Comparing Catalogs

Currency and Consistency of Controlled Headings

By Stephen Hearn

Evaluative and comparative studies of catalog data have tended to focus on methods that are labor intensive, demand expertise, and can examine only a limited number of records. This study explores an alternative approach to gathering and analyzing catalog data, focusing on the currency and consistency of controlled headings. The resulting data provide insight into libraries' use of changed headings and their success in maintaining currency and consistency, and the systems needed to support the current pace of heading changes.

Much of the work of technical services takes place out of public view. Perhaps this explains in part why measures of technical services' contribution to the library are relatively lacking in compendiums of library measures. The number of volumes and subscriptions in a collection, the rate at which electronic resources are accessed, circulations and reference interviews—all of these are frequently cited as measures of academic libraries' performance, but rarely is the work contributed directly by technical services used as a library's performance measure. For some in technical services, there might seem to be an advantage to being "under the radar" when internal or library-to-library comparisons are done; but the lack of measures can also leave any operation unsure of its own success and of the validity of any local or shared set of norms. Having practicable methods of determining a technical services unit's success in meeting its goals and of assessing that accomplishment in relation to that of peer institutions can help technical services units build confidence in their goals, identify systemic problems, and contribute to library planning and priority setting. The study presented here seeks to define and test an approach to measuring one of the contributions of technical services: the use of consistent and up-to-date headings in the library catalog.

Methods of Measuring Catalog Data Quality

One obvious component of library service is the product of technical services efforts: the data in the library catalog. The catalog assists users with finding known items in the collection; browsing the collection by subject, author, and title headings; browsing the result sets of keyword searches; examining and selecting items via their surrogate records; and locating the items desired. These basic services are provided through a wide variety of interfaces and displays. Vendors and designers of automated library systems offer a range of interface choices to their customers, and each library tailors its system's functionality and presentation for its users. Comparative evaluation of the differences between such varied interface options would inevitably be complex and highly subjective. In their review of the literature on quality in cataloging, Myall and Chambers note the difficulty and rarity of high-level evaluation of the catalog:

Stephen Hearn (s-hear@umn.edu) is Authority Control Coordinator/Head, Database Management Section, University of Minnesota Libraries, Minneapolis.

The author wishes to thank the University of Minnesota Libraries administration for granting a professional development leave to write this article.

Submitted April 30, 2008; tentatively accepted pending revision June 24, 2008; revised, resubmitted August 26, 2008, and accepted for publication.

> Quality of the overall catalog appears to be less frequently the subject of study, . . . notwithstanding the fact that both Cutter's objects and much of FRBR's approach are focused on the catalog as a whole rather than on individual records. Presumably, the limited extent of study at this level is due to the complexity and multi-faceted nature of the task, which now must include not only content and structure of the database, but also completeness and presentation of data on various screens, search engine execution, presence of context-sensitive help, and other elements in an environment in which users are familiar with many other Web-based information tools.[1]

Nevertheless, behind the variable screens of automated system interfaces, the data records that feed catalog indexes and displays are highly standardized. The widespread adoption of a core set of data standards by the U.S. academic cataloging community—the Machine-Readable Cataloging (MARC) 21 formats for mark up; the *Anglo-American Cataloguing Rules*, 2nd ed., rev., for description and name or title access; the Library of Congress' (LC) *Subject Cataloging Manual: Subject Headings* rules for subject access; and the LC's Name and Subject Authority Files (LCNAF and LCSAF, respectively) for authority-controlled headings—has enabled the sharing of catalog records through union databases, of which OCLC WorldCat is the prime exemplar, and the proliferation of library automated systems, all designed in their myriad ways to exploit the data contained in standard catalog records.[2] Studies of data quality rather than the qualities of automated system interfaces can reasonably claim to be focusing on a crucial and comparable aspect of overall catalog performance.

Past efforts to evaluate catalog data quality have generally relied on thorough review of individual catalog records. In their recent survey of the literature on quality in cataloging, Myall and Chambers found much disagreement over the definition of quality. The most common model they found for data quality analysis, reported in eight studies, calls for selecting a set of catalog records and examining the different areas of each record—fixed fields, standard numbers, title and statement of responsibility, edition and publication statements, notes, and access points—for errors, inconsistencies, and omissions.[3] This kind of evaluation tends to be time and labor intensive, requiring a significant level of expertise and often the retrieval of items from the collection for comparison with the catalog records. It also raises comparability issues. Libraries' standards for what constitutes an acceptable level of data quality and completeness vary across these several areas of description and access. For example, the extent to which libraries invest in the creation of table of contents or summary notes can vary greatly and are a matter of local policy; the trade-off between the added value of such notes and the added liability they represent as additional opportunities for error makes standard measurement difficult.

An alternative for the study of catalog data quality is to look not at a sample set of records, but at a sample set of searchable data. The "Dirty Database Test" takes this approach, offering libraries a set of typographical errors to search in the catalog.[4] The number of errors thus found does provide a measure of data quality; however, this measure tends to lack both context and focus. The prescribed typographical error search looks for one or one set (using truncation) of erroneous variants, and ignores the number of times the term in all its variants is spelled correctly in the database. In the absence of these other counts, determining an error rate for comparison purposes with other catalogs is difficult. Typographical errors, some of which may be unlikely objects of a searcher's query, can occur in any term in the record. Lastly, as noted earlier, libraries that include tables of contents and other notes in their records are likely to increase error counts by this measure without regard to the overall enhancement of access that such notes represent. Searching for and correcting typographical errors is an important part of maintaining access, as demonstrated by a 2007 study by Beall and Kafadar, but less effective as a comparative measure.[5]

Heading Consistency as a Comparative Measure

The aim of the current study is to explore another alternative for evaluating catalog data quality. Rather than looking at whole records for a broad range of error types or searching for typographical errors, this study focuses on the consistency of selected authority controlled headings. Wolverton reports that a commitment to heading consistency as a goal is widespread among technical services departments.[6] In describing their use of the whole-record review or "audit technique" at University of Bath, Chapman and Massey observe, "Authority control is a valuable form of quality assurance which the audit technique is weak in evaluating, compared to checking descriptive cataloguing."[7] The authors go on to note that their pilot study "was unable to confirm the feasibility of comparing headings to an authority file, which would inevitably increase the time required."[8]

Departing from the whole-record audit approach to focus instead on currency and consistency of controlled headings has a number of advantages as a comparative quality measure. It highlights heading data, which is of high value for discovery. It is less prone to differences over catalogers' judgment regarding how a particular resource

should be described. It is able to sample a much wider range of records than the audit technique. Lastly, it offers a point of comparison that most if not all catalog managers would acknowledge is valid, given their widespread commitment to maintaining current and consistent headings.

Consistent headings are necessary to ensure that users can find all the items they seek under one heading. Many heading inconsistencies are obvious to the alert user in a browse search, where two similar headings for the same name may appear adjacent to each other in the index display; in other cases, where the entry term for a name or subject heading changes, the two headings may be widely separated in the browse index.

Inconsistencies can be less obvious, and therefore more of a problem, in other searching contexts. A keyword search may retrieve one of the split heading's forms in its result set, and miss the other. A redirected search, prompted by clicking a highlighted access point in a catalog record's display, may find only the records that match that access point exactly and exclude the variants. A "faceted browse" display of the type exemplified by North Carolina State University's implementation of Endeca and Ex Libris' Primo analyzes headings and other data present in a result set and presents them under such facet headings as "Authors" and "Subjects" in order of frequency in the result set. Such an analysis may find both current and obsolete heading forms in its result set but display only the more frequently used heading in its truncated list of facet terms. Because libraries' newest items are the likeliest to carry the first instance of the revised form of a name or subject term, they are more likely to be low-posted and therefore less obvious in a faceted browse display, and possibly omitted altogether. Redirected searches are similarly prone to finding only records carrying the obsolete form of a heading and missing new resources with the current form of the heading if the heading split has not been corrected.

In addition to having a clear effect on the service the catalog provides, heading inconsistencies are relatively easy to recognize. Shared standards for heading forms are already in place. Standard forms of headings are widely distributed through the LCNAF and LCSAF, and widely relied on throughout the English-speaking library community. Determining the agreement between a library's catalog headings and a standard heading form is also relatively straightforward and less demanding of expert judgment than the analysis of a full catalog record. Standardization makes gathering data on multiple libraries' consistent use of a sample set of headings with a fair degree of efficiency and accuracy both possible and practicable.

