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Rising to the Top: Evaluating the Use of the HTML META Tag to Improve Retrieval of World Wide Web Documents through Internet Search Engines

Thomas P. Turner and Lise Brackbill

We evaluate the effectiveness of using the HTML META tag to improve retrieval of World Wide Web documents through Internet search engines. Twenty documents were created in five subject areas: agricultural trade, farm business statistics, poultry statistics, vegetable statistics, and cotton statistics. Four pages were created in each subject area: one with no META tags, one with a META tag using the keywords attribute, one with a META tag using the description attribute, and one with META tags using both the keywords and description attributes. Searches were performed in AltaVista and Infoseek to find terms common to all pages as well as for each keyword term contained in the META tag. Analysis of the searches suggests that the use of the keywords attribute in a META tag substantially improves accessibility while use of the description attribute alone does not. These results suggest that HTML document authors should consider using keywords attribute META tags. We also suggest that more search engines index the META tag to improve resource discovery.

The problem of finding materials on the World Wide Web has been discussed in library and information science journals, computer literature, and the popular media. Internet search engines have been developed to aid in finding materials; however, their performances vary considerably. Numerous researchers have evaluated these tools and have detailed their strengths and weaknesses. Melee’s Indexing Coverage Analysis (MICA) report, issued weekly, details the number of pages indexed by various Internet search engines; in addition, the speed of the systems is evaluated (Melee 1998). Other authors have analyzed particular aspects of Internet search engines, such as their retrieval precision (Leighton and Srivastava 1997), their usability (Pollock and Hockley 1997), and their indexing methods (Srinivasan, Ruiz, and Lam 1996). Some researchers have offered advice to the authors of Hypertext
Markup Language (HTML) documents about improving retrieval of their materials. The current research was designed to determine how useful one method, the HTML META tag, is in improving accessibility via Internet search engines; here we focus on indexing rather than on search engine performance.

**META DATA AND THE HTML META TAG**

Much has been written about the importance of metadata for understanding and using electronic resources. This literature sheds light on the types of issues that the HTML META tag (see figure 1) is

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**Figure 1.** Example HTML Document with Embedded META Tags.
intended to address. Metadata is commonly defined as data about data. A more complete definition notes that metadata provides "a user (human or machine) with a means to discover that the resource exists and how it might be obtained or accessed. It can cover many aspects, such as subject content, creators, publishers, quality, structure, history, access rights and restrictions, relationship to other works or appropriate audience" (Efthimiadis and Carlyle 1997, 5).

Metadata is important for what it enables; its strength is not description but the support it provides for resource discovery and data use (Lynch 1998). Metadata also prevents ambiguity about data (Lide 1995). Weibel (1995) describes metadata as the centerpiece of information gathering. He argues that new types of metadata need to be developed to facilitate document discovery and suggests the Dublin Core element description set as a solution for metadata problems.

HTML permits document authors to control not only how text, graphics, and multimedia materials are displayed, but also the information available about the document itself through the use of the META tag. Several authors have suggested that the HTML META tag can be used to enhance information retrieval, especially through Internet search engines. AltaVista Search Network (1997) documentation suggests that authors use the keywords and description attributes of the META tag to improve retrieval and control the description of the document that appears on a search results page. Bremser (1997) offers more detailed advice to Web authors about using different aspects of the META tag.

The META tag has also been seen as a way of providing additional types of metadata about documents. Miller (1995) discusses the potential use of the META tag to contain formatted information defined by the Dublin Core element set. The Dublin Core provides a means of creating basic metadata about a resource in a simple manner and is not formally connected to the HTML META tag. However, the META tag is the best section of the HTML specification in which this data can be placed (Weibel 1997). Many of these authors envision resources that are "self-declaring" because the items provide important information about themselves to human catalogers and automated indexers.

The HTML META tag resides within the header and can have the attributes CONTENT, HTTP-EQUIV, or NAME. It is intended to provide "a place to put meta-information that is not defined by the other HEAD elements. This allows an author to more richly describe the document content for indexing and cataloging purposes" (Graham 1995, 147). In this research, we are most concerned with two attributes: CONTENT and NAME. The NAME attribute requires that a CONTENT attribute also be present. Although the NAME attribute can take the values of author, document type, distribution, keywords, and description among other values, most of the Internet search engines that currently support use of the META tag recognize only those NAME attributes defined as keywords or description. The keywords attribute provides important terms associated with a document, while the description attribute briefly details it and is often used as a summary on the results page generated by Internet search engine queries. This example of a META tag from the header of the USDA report "Agriculture and trade: Europe" illustrates the use of both the keywords and description attributes:

```html
<META NAME="Keywords" CONTENT="USDA, Mann Library agriculture, Europe, agricultural economics, international agriculture, business, economics, trade, commodities, statistics">

<META NAME="Description" CONTENT="Database contains macroeconomic data on Western Europe, budget and price data, and time-series data on supply and utilization of agricultural commodities for the EC-12 and the European Free Trade Association.">
```

Several authors have voiced some concerns about the potential misuse and failure of the META tag. Kuhn (1996) notes
that although the META tag can be used for certain information, there is not enough agreement about the types of information that can be implemented. He is especially concerned about information related to authors of documents, abstracts, and document content beyond keywords assigned by authors. One concern about the use of the META tag involves the various opinions about the nomenclature for the NAME attribute. Currently some search engines recognize NAME designated as keywords and description, but other options, such as history, access restrictions, and audience, are ignored. Without consensus about the nomenclature among the HTML standard developers, authors using HTML, and Internet indexing services, the META tag will never be widely implemented (Pfaffenberger 1995). Current court cases will also set precedents for the use of the META tag. Using names in a META tag that have nothing to do with the content of a site has been called into legal question by companies whose names appear in documents with which they have no connection (Kaplan 1997).

**Problem Statement**

The Albert R. Mann Library at Cornell University works in conjunction with the Economic Research Service, the National Agricultural Statistics Service, and the World Agricultural Outlook Board of the United States Department of Agriculture to produce the USDA Economics and Statistics System (http://usdamannlib.cornell.edu/usda/). This system provides access to over 300 statistical reports and data sets in various agricultural commodity and business areas. Like other large content providers, producers want their materials to be discovered by Internet users who might not have been previously aware of the service. Users would find these materials relevant whether they were searching for agricultural economics materials in general or specific commodity figures, such as watermelon production statistics.

The META tag might help publishers ensure that their materials are found when appropriate searches are executed. Although the META tag is being put to use by many World Wide Web publishers, its effectiveness has not been evaluated. In this study, we examine the following questions related to the use of the HTML META tag:

1. Do pages that use the META tag have higher retrieval ranks than pages that do not?
2. Is one method of META tag authoring more effective than other methods?
3. Do pages that use both of the META tag attributes have better retrieval ranks than pages that use only one attribute?

To answer these questions, it is necessary to understand how search engines deal with the META tag.

**Method**

At the time of this research, Mann Library provided access to many USDA reports and data sets, as well as other networked electronic resources, through the Mann Library Gateway (http://www.library.cornell.edu/). All resources previously available through the Mann Library Gateway are now available through the Cornell University Library Gateway (http://library.cornell.edu). The gateway is a searchable database of electronic resources that allows users to connect via a hyperlink to resources that match their queries. Searches yield dynamically generated HTML pages with lists of appropriate records. A gateway record lists the title of the work, a description, the publisher, the publication date, update frequency, type of material, summary holdings, access information, and general subject categories. Users can connect to the resource by clicking on a hyperlink from the record. For this experiment, static gateway-like HTML documents were created to test how access to this type of metadata record could be improved.

Twenty HTML documents were created in five subject areas: agricultural
TABLE 1
LIST OF USDA ECONOMIC AND
STATISTICS SYSTEM DOCUMENTS USED

<table>
<thead>
<tr>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural trade between Asia/Near East countries and the United States</td>
</tr>
<tr>
<td>Agricultural trade of former Soviet Republics</td>
</tr>
<tr>
<td>Agricultural trade policies “Redbook”</td>
</tr>
<tr>
<td>Agriculture and trade: Europe</td>
</tr>
<tr>
<td>Cotton and wool outlook</td>
</tr>
<tr>
<td>Cotton and wool yearbook</td>
</tr>
<tr>
<td>Cotton ginnings</td>
</tr>
<tr>
<td>Cotton/citrus production</td>
</tr>
<tr>
<td>Farm business balance sheet</td>
</tr>
<tr>
<td>Farm operating and financial characteristics</td>
</tr>
<tr>
<td>Farm production expenditures</td>
</tr>
<tr>
<td>Farm sector balance sheet</td>
</tr>
<tr>
<td>Poultry outlook</td>
</tr>
<tr>
<td>Poultry slaughter</td>
</tr>
<tr>
<td>Poultry yearbook</td>
</tr>
<tr>
<td>Poultry production and value</td>
</tr>
<tr>
<td>Vegetable yearbook</td>
</tr>
<tr>
<td>Vegetables and specialties</td>
</tr>
<tr>
<td>Vegetables annual summary</td>
</tr>
<tr>
<td>Vegetables</td>
</tr>
</tbody>
</table>

to determine quickly where these particular documents resided on the ranked list of search results.

Keyword and description attribute terms were chosen from descriptive information available through the documentation for that report or data set as well as from cataloging records created at Mann Library. The number of keyword terms chosen for the keywords attribute ranged from 10 for “Poultry Slaughter,” to 40 for “Vegetables.” The average number of keyword terms assigned using the keywords attribute was 18.4 and the mode was 12. Keywords ranged from specific terms, such as “watermelon,” to abstract or general terms, such as “business.” Descriptions matched summaries routinely provided in cataloging records for each item and contained keywords associated with the title.

All 20 pages were submitted to the three Internet search engines that support the use of the META tag—AltaVista, HotBot, and Infoseek—in late December 1996. Of these three services, only AltaVista and Infoseek indexed the pages. Infoseek indexed the pages within two days of submission. AltaVista indexed the documents after a month’s delay and after several submission attempts over a six-week period. HotBot failed to index the pages after several requests. From the perspective of a content provider, we suggest that the process for submitting pages and the speed of indexing sites by Internet search engines might be improved.

Once the pages were indexed, searches were performed in AltaVista and Infoseek to find terms common to all pages as well as for terms paired with each keyword and description term contained in the META tags. The only search conducted for all 20 pages was the search for “Mann and agriculture.” Searches followed a set format in which “Mann,” “statistics,” or “USDA” were combined with the keyword terms contained in the META tags. The only search conducted for all 20 pages was the search for “Mann and agriculture.” Searches followed a set format in which “Mann,” “statistics,” or “USDA” were combined with the keyword terms contained in the META tags. The only search conducted for all 20 pages was the search for “Mann and agriculture.” Searches followed a set format in which “Mann,” “statistics,” or “USDA” were combined with the keyword terms contained in the META tags.
TABLE 2
SAMPLE QUERIES USED TO SEARCH FOR USDA ECONOMIC AND STATISTICS SYSTEM DOCUMENTS

<table>
<thead>
<tr>
<th>Mann and [Keyword]</th>
<th>USDA and [Keyword]</th>
<th>Statistics and [Keyword]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mann USDA</td>
<td>USDA Mann Library</td>
<td>Statistics Mann Library</td>
</tr>
<tr>
<td>Mann statistics</td>
<td>USDA statistics</td>
<td>Statistics USDA</td>
</tr>
<tr>
<td>Mann poultry production</td>
<td>USDA poultry production</td>
<td>Statistics poultry production</td>
</tr>
<tr>
<td>Mann value</td>
<td>USDA value</td>
<td>Statistics value</td>
</tr>
<tr>
<td>Mann agriculture</td>
<td>USDA agriculture</td>
<td>Statistics agriculture</td>
</tr>
<tr>
<td>Mann livestock</td>
<td>USDA livestock</td>
<td>Statistics livestock</td>
</tr>
<tr>
<td>Mann dairy</td>
<td>USDA dairy</td>
<td>Statistics dairy</td>
</tr>
<tr>
<td>Mann poultry</td>
<td>USDA poultry</td>
<td>Statistics poultry</td>
</tr>
<tr>
<td>Mann agricultural economics</td>
<td>USDA agricultural economics</td>
<td>Statistics agricultural economics</td>
</tr>
<tr>
<td>Mann business</td>
<td>USDA business</td>
<td>Statistics business</td>
</tr>
<tr>
<td>Mann trade</td>
<td>USDA trade</td>
<td>Statistics trade</td>
</tr>
<tr>
<td>Mann commodities</td>
<td>USDA commodities</td>
<td>Statistics commodities</td>
</tr>
</tbody>
</table>

word]" was searched to test a general term search with a range of specific and general keywords. "USDA and [Keyword]" was searched to test a commonly expected general name with a number of specific and general keywords. Table 2 lists a sample of queries. In total, 579 search combination results were recorded.

All Infoseek searches were completed in January and early February 1997. All AltaVista searches were completed during late March and April 1997. The length of time required to complete the searches was due partly to delays in indexing and partly to the time required to complete all searches. More efficient automated means of checking the ranks of pages, such as software like Webposition Analyzer, were not available at the time the searches were conducted. These delays are not expected to have had a significant impact on the results observed because searches repeated at intervals during this process did not reveal any changes in ranking. Once search results were achieved, the first 200 results were examined to determine which pages fell within those retrieved-item lists. If a page was found, the rank of the page within that list was recorded.

To evaluate the effectiveness of using the HTML META tag to improve retrieval of HTML documents searched on Internet search engines, the ranks of pages retrieved by both AltaVista and Infoseek were recorded. For each set of markup comparisons, searches were examined in which the terms appeared on both of the pages analyzed either in the text or in the description or keywords attributes of the META tag. To be considered for analysis in a given comparison, the search must either have retrieved both pages being compared or have been expected to retrieve both pages.

By basing queries on terms known to be present in these documents, several concerns must be noted. In his analysis of the ASLIB Cranfield Research Project, Swanson (1965) argues that it should not be assumed that nonsource documents behave in the same manner as source documents. Swanson also notes that the opportunity to find unexpected results might be lessened if the focus remains on a relatively small set of documents and search terms. In addition, terms searched might not reflect the wide range of terms used in actual searches from a diverse user population (Furnas et al. 1987). Searches performed in this research were designed to determine how search engines...
The results generated reflect an ideal scenario. Page ranks might be lower with more diverse search terms and search engine retrieval might be less effective under those conditions.

The first 200 documents retrieved were examined and the ranks of source pages within those first 200 were recorded. In cases in which more than 200 sites were retrieved, the first 200 were examined as an arbitrary cutoff point supported by all the search engines used. Harman (1993, 371) reported using 200 as a retrieval threshold, although she concluded that for the purposes detailed at the first Text Retrieval Conference, this point was too low. If a search could have resulted in retrieving a page but it was not in the top 200 sites, we gave that page the rank of 201 for that search. As a result, rankings ranged from 1 (highest) to 201 (not retrieved) and the number of searches analyzed in each comparison varied.

The ranks of the differently coded pages were compared using the Mann-Whitney U test. The U statistic measures “the number of times that the rank of a score in one group precedes the rank of a score in the other group” (Kiess 1989, 468). This provides for a comparison of two sets of ranked scores to determine whether or not the sets can be expected to fall within the same distribution. If the ranks are part of the same statistical distribution of ranks, then the addition of

## TABLE 3
NUMBER OF RANK SCORES COMPARED IN MANN-WHITNEY U TESTS BY META TAG COMPARISONS

<table>
<thead>
<tr>
<th>Attributes Compared</th>
<th>Number of Rank Scores Compared (sample size)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AltaVista and Infoseek Ranks Combined</td>
<td></td>
</tr>
<tr>
<td>None versus keywords</td>
<td>198</td>
</tr>
<tr>
<td>None versus description</td>
<td>96</td>
</tr>
<tr>
<td>None versus both keywords and description</td>
<td>194</td>
</tr>
<tr>
<td>Keywords versus both keywords and description</td>
<td>506</td>
</tr>
<tr>
<td>Description versus keywords</td>
<td>166</td>
</tr>
<tr>
<td>Description versus both keywords and description</td>
<td>174</td>
</tr>
<tr>
<td>AltaVista Ranks Only</td>
<td></td>
</tr>
<tr>
<td>None versus keywords</td>
<td>96</td>
</tr>
<tr>
<td>None versus description</td>
<td>44</td>
</tr>
<tr>
<td>None versus both keywords and description</td>
<td>96</td>
</tr>
<tr>
<td>Keywords versus both keywords and description</td>
<td>252</td>
</tr>
<tr>
<td>Description versus keywords</td>
<td>84</td>
</tr>
<tr>
<td>Description versus both keywords and description</td>
<td>88</td>
</tr>
<tr>
<td>Infoseek Ranks Only</td>
<td></td>
</tr>
<tr>
<td>None versus keywords</td>
<td>102</td>
</tr>
<tr>
<td>None versus description</td>
<td>52</td>
</tr>
<tr>
<td>None versus both keywords and description</td>
<td>98</td>
</tr>
<tr>
<td>Keywords versus both keywords and description</td>
<td>254</td>
</tr>
<tr>
<td>Description versus keywords</td>
<td>82</td>
</tr>
<tr>
<td>Description versus both keywords and description</td>
<td>86</td>
</tr>
</tbody>
</table>

Notes: No fewer than 22 searches were run for each set of comparisons. Each search generated ranks for each of the pages being compared. As a result, the number of searches is half that of the number of ranks compared. For example, 42 searches resulted in 84 ranks being generated: 42 ranks for pages with the description attribute and 42 ranks for pages with the keywords attribute.
META tags has probably not affected the retrieval rank. If the U test shows that the ranks are most likely not from the same distribution, then the type of META tag markup used has probably affected the rank.

The Mann-Whitney U test was chosen because it tests rankings of at least ordinal-level data. The rankings received from the search engines were considered ordinal-level data because AltaVista and Infoseek have different algorithms for ranking materials. In addition, the degree of relevance attributed to a site by a search engine is not directly correlated to its rank. For instance, one search might yield a result in which a site ranked first is considered 100% relevant to the search query, while in another search, a site given the first ranked position is considered 75% relevant to the query. As a result, the distance between ranks is not consistent for all searches analyzed. Ranks were recorded rather than relevance percentages because not all search engines provided relevance percentage information.

The Mann-Whitney U test was run to compare several sets of search result rankings for pages with: no META tag and keywords attribute META tags; no META tag and description attribute META tags; no META tag and both keywords and description attributes META tags; keywords attribute META tags and both keywords and description attributes META tags; keywords attribute META tags and both keywords and description attributes META tags; and description attribute META tags and both keywords and description attributes META tags. In each test the number of times that the rank of one set of scores exceeded the rank of another set of scores was tallied. The results are summarized in tables 3 and 4.

