preservation and Access: Defining Reasonable Effort” 295–306
Detroit Public Library: 155–57
Digital imaging: 158–62 (r)
Dodd, David C.: 172 (c)
Dole, Wanda V.: 50–57
Duchin, Douglas: 139–42

E
Ellis, Steven: 112–22
“Errors and Obsolete Elements in Assigned Library of Congress Subject Headings: Implications for Subject Cataloging and Subject Authority Control” 307–34

F
Filing order
In online catalogs: 79–100
Form/Genre terms: 190–204
Frangakis, Evelyn: 167–68
“From Citation to Piece in Hand: The Search for Efficiency in Accessing Monographic Series” 179–1009
“Fulfilling the Second Objective in the Online Catalog: Schemes for Organizing Author and Work Records into Usable Displays” 79–100, 273 (erratum), 347 (c)
G
Geer, Beverley: 164–66 (r)
Genealogical materials
Classification of: 335–46
Subject headings for: 307–34
Geographic information systems: 67–70 (r)
Gozzi, Cynthia: 136–38
Graham, Crystal: 000 (c)
“Grass-Roots Cataloging and Classification: Food for Thought from World Wide Web Subject-Oriented Hierarchical Lists” (Dodd, July 1996): 172 (erratum)
Greever, Karen E.: 39–49
Groom, Linda: 254–63

H
Hayman, Lynne M.: 236–53
Hiatt, Robert M.: 274–75

I
“Identical in Appearance but Not in Actuality: Headings Shared by a Subject-Access and a Form/Genre Access Authority List” 180–204
Information services: 58–60 (r)
“Instructions for Authors” 71–72
Interlibrary loan: 17–28

J
“Journal Collection Analysis at a Liberal Arts College” 283–94

K
Kaczor, Sue: 17–28
Khurshid, Zahiruddin: 264–72
Kingsley, Peter: 143–45

L
Lang, Mary S.: 219–35
Leazer, Gregory H.: 58–70, 158–66
Library of Congress subject headings
Errors in assignment of: 307–34
Obsolete elements of: 307–34
López-Mertz, Elsa M.: 123–35

M
Maddox, Anthony B.: 58–60 (r)
Malinconico, S. Michael: 29–38
“Managing Acquisitions in a Changing Environ-ment: From Coping to Control” 136–38
Massey, Susan A.: 29–38
Miller, David: 180–204
Mohr, Deborah A.: 205–18
Monographic series
Access to: 179–89
Mutilation of library materials: 7–16

N
National Library of Australia: 254–63
National Library of Medicine classification: 123–35
New York University: 143–45
Newspapers
Preservation of: 236–53
“Notes on Operations” 50–57, 136–57, 236–72, 335–46

O
OCLC bibliographic records: 29–38
OCLC/AMIGOS Collection Analysis CD: 50–57
Ogden, Sherelyn: 162–64 (r)
Olesko, Brian M.: 101–11
Olszak, Lydia: 7–16
Online catalogs
Displays on: 79–100
Filing order in: 79–100
Searching in: 219–35
Subject access in: 60–67 (r)

P
Paraprofessional staff members
Use of for cataloging: 205–18
Paris Principles: 79–100
Pharmacy materials
Classification of: 123–35
Pinyin romanization scheme
Conversion from Wade-Giles: 254–63
Preservation of library materials
Management of—Great Britain: 162–64 (r)
Preservation of library materials
Use of databases in: 236–53
Preservation of library materials: 158–62 (r)

R

S
Schuneman, Anita: 205–18
Science materials
Interlibrary loans of: 17-28
Sciilken, Marvin H.: 273 (c)
Serial publications
Analysis of collections of: 283-94
Serial publications
Costs: 101-11
Serial publications
Use studies: 101-11
Serial publications
Series, see Monographic series
Shemberg, Marian: 179-10089
Smith, Elizabeth H.: 7-16
Spalding, C. Sumner: 274-75 (about)
Stallings, Evelyn T.: 335-46
State University of New York, University at Albany: 17-28
State University of New York: 50-57
Subject access
In online catalogs: 60-67 (r)
Subject headings: 190-204
Genealogical materials: 335-46
Swanson, Edward: 349-52
Swartzburg, Susan Garretson: 167-68 (about)

T

Technical services departments

Management of: 139-42, 147-54
Transaction log studies: 219-35

U

University of Alabama Libraries: 29-38
University of North Carolina at Charlotte: 136-38
University of the Pacific: 219-35

V

“Variation in Interlibrary Loan Use by University of Albany Science Departments” 17-28
Vizine–Goetz, Diane: 307-34

W

Wade–Giles romanization scheme
Conversion to Pinyin: 254-63
Weinberg, Bella Hass: 60-67 (r)
Wiberley, Stephen E., Jr.: 172 (c)
Workstations: 139-42

Z

Zimmerman, Ann: 67-70 (r)
LOOKING FOR A
CATALOGING PARTNER?

Since 1985, the OCLC TechPro service has helped hundreds of libraries eliminate their cataloging backlogs and keep pace with ongoing cataloging, giving patrons prompt access to materials.

TechPro offers:
- Customized cataloging and physical processing to match your exact specifications
- Cataloging of materials in all bibliographic formats and in many languages
- Quality cataloging at prices that can reduce your overall cataloging costs

Here is another option to consider: the new TechPro Basic Price Option. This streamlined cataloging service is designed for libraries that need help getting recently published books and serials cataloged but without complex editing or having extensive local information added to records. If your project is straightforward, this simplified approach to contract cataloging may be just what you need.

Looking for a partner to keep your cataloging up-to-date? Contact the OCLC TechPro service today.

1-800-848-5878, ext. 4386
e-mail: marcia_stout@oclc.org
http://www.oclc.org
If you have been searching for an easy way to authority control your library's current cataloging, try LTI's Authority Express service.

With Authority Express, a library uses the Internet to transmit a file of newly cataloged bibliographic records to LTI (via FTP). Overnight, LTI processes the records through its state-of-the-art authority control system. Then, at the library's convenience, it logs into LTI's FTP server to retrieve fully authorized catalog records, along with linked LC name and subject authority records.

Authority Express
- Keeps authority control current at an affordable price
- Integrates easily into existing workflows
- Lowers cost by reducing staff time spent on catalog maintenance
- Provides next-day turn around for up to 5,000 catalog records
- Accepts records for processing even if LTI did not perform the original authority control

“Authority Control for the 21st Century”

LIBRARY TECHNOLOGIES, INC.
2300 Computer Avenue, Suite D-19 Willow Grove, PA 19090
(215) 830-9320  Fax: (215) 830-8422
(800) 795-8604  email: LTI@LibraryTech.Com
What do this animal and the leader in full service document delivery have in common?

They're both fast, lean, resourceful and great caregivers.

Just what you look for in a full service document delivery provider:

- Rapid standard delivery with rush capabilities
- Competitive base prices with volume discounts from an organization that knows how to pass cost savings onto the customer
- Innovative solutions such as globally-networked document sources, customized document ordering and management services, state-of-the-art automation, and a personalized TOC current awareness service
- Trained account service professionals who really care about your needs

All the document services you need and want from a name you already know and trust — EBSCO.

EBSCO Document Services, Delivering Results Worldwide.

E-mail: info@ebscodoc.com
Web: www.ebscodoc.com
Phone: 800-871-8508