One type of heading that offers an opportune focus for this kind of evaluation is a heading that has changed its authorized form. Authority files are dynamic, and the controlled terms for entities and concepts are always subject to revision for a variety of reasons. Two lists of changed headings are readily available. One is the long-standing "Library of Congress Subject Headings (LCSH) Weekly Lists," formerly distributed in paper form, now posted online (www.loc.gov/aba/cataloging/subject/weeklylists). The weekly lists include new, deleted, and changed headings in the LCSAF. The changed headings are marked by the text "CANCEL" following the old 1XX heading form in the online list. The other list is more recent. On February 1, 2006, the LC posted a revised rule interpretation reversing its policy of discouraging changes to the authorized form of personal name headings simply to add a death date. As of that date, OCLC began compiling and posting online lists of established personal name headings to which a death data had been added in the LCNAF under the title "Closed Dates in Authority Records" (www.oclc.org/rss/feeds/authorityrecords/default.htm). Together, these two lists are a handy source for samples of authorized headings that have changed their forms.

The hypothesis for this exploratory study is that an examination of the results of searching sample sets of changed name and subject headings in a collection of catalogs will yield objective and comparable results indicative of the state of data quality control in those catalogs.

Heading consistency can be evaluated in online public catalogs in two distinct contexts. Within a given catalog, whether the library's catalog records use the old or the revised form of a heading is arguably less important, provided the same form is used in all cases. The criteria of consistency and complete retrieval can be met in both cases. However, when a catalog's access points are integrated with those of other libraries' catalogs in a union catalog or federated searching environment, consistency within the local catalog may not be sufficient. The goal of consistent search results in union catalog contexts implies a shared commitment to using the latest form of an authorized heading, since that provides all contributing libraries with a common standard. For that reason, this study examines both these aspects of heading consistency: the rate at which heading "splits" (headings found in both old and new forms) occur in a single catalog; and the extent to which the new form is found to have replaced the old across a set of catalogs. By focusing on the data in the source records, interface variability can be ignored in favor of measuring adherence to commonly held goals and data standards.

Research Method

Using the two identified sources, the LCSH "Weekly Lists" and the OCLC lists of "Closed Dates in Authority Records" for personal name headings, three sample sets of revised subject and name headings were compiled. The source lists are posted weekly, and the sample sets were drawn

from three separate starting points within each series, both to broaden the range of heading changes gathered and to reveal any changes over time in the updating of headings in the catalogs under review. The name sample sets were collected from lists spaced approximately six months apart. The subject samples were collected from lists spaced approximately a year apart. In each case, the changed headings in the lists were reviewed from the chosen starting point forward in the list or lists until approximately fifty sample headings had been collected. For subjects, several lists were reviewed for each sample of fifty changed headings, since the number of changed subject headings in each LCSH weekly list is fairly small (approximately seven to nine). For names, each OCLC list examined exceeded the required number of fifty changed headings. With each new list sampled, the alphabetical end point of the previous sample set was used as the starting point for assembling the next set of fifty changed name headings.

Once the lists were assembled, a set of target public catalogs was selected. The home for this study is the University of Minnesota, which belongs to the Committee on Institutional Cooperation (CIC), a group of twelve large research universities.[9] The CIC universities have a history of cooperation, including the maintenance of a federated search of CIC catalogs for a time, and are often used as peer institutions for comparison purposes. The thirteen catalogs of the CIC libraries (counting the library catalogs of the Chicago and Urbana–Champaign campuses of the University of Illinois as separate catalogs) were therefore selected to test the method being explored. Because this study is exploratory, the names of the catalogs studied have been randomly ordered and replaced by A, B, C, and so on, in the results. The LC's public catalog was also included in the set of target catalogs, since it is the source for many of the changed headings. Because the LC's results show a significantly greater use of the headings under review and therefore make its identity obvious, the LC's results have been labeled.

All study data were gathered by searching the public catalogs of the target institutions. None of it depended on privileged access to information. The old and new forms of each of the sample headings were browse searched in each target public catalog, and the number of hits found for the old and new forms of the heading was recorded in a spreadsheet, the primary tool for data gathering and manipulation. Spreadsheet formulas were used to calculate the percentage of new headings found. In the spreadsheet, "0%" indicates that only instances of the old heading were found; "100%" indicates that only instances of the new heading were found; and any percentage in between indicates a split between the old and new forms. Where no use of either form was found, "NA" (not applicable) was substituted for a percentage. A sample of the spreadsheet appears in table 1. The project spreadsheets (without institution names) have been deposited in the University of Minnesota's institutional repository, where they are available for external review.[10]

For the subject samples, separate counts were made of unsubdivided and subdivided forms of the old and new heading. For the name samples, separate counts were collected under the old and new form for the name as an author and as a subject. These refinements to the counting were made to assess whether heading consistency in the catalogs studied differs for authorized heading strings (the unsubdivided subject strings) versus unauthorized heading strings (most subdivided subjects) and for personal name headings in author indexes versus personal name headings in subject indexes. In expressing the results of the study for this paper, the counts of unsubdivided and subdivided subject heading forms have been merged to show a single count of old versus new main heading forms for the subject index as a whole. The results of the personal name searches are reported separately for name indexes and subject indexes.

Some deselection of the headings initially found in the sampling process proved advisable. Several types of headings were excluded:

1. Headings with old and new forms that would normalize and file identically, e.g., headings changed to remove a hyphen or to correct diacritics, capitalization, or tagging. These differences would be difficult to discern in index displays and, in any case, appear unlikely to affect access.
2. Main headings appearing multiple times with different subdivisions or with different phrase extensions (e.g., ". . . in art"). A few instances of this were retained in the study to explore whether the presence of an established heading-plus-subdivision string in the authority file accounted for a higher rate of correction. The minimal results from the few cases in the study sample suggest not, but are far from conclusive.
3. Headings with more than two forms, e.g., those that changed again following the "new" form's establishment, or those that merged two earlier headings. The presence of multiple forms would require exceptional forms of counting. Given the relative rarity of instances like this, the few encountered were generally omitted. (An exception: the more heavily used older form "Hog cholera" was counted and the alternative "Swine fever" was not, though both were merged in the new heading "Classical swine fever.")
4. Narrower subject headings merged into broader preexisting ones, e.g., the formerly established "Middle Ages—History" being merged into "Middle Ages." Counting the number of changed headings under the preferred form would be impossible in most public catalogs.

5. Headings with an identical form in another heading system (e.g., the same term used by LCSH and MeSH) or MARC tag category (e.g., the same term used as a topical 650 and a genre/form 655 subject heading) also proved problematic. Some catalogs sort these differences into different indexes, but not all; if they appear in the same index, counting the instances of the changed bibliographic headings becomes difficult, requiring a record-by-record examination of MARC tag values.

The need for sensitivity to these kinds of problems makes the compiling of the sample sets a task that requires a cataloger's expertise. However, once the list is compiled, the process of searching each form and counting hits can be learned quickly and requires few judgment calls. The method used here was further simplified by regarding only the established old and new heading forms on the list. Other forms were occasionally observed in the indexes (e.g., headings with typographical errors), which also caused split headings, but these were not counted. The only heading splits reported are between instances of the two forms on the sample list.

The data were gathered between January 2 and February 8, 2008, roughly one year after the date of the most recent heading change list sampled. When this task was complete, summary counts were made for each of the catalogs, showing for each set how many of the sample headings were found to be all old form, all new form, split between the old and new form, or unused in each catalog.