Table 3 lists the number of searches whose rankings were compared in each pair.
TABLE 5
MEDIAN, MODE, AND RANGE FOR META TAG COMPARISONS
(ALTAVISTA AND INFoseEK COMBINED)

<table>
<thead>
<tr>
<th>Attributes Compared</th>
<th>Page Type</th>
<th>Median</th>
<th>Mode</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>None versus keywords</td>
<td>None</td>
<td>59</td>
<td>7</td>
<td>199</td>
</tr>
<tr>
<td></td>
<td>Keywords</td>
<td>8</td>
<td>3</td>
<td>181</td>
</tr>
<tr>
<td>None versus description</td>
<td>None</td>
<td>39.5</td>
<td>3</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>43</td>
<td>4*</td>
<td>197</td>
</tr>
<tr>
<td>None versus both keywords and description</td>
<td>None</td>
<td>79</td>
<td>15</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>14</td>
<td>2</td>
<td>193</td>
</tr>
<tr>
<td>Keywords versus both keywords and description</td>
<td>Keywords</td>
<td>14</td>
<td>2</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>20</td>
<td>1</td>
<td>196</td>
</tr>
<tr>
<td>Description versus keywords</td>
<td>Description</td>
<td>65</td>
<td>14</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>Keywords</td>
<td>13</td>
<td>3</td>
<td>109</td>
</tr>
<tr>
<td>Description versus both keywords and description</td>
<td>Description</td>
<td>57</td>
<td>4</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>12</td>
<td>2</td>
<td>192</td>
</tr>
</tbody>
</table>

*Multiple modes exist. Smallest mode is shown.

No fewer than 22 searches (yielding 44 rankings) were observed for each set of comparisons. Table 4 lists the results of the U test for each comparison by recording whether a statistically significant difference was noted at the .01 level. Sets of ranks are considered statistically significant in their differences if the smaller U score observed is less than or equal to the critical U value for that sample size.

The U tests were run for all searches in AltaVista and Infoseek combined as well as for AltaVista and Infoseek results separately. Results are reported for AltaVista and Infoseek ranks combined to determine how well META tags work regardless of the search engine used. AltaVista and Infoseek were also considered separately to determine whether one search engine's performance skewed the combined rankings. These results show how Internet search engines deal with META tag data rather than how well Internet search engines work to retrieve known items.

In addition to the Mann-Whitney U test, the medians, modes, and ranges of ranks were generated to test the practical significance of the findings from the Mann-Whitney U test. If the U test suggests a statistically significant difference but the median, mode, and range are similar, then the U test difference may be said to have less practical significance. However, if the U test suggests a statistically significant difference and the median, mode, and range are different, then the U test can be said to reflect a practical as well as statistically significant difference. The median, mode, and range values are summarized in tables 5, 6, and 7.

DATA ANALYSIS: COMPARISONS OF PRESENCE AND ABSENCE OF META TAG

The use of the HTML META tag was expected to improve the ranking of a document when searched using an Internet search engine. We tested this assertion by measuring the rankings of three sets of comparisons: pages with no META tag to those with keywords attribute META tags, pages with no META tag to those with description attribute META tags, and pages with no META tag to those with both keywords and description attributes META tags. The inclusion of the keywords attribute, with or without the description attribute also present, consistently improved the accessibility of HTML documents. Unexpectedly, however, the inclusion of only the description
attribute did not improve ranking of a page over a page with no META tag.

Pages containing the keywords attribute META tag were consistently ranked by Internet search engines as more relevant than pages lacking a META tag. Page rankings were found to have statistically significant differences at the .01 level. The U test results of pages employing only the keywords attribute versus pages lacking a META tag reflect a comparison of 198 search ranks. The results detailed in table 5 suggest that pages that use the keywords attribute META tag are consistently ranked as more relevant than those without the META tag. In addition, the disparity among the median, mode, and range for these two groups (table 5) is consistent with the findings of the Mann-Whitney test. Similar results were obtained when comparing the ranks of pages with no META tags and of pages with both the description and keywords attributes META tags. This comparison of 194 search results (tables 3 and 4) revealed that having both attributes in the META tag resulted in higher rankings than having no META tag present. As was the case with the keywords attribute only results, the median, mode, and range (table 5) were sufficiently different for each set to reinforce the results of the Mann-Whitney test.

Surprisingly, the comparison of the ranks of pages with no META tag and of pages with only the description attribute META tag revealed no significant difference. The ranks of 96 searches were compared, with a U test result that failed to reach the .01 level (table 4). In addition, median, mode, and range were very similar for both sets of ranks (table 5). This suggests that the effect of the description attribute was negligible.

The U test and median, mode, and range were generated for AltaVista and Infoseek scores separately to verify that the similarities noted in all scores combined were not the result of the bias of one particular search engine. The U test for AltaVista and for Infoseek (table 4) did not reveal a statistically significant difference between these sets of ranks. Moreover, the median, mode, and range for both AltaVista (table 6) and Infoseek (table 7) validated the U score results. Although it is possible that the AltaVista scores, which reflected a higher median for ranks of pages without a META tag than for pages with the description attribute alone, may have influenced the median for the scores combined, it is not likely that the results from either AltaVista or Infoseek biased the combined totals.

### TABLE 6
**Median, Mode, and Range for META Tag Comparisons (AltaVista Only)**

<table>
<thead>
<tr>
<th>Attributes Compared</th>
<th>Page Type</th>
<th>Median</th>
<th>Mode</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>None versus keywords</td>
<td>None</td>
<td>153.5</td>
<td>156</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>Keywords</td>
<td>10</td>
<td>5</td>
<td>181</td>
</tr>
<tr>
<td>None versus description</td>
<td>None</td>
<td>127</td>
<td>148</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>134</td>
<td>65*</td>
<td>197</td>
</tr>
<tr>
<td>None versus both keywords and description</td>
<td>None</td>
<td>153</td>
<td>156</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>25.5</td>
<td>12</td>
<td>199</td>
</tr>
<tr>
<td>Keywords versus both keywords and description</td>
<td>Keywords</td>
<td>23.5</td>
<td>4</td>
<td>181</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>34.5</td>
<td>3</td>
<td>193</td>
</tr>
<tr>
<td>Description versus keywords</td>
<td>Description</td>
<td>197.5</td>
<td>198</td>
<td>195</td>
</tr>
<tr>
<td></td>
<td>Keywords</td>
<td>17.5</td>
<td>5*</td>
<td>199</td>
</tr>
<tr>
<td>Description versus both keywords and description</td>
<td>Description</td>
<td>196.5</td>
<td>198</td>
<td>199</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>34.5</td>
<td>4</td>
<td>199</td>
</tr>
</tbody>
</table>
The differences noted here might be due to the ways in which Internet search engines index and weigh the text from a page in comparison with the text in a description attribute. According to information that we received from AltaVista Support, if the description attribute is indexed, the page text is not (Alta Vista Support 1998). This might be the case with other search engines as well and would naturally favor pages with no META tag over those with only the description attribute META tag because multiple occurrences of the same terms might be more likely in the text of a page than in the description attribute.

**Data Analysis: Comparisons of Different META Tag Attributes**

The Mann-Whitney U test was also performed on the ranks of pages using various attributes within the META tag. U scores were generated to compare these rankings: pages with only the keywords attribute META tag to those with both keywords and description attributes META tags; pages with only the description attribute META tag to those with both keywords and description attributes META tags; and pages with only the keywords attribute META tags to those with only the description attribute META tag. It was assumed that using both the keywords and description attributes would improve retrieval in relation to those pages with only one type of META tag. In addition, it was assumed that the keywords attribute META tag would result in better retrieval than the description attribute META tag.

No statistically significant differences were found between the ranks of pages with both the keywords and description attributes and those of pages containing only the keywords attribute in the META tag. We expected that pages with META tags containing both keywords and description attributes would result in higher rankings than those containing only the keywords attribute. Although the U test did not uncover a statistically significant difference between the sets of scores (table 4), the median rank for the keywords attribute only pages was somewhat better than the median rank for pages with both the keywords and description attributes (table 5).

The ranks of pages using only the description attribute META tag were compared to ranks of pages using only the keywords attribute and to ranks of pages.

---

**TABLE 7**

**Median, Mode, and Range for META Tag Comparisons**

*(InfoSeek Only)*

<table>
<thead>
<tr>
<th>Attributes Compared</th>
<th>Page Type</th>
<th>Median</th>
<th>Mode</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>None versus keywords</td>
<td>None</td>
<td>26</td>
<td>2*</td>
<td>199</td>
</tr>
<tr>
<td></td>
<td>Keywords</td>
<td>5</td>
<td>1</td>
<td>119</td>
</tr>
<tr>
<td>None versus description</td>
<td>None</td>
<td>18</td>
<td>3*</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>19</td>
<td>4*</td>
<td>82</td>
</tr>
<tr>
<td>None versus both keywords and description</td>
<td>None</td>
<td>37</td>
<td>3*</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>9</td>
<td>2</td>
<td>168</td>
</tr>
<tr>
<td>Keywords versus both keywords and description</td>
<td>Keywords</td>
<td>12</td>
<td>4</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>11</td>
<td>2</td>
<td>196</td>
</tr>
<tr>
<td>Description versus keywords</td>
<td>Description</td>
<td>27</td>
<td>19</td>
<td>198</td>
</tr>
<tr>
<td></td>
<td>Keywords</td>
<td>8</td>
<td>1</td>
<td>103</td>
</tr>
<tr>
<td>Description versus both keywords and description</td>
<td>Description</td>
<td>22</td>
<td>19</td>
<td>197</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>4</td>
<td>2</td>
<td>40</td>
</tr>
</tbody>
</table>

*Multiple modes exist. Smallest mode is shown.*
using both the keywords and description attributes. In both cases, the U test recorded a statistically significant difference (table 4). Additionally, the median ranks observed in both cases validated the U score results (table 5). The evidence suggests that using the keywords attribute, either with or without the description attribute, improves retrieval rank over using only the description attribute. This might be the result of the weight given to page text versus the weight given to description attribute text, or it might reflect the decision by search engine designers not to index the page text when a description attribute is present.

**CONCLUSION AND FUTURE WORK**

Enabling users to find materials on the World Wide Web is an important problem faced by librarians, search engine designers, and Internet publishers and content providers. As new standards in metadata emerge, such as the Dublin Core (Weibel 1995) and Extensible Markup Language, or XML (Flynn 1998), it will be possible to embed richer types of metadata into documents, thereby improving automated indexing processes. The goal of this research was to determine how useful one current method, the HTML META tag, is in improving accessibility via Internet search engines. Because only AltaVista, Infoseek, and HotBot currently recognize and use the META tag, we suggest that search engine designers enable their services to accept META tag data because it does benefit retrieval rank. Concern over improper uses of the META tag do not justify failure to index them when appropriately used.

This research serves as a snapshot of how current forms of embedded metadata are processed by Internet search engines. Newer technologies and methods for embedding and indexing World Wide Web documents are evolving that will alter the view presented here. The searches used to test indexing methods reflect an idealized situation because terms searched were known to be present in the documents sought. Retrieval rates based on more realistic search scenarios might reveal lower rankings. It was found that using the keywords attribute of the HTML META tag, with or without the description attribute, consistently improved the retrieval rank of a Web document. Mann-Whitney U test comparisons of rankings of pages with the keywords attribute versus those with no META tags revealed a statistically significant difference at the .01 level. However, using only the description attribute in the META tag did not appear to improve retrieval over not using a META tag. The Mann-Whitney U test did not reveal a statistically significant improvement in retrieval rank between pages using only the description attribute and pages with no META tag. Furthermore, the U test shows that pages with only the description attribute were given consistently less-relevant ranks compared to pages employing either the keywords attribute alone or pages containing both keywords and description attributes.

This discrepancy may reflect different ways in which Internet search engines index and weight the text from a page and the text in a description attribute and the failure to index page text when the description attribute is present. This process favors pages with no META tag over those with only the description attribute META tag because there can be multiple uses of the same terms in the text of a page while the description attribute is likely to use a given term fewer times. It is important to bear in mind that the description attribute is designed to provide a display summary of the resource rather than to improve retrieval of a document. We suggest that search engine designers consider indexing the full text of a page regardless of the presence of a description attribute or improve the relevance assessment of text in the description attribute. The Mann-Whitney U test did not uncover a statistically significant difference between the ranks of pages with only the keywords attribute and pages with both the keywords and description attributes. We suggest that World Wide Web authors use at least keywords attribute META tags in their documents.

More research needs to be done to determine the types of keywords that are
most effectively used in HTML META tags. In this research, we relied upon idealized search situations because all the terms searched were known to be present in the documents indexed. Further research is needed to determine whether META tag data assists users in finding known documents when a more diverse group of search terms is used. The method used here might have resulted in better retrieval rates than more realistic searches would generate. Not surprisingly, this research also suggests that because searches for abstract or general terms retrieve large result sets, the inclusion of a META tag might not have practical significance in improving the retrieval rank of a page. The inclusion of many abstract terms in a META tag might not raise retrieval rank.

It is clear, however, that the inclusion of specific terms in combination with more abstract ones will have an impact on retrieval rank when less general terms are searched. The question of the usefulness of abstract and specific keyword terms requires more study. Finding new ways of embedding significant metadata into documents will enhance the experiences of both content providers and users of Internet search engines.

Works Cited


AltaVista Support. 1998. E-mail message to the authors. 4 June.


Specificity, Syndetic Structure, and Subject Access to Works about Individual Corporate Bodies

Mary Dabney Wilson

The evolution of subject access to works about individual corporate bodies in Anglo-American subject cataloging practice is presented. Comparison is made to the similar problems of works of individual biography. The lack of comparable levels of subject access for the two classes of works is explored. Automation may have been part of the problem, but through automated maintenance routines, it offers the best hope for a viable solution. Recommendations are made that would restore parity in level of subject access by using syndetic reference structure and preserving the principle of specific entry upon which most subject access systems in Anglo-American libraries are based.

Works about individual corporate bodies are not unlike biographies of individual people. In fact, many are just that: histories treating the birth, life, and death of a particular institution or enterprise. With regard to subject access, a catalog user would probably expect to find a similar level of treatment for works about individual corporate bodies as that provided for biographies of individual persons. However, in catalogs following practices established by the Library of Congress (LC) that has not been the case in more than 10 years. For years the pendulum of subject access favored corporate bodies over individuals. Though using quite different approaches, a sort of equilibrium began to emerge in the late 1970s. By 1986, the pendulum was reversed, leaving works of individual biography with the fuller subject access. In this paper, I will review the evolution of subject cataloging practice for works about individual corporate bodies and suggest changes that would return parity to subject access for the two classes of works.

THE "YELLOW PAGES" DILEMMA

When assigning subject headings for a work about an individual corporate body, without hesitation a cataloger will assign the name of the corporate body in the form in which it is established for author entry, i.e., the form in the name authority record. For example, the cataloger of

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Case Western Reserve: A History of the University, 1826–1976, will first assign the heading Case Western Reserve University—History. Thereafter, many catalogers will instinctively think in terms of providing access to the work for those users who want information about colleges or universities in Ohio, but might not happen to know the names of the individual institutions about which a work might exist in the particular database or catalog. The cataloger reasons that such users would approach the catalog through a category or generic heading such as Universities and colleges—Ohio.

A paradigm for this type of access is familiar to all who use the yellow pages in a telephone directory. In the yellow pages are found listings of individual members of such categories as banks, credit unions, dry cleaners, hospitals, libraries, schools, museums, etc. within the local dialing domain. Thus it might be reasonable to assume that a user would expect to find listings of books, etc. about individual corporate bodies under a category heading in a library’s catalog. A user can find individual biographies of United States presidents under the category heading Presidents—United States, even though this treatment for individual biography is a relatively recent phenomenon and will be discussed later. Technically, the cataloger is prevented from providing a subject heading for the category on the record for the work about a particular instance, because of the principle of specific entry. This prohibition is currently manifested in the Consor Cataloging Manual (1993–, Module 15, 7–8) in the section on subject headings for serials:

15.2.5. Assigning headings when a corporate body is the subject. Material about a corporate body often receives a heading for that corporate body alone.

110.2 W.R. Grace & Co.
24500 Annual report/$c W.R. Grace & Co.
610.20 W.R. Grace & Co. $x Periodicals.

Note, however, for annual reports of corporate bodies that are responsible for certain activities, it may be appropriate to assign headings for both the individual corporate body and the corresponding activity or field. For example, for the biennial report of the Minnesota State Board of Medical Examiners, the following headings could be assigned:

610.20 Minnesota State Board of Medical Examiners $x Periodicals.
650.0 Medical personnel $x Licenses $z Minnesota $x Statistics $x Periodicals.

However, do not assign a general heading to reflect the type of corporate body when only one body is discussed. For example,

650.0 Health occupations licensing board $z Minnesota $x Periodicals

is not an appropriate heading for the biennial report of the Minnesota Board.

Similarly, regarding subject headings for works about individual corporate bodies, Chan (1994, 254) states:

The name of the corporate body, as established according to Anglo-American Cataloguing Rules ... is assigned as the subject heading for a work about an individual corporate body, even if the subject entry duplicates the main entry or an added entry. Generic headings representing types of corporate bodies are not assigned.

These instructions are unequivocal; the cataloger does not assign a category or generic subject heading in these situations. This principle dates back at least as far as Cutter (1904, 66–67). Until 1986, in the case of works about individual corporate bodies, the syndetic structure of the catalog supplied directional assistance to the user through a subject-to-name “See Also” reference from the broader category heading to the individually named instance. Since 1986, LC has ceased to make such references and in fact prescribes the elimination of them from older authority records where some still reside. Therein lies the dilemma: the cataloger is prevented from making the category heading in the bibliographic record because of the principle of specific entry and is also prevented from making the reference by current national level instructions. However, evidence
abounds in records in the national utilities that many catalogers elect to provide the broader subject access by adding category subject headings, either in ignorance of, or perhaps in spite of, the prohibition against them.

Inconsistent, and perhaps confusing to catalogers, is the manner in which precisely the same problem is addressed if the work is about an individual person rather than an individual corporate body. In LC subject cataloging practice, subject heading for a class of persons is assigned in the bibliographic record, a practice clearly in opposition to the principle of specific entry. How did this variation in approach come about?

**History**

Cutter (1904) recognized that there would be a tendency to want to assign headings at two levels of hierarchy. In his discussion of rule 161 for specific entry, he noted that difficulty would arise when the public, accustomed to using a classed catalog in his time, approached a dictionary catalog thinking of certain subjects in connection with their including classes. He stated (67):

> ... there is a temptation to enter certain books doubly, once under the specific heading to satisfy the rule, and once under the class to satisfy the public. The dictionary principle does not forbid this. If room can be spared, the cataloger may put the less comprehensive works also under their respective specific headings. The objection to this is that, if all the specifics are thus entered, the bulk of the catalog is enormously increased; and that, if a selection is made, it must depend entirely upon the "judgement," i.e., the prepossessions and accidental associations, of the cataloger, and there will be an end to all uniformity, and probably the public will not be better satisfied, not understanding why they do not find class-entry in all cases.

For Cutter, guiding users from the category to the instance was the role of syndetic reference structure in the catalog. In rule 187 Cutter (1904, 79) stated:

> Make references from general subjects to their various subordinate subjects and also to coordinate and illustrative subjects. Cross-references should be made by Full from classes of persons (Merchants, Lawyers, Artists, Quakers, etc.) to individuals belonging to those classes...

Note that when Cutter used the term "by Full," he was merely indicating the size of the catalog. He stated (1904, 11): "to avoid the constant repetition of such phrases as 'the full catalog of a large library' and 'a concise finding-list,' I shall use the three words Short, Medium, and Full as proper names. . . ."

Haykin (1951, 16) echoed the syndetic approach for individual biography, stating:

> Such references to names of individuals are indicated from headings designating occupations, for example:

- Architects, British see also Wren, Sir Christopher, 1632–1723
- Economists, American see also Veblen, Thorstein, 1857–1920
- Walker, Francis Amasa, 1840–1897
- Painters, French see also Bonheur, Rosa, 1822–1899
- Matisse, Henri, 1869–
- Meissonier, Jean Louis Ernest, 1815–1891

Haykin (1951, 17) was just as explicit regarding the recommended technique for works about individual corporate bodies:

> A reference from the subject heading for a particular kind of society or institution should be made to the names of individual societies of that kind as a guide to such of their publications as describe their purposes, activities, history, and proceedings. This obviates the necessity of using the subject heading designating the kind of society or institution for every entry of this character. It is exactly parallel with the use of the reference from the name of the occupation to the names of individuals who follow that.
occupation for the purpose of guiding the reader to autobiographical material.

Medicine—Societies
see also
Academy of Medicine of Cincinnati
Colorado State Medical Society
Medical Women’s International Association...

For both Haykin and Cutter, the principle was to assign the most specific subject, either the name of the person or corporate body, and make references from the generic category to the individual instance. For works about individual corporate bodies, the “See Also” reference technique was employed fairly consistently by catalogers at LC over a period of years. There were instructions (H 390, canceled in 1985) in Subject Cataloging Manual: Subject Headings (SCM:SH 1984) that detailed LC procedures for cataloging a work about an individual corporate body that would result in the addition of subject-to-name references to the existing name authority record for the body. In Cataloging Service (CS 1975, 28–29), the practice of making references whenever the name of a corporate body was first assigned as a subject heading is described:

Such references are of value since they represent to the catalog user the key link between the discipline of interest and the specific organizations represented in the catalog active in that discipline. Without them pertinent information may be overlooked. LC provides for such references for all corporate bodies except commercial firms and geographic jurisdictions, e.g.,

Societies International Kart Foundation
xx Karting—Societies, etc.

Otago Home Economics Association
xx Home economics—New Zealand—Societies, etc.

Agencies Manitoba Water Services Board
xx Water-supply—Manitoba... 

Institutions Art Museum of South Texas
xx Art—Corpus Christi, Tex.—Galleries and museums
Corpus Christi, Tex.—Museums
Museums—Texas

Dom, Fulda, Ger.
xx Cathedrals—Germany, West
Fulda, Ger.—Churches

From the examples given above, it is clear that only some of the references were from category headings. Many were topical subjects made into category headings with the addition of the subdivision “Societies, etc.,” and some represented a field of activity. It will also be noted that the form of many would have been affected by the “city flip” in which many subjects formerly constructed as [geographic name]—[topical subdivision] were flipped to [topical heading]—[geographic subdivision] forms. Examples of class of corporate body headings above would be Museums—Texas and Cathedrals—Germany, West.

**INDIVIDUAL BIOGRAPHY**

In 1976, LC announced changes in practice related to biography that included assigning an array of appropriate topical subject headings to a work of individual biography, one of which was for the class of persons (CS 1976). Before 1976, it is apparent that some, if not most, of Haykin’s class of persons See Also references were not made in LC’s manual file. El-Hoshy (1998) indicated that only on the manual authority card for Christopher Wren was “xx Architects—Great Britain” pencilled in. The other Haykin references did not appear on LC’s manual authority cards for the other names he used as examples, and so it is clear that Haykin’s recommendations were not frequently followed. In 1976, LC rationalized its new practice by saying that up to that time, topical information in individual biographies had been ignored and that by changing the practice, it was enabling a user to retrieve by form [biography] “in his particular field of interest.” “Field or discipline” would be manifested by a heading of the type: [class of persons]—[place]—Biography. Later, LC provided extensive new instructions to the basic provisions above to include headings for events or wars and sometimes ethnic and gender affiliations (CSB
With regard to the class of persons heading, SCM:SH (1996–, H1330, 2) includes instructions that now state:

Note: This heading is assigned to individual biographies primarily for the benefit of public library users who are seeking biographies of a particular type of person rather than a particular individual. The heading should be selected with that in mind. If the biographee belongs to no discernable class of persons of the type judged likely to be sought by the typical public library user, it may be omitted.

It is not immediately clear what it is about the technique of assigning a subject heading for the class of person to each biography of Abraham Lincoln that is inherently superior to the practice of making a single See Also reference from Presidents—United States to Lincoln, Abraham, 1809-1865 on Lincoln's name authority record. The answer, however, lies in catalog maintenance issues from the card catalog era to today's automated library systems. The general-to-specific or subject-to-name reference technique only works when the references are made and maintained in catalogs. Palmer (1986, 71) noted in a study of subject heading practices in card catalogs that many libraries never employed See Also references: "not even the largest libraries were able to provide the 'See Also' references upon which LC assignment of subject headings is based." Thus a major component of the subject access system was omitted in actual practice, throwing the efficacy of the entire system into question.

If libraries were unable to supply See Also references explicitly listed in the Library of Congress Subject Headings (LCSH), then they were even less likely to provide the subject-to-name references, because only institutions purchasing or receiving depository LC authority cards would even have had knowledge of their existence. Furthermore, the need for such references is institution-specific, depending solely on the local collections and the occurrence therein of works about individual persons or corporate bodies.

Only the most meticulous librarians ever provided complete arrays of even the explicitly listed See Also references within their catalogs. They were much less likely to make and maintain ones that they would have had to create and for which only the sketchiest guidelines were available. Instead, and as a substitute for syndetic structure in the catalog itself, the volumes of LCSH were placed strategically near the catalog for the benefit of the users and the librarians who helped them navigate subject terminology. Until automation, syndetic structure never had much of a chance to perform.

**Automation: the Problem**

Factors contributing to the lower visibility and utilization of subject-to-name references were and are related to automation. The first records coded and distributed in electronic form were bibliographic records, not authority records. A preliminary edition of Authorities: A MARC Format was published in 1976, with the first edition appearing in 1981 (USMARC Format for Authority Data 1993–). The first authority records began to be distributed through USMARC distribution tapes in 1984 (CSB 1983). While the ability to handle authority records and reference structures in systems has improved, further refinements are still needed, especially in the area of automated catalog maintenance. Under pressure to update terminology in LCSH, LC was faced with a situation where the limitations of its own system intervened with regard to subject-to-name references. Subject headings residing in name authority records could not be maintained. In October 1986, the Subject Cataloging Division at LC announced it would cease making subject-to-name references in name authority records for corporate bodies. Some time later LC instructed Name Authorities Cooperative (NACO) participants to remove subject-to-name references whenever the authority record was touched for any other reason. This practice is still in effect and is recorded in the NACO Participant’s Manual (NPM 1996,
The author did not find any solicitation for public comment on this issue, nor was there any announcement of the cessation of subject-to-name references in CSB. An example that currently remains in the national authority file can be seen in figure 1. The maintenance problem occurs when a change is needed in subject heading terminology (in this example, the heading “Universities and colleges”) and the system neither detects nor corrects a matching subject string when it resides in an authority record rather than a bibliographic record.

Figure 1. National Level Authority Record Containing a Subject-to-Name Reference.

81). The author did not find any solicitation for public comment on this issue, nor was there any announcement of the cessation of subject-to-name references in CSB. An example that currently remains in the national authority file can be seen in figure 1. The maintenance problem occurs when a change is needed in subject heading terminology (in this example, the heading “Universities and colleges”) and the system neither detects nor corrects a matching subject string when it resides in an authority record rather than a bibliographic record.

**GENERAL “SEE ALSO” REFERENCES AND THEIR PROBLEMS**

Using general See Also references is another sanctioned technique to guide the user from a category heading to works in the catalog about members of the category. Haykin (1951, 15) contrasts the use of specific See Also references with general See Also references:

Frequently, however, when the headings referred to are obviously individual members of a single class or category, the reference is made not to the individual members but to the class, and several members are added by way of example. . . . It may well be argued that general references defeat the syndetic aspect of an alphabetic subject catalog in that the specific subject headings to which the reference should lead are not all named, but are represented merely by an example. It is, however, unlikely that any but the occasional reader would seek all the material in the library covered by all the specific headings comprehended by the broad one from which the general reference is made. If he should, he would be wiser to seek his material through bibliographies, or to refer to systematic treatises on the broad subject for the topics for which there would be headings in the catalog should the library possess separate works on them. The purpose of the general reference is primarily suggestive.

In his logic for the efficacy of general See Also references, Haykin doubts that users will want all occurrences, when it seems much more likely that a user searching a category heading will not know specific headings to search and instead needs to see a listing from which to make a selection. The weakness of Haykin’s logic can be illustrated by applying it to an entry that might appear in yellow pages telephone directories. Most librarians would agree that an entry under “Banks” that advised users to “search white page listings under: First National Bank, etc.” would not supply a satisfactory level of guidance to users.

There is some evidence in SCM:SH that, for topical subjects, general See Also references for generic class-to-class member (e.g., “Tools See Also Axes, Files and rasps, Hammers . . .”) might be fading. In H 371 (SCM: SH 1996–, H371, 1) the following is stated:
The practice of making new references of this type has now largely been abandoned in favor of making a specific reference from a broader heading whenever a new heading is established. Existing general See Also references of this type are being retained in the subject authority file until all individual headings that had formerly been covered by the general reference are actually linked to the broader heading by BT/NT references:

This implies a move toward exhaustive listings for topical subject class-to-class member headings. However, H 371 goes on to say that there are other categories of general See Also references that have been made and may still be made. Among these types of general See Also references are those to categories or types of name headings, such as:

- Church buildings
  SA names of individual churches

In various SCM:SH instructions, there are other specific provisions for general See Also references (indicated in USMARC as 360 fields in the authority record for the category) that at best can only suggest a type of heading that might be available to the user, but still require the user to know individual names, such as:

- Universities and colleges
  SA names of individual institutions

- Hospitals
  SA names of individual hospitals

- Railroads
  SA names of individual railroads

- Concentration camps
  SA names of individual concentration camps

- Museums
  SA names of individual museums

**PROBLEMS ASSOCIATED WITH THE DIVISION OF THE WORLD**

In attempting to assign responsibility for establishing categories of ambiguous entities, LC has engaged in what is commonly known as "the Division of the World." SCM:SH H405 provides two lists of entities: those established in the name authority file and governed by descriptive cataloging conventions, and those established in the subject authority file and governed by subject cataloging conventions. Some of these ambiguous entities, when established by subject catalogers, will have a broader term reference provided for the category of entity to the specifically named entity (unless it falls under the provisions for assignment of a general See Also as prescribed by LC above) (see figure 2).

When an entity is moved from the subject file to the names file, as has recently been the case with concentration camps and arboreturns, an unfortunate phenomenon takes place. The broader term reference is immediately expunged. Again, this is because NACO guidelines for establishing names forbid the use of subject-to-name references. Individual concentration camps provide a case in point. When concentration camps were established by subject catalogers as geographic names, a broader term reference from *World War, 1939-1945—Concentration camps—[place]* to the individual camp was generally made. The result in a catalog that displayed See Also references was a listing of individual camps similar to that found in figure 3. As these entities migrated to the name authority file, the...
broader term references were eliminated. A similar phenomenon took place when individual computer software programs migrated from the subjects to the names file as uniform titles. When established according to subject cataloging principles, general-to-specific references were made (see figure 4). After the move from the subjects file to the names file for individual named entities, a user accustomed to finding an exhaustive listing is required to know the names of specific concentration camps or word processing software in order to find individual works about them.

**AUTOMATION: THE SOLUTION**

The only reason offered by LC for the cessation of subject-to-name references was that they had not been maintained, and the references continue to be removed for the same reason. One of the specific maintenance issues at LC has been that its automated system is unable to perform global changes. Thus, when a heading needs to be changed, as is frequently the case to meet the demand for updated terminology or the recommendations of 1991 Subject Subdivisions Conference, records must be updated manually. Couple this manual editing with the bifurcation of authority files between names and subjects and the division of personnel between descriptive and subject cataloging, and it is easy to see why maintenance is such an issue.

Maintenance in a manual environment is a significant and costly proposition, but in an automated environment it should be much less of an issue, provided that systems include the necessary maintenance routines. Programming based on existing USMARC formats and data elements could and should eliminate the drudgery involved in manual maintenance of headings in both bibliographic and authority records.

Many integrated library systems already have in place some level of validation and error detection routines. Some of the necessary features needed to restore subject-to-name references as an element of syndetic structure of the catalog and to eliminate almost all manual maintenance include the capability:

- To generate a reference from a name authority record 550 to display in the subject index (if separate) when the 550 has a control subfield w that is coded as a broader term, valid for subject reference structure only ("gbnn");
- To detect that such a reference is valid if the name heading to which it points (authority 1xx) has been used as a bibliographic (bibliographic 6xx), with or without further subdivision;
- To set automatically the values in the control subfield w of the authority 550 for nondisplay—that is, broader term, valid for subject reference structure only, do not display ("gbna") if the authority heading has not been used as a bibliographic subject heading (with or without further subdivision);

---

**Figure 3. Typical Reference Array Before Subject Headings Became Name Headings.**

**Figure 4. Typical Reference Array Before Subject Headings Became Subject Uniform Titles.**
To set automatically the control subfield w in the authority 550 to broader term valid for subject reference structure, display ("gbnn") if the 1xx in an authority record with a suppressed 550 (control subfield w "gbna") is used as a subject heading (with or without further subdivision);

To validate the use of the main heading as a subject in the local file and to set automatically the control subfield w to the appropriate value when an authority record enters the local system for the first time, if a 550 is present as mentioned above;

To change globally a target subject string when it occurs in authority records 550s (specifically in name authority 550s) as well as when it occurs in bibliographic records. This routine is needed in general subject authority work to support the updating of topical subject reference structures. Caution would be needed not to initiate a global change when an old subject term is replaced by two or more new terms.

To detect and report (not change) strings in name authority 5xx references that match on 4xx strings in subject authorities. This routine would take care of the problem of updating terminology across files when subject headings are changed. Previous terms would be recorded as 4xx references, but because the change is frequently for a heading split, the term in the name authority 5xx will need to be reported for human manipulation.

The routines described above would enable the subject-to-name reference technique to be applied to works of individual biography as well.

It should be recognized that even if maintenance of subject-to-name references can be automated, there will still be some cost associated with the intellectual effort of devising the references. However, there is a similar level of intellectual work to determine the class of persons subject heading for a work of individual biography. Using class of corporate body or class of persons references would offer a savings in effort over individually assigned subject headings, the current practice with individual biography. It would be minimally more costly to provide a comparable level of access for works about individual corporate bodies, and more importantly, not providing any level of subject access apart from the name itself is patently inconsistent.

**Conclusion and Recommendations**

The history of subject access in relation to works about individual corporate bodies and also to works of individual biography has been outlined. The principle of specific entry upon which subject access in dictionary catalogs is based requires a subject heading for the named entity and not one for the generic category to which that entity belongs. With other types of subjects, syndetic structure provides the directional cues needed to move from category to instance. In the case of individual biography, the principle of specific entry is violated by assigning subject headings for the class of persons, but at least a form of category access is being provided. In the case of works about individual corporate bodies, those cues have been eliminated, leaving a void in subject access. The only sanctioned remedy, the use of general See Also references, has been shown to be weak, being merely suggestive of possible terms for searching.

To restore comparable levels of access, there are three choices:

1. Follow the path used for individual biography and assign a class of corporate body subject heading to works about individual corporate bodies.
2. Leave individual biography treatment as it is, but restore subject-to-name references on name authority records when works about individual corporate bodies occur in the catalog.
3. Use subject-to-name references for both and cease assigning class of persons subject headings for individual biography.

The path most consistent with principles would be the third option. At the least,
it is recommended that the previous practice of generating subject-to-name references when a corporate body is used as a subject be reinstituted. The specific guidelines in the canceled SCM:SH H390 are more developed than those described in Cataloging Service (1975) and in Chan (1986, 107–108), and those H390 guidelines could be resurrected. The only provisions that should be reconsidered are those that call for addition of subject-to-name references for headings other than class of corporate body. Specifically, those H390 guidelines that call for subject-to-name references that indicate the field of activity for firms, banks, corporations, government agencies, etc. should be reconsidered according to the guidelines enunciated in Conser Cataloging Manual. Those guidelines state that field of activity, if appropriate to the work, should be assigned as a subject heading to the individual record rather than as a subject-to-name reference. The issue of the specificity of geographic subdivision (to the first order geographic name or to the local level) should be opened for discussion.

For NACO contribution and editing, the subject-to-name reference should be allowed when a participant identifies a need for the reference in a local file. In editing older records that have subject-to-name references, the NACO participant should update the heading to current subject cataloging terminology and construction. This practice would be similar to that required when other 4xx and 5xx references need to be evaluated.

LC is on the brink of selecting a new integrated library system, making this an auspicious time to restore these references and to consider their applicability to individual biography. An automated or an automated-assisted solution to the loss of subject-to-name reference structure over the last twelve years should also be explored.

**Works Cited**


The Impact of Subject Heading Assignment on Circulation of Dissertations at Virginia Tech

Richard E. Sapon-White and Mary Hansbrough

Subject headings for bibliographic records for dissertations are no longer assigned at some academic libraries, but the impact this might have on dissertation use has not been evaluated. In this study, bibliographic and circulation records for a sample of 248 academic dissertations were examined to determine the effect of controlled subject headings in the records on circulation of the items. Titles with LC subject headings were compared to those without. Chi-square analysis showed significant differences in circulation for the total sample ($p = .04$), but not for individual areas of study. Discussion of sources of bias and suggestions for future research are included.

Dissertations represent a unique and important form of research literature. Often, they are the first peer-reviewed writings of new researchers and represent the initial appearance of fresh ideas and discoveries in many disciplines. In the United States, over 41,000 dissertations were written during the 1995-1996 academic year, representing degrees awarded at over 750 institutions (UMI 1997). Finding dissertations on a given topic can be challenging because usually they are held only by the library of the institution where the dissertation was written. One way to locate this type of research is through subject searching.

Subject access to theses and dissertations generally takes three forms: published lists, various products published by UMI, and bibliographic records in library catalogs and bibliographic utilities. Lists of notable dissertations in a particular field are sometimes published by professional societies or university departments. These lists are sometimes indexed by standard indexing and abstracting services.