Table 1. Changed LC Subject Headings—Data Sample (Excerpts) for One Catalog

Cancelled Term	New Term	List Year and No.	No. of Uses of Old LC Heading	With Subdivision	No. of Uses of New LC Heading	With Subdivision	Percent Using New LC Heading	Percent with New Subdivision
Baldwin Hills (Calif.)	Baldwin Hills (Calif.: Mountains)	2005.1	0	0	0	0	NA	NA
Breast feeding	Breastfeeding	2005.1	0	0	203	323	100	100
Breast feeding—Immunological aspects	Breastfeeding—Immunological aspects	2005.1	0	0	1	2	100	100
Breast feeding—Law and legislation	Breastfeeding—Law and legislation	2005.1	0	1	3	7	100	91
Church of England. Book of common prayer. Psalter	Church of England. Psalter	2005.1	0	0	7	0	100	100
North Shore (Mass.)	North Shore (Mass.: Coast)	2005.1	0	9	0	1	NA	10
Unites States Highway 58	United States Highway 58 (Va. and Tenn.)	2005.1	0	0	3	0	100	100
Dargari language	Tharrkari language	2005.2	0	0	1	0	100	100
Reparation	Reparation (Criminal justice)	2005.2	0	4	88	703	100	99
Aranda language	Western Arrernte language	2005.3	2	0	0	2	0	50
Black humor (Literature)	Black humor	2005.3	3	0	29	2	91	91

The summary for the sample data in table 1 is illustrated in table 2.

Results

The summary table data have been expressed as a series of doughnut graphs for quicker comprehension. Each doughnut graph shows proportionally the four states of the sample set headings found in each catalog: all instances in the old form, all instances in the new form, instances split between old and new forms, and no instances in the catalog. The outermost ring represents the sample set of the earliest changed headings, and the innermost ring represents the most recently changed sample (see figures 1–3). This arrangement of the data makes it easier to see patterns over time in the proportions of each institution's sample sets.

Figure 1 represents the states of changed LC subject headings in the target catalogs. Some catalogs (LC, D, F, G, H, I, K) show most of their headings fully converted to the new form, while others (A, B, C, E) are largely unconverted or split for all three sample sets. Changed subjects also account for the largest proportions of heading splits overall when compared with the changed name headings. Catalogs J and L show the least use of the headings studied, while catalogs K and F and the LC's catalog show the greatest use.

Figure 2 represents changed LCNAF personal name headings in author indexes. Changed names show a slightly

Table 2. Changed LC Subject Headings—Data Summary for One Catalog

	LC Headings	
	Base Heading Only	**Base + Subdivided**
2007		
All old headings (0%)	0	0
All new heading (100%)	27	34
Split headings (1%–99%)	6	9
Unused headings (NA)	19	9
Percent split of all used	18	21
Percent used of all checked (n = 52)	63	83
2006		
All old headings (0%)	1	1
All new heading (100%)	31	29
Split headings (1%–99%)	10	12
Unused headings (NA)	4	4
Percent split of all used	24	29
Percent used of all checked (n = 46)	91	91
2005		
All old headings (0%)	2	2
All new heading (100%)	26	31
Split headings (1%–99%)	5	12
Unused headings (NA)	16	4
Percent split of all used	15	27
Percent used of all checked (n = 49)	67	92

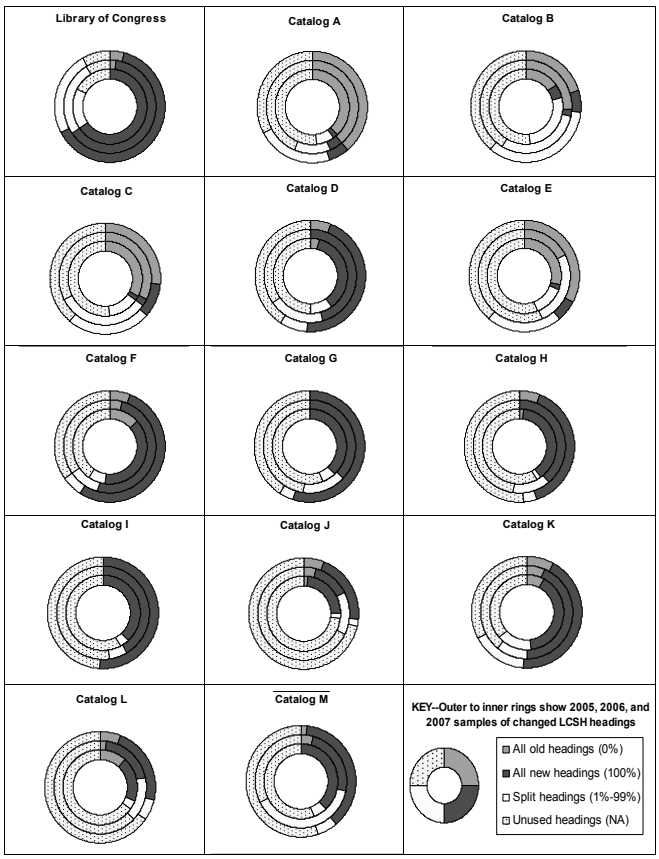

Figure 1. States of Changed LC Subject Headings in CIC Subject Indexes

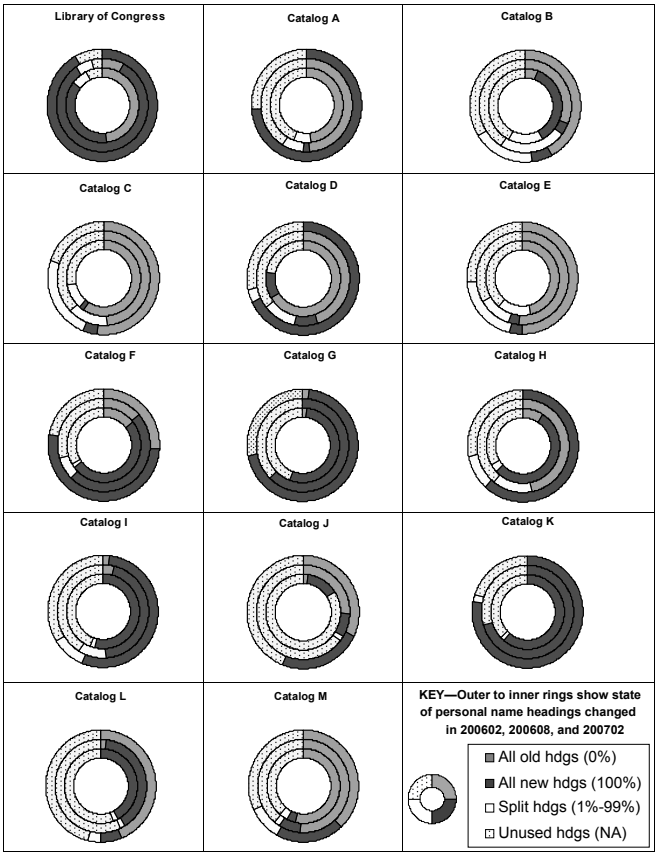

Figure 2. States of Changed LC Personal Name Headings in CIC Author Indexes

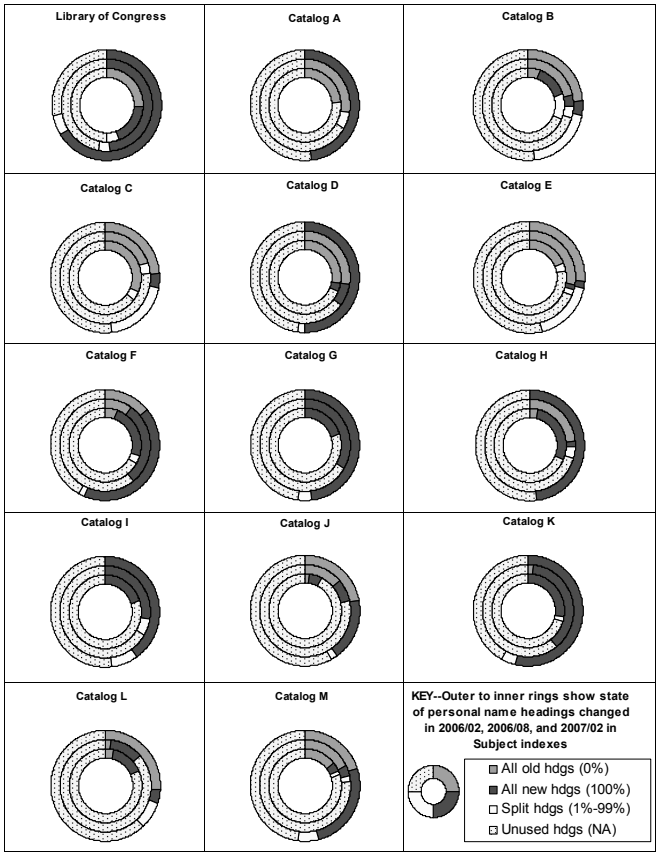

Figure 3. States of Changed LC Personal Name Headings in CIC Subject Indexes

higher rate of use across the CIC catalogs than did changed LCSH headings. Catalogs G, I, and K show large proportions of fully converted headings across all three samples, while catalogs C, E, and M are largely unconverted. The mixed results are seen for catalogs A, D, H, J, and L. Each shows one or two of the sample sets represented by each of the rings largely converted, but not all three. Such mixed results are more common for changed names than for subjects, suggesting that different approaches are being taken for these different kinds of maintenance.