UMI actively microfilms theses and dissertations for subsequent publishing on demand. It publishes its database in a variety of products, such as Dissertations First, Theses Abstracts, and Dissertation Abstracts, so that researchers can locate and purchase microfilm or print copies of the papers. Subject access to the database is limited as titles are only characterized by subject in the broadest terms. In UMI's electronic products, it is possible to search by keyword.
Librarians in most academic libraries catalog their local dissertations and contribute the bibliographic records to an online bibliographic utility, such as the OCLC Online Computer Library Center, Inc. Online Union Catalog or the Research Libraries Group Research Libraries Information Network (RLIN). The degree to which subject access is provided to this form of literature varies from library to library. Some assign subject headings and classify by subject while others assign no subject headings and place all theses and dissertations in a single class number for the institution.

In recent years, some academic libraries (e.g., University of Florida and UCLA) have chosen to cease assigning subject headings to some theses and dissertations, often as a means of controlling cataloging costs. Another factor in the decision might have been that subject access was thought to be sufficiently provided via keyword searching in the local catalog or by the use of Dissertation Abstracts. However, keyword searching is qualitatively different from subject searching using a controlled vocabulary. In addition, the UMI databases can only benefit those searching specifically for theses or dissertations; they do nothing for online catalog searchers seeking subject-specific information owned by that particular library.

The impact on use of dissertations caused by the decision to suspend subject heading assignment remains largely unevaluated. In this paper, we examine the impact on use as evidenced by circulation counts following the implementation of this decision at Virginia Tech.

**Literature Review**

There is a dearth of literature on the cataloging of theses and dissertations. Much of what does exist is out-of-date and in need of being replicated in an environment of online bibliographic databases and library catalogs. In many of these studies, authors describe how academic libraries catalog theses and dissertations, including how subject analysis is handled (Patterson, White, and Whittaker 1977; Harris and Huffman 1985; Ryans 1991; Khurshid 1995). Others investigate how researchers locate dissertations (Repp and Glaviano 1987; Lee-Smeltzer and Hackleman 1995) and the ease of searching for dissertations in bibliographic databases (Perry and Salisbury 1995), or evaluate how keyword searching compares with controlled vocabulary searching (Keller 1992). Only in two studies do authors evaluate the impact of subject heading assignment on the circulation of dissertations (Sullivan et al. 1992; Sapon-White 1997).

Patterson, White, and Whittaker (1977) surveyed librarians at 90 university libraries about their local practices for binding, cataloging, classifying, and storing theses and dissertations. They found that 76% of respondents assigned subject headings to all dissertations, while 17% did not assign any subject headings. The remaining respondents assigned only broad subject categories, used locally devised headings, or assigned subject headings on a selective basis. The authors also recorded the statement from one respondent that "subject analysis is too costly for the cataloging department and a waste of time in relation to the amount of use." This unsubstantiated statement was subsequently cited by later authors (Harris and Huffman 1985; Khurshid 1995). It contrasts with the high percentage of libraries reported to be assigning subject headings to dissertations in these and later studies.

Harris and Huffman (1985) reported on a survey of practices at 84 academic libraries concerning thesis and dissertation cataloging practices. They found that 89% assigned subject headings, while 10% did not. Two institutions surveyed, the University of Kansas and the University of New Orleans, had previously performed subject analysis for their dissertations but had discontinued the practice. Harris and Huffman speculated that as libraries switched from card catalogs to online catalogs with keyword searching capabilities, the long descriptive titles of dissertations would obviate the need for subject analysis.

Ryans (1991) surveyed Association of Research Libraries (ARL) libraries in an
attempt to replicate the work of Harris and Huffman (1985). She found that 92% assigned Library of Congress (LC) subject headings, with some respondents also using in-house subject headings.

Khurshid (1995) noted that at his institution, the decision was made to assign only broad LC subject headings followed by a local form subdivision "Theses and dissertations." At his university, the form subject heading "Dissertations, Academic" subdivided by subject was also assigned. He stated that keyword access to the titles and abstracts of theses and dissertations compensated for the lack of more specific subject headings.

Repp and Glaviano (1987) studied how and why extramural researchers (those outside the institution where a dissertation is produced) access locally produced dissertations. They concluded that these scholars usually search for dissertations by subject, though their search terms were often the broad subject categories used by Dissertation Abstracts and related products.

Lee-Smeltzer and Hackleman (1995) surveyed library users, asking those who had checked out a thesis or dissertation about the strategy used to search the online catalog. The authors concluded that library users preferred keyword searching in subject fields over other catalog searching methods, although keyword searching in author fields and exact author searches were also frequently used.

In an interesting study by Perry and Salisbury (1995), OCLC's WorldCat database and RLIN's Dissertation Abstracts International (DAI) database were compared for ease of retrieval of bibliographic records for dissertations. Though they focused primarily on ease of searching and the availability of abstracts, they also compared the databases for coverage of dissertations. They pointed out that there were twice as many records for theses and dissertations in WorldCat as there were in DAI (2.6 million versus 1.3 million) and the WorldCat records appeared much sooner than those in DAI. Moreover, while coverage in the two databases did overlap, coverage was by no means identical. True subject searching in DAI, via a controlled vocabulary, was limited by the broad subject terms used, whereas many of the records in WorldCat were assigned LC subject headings.

Keller (1992) looked at how well the words in subject headings matched words in the titles of theses. Her purpose was to see whether keyword searching could replace subject searching with a controlled vocabulary in an online environment. She found that matching was not high enough to warrant abandoning subject analysis.

Sullivan and others (1992) were one of the few groups of researchers looking at the effect of subject headings on the circulation of dissertations. They looked at circulation records for the first two years of shelf life for dissertations, noting whether or not the titles had circulated. They found that those dissertations that had been assigned subject headings were more likely to have circulated than those that did not have subject headings. In their study, it was impossible to tell how many times an item had circulated.

Similarly, Sapon-White (1997) compared circulation counts for individual titles of 1993 theses at Oregon State University before and after the assignment of subject headings. Circulation counts of titles increased 30% following subject heading assignment. Much of the increase appeared to be due to a small number of titles that circulated many times after the assignment of subject headings.

**BACKGROUND**

Virginia Tech in Blacksburg is Virginia's land-grant university and its leading research institution. Its research expenditures place it in the top 50 institutions in the nation. Virginia Tech has over 200 degree programs and nearly 25,000 students on campus, including approximately 4,200 graduate students.

The university libraries are a member of ARL and a selective depository for federal documents. The libraries hold over 1.9 million printed volumes, 17,000 serial subscriptions, 5 million microforms, 130,000 audiovisual and machine readable pieces, and 120,000 maps. In addition to the main library, the university
The university libraries have open stacks and use VTLS as the online catalog system. VTLS is searchable by keyword in almost all text fields, including author, title, series, and all subject heading fields, as well as several note fields (including thesis and summary notes) by performing a "w/" (word) or "b/" (Boolean) search. Keyword searching can also be restricted to the author, title, or subject heading fields if desired. A subject search, "s/", will retrieve only records with LC subject headings in the MARC 650 field.

**METHOD**

While Sullivan et al. (1992) showed that titles with subject headings were more likely to circulate than those without subject headings, they did not take into consideration the number of times a title circulated. To take an extreme example, it is conceivable that some titles without subject headings circulated many times, while titles with subject headings circulated infrequently. In order to get a complete picture of how subject headings affect circulation, one must consider the number of times a given title is checked out of the library. The present study was designed with this in mind.

The university libraries receive two copies of each dissertation. The first is housed in the Special Collections Department and does not circulate. The second is placed in the general stacks and does circulate. In some cases, a third, circulating copy is deposited in one of the branch libraries. Dissertations are classed together in a single call number and are organized by year, then alphabetically by author's last name. Basic descriptive cataloging is performed by a student assistant using an OCLC constant data form. In the past, a catalog librarian then assigned LC subject headings to each dissertation. After the records are reviewed and edited by a catalog librarian, they are updated in OCLC and exported to VTLS.

Prior to July 26, 1995, LC subject headings were assigned to bibliographic records for all Virginia Tech dissertations. Dissertations cataloged after July 25, 1995, received no LC subject headings, but some were assigned uncontrolled subject terms, suggested by the author of the dissertation, in MARC field 653. Because the VTLS system indexes both title words and field 653 words for general keyword searching, author-supplied terms that matched title words were considered redundant and were omitted from the record during cataloging.

This study was designed to determine the effect of this change in subject heading treatment on dissertation circulation. A program was run against the library database on October 21, 1996, to identify all copies of dissertations that entered into the system between May 1 and October 31, 1995, thus collecting 12 to 18 months worth of circulation data. Entry date was based on the day that the item's barcode was entered into VTLS. This corresponds closely to the date the item becomes available to the public. After being barcoded, the item is labeled and sent to the shelving unit to be placed in the stacks, a process that usually takes only a day or two. The noncirculating Special Collections copies were excluded from the study.

The output of the program listed author, title, call number, barcode number, and copy number for each dissertation that fit the study criteria, as well as the number of times each item had circulated. The circulation count included the number of times the item circulated from the time it entered the library's database until October 21, 1996, the date on which the program was run. Because VTLS updates the circulation count when items are returned, this figure does not include a count for items that were checked out when the program was run or that had been renewed by the borrower after they were checked out. The circulation count does include items checked out to and returned from interlibrary loan.

Following this initial data collection, each bibliographic record was searched in VTLS and viewed to find the date the copy was entered into the system and the academic department for which the dissertation...
<table>
<thead>
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<th>Area of Study</th>
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<td>Art/Architecture</td>
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<td>Biochemistry and Anaerobic Microbiology</td>
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<td>Computer Science</td>
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<td>Crop and Soil Environmental Science</td>
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<tr>
<td></td>
<td>Forestry</td>
</tr>
<tr>
<td></td>
<td>Genetics</td>
</tr>
</tbody>
</table>
was written. If uncontrolled subject terms were encountered in a 653 MARC field, they were counted and recorded for later analysis.

The circulation count for dissertations with subject headings was then compared to the circulation count of those cataloged without subject headings. Data were entered into an Excel spreadsheet for analysis. Each entry was assigned to one of six broad areas of study (art and architecture, business and management, education, engineering, science, social science). The information was sorted by academic area so that the data could be analyzed by subject categories as well as for the whole sample. The areas of study and the departments they included are listed in table 1.

Anomalies in the data included 6 titles with 2 copies that could be checked out. In 5 of these 6 cases, 1 of the 2 copies did not circulate at all. In all 6 cases, the circulation counts for the 2 copies were added together and entered as if there were only 1 copy. Also, 2 dissertations were encountered that comprised 2 volumes each. In one case, neither volume circulated. In the second case, 1 volume circulated once while the other did not circulate at all. Again, the circulation information was added together and entered as if it were one volume.

Although titles with subject headings were on the shelf for a longer period of time than those without subject headings (potentially 15–18 months versus 12–15 months), and therefore had a greater likelihood of circulating, this is probably not a significant factor for two reasons. First, the extra months occurred in the summer, which is a time when the library receives the lowest amount of foot traffic and circulation of dissertations in both groups would be expected to be extremely low. Second, although the date parameters for selection of the sample cover a 6-month period (3 months before and after the change in treatment), in actual fact 92% of the titles with subject headings entered the online system between June 21 and July 25, 1995; 58% of titles without subject headings entered the system between July 26 and August 15, 1995. Any bias as a result of the difference in time on the shelf was therefore considered to be very small.

Data were analyzed using the chi-square test of independence (Sheskin 1997). Because Sullivan et al. (1992) had shown that titles with subject headings were more likely to circulate, this study was designed to evaluate whether titles with subject headings circulated more often than those without subject headings. The null hypothesis was: The circulation count for dissertations is independent of the subject headings assigned to their
browsable records. A value of .05 was chosen for determining significance of the results.

**RESULTS**

A total of 248 dissertations were cataloged between May 1, 1995, and October 31, 1995. Of these, 139 were assigned LC subject headings. Of the 109 without subject headings, 36 had author-supplied uncontrolled subject terms added in the MARC 653 field of the record. Although the program parameters were set to collect 6 months worth of cataloging data, in actuality, all of the dissertations in the study were cataloged between June 21, 1995, and October 31, 1995. Therefore, the data collected represents 16–17 months worth of circulation information for dissertations with LC subject headings and 12–15 months worth of information for those without subject headings.

The distribution of the records among areas of study is shown in table 2.

The mean number of circulations for the total sample was 58% higher for records with subject headings when compared to those without subject headings. Engineering records showed a mean 69% higher for records with subject headings, while Science records with subject headings had a mean 128% higher than those without subject headings. Education records, however, showed nearly identical means for the two groups.

The number of titles in Art/Architecture, Business/Management, and Social Science was too small to analyze using the chi-square test but are included in the overall analysis. Results of the test are shown in tables 3–6 for all dissertations, Education, Engineering, and Science, respectively. Statistically significant results were found for the aggregated sample (chi-square=9.99; df=4; p=.04), but not for Education (chi-square=1.27; df=2; p=.53), Engineering (chi-square=3.74; df=2; p=.15), or Science dissertations (chi-square=1.14; df=1; p=.28).

**DISCUSSION**

The results shown in table 3 indicate that, for all titles in this study, dissertations with subject headings were more likely to circulate and circulated a greater number of times than titles without subject headings. The null hypothesis that circulation count is independent of the presence of subject headings is therefore rejected. One explanation for these results is that library patrons used subject searching in the online catalog and found their way to dissertations, as well as other materials, on their subject of interest. Conventional subject searching retrieved materials that had subject headings on their records, while records lacking subject headings were not retrieved. In the case of keyword searching, the addition of the subject headings might have enriched the vocabulary present in the bibliographic record, thereby increasing the likelihood of subject retrieval by keyword. These results indicate that library users are searching by subject often enough to have an impact on the circulation of dissertations.

One might reasonably expect that subject terms supplied by the dissertation
TABLE 3
ALL DISSERTATIONS

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<thead>
<tr>
<th>Number of Circulations</th>
<th>0</th>
<th>1</th>
<th>&gt;1</th>
<th>Total</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without subject headings</td>
<td>58</td>
<td>29</td>
<td>15</td>
<td>7</td>
<td>109</td>
</tr>
<tr>
<td>With subject headings</td>
<td>53</td>
<td>42</td>
<td>24</td>
<td>13</td>
<td>139</td>
</tr>
<tr>
<td>Total</td>
<td>111</td>
<td>71</td>
<td>39</td>
<td>20</td>
<td>248</td>
</tr>
<tr>
<td>Expected</td>
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</tr>
<tr>
<td>Without subject headings</td>
<td>48.79</td>
<td>31.21</td>
<td>17.14</td>
<td>8.79</td>
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<tr>
<td>With subject headings</td>
<td>62.21</td>
<td>39.79</td>
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<tr>
<td>Total</td>
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<td>71</td>
<td>39</td>
<td>20</td>
<td>248</td>
</tr>
</tbody>
</table>

Chi-square=9.99; p=0.04

authors (and recorded in the 653 MARC field) would boost the circulation of titles without subject headings. In the present study, any such boost was not great enough to be detected. This might be due to the fact that only 36 titles of the 109 without subject headings (33%) had uncontrolled subject terms added to the bibliographic record. In order to fully evaluate the effect on circulation of adding uncontrolled subject terms, one would need to compare a group of records containing such terms with a control group lacking both author-supplied terms and LC subject headings.

These results help to confirm the work done by Sullivan et al. (1992). In that study, researchers could only tell whether a dissertation circulated or not; there was no way to account for the number of times a title circulated. In the present investigation, by looking at the circulation counts for each title, we show quantitatively higher circulation counts for dissertations with subject headings.

The results from the academic fields of study tables are less revealing as there were no statistically significant differences between titles with and those without subject headings in any disciplinary area. The chi-square test, however, is not powerful enough to detect differences in the distribution of circulation counts when the sample size is small. A more sophisticated test, beyond the means available for the present study, might have the power to detect a directional shift in these tables. That shift is evident if one compares the observed and expected values within the engineering or science tables; titles with subject headings circulated more than expected while titles without

TABLE 4
EDUCATION DISSERTATIONS

<table>
<thead>
<tr>
<th>Number of Circulations</th>
<th>0</th>
<th>1</th>
<th>&gt;1</th>
<th>Total</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without subject headings</td>
<td>6</td>
<td>6</td>
<td>11</td>
<td>23</td>
<td>1.26</td>
</tr>
<tr>
<td>With subject headings</td>
<td>9</td>
<td>16</td>
<td>15</td>
<td>40</td>
<td>1.25</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>22</td>
<td>26</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Expected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without subject headings</td>
<td>5.48</td>
<td>8.03</td>
<td>9.49</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>With subject headings</td>
<td>9.52</td>
<td>13.97</td>
<td>16.51</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>22</td>
<td>26</td>
<td>63</td>
<td></td>
</tr>
</tbody>
</table>

Chi-square=1.27; p=0.53
subject headings circulated less than expected. The need to “collapse” the cells to perform the chi-square analysis, partially due to the small sample size, is the likeliest reason why no statistically significant probability is calculated for the science and engineering tables. The aforementioned directional shift is clearly missing from the education table.

Harris and Huffman (1985) contended that keyword searching might provide a useful substitute for subject searching when titles are sufficiently descriptive of content. In this study, all titles were highly descriptive of their content. Though some dissertations in the humanities have non-descriptive, even whimsical, titles, none such works were present in this study. In the case of whimsical titles, retrieval by keyword in the absence of subject heading assignment would be highly unlikely.

These results have implications for understanding user behavior. Clearly, dissertation users are not only conducting known-author or known-title searches. Subject access to dissertations is important, though one cannot tell from this study whether the catalog searches are specifically looking for dissertations or if they are searching for material on their subject in any format. As previously mentioned, authors of two studies have looked at this issue and, in both instances, concluded that, for dissertation users, searching by subject is significant (Repp and Glaviano 1987; Lee-Smeltzer and Hackleman 1995).

We have used circulation counts as an indication of use, but do not consider in-house use. A more complete picture of the effect of subject heading assignment on use would have to include such use as

### TABLE 5
**ENGINEERING DISSERTATIONS**

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>&gt;1</th>
<th>Total</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Observed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without subject headings</td>
<td>15</td>
<td>5</td>
<td>8</td>
<td>28</td>
<td>0.89</td>
</tr>
<tr>
<td>With subject headings</td>
<td>16</td>
<td>13</td>
<td>22</td>
<td>51</td>
<td>1.51</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>18</td>
<td>30</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td><strong>Expected</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without subject headings</td>
<td>10.99</td>
<td>6.38</td>
<td>10.63</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>With subject headings</td>
<td>20.01</td>
<td>11.62</td>
<td>19.37</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>18</td>
<td>30</td>
<td>79</td>
<td></td>
</tr>
</tbody>
</table>

Chi-square=3.74; p=0.15

### TABLE 6
**SCIENCE DISSERTATIONS**

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>&gt;0</th>
<th>Total</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Observed</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without subject headings</td>
<td>27</td>
<td>7</td>
<td>34</td>
<td>0.21</td>
</tr>
<tr>
<td>With subject headings</td>
<td>21</td>
<td>10</td>
<td>31</td>
<td>0.48</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>17</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td><strong>Expected</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without subject headings</td>
<td>25.11</td>
<td>8.89</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>With subject headings</td>
<td>22.89</td>
<td>8.11</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>17</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

Chi-square=1.14; p=0.28
well. It does not seem likely that in-house users would behave differently from users who check out materials, and so the results here are not likely to be biased by the focus on circulation counts.

Though beyond the scope of the present study, the question still remains as to whether subject searching in Dissertation Abstracts could compensate for the lack of subject headings assigned to dissertations in a local catalog. It would be interesting in a future study to compare the descriptors used in DAI’s subject searching with the controlled vocabulary of LC subject headings in a library’s catalog. Such a study would shed further light on the merits of these two subject searching systems and add to our understanding of how users find the materials they need.

Further research, perhaps using a larger sample and a more powerful statistical test, is indicated to evaluate differences between academic areas of study and to corroborate these results with an assessment of user behavior when searching for dissertations.

CONCLUSION

Cost-saving measures in academic libraries must be carefully evaluated in terms of their effect on service to library users. One such measure, the suspension of assigning subject headings to dissertations, has a significant impact on dissertation use. The results of this study indicate that dissertations with subject headings in their bibliographic records are more likely to circulate (and circulate more often) than those without subject headings. Failure to add subject headings to bibliographic records for dissertations, while indeed saving time in cataloging, noticeably reduces the likelihood that the items will be found and used by patrons. Library administrators choosing to make such a decision should do so understanding that there will be a resulting loss of use of this unique form of research literature.

WORKS CITED


Lee-Smeltzer, Janet, and Deb Hackleman. 1995. Access to OSU theses and dissertations in Kerr Library. How they are used ... or are they? Cataloging & classification quarterly 12, no. 4: 25-43.


Notes on Operations

Evaluation of Three Record Types for Component Works in Analytic Online Catalogs

Herbert H. Hoffman

Works contained in collections and anthologies are a significant body of information stored in libraries. For the retrieval of such works, online catalogs today rely mostly on contents notes and added entry fields. Four criteria for analytic catalogs are suggested: a search for a specific work should retrieve all units of that work; it should retrieve only that work, without false drops; the search should require only one pass; and the resulting display should clearly collocate all retrieved works. It is suggested that "In" analytics as described in AACR2 rule 13.5A promise better results than analytic entries based on contents notes and added entries.

Bibliographic databases that make up library online catalogs contain bibliographic records that represent the books, discs, cassettes, and other items a library has on its shelves. When such an item contains one sole work, the item and the work it contains are perceived to be one and the same thing. It is rarely difficult to retrieve such works. But when one item contains two or more works, it may be difficult to link the works to the item. That may be part of the reason why online catalogs are still hard to use, as Borgman recently reiterated (Borgman 1996).

Much groundwork has been done to distinguish works from items. Lubetzky held that the "work"—the "literary unit"—was the basis of bibliographic description (Lubetzky 1963). Hoffman (1976) has attempted to show that all publications, regardless of medium or format, are first of all "works" (i.e., essays, poems, novels, plays, symphonies, etc.) contained in "books" (i.e., monographic publications, collections, periodicals, cassettes, etc.) that come in "sets" of one or several volumes, and that there are no exceptions. The ERIC thesaurus of 1978, in its basic list of publication type categories, supported this view by defining "book" as "pure form or 'empty container,'" contrasted with "creative works" such as "poetry, literary works, essays, novels, short stories..." (Educational Resources Information Center 1978, 178D). These definitions lend weight to Lubetzky's proposition that it is the work—the intellectual creation—and not the package or the container on which the catalog should focus.

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The bibliographic description of "analyzed parts" versus "containing items" was treated in detail by McCallum nearly two decades ago (McCallum 1980). Still, as Howarth (1997, 9) described the situation, today's online catalogs seldom manage to represent the "work independently of the physical format." As Weintraub and Shimoguchi phrased it (1993, 178), a reliable analytic catalog would not only remain a "vehicle for transmitting bibliographic information about whole books" but would "reveal information couched within these books" as well. In such a catalog, the bibliographic records of all of an author's works, large or small, those that stand alone and those that are "component parts," would be indexed so that any of them can be searched for and retrieved with one simple keystroke or click.

While a true analytic online database on a national scale does not yet exist, a case could be made for it. Hoffman and Magner (1985) found that for every item on the shelf that is listed in the catalog, there might be five works embedded in collections and anthologies, works that are not listed—not in the catalog nor in any other index, finding list, or bibliographic aid. Thus, leaving the periodical literature aside, a library of 100,000 items might contain half a million works that are not easily accessible to patrons searching the online catalog. Poulsen (1990), in studies at six other libraries, had similar findings. Such data justify the conclusion that our libraries contain enough uncataloged or insufficiently cataloged works to make improved analytic catalogs worthwhile. Hagler (1997, 13) seconds this objective when he suggests that future editions of AACR should require that "an agency provide access to every work ... appearing within each catalogued document."

The sheer numbers of works, however, call for a cooperative effort. Given the advances being made in computer technology and telecommunications today, it is conceivable that in addition to a MARC database of books qua containers, a comparable utility for component works will become feasible, a utility that would enable readers to access the works contained in library collections and anthologies, much as they now use INFOTRAC and similar indexes to access the works contained in periodicals. The organizational and administrative aspects of such an undertaking, however, are not within the scope of this paper. We restrict ourselves to a discussion of how different bibliographic record structures affect the search for, retrieval, and display of component works in analytic or partially analytic online catalogs.

Let us consider what an analytic catalog ought to achieve to facilitate the retrieval of specific works. It seems there are four major goals:

1. Once a work has been identified, the catalog should retrieve all versions of that work the library owns, not just some. At present, few online catalogs provide complete and reliable access to works embedded with others in collections and anthologies. Most online catalogs are at least partially blind to component works because the contents of collections and anthologies are not listed in the bibliographic records that make up the database. A sample of 44 anthologies of drama retrieved from the catalog of one large American university revealed that only 15 of them were represented by bibliographic records that contained tables of contents. There was no clue to the contents of the other 29 anthologies. In that library, a student looking for a given work will find some manifestations of that work but will not find all manifestations for that work that the library owns. And because most libraries today download their records from the same pool of MARC records, few other online catalogs are likely to give better service.

2. The catalog should retrieve only versions of that work and no others. There should be no irrelevant or unrelated titles retrieved, that is, no false drops. In many online catalogs, a search for author "Beethoven" and title keyword "Octet" will retrieve many examples that do not contain any of Beethoven's octets. For example, this search will retrieve a
record that contains Beethoven’s Septet op. 20 and Mendelssohn’s Octet op. 20. Both search terms are contained in the record for the item, but they do not describe one work; they are not linked specifically to a particular work.

3. It should be possible to achieve the desired results in one pass. Readers should not have to try several approaches before they are confident that they have exhausted all possibilities. A search for author “Schnitzler” and title “Game of love” in many catalogs will draw a blank. Libraries that own Corrigan’s Masterpieces of the Modern Central European Theatre, however, do have a copy of the play. The MARC record has a searchable contents field for the title. But there is no searchable author field for “Schnitzler.” To find Schnitzler’s play, then, the reader must do a second title search, which, paradoxically, will only work if the author’s name is left out.

4. The retrieved records should be collocated in an uncluttered, unambiguous screen display. In today’s online catalogs, as Carlyle (1997) points out, the second objective of the Paris Principles tends to get short shrift. The second objective requires that the catalog collocate all of an author’s works that the library owns (Verona 1971). To display a work in the online catalog means to show its title and, if applicable, its author or authors, in a prominent position on the screen. A user searching for Shaw’s play Arms and the Man, for example, expects to see a screen that displays both the author name and the title. However, in most systems, a brief display will include data from MARC field 100 (for author) and MARC field 245 (for title), with results similar to those seen in figure 1. This display is not as clear as might be expected. From the information given, it is not clear that only the last two items contain the play sought. Moreover, neither “Shaw” nor “Arms and the man” are displayed on screen. The reader must search for that information in the full display of each record on subsequent screens.

To construct analytic catalogs that achieve all four goals, librarians must determine which record format will produce the desired results. In the Anglo-American Cataloguing Rules, 2d ed., 1988 revision (AACR2R), three record structures for analytics are mentioned. They are contents notes, added entries, and “In” analytics.

The first method—contents notes—is described in rule 13.4A. The rule states (p. 300) that it is “the simplest means of analytics” and that it is “usually limited to a citation of title or name and title.” Blackwell’s “Blackwell Table of Contents” project focuses on this method, making title-searchable contents lists for selected collections and anthologies available for downloading.

The second method—added entries—is described in rule 13.2A, which reads in part (p. 300): “this method is appropriate when direct access to the part is wanted without creating an additional bibliographic record for the part.” It is clear from the wording that direct access to component works has always been a desirable feature of library catalogs. It must be remembered that the rules date back to a time when the standard was a card catalog. An added entry then was an extra card. When filed in proper order, readers had direct access to a given title and found all manifestations of it neatly collocated in the drawer. In the online world, however, an added entry is no longer a separately

<table>
<thead>
<tr>
<th>AUTHOR</th>
<th>TITLE</th>
<th>PURLAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hills, L. Rust</td>
<td>Lust, violence, sin, magic</td>
<td>c1993</td>
</tr>
<tr>
<td>Grey, M Cameron</td>
<td>Angels and awakenings</td>
<td>1994</td>
</tr>
<tr>
<td>Kernan, Alvin B.</td>
<td>Classics of the modern theater</td>
<td>1965</td>
</tr>
<tr>
<td>Barnet, Sylvan</td>
<td>Eight great comedies</td>
<td>c1958</td>
</tr>
</tbody>
</table>

Figure 1. Display of Titles Retrieved for Shaw’s Play Arms and the Man.
Figure 2. Use of Single Contents Note for Collections.

The third method—"In" analytics—is described in great detail in rule 13.5A and B. The rule states that an "In" analytic entry be made (p. 300) "if more bibliographic description is needed than can be obtained by displaying it in the note area."

**CONTENTS NOTES**

Many librarians will say that a contents note in the bibliographic record for a book or other item containing different works will suffice. There are two ways of entering data into the contents field of a MARC record (field 505). The basic method uses subfield a; similar results can be achieved by placing the titles of component works into the subtitle, i.e. MARC field 245 subfield b. The second, enhanced method uses subfields t and r in MARC 505.

**BASIC 505 FIELD FOR COLLECTIONS (ALL WORKS BY THE SAME AUTHOR)**

Let us first look at the basic contents note method for collections. Librarians raised on AACR2R, Akers' Simple Library Cataloging, and similar classics might not be in the habit of distinguishing clearly between collections that contain works by the same author and collections that contain works by different authors. The two types of items, however, are cataloged by different rules. That is why we prefer a distinction and use the term "collection" here to designate the former type of item. We shall use the term "anthology" for the latter. In a collection, then, the author's name would be in field 100 of the bibliographic record. The titles of component works can be added in field 505 subfield a or, occasionally, in 245 subfield b. It might seem that this simple method of analytics makes good sense, but there is a problem. Because all strings in 505 subfield a and in 245 subfield b are in one subfield, only a title keyword search is possible. There is no way to instruct a computer to search for the exact title phrase.

An example would be the collection *Eight Plays* by Tennessee Williams (see figure 2). The author's name appears in the searchable 100 field. But a search for the exact title "Summer and Smoke" would fail. Only a search for author's name plus one or more title keywords will retrieve this collection. When the retrieved item is displayed on the screen, of course, it will show the title "Eight plays," not "Summer and smoke," thus hiding the col-

1. Williams, Tennessee
   Collected plays ................................ 1
2. Williams, Tennessee
   Eight plays .................................... 1
3. Williams, Tennessee
   Summer and smoke ................................ 1
4. Williams, Tennessee
   Sweet bird of youth, and two other........ 1

Figure 3. Display of Results for a Search for Williams' "Summer and Smoke."
location feature. If the library owns several versions of *Summer and Smoke*, the reader might see a summary display like that seen in Figure 3. Such a display confuses the searcher because it is not clear which lines actually point to the play sought.

The basic table of contents method is unable to respond to exact title searches. This is a problem for the reader who begins with an exact title search, then finds out that the retrieved item is not available. The reader has two choices: give up or do a second search, just to be sure that there really are no other copies of the play in the library. And even if the library does not own any other collections or anthologies that contain the work, this second pass is still necessary to be sure all avenues were exhausted.

There is another problem. Keyword searches are vulnerable to false drops. Suppose a reader searched the catalog for author’s name “Shaw” and title keyword “Man” (as in *Man and Superman*). It is easy to see that there might be a hit, but that the play the reader retrieved was *Arms and the Man* instead. A keyword search for Palestrina’s “Ave Maria” might well retrieve Hyperion CDA 66850, an item that does not contain the work but does contain one titled “Ave verum corpus, natum de Maria virgine.” Unless the library’s catalog takes word order and proximity into account, a reader looking for the poem *Lost World* might well retrieve the story “World Well Lost” instead.

**Basic 505 Field for Anthologies (Works by Different Authors)**

If an author’s works are contained in an anthology together with other authors’ works and field 505 subfield a is the only analytic field in the host item record, then author searches or author and title searches will not work.

An example is the anthology *Nineteenth-Century British Drama* (see Figure 4). Although Oscar Wilde’s *The Importance of Being Earnest* is contained in this anthology, a perfectly logical author/exact title (or even an author/title keyword) approach will fail because authors’ names, in this case, are not contained in any author-indexed field. Pragmatical souls will say that all one has to do to achieve the desired retrieval is to treat the author’s name as a title keyword and include it in the search argument. But this is a stopgap approach, inconsistent with the concept of authorship, and therefore not recommended as a permanent catalog design feature. Library users should not be required to do mental rearrangements like this in order to succeed at the catalog.

**Enhanced 505 Field for Collections (All Works by the Same Author)**

The enhanced 505 field has repeatable subfields t for titles. An example would be *Three Plays* by August Wilson (see Figure 5).
Unlike the basic 505, the enhanced 505 with subfield t can, if the library's software allows it, be fully title indexed and can then be searched by exact title phrase as well as by keyword. The author's name is in field 100, the title in 505 subfield t. Thus, exact title, keyword, and author/title searches will succeed. The possibility of a false drop is remote. But readers would find it hard to notice the collocation feature. For even if one has searched for and found a work title in a browsing display, the machine is likely to generate a final item display that shows the title contained in field 245, not the work title contained in field 505. An unsuspecting, maybe less sophisticated user looking for the title *Fences* might, on seeing the summary display in figure 6, pick line 2 and take home the wrong book.

**Enhanced 505 Field for Anthologies (Works by Different Authors)**

In the case of an anthology, one would add separate subfields r for authors' names. An example would be *Zora Neale Hurston, Eulalie Spence, Marita Bonner, and Others: The Prize Plays* (see figure 7). But subfield r, being a part of field 505, cannot be controlled the way separate fields 100 and 700 are, because 505 is a transcribed field, while 100 and 700 use authorized forms of names. Field 505 subfield r, therefore, cannot be used reliably for author searches. And even in case of a correct retrieval by title, a searcher looking for *Aftermath* by Burrell will be shown a screen that says “Zora Neale Hurston, Eulalie Spence, Marita Bonner, and other” instead of “Aftermath,” a situation that will probably confuse all but the more experienced library users because it looks as if the desired work was not found. The “table of contents” method may be the simplest method of analytics, but it is not the best. Let us examine another alternative.

**Added Entries**

Some believe that the best way to provide analytic access to component works is to use added entries. This is the method advocated in such rules as 13.2A and 21.30M1 of AACR2R. It requires the addition of a suitable combination of 7XX fields to the host item's bibliographic record, either alone or together with a 505 field.

**7XX Fields for Collections (All Works by the Same Author)**

For a collection it would be easy to add a number of 740 fields to the item record, one for each component work title. Because in such a situation the name of the author of all the works is in the 100 field, an author/title search would be successful. An example is *Three by Tennessee* (see figure 8). As in the situations described...
above, however, when the host item is displayed on the screen, the title shown will be that contained in the 245 field, thus hiding the identity of the retrieved work behind the item or document title.

**7XX Fields for Anthologies (Works by Different Authors)**

For an anthology, one or more 700 fields would be indicated, where subfields a and t contain the authors and titles, respectively, of component works. It might look as if exact title, title keyword, as well as author/title searches are provided for in this case. There is a problem, though, when author names in 700 subfield a and titles in 700 subfield t are not linked. For example, a search for author "Palestrina" and title "Ave Maria" in most catalogs would retrieve a record for an item that contains Palestrina’s “Sicut Cervus” and Robert...
Parsons' "Ave Maria" because both terms occur in that record. The machine finds the author "Palestrina" and the title "Ave Maria" and registers a false hit.

This will remain a problem until newer software such as Horizon, Voyager, and others make it possible to limit the search for an author and a title to the same field, excluding all other hits. Because "Palestrina" and "Ave Maria" in the example given above are not in the same 700 field, such an advanced system would avoid the false drop. Even that, however, will not solve the problem of coauthors, editors, performers, conductors, and the like. In bibliographic records that stand for single-work items, or "standalone works" as we could call them, such names, entered in separate fields, are ipso facto linked to the work. The moment two or more works are described in the same bibliographic record those relationships become blurred. Consider the case of the RCA Victor Gold Seal recording 7709-2-RG. The OCLC record has a 245 subfield a "showpieces." There are several added entry fields, two of them for the conductors (see figure 9). This CD contains five pieces, four of which are designated by analytic 700 fields. Even if authors' names and work titles in these analytic 700 fields were linked, there is nothing in any indexed field that would allow a library user to focus on the works for which each conductor is responsible. A search for conductor (in most online catalogs, conductors' names are included in the author index) "Solomon" and title "Zigeunerweisen" will retrieve something, but it will not be that work conducted by Izler Solomon.

There are still other complications. Works often appear in translation. Calderon's *Life Is a Dream*, when published as a separate book, is represented by a bibliographic record that automatically links the English title with the original *La Vida Es Sueño* in a separate field. The same goes for nicknames and alternate titles. If a search for "Eine kleine Nachtmusik" brings up a standalone work titled "Serenade in G," we can be sure that we are dealing with one and the same work.

But when the work is one of many in an anthology and there is only one bibliographic record for the item and its contents, the links between such separate fields and the works to which they belong are more difficult to establish. The catalog retrieving Chekhov's "Vishnyovy sad" should equate that work with "The Cherry orchard." However, as long as all titles contained in a multwork item are in separate fields, the catalog has no precise way to establish and display this link.

One other detail needs to be considered. When an added entry in the 7xx fields names a work that is contained in the item named in field 245, the second indicator is given the value of "2" to show that the added entry is an analytic one. This indicator is not as helpful for the analytic retrieval of embedded works as one would hope. In the first place, there is, at this point, no library software available that would, on retrieving such an embedded work, create a display such as the one found in figure 10.