Figure 3 represents changed LCNAF personal name headings in subject indexes. Not surprisingly, this set of results shows the lowest use rates, though even here use of less than a quarter of the sample headings is relatively uncommon. Catalogs G, I, and K again stand out as the most fully converted, while catalogs B, C, and E are largely unconverted and A, D, and H show mixed results.

This analysis does not take into account the number of hits found for each heading in each catalog. It looks only at whether the heading is present, whether all matches are on the old or the new form, and whether they are split between the two forms. The raw data, however, do include hit counts for each form of the heading and could support other kinds of analysis. For example, splits can only occur when a heading appears more than once in a catalog. Single appearances ranged from two to ten per catalog in the name samples, averaging five to six, and were always outnumbered by headings appearing multiple times. This indicates that a low count for splits in a particular catalog cannot simply be attributed to single appearance headings that could not be split.

Discussion

An examination of the data gathered prompts three kinds of analysis. The first considers the extent to which the sampled headings were found to be in use in the target catalogs and whether the method chosen to assemble the sample sets of headings was effective. The second responds to the question that prompted this project—can a study of the state of changed headings in library catalogs provide a useful measure of data quality for those catalogs? The last takes up two more general questions—are the true states of headings in

our catalogs sufficiently consistent with common models of data quality; and are there changes to the systems involved in revising headings that could simplify the task of heading maintenance?

Headings

The sample headings used in this study are listed in appendixes A and B. Each list shows both of the forms searched for each heading, the list from which they were drawn, and the number of catalogs out of the thirteen CIC catalogs surveyed in which the heading was found. The entries in the list have been sorted in order of their frequency of occurrence.

One question being explored by this study was whether the sample-generating method used would yield headings that produced useful data. Many name and subject headings occur only infrequently even in large catalogs, and selecting headings without regard for their narrowness or obscurity might have resulted in very few hits. Looking only at the CIC catalogs, twenty-one out of the 147 subject heading pairs checked were unused. At the same time, thirty-six were found in all thirteen CIC catalogs, including twelve from each of the three sample lists. Subject headings appearing in at least half of the target catalogs account for 50 percent of the full subject sample list. In the case of name headings, fifteen out of 155 name pairs sampled were unused, while fifty were found in all thirteen CIC catalogs, including at least twelve in each sample set. Name pairs used in at least half of the CIC catalogs accounted for 68 percent of the name sample as a whole. The investigator's ability to discern which name headings would have no or few hits was minimal. Subject headings proved a bit more predictable. Headings for geographic features had very low hit counts, as did headings reflecting narrow ethnicities or nationalities and headings for uncommon species.

An alternative approach to selecting the target headings would be to have a threshold count in one or more test catalogs that each candidate heading would have to meet. This would provide a larger volume of data for determining the use of old versus new forms in the target catalogs. Nevertheless, the samples used have generated sufficient evidence to provide useful data for this exploratory study. Furthermore, they demonstrate that any large catalog comparable to those studied is likely to have a number of heading changes to attend to in every sequence of fifty changed headings appearing in these Web-distributed lists. The heading changes being promulgated in these lists are having a constant effect on the currency of headings in library catalogs. In the case of the most widely found headings, the effect is often also significant, with some heading changes affecting hundreds of bibliographic records.

Catalogs

The data gathered by the study and represented in the graphs in figures 1–3 indicate each catalog's performance against the measures being explored, heading currency and heading splits. Catalogs G, I, and K show a high proportion of consistently used new heading forms across all the sample sets. Catalogs B, C, E, and M show a predominance of consistent use of older forms. In some cases, the message is mixed; e.g., Catalogs A and D show a high proportion of consistently new headings in the oldest name sample, while consistently old forms still predominate in the more recent sample sets. Larger proportions of split headings were found in those catalogs with larger proportions of old heading forms—Catalogs A, B, C, and E. This indicates that the greatest reductions in split headings are achieved in catalogs that also show the greatest success in updating headings to their newer forms.

The purpose of this exploratory study was primarily to develop a method that can demonstrate significant differences between catalogs and thereby provide a useful measure of performance. The study was not designed to explain these differences. However, a number of factors can be suggested.

Some automated systems provide more efficient functionality than others for automatically updating authorized headings; however, no system in use at more than one CIC institution was found to correlate consistently with more current or more consistent headings. The extent to which any library is able to exploit its system's helpful features can vary depending on the availability of staff time and expertise and the press of other significant priorities. The inclusion in a library's system of current authority records and access to a vendor's authority processing service also might be factors in explaining the differences found between catalogs.

Many catalogs are subject to influxes of older or otherwise problematic catalog records, e.g., when the records for a microfilm set or a retrospective conversion project are batchloaded or when records from a foreign vendor are loaded for acquisitions purposes. The fact that the present survey was carried out over a limited period of time may have meant that some catalogs were reviewed at a "bad time." Repeating the data gathering exercise for the sample headings used here at a later date to determine how the proportions of new, old, and split headings might have shifted would be an interesting exercise; though once this paper is published, it may itself have an effect on the state of this particular set of sample headings. Repeating the study with a new sample set of changed headings could amplify or correct impressions left by the current study.

In any case, the data from this study do support the notion that maintaining current, authorized, consistent

headings in the library catalog is an achievable goal. None of the catalogs performed perfectly in this regard, but perfection is a Procrustean standard of measurement. The new appearance of old headings and of heading splits is a constant in catalog management, and can never be eliminated. Realistically, the goal should be to keep heading currency high and heading splits within tolerable limits, as determined first by each library's policies and goals and then by an awareness of what peer institutions are achieving. The study results support this kind of comparative judgment and goal setting by revealing differences between catalogs and illustrating the relative success of some catalogs—here catalogs G, I, and K—in responding to the challenge of maintaining current and consistent headings. Catalog data quality should not be taken for granted. The variation observable across catalogs in a performance measure—heading currency and consistency—which is essential to interoperability and uniform search results, highlights both the need for greater effort and realistic benchmarks for success.

Systems

The term "systems" here refers broadly to the complex of rules, technology, and practice that governs the management of catalog headings. It does not refer simply or even primarily to integrated library systems.

Many heading changes do not involve any change in the definition of the entity or concept named. The name headings "Abbey, Edward, 1927–" and "Abbey, Edward, 1927–1989" represent the same entity, with or without a death date. "Breast feeding" and "Breastfeeding" represent the same concept, with or without the space. As long as what the authority record names does not change, changes to the name itself are easily managed, at least in principle. However, rules limiting the types of references permitted on LC authority records have made this situation more complex. LC policy currently does not allow the retention of the older, open-dated personal name heading form as a reference on LCNAF records when a death date is added. Similarly, no reference from an earlier LCSH subject heading form is allowed in some cases when LCSAF headings are updated. In January 2007 the MARC Advisory Committee and ALA's MARBI (Machine-Readable Bibliographic Information) Committee passed Proposal No. 2007-02, which introduces new coding to enable the inclusion of these kinds of references.[11] The proposal was approved in May 2007 by the LC, Library and Archives Canada, and the British Library, though no implementation plans or dates have been announced (as of October 15, 2008). Implementing the proposed changes could lead to simpler and more standardized online system functions for automated maintenance of changed headings.

In other cases the constancy of the definition of the changed heading is more problematic. Subject headings for open-ended periods in a country's history may have been used on bibliographic records for events that fall beyond a later-assigned closing date for the period. When the heading change is not one-for-one, each instance of the older form needs to be evaluated to ensure a correct revision. In many of the catalogs studied, including the LC's, closing historical period headings—e.g., changing "Cuba—History—1959–" to either "Cuba—History—1959–1990" or "Cuba—History—1990–"—lagged behind other types of subject heading maintenance. These kinds of changes will resist automated solutions and account in part for the larger number of split headings found for changed subject headings than for changed name headings. Developing more automated means for managing routine one-for-one heading changes would enable more staff time to be focused on those changes that require intellectual decisions.

Lastly, the inefficiencies inherent in maintaining catalog headings across multiple distributed catalogs could be addressed at the systems level. The more libraries can share a single record for bibliographic access, the fewer the records that will need to be maintained. This potential for increased efficiency is one of the motivations behind the current interest in OCLC's development of WorldCat Local, a catalog model that filters widely shared and maintained OCLC bibliographic records against each record's holding institutions to provide distributed access to local collections from a centralized database. If sufficient functionality can be built into this model to make it competitive with more conventional library systems, its advantages in terms of shared data management could be significant.

Conclusion

The method tested in this study bears out the hypothesis that examining headings across library catalogs for currency and consistency can produce quantified, comparable results, and can serve as one useful measure of catalog data quality. A study of this kind can indicate how well a library's catalog is performing in relation to locally established goals and to the catalogs of peer institutions, and it can indicate areas needing greater attention. The results also indicate that heading changes in the LCNAF and LCSAF are having negative as well as positive effects on catalog performance. Maintaining catalog headings is a constant challenge, and not one that is being universally or consistently met.

The proposed method for data gathering and analysis could be improved upon in several ways. Better methods might be devised for selecting sample heading sets to reduce the number of unposted or rarely posted headings.

A more nuanced analytical approach might factor in the number of bibliographic records containing new versus old headings found in each catalog to produce a more balanced accounting of heading currency. Other sources of heading variations—e.g., typographical errors or unexplained variant forms—could be included to give a more complete measure of the occurrence of heading splits in the target catalogs.

More research into explanatory factors could also prove valuable. Are there common elements in the technical services operations or system implementations of those libraries that do well on this measure? Do apparent patterns in the heading currency of particular catalogs reflect changes in policies or procedures and their effect? Would closer attention to the types of changed headings that do and do not receive prompt maintenance attention suggest alternative ways of distributing this work?

Lastly, the fundamental question behind this study remains unanswered—should the library catalog's data quality be evaluated as an outcome measure of the work of technical services? This study has attempted to demonstrate a practical method for such measurement, but it cannot answer the question of whether such measurement should be undertaken by a library or a group of libraries or included in models of library evaluation. Further discussion of that question would also be enlightening.

References and Notes

1. Carolynne Myall and Sidney Chambers, "Copy Cataloging for Print and Video Monographs in Two Academic Libraries: A Case Study of Editing Required for Accuracy and Completeness," *Cataloging & Classification Quarterly* 44, no. 3/4 (2007): 237.
2. Library of Congress, Network Development and MARC Standards Office, *MARC 21 Format for Bibliographic Data*, 1999 ed., October 2007 update (Washington, D.C.: Library of Congress, 2007); Library of Congress, Network Development and MARC Standards Office, *MARC 21 Format for Authority Data*, 1999 ed., October 2007 update (Washington, D.C.: Library of Congress, 2008); *Anglo-American Cataloguing Rules*, 2nd ed., 2002 rev., 2005 update (Chicago: ALA; Ottawa: Canadian Library Assn.; London: Chartered Institute of Library and Information Professionals, 2005); Library of Congress, Office of Subject Cataloging Policy, *Subject Cataloging Manual: Subject Headings*, 5th ed., February 2008 update (Washington, D.C.: Library of Congress, 2008); Library of Congress Authorities, http://authorities.loc.gov (accessed Oct. 14, 2008).
3. Myall and Chambers, "Copy Cataloging for Print and Video Monographs in Two Academic Libraries," 236.
4. Jeffrey Beall, "The Dirty Database Test," *American Libraries* 22, no. 3 (Mar. 1991): 197.
5. Jeffrey Beall and Karen Kafadar, "Measuring Typographical Errors' Impact on Retrieval in Bibliographic Databases," *Cataloging & Classification Quarterly* 44, no. 3/4 (2007): 197–211.
6. Robert E. Wolverton Jr., "Authority Control in Academic Libraries in the United States: A Survey," *Cataloging & Classification Quarterly* 41, no.1 (2005): 121–24.
7. Ann Chapman and Owen Massey, "A Catalogue Quality Audit Tool," *Library Management* 23, no. 6/7 (2002): 321.
8. Ibid.
9. CIC members: University of Chicago, University of Illinois, Indiana University, University of Iowa, University of Michigan, Michigan State University, University of Minnesota, Northwestern University, Ohio State University, Penn State University, Purdue University, University of Wisconsin–Madison. For further information, see www.cic.uiuc.edu.
10. Name headings spreadsheet: conservancy.umn.edu/handle/37367; Subject headings spreadsheet: conservancy.umn.edu/handle/37371.
11. MARC Proposal 2007-02, "Incorporating invalid former headings in 4XX fields of the MARC 21 Authority Format," www.loc.gov/marc/marbi/2007/2007-02.html (accessed Oct. 14, 2008).

Appendix A. Changed LC Subject Headings, Sorted by Frequency of Use in CIC Catalogs

Cancelled Term	New Term	List No.	Catalogs Using Headings
Angels (Judaism)	Angels—Judaism	2005.3	13
Black humor (Literature)	Black humor	2005.3	13
Breast feeding	Breastfeeding	2005.1	13
Breast feeding—Immunological aspects	Breastfeeding—Immunological aspects	2005.1	13
Calligraphy, Islamic	Islamic calligraphy	2005.5	13
Calligraphy, Zen	Zen calligraphy	2005.5	13
Children's web sites	Web sites for children	2007.1	13
China—Social life and customs—1976–	China—Social life and customs—1976–2002	2006.2	13
Crimes against humanity, German	Crimes against humanity—Germany	2007.4	13
Cross Florida Barge Canal (Fla.)	Marjorie Harris Carr Cross Florida Greenway (Fla.)	2007.5	13
Cuba—Foreign relations—1959–	Cuba—Foreign relations—1959–1990	2006.3	13
Cuba—History—1959–	Cuba—History—1959–1990	2006.3	13
Cuba—Politics and government—1959–	Cuba—Politics and government—1959–1990	2006.3	13
Definition (Logic)	Definition (Philosophy)	2007.4	13
Friendly societies	Fraternal organizations	2006.7	13
Friendly societies—United States	Fraternal organizations—United States	2006.7	13
Gutters	Roof gutters	2005.4	13
Hog cholera—Vaccination	Classical swine fever—Vaccination	2007.9	13
Hog cholera	Classical swine fever	2007.9	13
Indians of North America—Wars, 1868–1869	Washita Campaign, 1868–1869	2005.8	13
Insurance, Unemployment—Claimants	Unemployment insurance claimants	2007.2	13
Islam and terrorism	Terrorism—Religious aspects—Islam	2005.2	13
Kennebec Patent	Kennebec Patent (Me.)	2007.9	13
Knizhnik-Zamoldchikov equations	Knizhnik-Zamolodchikov equations	2006.3	13
Lady and the Unicorn (Tapestries)	Lady and the Unicorn	2005.4	13
Mexico—Politics and government—1988–	Mexico—Politics and government—1988–2000	2007.6	13
Online data processing—Downloading	Downloading of data	2006.1	13
Path analysis	Path analysis (Statistics)	2006.4	13
Puerto Rico—History—1952–	Puerto Rico—History—1952–1998	2007.2	13
Reciprocity	Reciprocity (Commerce)	2007.8	13
Reparation	Reparation (Criminal justice)	2005.2	13
South Africa—History—1961–	South Africa—History—1961–1994	2006.7	13
Student loan funds	Student loans	2006.1	13
Swastika	Swastikas	2005.2	13
Wages—Gas industry employees	Wages—Gas industry	2007.1	13
Weblogs	Blogs	2006.8	13
Ak Koyunlus (Turkic people)	Ak Koyunlu (Turkic people)	2006.5	12
Art, Papua New Guinea	Art, Papua New Guinean	2006.8	12
Church of England. Book of common prayer. Psalter	Church of England. Psalter	2005.1	12
Malawi—History—1964–	Malawi—History—1964–1994	2007.1	12
New Zealand—History—Maori War, 1845–1847	New Zealand—History—New Zealand War, 1843–1847	2005.2	12
Papua New Guinea literature (English)	Papua New Guinean literature (English)	2006.8	12
Usury (Islamic law)	Interest (Islamic law)	2005.5	12
Amendments (Parliamentary practice)	Legislative amendments	2005.8	11
Friendly societies—Law and legislation	Fraternal organizations—Law and legislation	2006.7	11
Harmonica and electronic music	Electronic and harmonica music	2005.5	11
Karen language	Karen languages	2007.9	11
Lullabies, American	Lullabies, English—United States	2006.1	11
Pallavas	Pallava dynasty, 4th–9th centuries	2007.9	11