But even if there were such software, it would work only if the 7XX fields contained the actual title of the work sought. In many situations this is not true. A certain recording (EMI CDC 7 49656 2) contains Beethoven's Symphony no. 5 in C minor, op. 67. A title search for this work would, in most libraries today, not retrieve the EMI recording because the relevant analytic added entry uses the collective uniform title "Symphonies." The second indicator, according to the rules, marks this 700 field as one that designates an analytic work contained in the item in hand. But in this case subfield t designates a class of works, not the specific work sought. Needless to say, a search for Symphony no. 5 finds no match.

It would appear that, for works contained in collections and anthologies, not all author/title/subject searches can be handled by MARC 700 added entry fields, even if analytic indicators and "in-the-same-field" stratagems are employed, unless the field in question is expanded to contain coauthors, editors, performers, translated titles, subject headings, etc.—all the information that in standalone works appears in separate fields.

Conceivably, added entry analytics could also be constructed using separate
010  $a 91751736 /R/r972
028  00 $aCD 7 49852 gEMI
028  00 $aCD 7 49746 gEMI
028  00 $aCD 7 47698 gEMI
028  00 $aCD 7 49101 gEMI
028  00 $aCD 7 49656 gEMI
028  00 $aCD 7 49816 gEMI
028  00 $aCD 7 49221 gEMI
033  2 $a198607 -- $a198808 -- $b5754ScL6
040  $aDLCScDLCscDLC
041  0 $dger$egeringfre$ger$engfreger$eng
045  2 $bd1799Sbd182401
047  $asy$aov
048  $aoa
048  $bva01$vb01$bd01$bf01$aca$aova
050  00 $aEMI CDS 7 49852 2
100  10 $aBeethoven, Ludwig van,$d1770-1827.
240  10 $aOrchestra music.$bSelections
245  00 $a9 Sinfonien$[sound recording] =$bSymphonies / $cBeethoven.
260  00 $aHayes, Middlesex, England :$bEMI,$c[1989]
300  $a6 sound discs :$bdigital, stereo. ;$sc4 3/4 in.
440  00 $aReflexe
500  $aEMI: CDS 7 49852 2 (CDC 7 49746 2, CDC 7 47698 2, CDC 7 49101 2, CDC 7 49656 2, CDC 7 49816 2, CDC 7 49221 2).
500  $aThe 12th work sung in German.
500  $aTitle from slipcase.
511  00 $aYvonne Kenny, soprano, Sarah Walker, mezzo-soprano, Patrick Power, tenor, Petteri Salomaa, bass, Schütz Choir of London (12th work); London Classical Players; Roger Norrington, conductor.
518  $aRecorded July 1986-Aug. 1988, No. 1 Studio, Abbey Road, London.
500  $aCompact discs.
500  $aProgram notes by David Wyn Jones and performance notes by Roger Norrington in English with French and German translations and text of the last movement of the 12th work in German with English and French translations (95 p.: i11.) included.
505  00 $aSymphony no. 1 in C major, op. 21 -- Symphony no. 6 in F major, op.68: Pastorale -- Symphony no. 2 in D major, op.36 -- Symphony no. 8 in F major, op.93 -- Prometheus overture: op.43 -- Symphony no. 3 in E flat major, op.55: Eroica -- Symphony no. 4 in B flat major, op.60 -- Symphony no. 5 in C minor, op.67 -- Overture to Collin's tragedy Coriolan : op. 62 -- Overture to Goethe's tragedy Egmont: op. 84 -- Symphony no. 7 in A major, op.92 -- Symphony no. 9 in D minor, op. 125 : Choral.
650  00 $aSymphonies.
650  00 $aOvertures.
660  10 $aSchiller, Friedrich,$d1759-1805.$xMusical settings.
700  10 $aKenny, Yvonne.$4prf
700  10 $aWalker, Sarah.$4prf
700  1 $aPower, Patrick,$d1947-$4prf
700  10 $aSalomaa, Petteri.$4prf
700  10 $aNorrington, Roger.$4cnd
700  12 $aBeethoven, Ludwig van,$d1770-1827.$tSymphonies.$f1989.
700  12 $aBeethoven, Ludwig van,$d1770-1827.$tGeschöpfe des Prometheus.$tOuverture.$f1989.
700  12 $aBeethoven, Ludwig van,$d1770-1827.$tCoriolan.$f1989.
700  12 $aBeethoven, Ludwig van,$d1770-1827.$tEgmont
$tpOuverture.$f1989.
710  20 $aHeinrich Schütz Choir.$4prf
710  20 $aLondon Classical Players.$4prf

Figure 10. Bibliographic Record for an “In” Analytic Structured in Accordance with AACR2 rule 13.5.
700 and 740 fields instead of 700 subfield a and subfield t. The problems are the same: the computer cannot tell which author's name goes with what title, or which subject or performer might belong to which 740 field, and so on.

The added entry method using MARC fields 7XX has merit, especially if proximity and “in-the-same-field” limits, as well as use of the second indicator, are incorporated into library software. But misses and false drops are still possible even then. Nor can collocation or clear display of retrieved work titles be achieved in all cases. Also, as long as all component works are listed in one and the same bibliographic record, the title ultimately displayed to the reader is bound to be the one in field 245. If the table of contents method for documenting analytics has its shortcomings, the added entry method is not completely satisfactory either.

**“In” Analytics**

The “In” analytic, described by rule 13.5A of AACR2R, is a third possibility. In an online catalog, such analytics consist of separate bibliographic records for all component works, whether contained in collections or anthologies, each with its own MARC 245 and lxX field, as appropriate. Each record will also contain a “Host item entry” MARC 773 field, a field that is described in MARC manuals as containing information concerning the host item for the constituent unit described in the record (vertical relationship). As the scope statement for 773 explains, this field is provided in order to enable the user to locate the physical piece that contains the component part being described.

For the example shown above, *Eight Plays* by Tennessee Williams, eight separate “daughter” records would be created (see figure 11). This stratagem produces reliable retrieval because the author and title are unequivocally linked. In an author/title search, there is no possibility of linking an author and a title that do not belong together, because there is only one title in the bibliographic record. If this method is used consistently, the catalog, searched by author and title, will retrieve all manifestations of a work in one pass. There can be no false drops. And the display will clearly collocate all retrieved manifestations of a work without intervening titles that are not those of the work sought (see figure 12).

The “In” analytic also solves the problem of linking joint authors, performers, alternate titles, uniform titles, subject headings, etc., to the works they pertain to because each work is represented by its own bibliographic record. All fields in that record are, by definition and without special programming, linked to the work named in field 245. A search for author “Beethoven” and title keyword “Octet” will retrieve all and only records that carry this author’s name and this title keyword in one of the fields. A false drop such as the London 421 093-2 disc, mentioned above, is not possible. The reader looking for Euripides’ *Medea* will not ever be confused again by being presented with *Alcestis* instead. If you are looking for Schnitzler’s *Game of Love*, you will not only find it, but find it on the first try.

The subject approach to component works should not be forgotten either. Many studies in library literature confirm the importance of the subject approach, especially in academic libraries. Larson

| 1. Williams, Tennessee Summer and smoke                | 1 |
| 2. Williams, Tennessee Summer and smoke                | 1 |
| 3. Williams, Tennessee Summer and smoke                | 1 |

*Figure 12. Brief Display of Analytic Records*
(1991), for example, concluded that subject searches are not only most used but are also most likely to fail. Without investigating in detail the several reasons for failure, it is easy to see one of them. When many works are packaged together in one container and each work deals with a different subject, searches are likely to miss important information. The primary reason for this is that multwork items are often assigned only a heading that summarizes the subject content of all the component works. The Analytic Spirit: Essays in the History of Science (Cornell University Press, 1981), for example, was assigned the summary heading Science—History. In the contents field, the titles and authors of all 15 essays, ranging from a discussion of Lavoisier’s theory of the gaseous state to the supernova of 1054, are listed. Will a reader interested in the Crab Nebula look under the broad heading “Science”? Probably not.

Librarians at libraries where users have a strong interest in astronomy, remembering Ranganathan’s fourth law (“Save the time of the reader”), might want to make it easier for readers to access interesting materials by adding essay-specific subject headings to a book like this. As long as the essays are listed only in a 505 field, or even in a 7XX field, it is impossible to tell which subject heading goes with what essay. In such a case, the “In” analytic seems indicated. For the essay by L. Pearce Williams, “The supernova of 1054,” a separate bibliographic record might be created, complete with author, title, specific subject headings, and link to the mother record.

The reader searching by subject will now retrieve all relevant “standalone” as well as component works. The search is precise and exhaustive, requires only one pass, and the retrieved materials will be neatly and unequivocally collocated on the screen.

CONCLUSION AND RECOMMENDATION

There are three major methods employed in libraries to catalog component works—contents notes, added entries, and “In” analytics. Under the third method, separate bibliographic records for all component works are created, and these are linked by a common key to their host records, the collections and anthologies that contain the works. If all collections and anthologies on a library’s shelves are consistently cataloged by this method, a search for a specific work will:

1. Retrieve all manifestations of that work,
2. Retrieve only that work without false drops,
3. Not require a second pass, and
4. Clearly collocate all retrieved work titles.

If librarians plan to offer their readers reliable analytic catalogs that perform well on these four points, then the choice of record format will have to be given serious consideration. It appears that “In” analytics linked to their host item records, a method so far neglected in most online catalogs, might be the choice of the future.

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Mendigoinera: Scaling the Peak of the Basque Library Backlog

Marcelino Ugalde and Kathryn Etcheverria

The Basque Studies Collection, housed at the University of Nevada, Reno, is world-renowned as the most extensive collection of materials both by and about the Basque people. Efforts to keep pace with the cataloging backlog of this multilingual collection have met with limited success. This article describes the Basque Cataloging Project, administered from 1993 to 1996 and funded by an HEA Title II-C grant, as it worked to produce cataloging for 10,000 monographic titles. Attention is given to preparation for the project, special considerations in cataloging this unique collection, and recommendations for the future.

Ethnic studies programs cannot flourish without a strong library collection. From its inception in 1967, the Basque Studies Program at the University of Nevada, Reno, has understood the importance of building a strong Basque collection to support scholarly research activities. The foundation of the Basque Studies Library was two respectable private libraries totaling more than 4,300 works. The purchase of these libraries from Europe was facilitated by Robert Laxalt and the late Jon Bilbao. Robert Laxalt made contacts with the Veyrin family in the late 1960s, and Jon Bilbao spoke to the Goñi family in 1972 (Basque Studies Program 1983). Fortunately, the materials in these libraries complemented each other. One emphasized the northern Basques in France and the other focused on the southern Basques of Spain, especially the Navarrese region.

Collection development efforts by the Basque Library continued to flourish through annual appropriations of approximately $10,000 from the university library's materials budget. Since 1986, the Basque Library has acquired more than 1,000 new and retrospective titles annually, receiving 2% of the library's total materials budget (Basque Studies Program 1987). In 1997, the number of new titles added reached 1,300, with almost all of these titles going directly into an uncataloged backlog.

The Growing Backlog

Why had the backlog of the Basque collection become so large and unmanageable? A variety of factors beyond the control of the university and its Basque Studies Program may have created or contributed to the situation, including

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publishing trends in the Basque country, limited efforts related to international cooperation in cataloging, and the consequent lack of catalog copy for foreign monographs in the format usable by American libraries.

While publishing may have stabilized or declined among other linguistic or ethnic groups, literature published in the Basque provinces in monographic form has experienced a boom in recent years. Otero-Boisvert (1992) points out that the Basque culture, long suppressed under the Franco regime, just recently began producing more public evidence of a written culture and literature, while other cultures were already under the strong influence of a well-established publishing industry. After Franco's death, publication in the Basque language became a political statement made by those with nationalistic and linguistic enthusiasm for the Basque homeland. This, coupled with a dramatic increase in the learning of the Basque language by the young people of that region, may have been influential in creating a 63.5% increase in new Basque language publications in 1985.

In an effort to keep pace with this publishing boom, librarians at the University of Nevada, Reno, responded with an ambitious acquisitions program. The library's policy was to acquire virtually everything published by and about Basque people. The size of its monographic collection grew from 13,997 titles in 1980 to 25,642 titles in 1990, an average annual increase of approximately 10% during those years.

The University of Nevada, Reno Library, along with other academic and special libraries, was unable to acquire the quality and quantity of catalog records representing foreign language monographs that are usually available for domestic academic titles. The problem is well documented. Grover (1991) found in his 1983–1985 study that although Latin American materials were widely acquired by large academic and public libraries, adequate cataloging for the materials was often not provided. Results of the study of bibliographic control by Leazer and Rohdy (1995) lend support to the theory that far less control exists over foreign monographs than domestic monographs; moreover, bibliographic records available for foreign monographs tend to be lower quality than those of monographs in general (Sercan 1994). Further, the availability of cataloging for these foreign titles may be on the decline. Sercan (1994) found, with regard specifically to Latin American publications searched in the RLIN database, a marked decline in available catalog copy compared to Grover (1991).

One possible reason behind the lack of catalog copy for foreign monographs is the slowdown of once ambitious efforts to achieve international cooperation in cataloging. Lambrecht (1995) points out that massive efforts in the 1960s to provide an international standard for bibliographic description have not been significantly helpful beyond the English-speaking world, nor have they moved far beyond publication of the Anglo-American Cataloguing Rules. Access by academic libraries to the national bibliographies of other countries is only minimally helpful when a lack of standardization of computer formats creates not easily transferred electronic versions of records that necessitate inefficient rekeying of cataloging records of other nations and languages. For example, in the case of the Basque Library, where approximately 60% of its collection is published in Spain, a tool with limited usefulness has been the Bibliografia Nacional Española. Nonetheless, beyond the need to translate subject headings and portions of other access points, the real problem in using matching records is that they are not transferable.

Similar to findings in the literature, a sample search performed prior to the project resulted in a low hit rate, only 40% of sample titles searched (see table 1). Relatively few were Library of Congress (LC) records, the rest being member copy. Clearly, a cataloging project that would address the needs of this unique collection would include provision for professional
TABLE 1
PREPROJECT SAMPLE SEARCH RESULTS

<table>
<thead>
<tr>
<th>Type of OCLC Record</th>
<th>Classes D, E, F</th>
<th>Class P</th>
<th>Basque Language</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLC Member</td>
<td>22/20%</td>
<td>19/12%</td>
<td>6/6.5%</td>
<td>47/13%</td>
</tr>
<tr>
<td>Total found</td>
<td>62/56%</td>
<td>68/44%</td>
<td>12/13%</td>
<td>112/40%</td>
</tr>
<tr>
<td>No match</td>
<td>49/44%</td>
<td>85/56%</td>
<td>78/87%</td>
<td>212/60%</td>
</tr>
<tr>
<td>Total</td>
<td>111/100%</td>
<td>153/100%</td>
<td>90/100%</td>
<td>354/100%</td>
</tr>
</tbody>
</table>

The staff skilled in original cataloging in a multilingual environment, as well as classified staff with the ability to work with a high percentage of member records, which often require additional time to add LC call numbers and subject headings.

Searching tracked during the course of the cataloging project resulted in slightly higher hit rates than those shown in the prior random sample (overall hit rate 40%), but low enough to justify the staffing needs described above.

EARLY EFFORTS TO CATALOG THE COLLECTION

Providing bibliographic access for this multilingual collection has always been a challenge. Despite all efforts and good intentions of the technical services staff in the main library, a backlog of uncataloged books began to grow. The growth was occasionally slowed by the outstanding efforts of university catalogers. However, the nonstop rigors of title search and verification in three different foreign languages—Basque, Spanish, and French—along with the other problems associated with acquiring materials from foreign sources and getting them cataloged, demanded more time and effort than the technical services staff could supply.

In order to provide access to the collection, a bibliographer handled local processing and assigned call numbers for the material. He adapted from the LC classification system temporary call numbers using the classification number portion and then added either the author's name or a significant word from the title. He was assisted in the local processing of various material formats for many years by students and classified staff.

In 1983, two catalogers were hired for a year through funding from the Basque Autonomous Government in Spain to achieve as much cataloging as possible. After one full year of hard work, a significant portion of the Basque Library received full-level access. It would be eleven years before another serious effort was made to reduce the tremendous backlog of Basque material.

A CATALOGING GRANT

In late 1993, the University of Nevada, Reno Library initiated a cataloging project intended to eliminate part or all of the backlog for the Basque Library. Funded by a grant from the Department of Education (an HEA Title II-C grant), the university hired a project director, two catalogers, three classified staff, and student workers. The primary focus would be to catalog 10,000 monographs in the Basque Studies Library. It was anticipated that the project staff would, in a period of two years, produce more than 10,000 bibliographic records by creating original catalog copy or by editing existing full-level Machine Readable Cataloging (MARC) records.

Other objectives included completion of related authority work and promotion of increased use of the newly cataloged titles and the collection as a whole within the Basque scholarly community.
The hurdles

Language Training
The probability of hiring catalog librarians with the necessary skills in the Basque language was predicted to be very slim, and such turned out to be the case. The length of the project did not allow enough time for the catalogers to learn the language to the extent desired, but training was tailored to make them bibliographically proficient.

It is one thing to do descriptive cataloging in a language in which you do not have the slightest understanding, but it is another thing entirely to classify and provide subject analysis. Knowing that catalogers with sufficient Basque language proficiency were nonexistent, the Basque Studies staff went to work preparing cataloging tools, such as a trilingual guide (Basque, English, and Spanish) to publishing terms, common European publisher names and locations, cardinal and ordinal number translations, and title page convention descriptions. Additional tools included a photocopy of a name authority list of Basque authors, with pseudonyms produced by the International Society of Basque Studies, and a photocopy of the section about Basque from Allen (1975), which presented a grammatical structure and background for the language.

A two-week intensive language training session began as soon as the cataloging staff arrived. The focus of the two-week sessions was to discuss the handouts and to produce some sample cataloging for a variety of works: current publications, older backlog monographs, and rare book titles. The catalogers quickly became aware of the differences between a non-Indo-European language (Basque) and Indo-European languages (Spanish, French, English). After the two-week training, the instructors made arrangements to meet with the cataloging project staff two hours weekly or when needed to answer questions and solve problems during the first year of the cataloging project. During the remaining term of the project, language assistance was provided to the cataloging staff when necessary, usually a few times a week.

Bibliographic Control

Bibliographic control in European literature is reasonably comprehensive. From Spain, the Biblioteca Nacional de España distributes its national bibliography of cataloged items submitted for legal deposit since 1976 in the Bibliografía Nacional Española, distributed by Chadwick-Healey on CD-ROM. Because the preponderance of the Basque collection is published in Spain, whether in Spanish or Basque language, the purchase and use of this CD-ROM version was considered well worth both the time spent searching for records and the money spent. In a sample taken from monographs cataloged from June 1995 through August 1995, 41.5% of original records had a Bibliografía Española record available. Particularly useful were entries for personal, corporate, and series names. Further, Spanish language subject headings were used as a guide to content and sped up the process of assigning LC subject headings. Because IBERMARC catalog records are read-only and not transferable to the PRISM Catalog software, all data had to be keyed.