Cancelled Term	New Term	List No.	Catalogs Using Headings
Tabla and sitar music	Sitar and tabla music	2007.8	11
Uttar Khand Region (India)	Uttaranchal (India)	2005.2	11
Abelam (Papua New Guinea people)	Abelam (Papua New Guinean people)	2006.8	10
Akademicheskii malii dramaticheskii teatr (Saint Petersburg, Russia)	Akademicheskii malyi dramaticheskii teatr (Saint Petersburg, Russia)	2005.4	10
Angels (Islam)	Angels—Islam	2005.3	10
Canons, fugues, etc. (Voice)	Canons, fugues, etc. (Voices)	2006.5	10
Electronic and harpsichord music	Harpsichord and electronic music	2005.5	10
Online data processing—Uploading	Uploading of data	2006.4	10
Siddhi (Indic people)	Siddi (Indic people)	2007.4	10
Yay language	Bouyei language	2007.2	10
Anostraca	Fairy shrimps	2007.1	9
Aranda language	Western Arrernte language	2005.3	9
Banda language	Banda language (Central Africa)	2007.9	9
Breast feeding—Law and legislation	Breastfeeding—Law and legislation	2005.1	9
Congridae	Conger eels	2006.4	9
Creeper lanes	Climbing lanes	2007.1	9
Midea Site (Greece)	Midea (Extinct city)	2005.4	9
Dargari language	Tharrkari language	2005.2	8
Karakoyunlus	Kara Koyunlu (Turkic people)	2006.5	8
Mesaras Plain (Greece)	Mesara Plain (Greece)	2005.2	8
Papua New Guinea fiction (English)	Papua New Guinean fiction (English)	2006.8	8
Saint Martin—Description and travel	Saint Martin (West Indies)—Description and travel	2006.3	8
Sculpture, Kota	Sculpture, Kota (Africa)	2006.4	8
Dolgan dialect	Dolgan language	2007.8	7
Karts (Midget cars)	Karts (Automobiles)	2006.5	7
Daba language	Daba language (Cameroon and Nigeria)	2007.4	6
Little League World Series, Williamsport, Pa.	Little League World Series (Baseball)	2005.4	6
Marriage (Luo law)	Marriage (Luo (Kenya and Tanzania) law)	2007.2	6
North Shore (Mass.)	North Shore (Mass. : Coast)	2005.1	6
Art, Parsic	Parsee art	2007.7	5
Back River (Nunavut)	Back River (N.W.T. and Nunavut)	2005.5	5
Back River Valley (Nunavut)	Back River Valley (N.W.T. and Nunavut)	2005.5	5
Caernarvon Castle (Caernarvon, Wales)	Caernarfon Castle (Caernarfon, Wales)	2006.4	5
Calligraphy, Buddhist	Buddhist calligraphy	2005.5	4
Calligraphy, Islamic, in art	Islamic calligraphy in art	2005.5	4
Calligraphy, Taoist	Taoist calligraphy	2005.5	4
Castel Roncolo (Bolzano, Italy)	Castel Roncolo (Bolzano, Trentino-Alto Adige, Italy)	2006.8	4
Cookery, Papua New Guinea	Cookery, Papua New Guinean	2006.8	4
Hog cholera—Diagnosis	Classical swine fever—Diagnosis	2007.9	4
Mass media in breast feeding promotion	Mass media in breastfeeding promotion	2005.1	4
Alfures (New Guinea people)	Alfures (New Guinean people)	2006.8	3
Emirian periodicals	Emirati periodicals	2007.3	3
Frake family	Frakes family	2007.7	3
Papua New Guinea drama (English)	Papua New Guinean drama (English)	2006.8	3
Pochard	Common pochard	2005.4	3
Public interest (Islamic law)	Istislah (Islamic law)	2006.8	3
Rajbangsi dialect	Rajbangsi language	2007.8	3
Sgaw Karen dialect	Sgaw Karen language	2007.9	3
Angels (Buddhism)	Angels—Buddhism	2005.3	2
Croatia—History—Zrinski-Francopan Conspiracy, 1664–1671	Zrinski-Francopan Conspiracy, Croatia, 1664–1671	2007.7	2

Cancelled Term	New Term	List No.	Catalogs Using Headings
Gabbard family	Gebhardt family	2007.6	2
Kayan language	Kayan language (Borneo)	2007.9	2
Kayu Agung dialect	Kayu Agung language	2007.9	2
Kittiwake	Kittiwakes	2006.6	2
Liang Mountains (China)	Liang Mountains (Shandong Sheng, China)	2007.8	2
Polish American friendly societies	Polish American fraternal organizations	2006.7	2
Pwo Karen dialect	Pwo Karen language	2007.9	2
Saint Martin—Antiquities	Saint Martin (West Indies)—Antiquities	2006.3	2
Versatile Manufacturing Ltd. Strike, Winnipeg, Man., 2000–2001	Buhler Versatile Inc. Strike, Winnipeg, Man., 2000–2001	2007.5	2
Victor (Jet planes)	Victor (Jet bomber)	2007.5	2
Arnica (Drug)	Arnica montana—Therapeutic use	2007.4	1
Fertu-Hansag Nemzeti Park (Hungary)	Ferto-Hansag Nemzeti Park (Hungary)	2007.9	1
Flower pots in art	Flowerpots in art	2006.3	1
Hu Mountain (China)	Hu Mountain (Jiangsu Sheng, China)	2005.5	1
Hypsiglena ochrorhynchus	Spotted night snake	2006.4	1
Immoral contracts (Islamic law)	Illegal contracts (Islamic law)	2005.5	1
Jardins du Prieure de Salagon (Mane, France)	Jardins du Prieure de Salagon (Mane, Provence-Alpes-Cote d'Azur, France)	2006.8	1
Kornelsen family	Cornelsen family	2007.9	1
Lewis and Clark Cavern State Park (Mont.)	Lewis and Clark Caverns State Park (Mont.)	2005.6	1
Mythology, Kota	Mythology, Kota (Africa)	2006.4	1
Pahute Mesa (Nevada)	Pahute Mesa (Nev.)	2005.6	1
Ricinodendron rautanenii	Manketti	2005.6	1
Samo language	Samo language (Western Province, Papua New Guinea)	2007.4	1
Satluj River (India)	Sutlej River	2007.5	1
Scottish American friendly societies	Scottish American fraternal organizations	2006.7	1
Spruce Island (Alaska)	Spruce Island (Kodiak Island Borough, Alaska)	2005.2	1
Taungthu dialect	Taungthu language	2007.9	1
Alamblak (Papua New Guinea people)	Alamblak (Papua New Guinean people)	2006.8	0
Ansitz Rottenbuch (Bolzano, Italy)	Ansitz Rottenbuch (Bolzano, Trentino-Alto Adige, Italy)	2006.8	0
Atlases, Emirian	Atlases, Emirati	2007.3	0
Bagore-ki-haveli (Udayapura, India)	Bagore-ki-Haveli (Udaipur, Rajasthan, India)	2005.5	0
Baldwin Hills (Calif.)	Baldwin Hills (Calif. : Mountains)	2005.1	0
Bankudu-Balue language	Bakundu-Balue language	2007.3	0
Congrina	Bathycongrus	2006.4	0
Economic assistance, Emirian	Economic assistance, Emirati	2007.3	0
English language—Augment	English language—Augmentatives	2005.2	0
Hare Island (Ireland)	Hare Island (Cork, Ireland)	2007.6	0
Lakhra Coal Field (Pakistan)	Lakhra Coalfield (Pakistan)	2006.1	0
Lullabies, Puerto Rican	Lullabies, Spanish—Puerto Rico	2006.1	0
Lycopersicon pimpinellifolium	Currant tomato	2007.7	0
Mist Gas Field (Oregon)	Mist Gas Field (Or.)	2005.6	0
Pangaimotu Island (Vava'u Group, Tonga)	Pangaimotu Island (Vava'u, Tonga)	2007.4	0
Peng Chau (China)	Peng Chau (Islands District, China)	2005.3	0
Proverbs, Yay	Proverbs, Bouyei	2007.2	0
Sonda Coal Field (Pakistan)	Sonda Coalfield (Pakistan)	2006.1	0
Songs, Gaviao	Songs, Gaviao (Para, Brazil)	2007.7	0
Sylarna (Sweden)	Sylarna (Sweden : Mountain)	2005.4	0
United States Highway 58	United States Highway 58 (Va. and Tenn.)	2005.1	0

Appendix B. Changed LC Name Headings, Sorted by Frequency of Use in CIC Catalogs

Cancelled Name	New Name	OCLC List Date	Catalogs Using Heading
Abbey, Edward, 1927–	Abbey, Edward, 1927–1989	20060208	13
Adams, Norman Isley, 1895–	Adams, Norman Isley, 1895–1985	20060208	13
Adler, Mortimer Jerome, 1902–	Adler, Mortimer Jerome, 1902–2001	20060208	13
Albert, Stewart Edward, 1939–	Albert, Stewart Edward, 1939–2006	20060208	13
Alley, Rewi, 1897–	Alley, Rewi, 1897–1987	20060208	13
Arafat, Yasir, 1929–	Arafat, Yasir, 1929–2004	20060208	13
Axelrod, Julius, 1912–	Axelrod, Julius, 1912–2004	20060208	13
Ball, Lucille, 1911–	Ball, Lucille, 1911–1989	20060208	13
Bancroft, Anne, 1931–	Bancroft, Anne, 1931–2005	20060208	13
Bethe, Hans Albrecht, 1906–	Bethe, Hans Albrecht, 1906–2005	20060208	13
Block, Herbert, 1909–	Block, Herbert, 1909–2001	20060208	13
Bolitho, Hector, 1898–	Bolitho, Hector, 1898–1974	20060208	13
Brown, Herbert Charles, 1912–	Brown, Herbert Charles, 1912–2004	20060208	13
Burns, George, 1896–	Burns, George, 1896–1996	20060201	13
Callaghan, James, 1912–	Callaghan, James, 1912–2005	20060208	13
Carson, Johnny, 1925–	Carson, Johnny, 1925–2005	20060208	13
Cheney, Brainard, 1900–	Cheney, Brainard, 1900–1990	20060208	13
Cheney, Frances Neel, 1906–	Cheney, Frances Neel, 1906–1996	20060208	13
Chisholm, Shirley, 1924–	Chisholm, Shirley, 1924–2005	20060208	13
Clark, Kenneth Bancroft, 1914–	Clark, Kenneth Bancroft, 1914–2005	20060208	13
Cochran, Johnnie L., 1937–	Cochran, Johnnie L., 1937–2005	20060208	13
Ford, Charles, 1908–	Ford, Charles, 1908–1989	20070207	13
Hadamowsky, Franz, 1900–	Hadamowsky, Franz, 1900–1995	20070207	13
Hayter, Stanley William, 1901–	Hayter, Stanley William, 1901–1988	20070207	13
Hogben, Lancelot Thomas, 1895–	Hogben, Lancelot Thomas, 1895–1975	20070207	13
Howes, Raymond F. (Raymond Floyd), 1903–	Howes, Raymond F. (Raymond Floyd), 1903–1986	20070207	13
Janson, H. W. (Horst Woldemar), 1913–	Janson, H. W. (Horst Woldemar), 1913–1982	20070207	13
Kennedy, John F. (John Fitzgerald), 1960–	Kennedy, John F. (John Fitzgerald), 1960–1999	20060201	13
Kunstler, William Moses, 1919–	Kunstler, William M. (William Moses), 1919–1995	20070207	13
La Sale, Antoine de, b. 1388?	La Sale, Antoine de, 1385?–1461?	20060201	13
Landeck, Armin, 1905–	Landeck, Armin, 1905–1984	20070207	13
Lavon, Pinhas, 1904–	Lavon, Pinhas, 1904–1976	20070207	13
Ley, Hermann, 1911–	Ley, Hermann, 1911–1990	20060201	13
Lowry, William P., 1927–	Lowry, William P. (William Prescott), 1927–1998	20070207	13
Mantle, Mickey, 1931–	Mantle, Mickey, 1931–1995	20070207	13
Massine, Leonide, 1896–	Massine, Leonide, 1896–1979	20070207	13
Moore, Barrington, 1913–	Moore, Barrington, 1913–2005	20060816	13
Nixon, Richard M. (Richard Milhous), 1913–	Nixon, Richard M. (Richard Milhous), 1913–1994	20060201	13
Obote, A. Milton (Apollo Milton), 1924–	Obote, A. Milton (Apollo Milton), 1924–2005	20060816	13
Onassis, Jacqueline Kennedy, 1929–	Onassis, Jacqueline Kennedy, 1929–1994	20060201	13
Osthoff, Helmuth, 1896–	Osthoff, Helmuth, 1896–1983	20060816	13
Peck, M. Scott (Morgan Scott), 1936–	Peck, M. Scott (Morgan Scott), 1936–2005	20060816	13
Redfield, William, 1927–	Redfield, William, 1927–1976	20060816	13
Rice, William, 1931–	Rice, William, 1931–2006	20060816	13
Rufer, Josef, 1893–	Rufer, Josef, 1893–1985	20060816	13
Sale, William Merritt, 1899–	Sale, William Merritt, 1899–1981	20060816	13
Salgado, Plinio, 1895–	Salgado, Plinio, 1895–1975	20060816	13
Salisbury, Harrison Evans, 1908–	Salisbury, Harrison E.(Harrison Evans), 1908–1993	20060816	13
Tikhonov, Nikolai Semenovich, 1896–	Tikhonov, Nikolai Semenovich, 1896–1979	20060816	13
Van Allen, James Alfred, 1914–	Van Allen, James A. (James Alfred), 1914–2006	20060816	13
Achelis, Elisabeth, 1880–	Achelis, Elisabeth, 1880–1973	20060208	12