Descriptive Cataloging

Beyond the apparent challenge of gaining some familiarity with a non-Romance language, catalogers grappled with stylistic idiosyncrasies found in Basque language publishing. Modern printers often make use of the Basque typeface on title pages and introductory material. It is believed that this unique face was developed by Basque carpenters during the Middle Ages, but really became widely used in the twentieth century (North American Basque Organization 1997, 3). Use of the typeface became associated with the interest in Basque nationalism. Examples of the face are shown in figure 1.

Lan Tombe Basque Pero L. Coles
El Pais Vasco Por Carlos Espel Vranga Y VICTOR XENAI GIZTARRO
EVSKAL AEVRKET

Figure 1. Examples of the Basque typeface.
Characteristic in the Basque font is consistent capitalization of all the words on the title page, while common usage in Basque calls for the same rules of capitalization as in Spanish and French. This exasperating style, combined with the highly synthetic and post-positional nature of the language, makes the title page and cover of a Basque publication sometimes appear as an unlocked puzzle. Without some knowledge of Basque vocabulary, grammar, and syntax, Basque on the title page is nearly indecipherable.

Interestingly enough, the Basque language is free of diacritics. Other languages commonly used in and around the Basque culture and found in the collection, such as French and Spanish, are not. Those at work cataloging these materials familiarize themselves with both key equivalents for PCs using Passport/PRISM/Catme plus software, as well as the three-digit numerical codes representing diacritics common to those languages, which display in curly brackets in place of the diacritic in the Innovative Interfaces system display.

**AUTHORITY WORK**

Name authority, particularly in a multilingual environment, always presents challenges for catalogers. LC has led the way in many cases by establishing names with a preference for the Castilian spelling of names over the Basque spelling. Recent agreements, however, grant the Basque language co-official status with Castilian in the Basque region of Spain (Pais Vasco, Spain, Gobierno Vasco, SCP 1983). Now, most modern Basque writers prefer to use the Basque orthography of their names, reinforcing their cultural differences from the rest of Spain and France (see table 2).

<table>
<thead>
<tr>
<th>Spanish Form</th>
<th>Basque Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angel Lerchundi</td>
<td>Aniol Lertxundi</td>
</tr>
<tr>
<td>José Miguel</td>
<td>Joxe Miel</td>
</tr>
<tr>
<td>Domingo Aguirre</td>
<td>Txomin Agirre</td>
</tr>
<tr>
<td>Echeverria</td>
<td>Etxeberria</td>
</tr>
</tbody>
</table>

Name authority is further complicated by the use of pseudonyms or nicknames among Basque people, a culturally embedded custom dating back to the thirteenth century, not merely used by literary figures (White 1992). Basque people were known by their house name rather than their surname (Lhande 1908, 14–16; Caro Baroja 1971, 211–13; Manterola 1980, 537–600), a practice so pervasive that most young men did not know their surnames until they served in the military and found surnames on their military documents. Some prominent writers who are well-known by their pseudonyms are shown in table 3.

Since 1975, pressure to publish Basque works in the unified Basque dialect, Euskara Batua, has compelled publishers to use the single Basque surname in preference over the old double Spanish surnames (White 1992, 11). Writing careers that span the two eras often require references in authority records.

**TOOLS AND RESOURCES USED BY THE STAFF**

A valuable source in decoding and cross-referencing pseudonyms and establishing authors’ dates is the monumental multivolume work, Eusko Bibliographia, compiled by Bilbao and considered the most comprehensive bibliography of Basque materials in the world. Initially, the set was 10 volumes spanning the Basque bibliographic years from the beginning of history through 1975. In 1985, a three-volume supplement was published by the Basque University Press, covering the years 1976–1980. From 1987 to 1991, a bulletin was irregularly published, organizing information from...
1987 to 1989 as a means for the Association of Basque Bibliography to keep current with Basque bibliography. Recently, the Basque University Press has completed a second supplement to Eusko Bibliographia, listing entries for the years 1980–1985. Bilbao dedicated most of his life to Basque bibliography, traveling extensively throughout his lifetime and recording entries for monographs, serials, pamphlets, leaflets, journal articles, government documents, and manuscripts. Basically, everything by and about Basques has been included. Bibliographic entries were organized by the standard author, title, subject, and series titles format. All entries were interfiled and alphabetized. Subject headings were developed using Spanish subject headings, including place names, mostly as a sign of the time period Bilbao was working in, during the Franco dictatorship. Sample entries are shown in figure 2.

The benefits of having access to this multivolume masterpiece were numerous. On many occasions the bibliography helped the catalogers in name authority work to link surnames when only authors’ pseudonyms were present; in addition, it helped in establishing dates for certain authors.

A list that focuses strictly on pseudonyms for literary figures is Entrasaca de un diccionario de seudonimos by Amezaga (1991). Though dated, the list, giving author, profession, century author flourished, and corresponding pseudonym or pseudonyms, is reliable.

Place names pose another problem area for the Basque region in terms of name authority. Although catalogers by policy choose the Spanish forms over Basque forms in names with spelling conflict, the Spanish Statute of Autonomy (1982) made the Basque language co-official with Spanish in the Basque region. Emanating from the statute, an authoritative list of place names, Euskal Herriko Udalen Izendegia (Euskal Herriko Autonomi Elkartearen Administrazio Orokorra, HABE 1993), reveals that the Basque form of a name became official about as often as the Spanish form. Catalogers referred to this list frequently.

Another useful source to aid in deciphering title page and prefatory material was A Manual of European Languages for Librarians (1975). The chapter on the Basque language offers specific information on grammar, syntax, surnames, and what to expect on the title page, followed by a glossary of publishing terms.

**Shelflisting**

As with many special collections, the shelflist of the Basque collection shows signs of considerable effort to fit material into portions of the schedules not fully developed by LC. These efforts are most evident in Basque literature, history, and geographic description and travel. In December 1995, very close to completion of the Basque Cataloging Project, a survey of the Basque collection shelflist showed that in DP402, for example, signifying Spain, local history and description, other cities, towns, etc., 84 out of the existing 220 Cutter numbers had been created locally. Similarly, in the literature sched-
ule, where PH5339 represents all works of literature by individual Basque authors, an impressive 195 out of 308 authors represented in the UNR online catalog (WolfPAC) were established at the University of Nevada, Reno.

Beyond published sources, project catalogers had exclusive access to a number of useful documents. "Language information: English, Spanish, Basque" was compiled specifically for the project staff by the Basque Studies Department. It was a quick reference tool that pulled together such information as publishing terms, grammar, syntax, and major publishing houses whose works were found most frequently in the collection.

A Successful Conclusion, . . .
What is in Store?

As of February 29, 1996, the closing date for the project, staff had produced 3,425 DLC records, 2,824 member copy records, and 4,261 original catalog records, for a total of 10,510 catalog records, representing 40% of the total cataloged monograph holdings for the Basque collection. More than 3,100 authority records were either created or exported to support corresponding new bibliographic records in the university's online catalog. The production goals of the Basque Cataloging Project were met and exceeded.

Newly cataloged titles were primarily promoted via the online catalog. Efforts to inform Basque scholars were made through the BSP Newsletter published biannually. Further ease of access was achieved when the University of Nevada made the online catalog available via the World Wide Web.

When the cataloging project ended, a period of roughly one year passed when nearly nothing was cataloged, despite an average of 84 new titles arriving monthly. The main cataloging department was not able to produce original cataloging or even maintain records for the Basque Studies Library. Consequently, the Basque backlog began to grow rapidly as was the case before the cataloging project. The backlog was and continues to be an issue. The cataloging project was, without question, successful in meeting its goals, but follow-up in the form of continued maintenance and sustained cataloging for the Basque collection is paramount to ward off huge backlogs of uncataloged material.

Also important to reducing backlogs for this special collection, as well as other special collections, is a fresh attitude about cataloging from catalogers. We may need to discard the ideal of "perfect" cataloging to conquer a backlog. Along with an altered ideal, catalogers could save precious time by becoming more accepting of cataloging from other institutions. When editing the valuable few member records available, catalogers for this and other special collections do well to set a specific ceiling on the amount of time they will expend on editing records.

Reflection on this project also produced some thoughts on successful staffing. First, project staff were well suited to their task once language orientation took place. One might believe that being proficient in a language is necessary to catalog in that language, but cataloging experience and demonstrated language ability of some kind might be sufficient. Administrators were pleased with the level of language ability catalog staff held once the project was up and running, and additional language assistance was available when needed. Less than satisfactory, however, was the configuration of staff. With such a low hit-rate of OCLC Online Computer Library Center, Inc. records against the collection, hiring of one additional cataloger would have yielded better results, i.e., more original cataloging produced. Similar projects would benefit from being sure to have sufficient professional catalogers to produce cataloging for a special language collection.

In the future, adequate bibliographic access to Basque materials will continue only when cooperative efforts are established between institutions. The University of Nevada, Reno Library supplies the majority of bibliographic cataloging records of Basque language material to OCLC. Because eight to ten foreign libraries as well as a handful of U.S. academic libraries collect titles on Basque subjects, cooperative cataloging might be the answer to
keeping up-to-date with new Basque language material, as well as reducing the backlog. A cooperative cataloging plan could create more bibliographic records for other institutions to use selectively and reduce duplication of international cataloging efforts (Byrd 1993).

There is no Basque studies collection in the United States as comprehensive as the one at the University of Nevada, Reno. Fortunately, there is an institution in the Basque country of northern Spain, the library of the Sancho el Sabio Foundation, that manages a strong Basque collection that is similar to and slightly larger than the Basque collection at the University of Nevada, Reno. Unfortunately, Sancho el Sabio uses IBERMARC, the MARC format developed by the Spanish state and adopted by the Basque country as well as the rest of Spain, which differs enough from USMARC or UNIMARC to prevent IBERMARC catalog records from being converted to the UNIMARC format for OCLC. Further, OCLC has decided to stop allocating time and resources to developing software to convert various MARC versions to UNIMARC. At the present time, institutions in the Basque country are not willing to invest time or resources to convert their catalog records to the UNIMARC format. This dilemma could leave the Basque Studies Library in an unfortunate position for providing adequate access to its collection in the future.

More serious work on cooperation between cataloging agencies at the international level is paramount. The benefits of cooperation will be realized by all if we persist with the vision that a work should be cataloged only once in its country of publication and consequently for the rest of the world (Lambrecht 1995). In the future, the Basque Studies Library will have to rely on cooperation and collaboration, instead of grants and other funding sources, to sustain its cataloging needs.

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STATEMENT OF OWNERSHIP AND MANAGEMENT
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EXTENT AND NATURE OF CIRCULATION
(“Average” figures denote the average number of copies printed each issue during the preceding twelve months; “Actual” figures denote actual number of copies of single issue published nearest to filing date—April 1998 issue.) Total number of copies printed: Average, 7,245; Actual, 7,440. Paid and/or requested circulation: not applicable (i.e., no sales through dealers and carriers, street vendors, and counter sales). Mail subscription: Average, 6,577; Actual, 6,695. Total paid and/or requested circulation: Average, 6,577; Actual, 6,695. Free distribution by mail, carrier, or other means, samples, complimentary, and other free copies: Average, 66; Actual, 68. Total distribution: Average, 7,245; Actual, 7,440. Copies not distributed: office use, leftover, unaccounted, spoiled after printing: Average, 602; Actual, 677. Returns from news agents: Not applicable. Total (sum plus previous three entries): Average, 7,2450; Actual, 7,440.
Union Listing and the Interlibrary Loan Connection

Kathryn Ryan-Zeugner and Mary W. Lehman

Analysis of unfilled interlibrary loan lending requests at the University of Notre Dame showed that 35% were for volumes not owned by the library. The library had not maintained accurate holdings records in the Indiana Union List of Serials since 1983. Incomplete and inaccurate holdings statements resulted in poor fill rates that could only worsen with time. A project to update union list holdings was launched in the spring of 1996. The project is expected to go on for five years, but the fill rate already begins to reflect the results of the corrections made.

Historically, the library world has stressed the value of union lists proportionate to the proliferation of serial titles during this century. As budgets get tighter, however, the ongoing efforts to maintain union lists often fall by the wayside. Yet the increasing emphasis on consulting union lists to determine volume holdings before sending an interlibrary loan (ILL) request to another library demonstrates what would seem to be an obvious connection between holdings data and fill rates. Fill rate is defined as the percentage of the total number of requests received that are supplied by an institution, e.g., if 50 requests are supplied out of 100 received, the fill rate is 50%. Improving the ILL lending fill rate is greatly dependent on the existence of accurate holdings data. In this article, we hope to reach those with the power of the purse, whose approval is required to allocate money and staff for the creation and maintenance of union lists.

Most ILL units can vouch for the fact that their use statistics rise annually. Association of Research Libraries (ARL) statistics show a 61% increase in ILL lending between 1986 and 1996 (ARL 1998). Notre Dame lending statistics show a startling 145% increase for the same period. Additional money and staff are rarely available to cope with rising workloads. Learning to handle the work with increasing efficiency is the only answer when other help is not forthcoming. Accurate, up-to-date union lists can be critical to overburdened ILL staff.

LENDING FILL RATE

Prior to beginning this project, a ten-year literature search was done on such topics as fill rates, union lists, costs, and statistics, as related to interlibrary loans. Anything that looked remotely useful was collected. In general, the literature proved disappointing. Nothing could be found on the cost of unfilled ILL requests, or on the effects of the use of union lists on ILL

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costs or fill rates. Review of the literature generated more questions than answers:

1. Weaver-Meyer (1995) found that 60% of ILL borrowing requests were filled by the first two libraries on the lender string, and 87% were filled within the five. No one knows how much of this is dependent on union list use, or how accurate those lists are.

2. There is debate about who should maintain union lists. A recent discussion on the ILL-L listserv came up with a variety of answers: cataloging departments, serials departments, state libraries, reference, and student assistants.

3. No figures are available on the costs for handling an unfilled request.

4. There are no figures that determine which is more cost-effective—maintaining a union list or repeatedly handling the same unfillable ILL requests.

5. It is not known what effect poorly maintained union lists might have on the effective use of Direct Request, an OCLC Online Computer Library Center, Inc. service that allows delivery of unmediated ILL requests directly into the OCLC ILL system.

These are beyond the scope of this paper.

Some believe that fill rates are significant indicators of operational activities. Although fill rates are not included in the annual ARL statistics, they do demonstrate the successful use of time spent in filling lending requests. Time is money. Libraries must give more attention to costs. Spending time on requests for materials not owned wastes money. Imagine the time wasted every day in an ILL operation where 45% of incoming requests cannot be filled for various reasons.

In the early 1980s at Notre Dame, the lending fill rate hovered around 50%, which seemed low. In 1985, librarians in the ILL department did a survey to determine the reasons for unfilled requests (see table 1). In an attempt to raise the fill rate, staff continued to search daily for items that did not appear on the shelf until the four-day OCLC time limit ran out. A check of the other reasons requests were unfilled showed that all were beyond the abilities of the ILL unit to correct. The routine rechecking of the shelves managed to inch the fill rate up to around 55%. And there it stuck. In 1992, librarians in the unit did two additional surveys with results that were identical to the first.

**THE INDIANA UNION LIST AT NOTRE DAME**

The survey results clearly showed the major obstacle to increasing the fill rate was the 35% of requests that went unfilled because Notre Dame did not own the volume. To the extent that ILL borrowers consult union list holdings data, the problem could be ameliorated if Notre Dame updated its serial holdings in the Indiana Union List (IUL). This union list was first published in paper in 1973, then microfilm, and in 1983 was added to the OCLC Union List database. Although the accuracy of the original holdings data reported by Notre Dame in 1973 is unknown, the lack of upkeep over the years can be assumed to have had a detrimental effect.

The history of union lists goes back to the middle of the nineteenth century when the first one was compiled in Italy in...
1859. The first one in this country listed the holdings of Baltimore libraries and was published in 1876 (Hanson 1968). The current situation of tight budgets and escalating serial prices should make these lists more appealing, not less. Climbing prices lead to further incentives for resource sharing, but effective resource sharing cannot be done without accurate, up-to-date union lists. Besides saving time, union lists assist ILL operations in spreading the workload more equitably.

Part of the problem that led to a lack of maintenance is that union listing is seen as a cooperative project done for the benefit of other members of a consortium, not the library doing the maintenance. Accurate holdings beyond the title level didn’t seem of sufficient benefit to outweigh the costs of producing them. In the early 1980s, there was no pressure on ILL staff to use union lists. If lists were used, it was to locate a title, not a particular volume or issue. The situation has changed, and their use is now crucial to ILL operations and expected by lenders.

Because of the increased reliance on and use of ILL, ILL departments have come to rely much more heavily on union listings to speed ILL requests. Members of the Notre Dame ILL department were concerned that inaccuracies in the IUL were contributing to the low fill rate at Notre Dame. To demonstrate the inaccuracy of our holdings to the library administration, ILL staff compiled a list showing a few titles from the IUL, what the list said Notre Dame had, and what the actual holdings were. In most cases, holdings were far less than the union list indicated.

The lack of current accurate serial holdings on the IUL cost Notre Dame several offers of reciprocal agreements for free photocopies with other libraries. These libraries made the agreement contingent on accurate holdings being available on a union list, and we could not sign in good conscience with our holdings in such disarray.

In the early 1990s, as pressures grew in ILL operations, the ILL department began getting notes from some librarians who could tell that we were not always using union lists when selecting potential lenders. The pressure was growing on all ILL operations to use union lists, and this was going to have a substantial effect on our fill rate. Where the list was in error, it almost invariably showed holdings greater than actually owned. The more that other ILL units relied on the union list, the more requests Notre Dame would receive for items not owned. Borrowing operations were willing to consult union lists because theoretically it saved them time, and provided their clients with faster service. Lending operations were interested in their fill rates, and in the time saved not searching for items not owned.

At this point it would have been helpful to have had some research on the average cost of handling an unfilled ILL request. An important consideration when making library budget decisions is whether it costs more to maintain an accurate union list even with a higher fill rate, or to check the same title over and over because of a faulty union list. Two ARL studies on ILL costs (Roche 1993, and Jackson 1998) were checked to see whether they had come up with any specific information on the cost of handling an unfilled lending request. Unfortunately, the authors of both studies focused only on determining the cost of filled ILL requests.

While the ILL department was addressing the need for a union list update project, some unanticipated questions arose from our non-ILL colleagues. They asked whether it was feasible to use the Internet to obtain borrowing request information rather than go to union lists. Accessing directly the catalogs of the world daily for hundreds of requests, however, is not nearly as efficient as searching through OCLC. The question revealed the lack of understanding of the usefulness of union lists, and the hurdles faced in assigning staff resources to maintain serial holdings.

**Notre Dame Union List Update Project**

When the Indiana consortium, INCOLSA, arranged in 1983 for OCLC to batch load Notre Dame’s union listing data, the library’s holdings were represented by about
14,000 local data records (LDRs). The only maintenance on these holdings in OCLC over the following 12 years was to delete an LDR when all holdings of a listed title were withdrawn. Early in 1996, the library purchased from OCLC a printout that listed all records to which LDRs were then currently attached. Unfortunately, OCLC could not provide a listing of all the serial bibliographic records that had Notre Dame’s holdings symbol attached.

A member of the library’s systems staff wrote a short program to identify all records coded as bibliographic level S in the local NOTIS system to determine the titles to be union listed. When the program was run, the resulting printout contained just over 31,000 titles. The printout, sorted first by OCLC record number and then by local system number and title, is being annotated with the date the LDR is updated or newly created and serves as the master record of which holdings have been updated. Unfortunately, OCLC’s printout is sorted alphabetically by title; it could not be sorted into OCLC record number order, which would have eased working with the two printouts side by side.

The library had already adopted the Z39.44 Serial Holdings Statements standard. Local policy for recording holdings calls for Level 4 detailed holdings. To satisfy OCLC’s union listing requirement of reporting holdings at Level 3 summary holdings necessitates a reworking from Level 4 to Level 3 during rekeying into OCLC. Ensuring that the specific extent of holdings posted to a particular OCLC bibliographic title conforms to beginning and ending dates for the title has created a buildup in the number of local bibliographic records needing remedial attention.

The NOTIS printout of serial titles to be union listed was accurate only as of the first day that union listing resumed. Subsequent serials processing that affects the accuracy of union listing must be taken into account. In order that other staff members have ready access to the information and do not incur search charges in OCLC to determine whether or how the library has union listed a title, Level 3 data without captions are entered in the local system on a copy-specific basis. Staff members in various serials workflows need only notify union listing staff of the local system’s record number when there is additional work to be done in the union list.

The updating project is warmly endorsed by the library’s ILL office. Outdated information is being corrected, and the library is reporting to the broader scholarly community via OCLC about holdings for thousands of titles never before union listed. It has made a positive difference; the statistics show it.

**Union List Contributor Survey**

In reading the literature on union lists, some things became obvious. Everyone who writes on the subject praises them as good and necessary—for ILL, for resource sharing, for cancellation decisions, etc. Little is written, however, on the problems of maintaining union lists. At the birth of any union list, there is much enthusiasm—but as Bloss (1985/86, 143) states, “the popularity of union list revision was second only to shelf reading.”

With the knowledge that union list maintenance was low on everyone’s priority list, the original contributors to the IUL were asked about their perceptions of its accuracy and completeness. Also, they were asked whether they consulted union lists in ILL borrowing and kept up their holdings once the IUL was available in the OCLC database. Using the original list of contributors found in the 1973 edition, we sent a brief survey to librarians at 56 Indiana libraries. Thirty-three librarians (59%) responded. Of those, 25 (75%) indicated that they used the IUL in placing ILL requests.

Participants were asked to give their impressions of the list’s accuracy and currency. Only 10 had the courage to attempt an answer. Some of their responses were: “full of erroneous data—quicker to take a shot in the dark”; “difficult to say, but it beats an OCLC ‘dha’ display”; “better than flying blind”; “I feel it is accurate—we do depend on it”; “spotty”; “50/50 currency, 75/25 accuracy”; “I don’t know”; “since we’re not updating ours, we shouldn’t expect others to do theirs.”

Asking whether the respondent’s insti-
TABLE 2
UNFILLED INTERLIBRARY LOAN REQUESTS
(MARCH, APRIL, MAY 1997)

<table>
<thead>
<tr>
<th>Reason Unfilled</th>
<th>Percentage of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume not owned</td>
<td>20</td>
</tr>
<tr>
<td>In circulation</td>
<td>32</td>
</tr>
<tr>
<td>Not on shelf</td>
<td>10</td>
</tr>
<tr>
<td>Noncirculating</td>
<td>10</td>
</tr>
</tbody>
</table>

Institution had kept its union list holdings information up-to-date, the vote split evenly three ways: 11 yes; 11 no; and 11 partly.

Those who answered “no” or “partly” on whether their institution had kept its union listings current were asked whether they had any plans to update, and if not, why not. Some of those answers were: “too short of staff”; “lack of time”; “never use this”; “we have let it fall through the cracks”; “not a priority at this time.”

One thing was apparent from the questionnaire results: the smaller libraries were the ones most likely to be maintaining their holdings. Perhaps this is because they have smaller collections to maintain and fewer changes to input annually, making labor costs less critical. Another factor for the larger institutions with large serial collections to consider was the OCLC storage costs. In 1983, the initial load into OCLC cost Notre Dame $360. The charge is now 2 cents a year per local data record. In 1997, this came to $372 for Notre Dame. Not bad, given 13 years of inflation.

In these days of tight budgets, all activities are scrutinized, with costs weighed against results; union listing activities are no exception. ILL costs more if you receive a large number of unfillable requests, but fixing the union list has costs, too. Without any cost data, we are suggesting, nevertheless, that it is less expensive to fix the union list. This is only a guess, but there is an underlying rationale. Once the list is up-to-date and maintained properly, there should be fewer unfillable lending requests, and ILL costs for unfilled requests should come down. If the union list is never fixed, its accuracy will further deteriorate over time, the fill rate will further decline, and the cost for unfilled requests will rise. Experience shows that requests for the same titles are received over and over again, e.g., titles of which Notre Dame owned five volumes twenty years ago, but no longer receives. Fixing and using a union list can put an end to the erroneous requests.

CONCLUSION

After only three months, the Notre Dame union listing maintenance project began to demonstrate its value to ILL operations. Our fill rate rose from 55% to 62%, and a survey of unfilled requests showed a rather dramatic drop in the percentages for “Don’t own the volume” (see table 2). These figures also demonstrate that ILL operations around the country do use union lists when selecting potential lenders. The project is now in full swing and is expected to take five years to complete.

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Book Reviews

Margaret Rohdy, Editor


The second edition of the MARC Manual, which was first published in 1991, is updated throughout, with new chapters on MARC format integration and the community information format. Byrne intends this book to be useful to all practicing librarians—not just catalogers, but also administrators, library vendors, and library science students. She succeeds in her goal of explaining what MARC (Machine-Readable Cataloging) is, why it is important, and how it works.

Introductory chapters, “MARC Theory and Development,” “MARC Format Structure and Content Designation,” and “Patterns in the MARC Format,” precede the book’s longest chapter, “Major MARC Bibliographic Codes.” This chapter is a field-by-field presentation of the MARC format with “Description, Potential Uses, Caveats” for each field. Byrne emphasizes format integration: chapter 3 is devoted to the topic, and revisions throughout this edition focus on specific format integration-related changes in MARC coding. In addition to the lengthy treatment of the MARC bibliographic format, there are separate chapters on the authority format, the format for holdings data, and the format for community information.

Byrne follows this detailed information on MARC content designation with several chapters on the use of MARC records: “MARC Records in Electronic Form,” “MARC-Based Online Systems,” and “MARC Use in Different Types of Libraries.” Chapters 7 and 8, “MARC Database Processing” and “MARC Database Products,” will be most useful to libraries automating their catalog for the first time. The processing services that vendors can provide (e.g., de-duping, holdings consolidation, correction of filing indicators, smart bar-code processing, and authority control) are covered in detail and accompanied by a discussion of the information that libraries must provide to vendors, the decisions they will need to make, and options they should consider. Byrne concludes the section with a discussion of the pricing of MARC database systems.

The layout of the book is attractive. Folder icons distinguish chapters, sections, and subsections; a magnifying glass identifies USMARC definitions; and ! in the left margin indicates a MARC field or code with major changes since the book’s first edition. Unfortunately, there is no overall explanation of these symbols.

Despite the author’s expressed concern for timeliness, the book lacks explicitness and consistency as to its currency. In general, changes made through Update No. 2 (March 1996) of the USMARC Bibliographic Format (1994) are shown; however, several earlier changes are not included. For example, the code for Core level description (approved in June 1994) is not included in the discussion of Encoding Level. The 856 field (Electronic location and access) was first approved in January 1993. Byrne includes it with the community information format, but not in the field-by-field presentation of the
MARC bibliographic codes, where it is essential information for many users of this book. The March 1996 changes in the first indicators for X00 fields are included, but the 1993 deletion of the second indicators 0 and 1 for fields 700–730 is not. Byrne does not mention the 1991 USMARC Format for Classification Data, which predates the community information format (1993).

In the MARC Manual, careless editing is apparent in several instances. Under Type of Record code (p. 63), the definition of Non-musical sound recording is given for the code g (Projected medium), while the definition of Projected medium and the code i for Non-musical sound recording are omitted. Though she includes the current definition of the 740 field, Byrne retains its pre-1993 name, Added Entry - Variant Title (p. 125). In chapter 12, which is new for this edition, Byrne notes that “the community information format is the newest format (first published in 1993)” (p. 233). Chapter 11 begins with a statement that the holdings format “is the youngest of the USMARC formats, being published in 1990” (p. 229). This sentence, accurate in the 1991 edition of the book, should have been omitted from this edition.

Byrne's book will be compared to Walt Crawford's MARC for Library Use (2d ed., 1989), which appeals to the same audience. Crawford includes separate chapters for each type of bibliographic material for which a MARC format existed when he wrote the book, while Byrne presents all of the major bibliographic codes in one format-integrated chapter, focusing on the MARC fields rather than on the types of material. Both books have separate chapters on the Authorities and Holdings formats. Crawford includes chapters on intra- and inter-record linking fields, on non-Roman text, and on extensions of the USMARC format developed by the bibliographic utilities, as well as a more extensive glossary. Byrne provides a chapter on the community information format and useful chapters on MARC processing and products.

While there are many manuals (e.g., Maxwell's Handbook for AACR2R, 1997) that explicate the Anglo-American Cataloguing Rules, 2d ed. revised (AACR2R), and at least two (Byrne and Crawford) that describe and explain the MARC format, Deborah Fritz's Cataloging with AACR2R and USMARC for Books, Computer Files, Serials, Sound Recordings, Videorecordings is the first to correlate the cataloging rules with MARC content designation. The book is based on the author's more than eight years' experience in leading MARC cataloging workshops; its intended audience is original and copy catalogers in all types of libraries and library science students.

In her preface, Fritz states: "The purpose of this book is to bring together—in one place—information about the cataloging rules, various sources of rule interpretations, and the MARC coding standards. It cannot claim to be a completely comprehensive tool; it is limited in scope to five types of material only; it is not meant to replace the rules or interpretations or coding manuals; and it does not include every rule or MARC tag. . . . But this work will give the cataloger facing a MARC record on a computer screen, or a blank template/workform, a place to start" (p. vii).

The book includes only the parts of the MARC format that relate to the cataloging rules for books, computer files, serials, sound recordings, and videorecordings. Thus there is no history of MARC, no description of the Directory structure, no background discussion of format integration, and no information about cataloging maps or archival materials. The book consists of unbound, three-hole punched 8 1/2-inch by 11-inch sheets. Most of the information is packed into tables and lists, Fritz's solution to the problem of showing the complex patterns and relationships in the MARC format and the rules for bibliographic description.

In the first introductory chapter, Fritz lists basic cataloging tools and describes the relationship of these tools, the cataloging rules, and the MARC format to this book. For each updatable tool she specifies the latest update used. Here she also describes the conventions used in the book; many of the explanations are repeated where appropriate to make the book easier
to use. The second chapter is a detailed discussion of the cataloging process and types of cataloging, from straightforward copy cataloging to creating original records.

Bibliographic description is the focus of chapters 3–7. Fritz introduces each chapter with a list of “Cataloging Steps” for the type of material and then presents, in tables arranged by MARC field, detailed guidelines for searching, matching records, editing records, cataloging different editions, and original cataloging. Guidelines for both USMARC and OCLC records are included. The AACR2R rules are clearly paraphrased, but if the rule is too complex to be safely paraphrased, Fritz refers the reader to the cataloging rule itself. She places her own hints for cataloging and coding in brackets to distinguish them from those taken from official sources. The MARC tables, or “cheat sheets” as Fritz calls them (p. 3), are quick reminders of basic information for each field: repeatability, indicators, subfields, end punctuation, LC and OCLC input standards, cataloging rule numbers, prescribed sources of information, and related fields. Each chapter includes a list of specific tools, beyond those listed in chapter 1, that are useful in cataloging that type of material. Several chapters include additional information tailored to the type of material. The “Books” chapter includes discussion of CIP (Cataloging-in-Publication) and large-print books. In “Serials,” the editing sections are divided into “Same issue” and “First-Later issues” to provide guidance when the item in hand is not the one described in the bibliographic record. “Videorecordings” concludes with a Video Viewing Notes worksheet.

Chapter 8, “Tags,” constitutes almost half the book. All fixed and variable field tags from the Leader to the 830 field, including the 049 field for OCLC local holdings and 09X for locally assigned call numbers, are listed. The tables of fixed field codes, arranged by USMARC character position, include OCLC and Bibliofile labels, a blank space for local system labels, and a helpful column of related MARC fields. Each variable field is presented with the applicable AACR2R rules and Library of Congress rule interpretations (LCRIs). Chief source, repeatability, LC and OCLC input standards, indicators, subfields, and end punctuation are listed in “cheat sheet” tables with each field.

Chapter 9 covers choice and form of name and title access points, based on chapters 21–25 of AACR2R, but limited to those access points applicable to books, computer files, serials, sound recordings, and videorecordings. Each type of access point is linked to applicable cataloging rules, LC rule interpretations, and MARC tags.

The chapters on bibliographic description and the “Tags” chapter include many of the same details, such as MARC indicators, subfields, input standards, and end-of-field punctuation, first in the context of the cataloging process and then in relation to the parts of the bibliographic description. In addition, Fritz provides ready-reference access, in appendixes, to MARC indicators, end-of-field punctuation, and sources of information for the bibliographic description.

The subject of these two books is the same, but their approaches to the topic and their potential uses are very different. Deborah Byrne’s MARC Manual, a thorough introduction to the MARC format, can be used as a reference tool or a textbook. In Cataloging with AACR2 and USMARC, Deborah Fritz assumes a knowledge and understanding of MARC and focuses on the relationship between MARC coding and AACR2R cataloging rules. As a tool designed for the practicing cataloger, this book would be even more useful if it were available in electronic form, for installation on catalogers’ workstations.—Judith Hopkins (ulcjh@acsu.buffalo.edu), State University of New York at Buffalo

Ideally, research is conducted in an environment based on honesty and trust. Peer review and replication of results make the research process self-correcting, so that the validity of research results is assured. In this book, Altman and Hernon note that this ideal process sometimes fails. They present a detailed discussion of research misconduct, with a case study of faculty and student perceptions of misconduct and an experiment using a falsified research paper. The book is unique in its library perspective; the editors focus throughout on the implications of research misconduct for library collections and services, advocating that librarians take a proactive stance to prevent distribution of false or misleading information.

Altman begins with an examination of the difficulties in defining research misconduct. Common elements of most definitions are plagiarism, fabrication of data, and falsification of results. While the most newsworthy misconduct often involves medical research, the problem occurs in all areas of the natural sciences, social sciences, and humanities. By the time an article survives the peer review process, it has earned a reputable stance in the academic community. Peer review, however, is not infallible; reputable journals have published falsified documents. The extent to which misconduct occurs is unknown, because few people willingly admit to fraud and because the exposure of fraud in scientific and scholarly research is usually handled with discretion.

Peter Hernon and Laura R. Altman report on a study done at Tufts University, where they used a questionnaire to explore faculty and student awareness of research misconduct. Their results indicated that neither faculty nor students usually considered the possibility of research misconduct when using library resources, though students were somewhat more likely than faculty to trust printed resources in library collections. Faculty members tended to assume that students had developed sufficient critical thinking skills through their academic experiences, but most students indicated that they did not question the validity of the material they use.

Hernon and Philip J. Calvert describe their experiment designed to explore multiple perspectives on research misconduct. They developed a research paper based on fabricated data that they distributed to library school students, librarians, professors, and deans to read and critique. The participants were then told of the false nature of the document and debriefed in focus groups about their thoughts and reactions concerning the paper. Finally, the authors distributed the paper to journal editors, informed them of the falsified data, and requested feedback on whether the paper appeared suitable for publishing, after revision.

A common theme of the student reactions was the helplessness they felt upon learning of fraud. Librarians also expressed a sense of helplessness, stemming from the breach of their trust in the publishing process and in the reputation of journal titles or publishers. The deans and professors expressed belief in the self-correcting nature of the research process; correction may not occur quickly, but eventually the errors would be discovered and the necessary revisions made. They also noted that efforts to expose a relatively few cases of fraudulent research would not be cost-effective. Though the journal editors recognized weaknesses in the article and suggested revisions, they agreed that the article was likely to be published eventually.

Focusing on the role of librarians, Hernon notes that library users need critical thinking skills and information literacy to be able to use both print and electronic resources effectively; and Walters shows how bibliographic instruction can increase awareness about research misconduct. Researching critical reception by tracking reactions to a research document through citation searches and reviews encourages library users to develop a fuller frame of reference and a healthy skepticism about research results. They learn that misconduct is difficult to detect and that the retraction may not be linked directly to the falsified document.

Most library users believe that information found in a library must be correct, but Altman points out that factual correctness
is not a standard element of library collection development policies. Librarians have traditionally seen themselves as impartial intermediaries between resources and users, but should the principle of objectivity in regard to expressions of opinion also apply to falsified facts? Altman shows that librarians' responsibilities are evolving toward greater accountability for the information they provide. She discusses methods that have been used in some medical libraries to notify users about retractions, e.g., stamping a statement near the title of the article indicating that a retraction is available at the library’s information desk, or writing the citation of the erratum or retraction directly on the article. Unlike bibliographic instruction or collection development efforts to deal with research misconduct, these actions by librarians raise concerns about the labeling of documents, which catalogers avoid as a matter of principle. The problems of whether and how to incorporate value-based information such as research retraction statements into bibliographic records have yet to be solved. According to Altman, including a retraction or correction is not labeling; it is a value-added service that allows library users to make more informed judgments about the document. Adding value to information is a key function of the library profession; the need for value-added services will grow as accuracy of data becomes more difficult to ascertain in the electronic information environment. The authors of this book believe that librarians can and should participate actively in establishing procedures and standards for documenting research misconduct.

The book includes several useful appendices: reviews of publicly discussed cases of scientific misconduct, a selected list of journals and monographs that include research by individuals implicated in misconduct, suggested resources for investigating research misconduct incidents, and references to codes of ethics from professional societies. There is also an extensive bibliography, a useful resource for further research on this important issue.—Terry L. Kirchner (tkirchner@nypl.org), General Research Division, The New York Public Library
Index

Volume 42, 1998

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 and nonprint media 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 and nonprint media 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.

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