Cancelled Name	New Name	OCLC List Date	Catalogs Using Heading
Benenson, Peter, 1921–	Benenson, Peter, 1921–2005	20060208	12
Bernhard Leopold, Prince, consort of Juliana, Queen of the Netherlands, 1911–	Bernhard Leopold, Prince, consort of Juliana, Queen of the Netherlands, 1911–2004	20060208	12
Bronfenbrenner, Urie, 1917–	Bronfenbrenner, Urie, 1917–2005	20060208	12
Erskine, Ralph, 1914–	Erskine, Ralph, 1914–2005	20070207	12
Harley, Robison D. 1911–	Harley, Robison D. 1911–2007	20070207	12
Hoffmeister, Adolf, 1902–	Hoffmeister, Adolf, 1902–1973	20070207	12
Hojo, Hideji, 1902–	Hojo, Hideji, 1902–1996	20070207	12
Luzzati, Emanuele, 1921–	Luzzati, Emanuele, 1921–2007	20070207	12
Machel, Samora, 1933–	Machel, Samora, 1933–1986	20070207	12
Malcolm, George John, 1917–	Malcolm, George, 1917–1997	20070207	12
Meyer, Ernst Hermann, 1905–	Meyer, Ernst Hermann, 1905–1988	20060816	12
Nelson, Gene, 1920–	Nelson, Gene, 1920–1996	20060816	12
Porter, Charles Orlando, 1919–	Porter, Charles Orlando, 1919–2006	20060816	12
Schmid, Daniel, 1941–	Schmid, Daniel, 1941–2006	20060816	12
Seel, Pierre, 1923–	Seel, Pierre, 1923–2005	20060816	12
Simpson, Robert Wilfred Levick, 1921–	Simpson, Robert, 1921–1997	20060816	12
Stein, Fritz Wilhelm, 1879–	Stein, Fritz Wilhelm, 1879–1961	20060816	12
Edmunds, Murrell, 1898–	Edmunds, Murrell, 1898–1981	20070207	11
Eliscu, Edward, 1902–	Eliscu, Edward, 1902–1998	20070207	11
Habermann, Abraham Meir, 1901–	Habermann, Abraham Meir, 1901–1980	20070207	11
Haksar, P. N. (Parmeshwar Narain), 1913–	Haksar, P. N. (Parmeshwar Narain), 1913–1998	20060201	11
Lewis, Joseph H., 1907–	Lewis, Joseph H., 1907–2000	20070207	11
McAvoy, May, 1901–	McAvoy, May, 1901–1984	20070207	11
Pasternak, Joe, 1901–	Pasternak, Joe, 1901–1991	20060816	11
Santorsola, Guido, 1904–	Santorsola, Guido, 1904–1994	20060816	11
Tubb, Ernest, 1914–	Tubb, Ernest, 1914–1984	20060816	11
Elwood, Muriel, 1902–	Elwood, Muriel, 1902–1976	20070207	10
Gonzales, Pancho, 1928–	Gonzales, Pancho, 1928–1995	20070207	10
Johari, Harish, 1934–	Johari, Harish, 1934–1999	20060201	10
Michelin, Bernard, 1918–	Michelin, Bernard, 1915–2003	20060816	10
Strock, Herbert L., 1918–	Strock, Herbert L., 1918–2005	20060816	10
Flanders, Ed, 1934–	Flanders, Ed, 1934–1995	20070207	9
Foss, Joe, 1915–	Foss, Joe, 1915–2003	20060201	9
Frohner, Adolf, 1934–	Frohner, Adolf, 1934–2007	20070207	9
Jordan, Richard, 1938–	Jordan, Richard, 1938–1993	20070207	9
Kamleshwar, 1932–	Kamleshwar, 1932–2007	20070207	9
O'Brien, Virginia, 1921–	O'Brien, Virginia, 1921–2001	20060816	9
Okada, Jo, 1911–	Okada, Jo, 1911–1981	20060816	9
Rybar, Peter, 1913–	Rybar, Peter, 1913–2002	20060816	9
Alice, Duchesse of Glouchester, 1901–	Alice, Duchesse of Glouchester, 1901–2004	20060208	8
Banner, Donald W., 1924–	Banner, Donald W., 1924–2006	20060208	8
Brown, Clarence, 1924–	Brown, Clarence, 1924–2005	20060208	8
Defore, Don, 1917?–	Defore, Don, 1913–1993	20070207	8
Keshet, Yeshurun, 1893–	Keshet, Yeshurun, 1893–1977	20070207	8
Lishner, Leon, 1913–	Lishner, Leon, 1913–1995	20070207	8
Moulton, Augustus Freedom, 1848–	Moulton, Augustus Freedom, 1848–1933	20060201	8
O'Brien, George, 1927–	O'Brien, George, 1927–2005	20060816	8
Philips, Frits, 1905–	Philips, Frits, 1905–2005	20060816	8
Elkoshi, Gedaliah, 1910–	Elkoshi, Gedaliah, 1910–1988	20070207	7
Galai, Binyamin, 1921–	Galai, Binyamin, 1921–1995	20070207	7
McManus, Frederick R. (Frederick Richard), 1923–	McManus, Frederick R. (Frederick Richard), 1923–2005	20060816	7
Pandey, Sangam Lal, 1929–	Pandey, Sangam Lal, 1928–2002	20060201	7
Previn, Charles, 1888–	Previn, Charles, 1888–1973	20060816	7

Cancelled Name	New Name	OCLC List Date	Catalogs Using Heading
Rousselot, Louis M. (Louis Marcel), 1902–	Rousselot, Louis M. (Louis Marcel), 1902–1974	20060816	7
Singh, Mohan, 1905–	Singh, Mohan, 1905–1978	20060816	7
Helou, Charles, 1912–	Helou, Charles, 1912–2001	20070207	6
Hunter, Joe, 1927–	Hunter, Joe, 1927–2007	20070207	6
Montana Slim 1904–	Montana Slim 1904–1996	20060816	6
Parker, Lester Shepard, b. 1860	Parker, Lester Shepard, 1860–1925	20060201	6
Silsoe, Malcolm Trustram Eve, Baron, 1894–	Silsoe, Malcolm Trustram Eve, Baron, 1894–1976	20060201	6
Taylor, Al, 1948–	Taylor, Al, 1948–1999	20060816	6
Adler, Friedrich, b. 1878	Adler, Friedrich, 1878–1942	20060208	5
Bailey, Derek, 1930–	Bailey, Derek, 1930–2005	20060208	5
Furness, Betty, 1916–	Furness, Betty, 1916–1994	20070207	5
Mager, Gus, 1878–	Mager, Gus, 1878–1956	20070207	5
McGiffert, David E., 1926–	McGiffert, David E., 1926–2005	20060816	5
Moore, Garry, 1915–	Moore, Garry, 1915–1993	20060816	5
Sellings, Arthur, 1921–	Sellings, Arthur, 1921–1968	20060816	5
Curtis, Jackie, 1947–	Curtis, Jackie, 1947–1985	20060201	4
Kagoshima, Juzo, 1898–	Kagoshima, Juzo, 1898–1982	20070207	4
Radcliffe, Ted, 1902–	Radcliffe, Ted, 1902–2005	20060816	4
Jergens, Adele, 1922–	Jergens, Adele, 1917–2002	20070207	3
Lansing, Robert, 1929–	Lansing, Robert, 1929–1994	20070207	3
McGee, J. Vernon (John Vernon), 1904–	McGee, J. Vernon (John Vernon), 1904–1988	20070207	3
Reece, Arley, 1945–	Reece, Arley, 1945–2005	20060816	3
Sakazaki, Shizuka, 1887–	Sakazaki, Shizuka, 1887–1978	20060816	3
Smith, Ethel, 1910–	Smith, Ethel, 1910–1996	20060816	3
Gainsborg, Lolita Cabrera, 1895–	Gainsborg, Lolita Cabrera, 1895–1981	20070207	2
Gos, Francois, b. 1880	Gos, Francois, 1880–1975	20060201	2
Carpenter, Clinton A. 1921–	Carpenter, Clinton A. 1921–2005	20060208	1
Carrasquilla L., Juan de Dio, b. 1833	Carrasquilla L., Juan de Dio, 1833–1908	20060208	1
Daniels, John S., 1906–	Daniels, John S., 1906–1996	20070207	1
Fisher, Doris, 1915–	Fisher, Doris, 1915–2003	20070207	1
James, Cecil, 1913–	James, Cecil, 1913–1999	20070207	1
Leighton, Lee, 1906–	Leighton, Lee, 1906–1996	20070207	1
Mock, Richard, 1944–	Mock, Richard, 1944–2006	20060816	1
Roger, Roger, 1911–	Roger, Roger, 1911–1995	20060816	1
Sampson, Alistair, 1929–	Sampson, Alistair, 1929–2006	20060816	1
Sullivan, Neil V. (Neil Vincent), 1915–	Sullivan, Neil V. (Neil Vincent), 1915–2005	20060816	1
Anderson, Sigurd, 1904–	Anderson, Sigurd, 1904–1990	20060208	0
Blitch, Iris, 1912	Blitch, Iris, 1912–1993	20060201	0
Chabloz, Fritz, b. 1841	Chabloz, Fritz, 1841–1905	20060208	0
Devine, Bing, 1916–	Devine, Bing, 1916–2007	20070207	0
Evans, W. R. (William Rees), 1910–	Evans, W. R. (William Rees), 1910–1991	20070207	0
Fujimoto, Yoshimichi, 1919–	Fujimoto, Yoshimichi, 1919–1992	20070207	0
Javierre Ortas, A. M. (Antonio Maria), 1921–	Javierre Ortas, A. M. (Antonio Maria), 1921–2007	20070207	0
Johnson, Ernie, 1943–	Johnson, Ernie, 1943–2005	20070207	0
Kavanaugh, Ken, 1916–	Kavanaugh, Ken, 1916–2007	20070207	0
Nelson, Paul, 1936–	Nelson, Paul, 1936–2006	20060816	0
Puzo, Mario, 1920–	Puzo, Mario, 1920–1999	20060816	0
Szabo, Sandor, 1915–	Szabo, Sandor, 1915–1997	20060816	0
Tichenor, Jerome, 1911–	Tichenor, Jerome, 1911–2006	20060816	0
Udam, Haljand, 1936–	Udam, Haljand, 1936–2005	20060816	0
Vidal, Pietro, b. 1867	Vidal, Pietro, 1867–1938	20060201	0