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Then and Now

A glance at the twenty-five-year index to *LRTS* tells of the many interests of technical services librarians, some changing, some constant. Flexowriters and the Chiang small duplicator intrigued us for a while, but now it's Bradford's law and Lotka's law. MARC, RECON, and bibliographic utilities are newcomers, but serials and subject headings have been of perennial interest. To learn the extent to which for technical services librarians, it is *plus ça change, plus c'est la même chose*, I invited four authors to look back at the world of the technical services librarian eighty years ago and to contrast it with the world of today. They have responded nobly. John Boll compares the literature that could be read by catalogers and classifiers at the turn of the century with the multifarious offerings of today. Margaret Maxwell depicts the cataloging classes of yesteryear. David Smith re-creates the role of the Library of Congress in putting "the country's cataloging in gear," while Laurie Smith describes the worldwide programs of LC's Processing Services today. The other papers that complete the issue reflect the concerns of today—Papakhian's investigation of the incidence of personal names in a non-print materials catalog, Kramer's suggestions for compacting a large card catalog, and Ross' observations on the romanization of Vietnamese-Chinese words and names. We hope that you will enjoy this glimpse of the world of the technical services librarian then—1905—and now—1985.—*From the desk of the editor, Elizabeth L. Tate.*

05  85

Professional Literature on Cataloging—Then and Now

John J. Boll

By 1905 many of the conflicting philosophies and crosscurrents that had agitated the library world, and especially cataloging, in the nineteenth century had been largely settled. Movable rather than fixed location for books, the Dewey Decimal Classification for organization, the dictionary catalog in card form, and Cutter's subject headings had been accepted by most general libraries, and the American Library Association in 1902 had reconciled the differences among the existing national descriptive cataloging codes. However, there were no serials dedicated to cataloging and very few cataloging aids. Today's literature is, in general, far broader in scope, greater in quantity, and shows more emphasis on research than the literature of eighty years ago. Topical themes reflect the profession's changing interests, with automation and networking being today's new themes.

THE WRITTEN RECORD of a profession should mirror the field itself. When reviewing such a record over many years, one expects to see the changes in the field reflected in the literature: one hopes to see progress, to see ideas crystallized but not calcified over time, to see new ideas emerge, solutions developed for what used to be problems, adjustments to new technology, and a maturation of the field's philosophical basis. In many ways, the professional literature on cataloging and classification fulfills these hopes. One might say that the differences between our literature of 1905 and that of 1985 reflect the increasing number of practitioners, which demands more vehicles of publication; the increasing sophistication and specialization of the field, which demand narrower topics, more precise treatment of these topics, and more precise evaluation; the broadening of the field to include a whole range of information retrieval techniques; and the several technological revolutions that occurred during those years that permit a host of activities undreamed of in 1905. Yet, the underlying current of dedication, of almost missionary zeal in providing a path to the written record, to the literature that en-

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lightens, that delights, that informs, has remained unchanged.

BACKGROUND TO CONSENSUS

By 1905, many of the conflicting philosophies and crosscurrents that had agitated the library world in the nineteenth century, and in particular its cataloging and classification aspects, had been largely settled. To cite some examples: the nineteenth century had seen the change from extremely broad shelf classification to much more specific classification, from typically fewer than twenty classes containing fewer than forty total subdivisions¹ to Melvil Dewey's basic list of one thousand classes. The debate for and against fixed or movable location of books had resulted in a clear victory for movable location, so that book numbers no longer indicated the precise alcove, bookcase, shelf, and spot on the shelf where a work was located. Along with this, the use of Cutter or Cutter-Sanborn author numbers to subarrange works within a subject class had become quite common.

The argument for and against the alphabetical author catalog, whose job had been essentially to collocate the works of an author, as against the subject catalog whose job had been essentially to facilitate retrieval by subject, had been effectively squelched by Charles Ammi Cutter, who combined the objectives of both into one through his famous statement of 1876: "[The object of a catalog is] (1) To enable a person to find a book of which either (A) the author, (B) the title, (C) the subject is known; (2) To show what the library has (D) by a given author, (E) on a given subject, (F) in a given kind of literature."² Thanks partly to Cutter's statement, but probably mostly to the Library of Congress' acceptance of the dictionary card format early in this century, the literary debates over the various nineteenth-century subject catalog formats had also largely ceased by 1905: the catchword index, the classed catalog, and the alphabetic-classed catalog were not considered current any more. The true dictionary catalog, using Cutter's specific-direct subject headings, was almost universally accepted. After all, subject headings were so obviously easier for the layperson to use than the scholarly classed catalog. (Little did we imagine in those days "easy and obvious" subject headings like "Dielectrics, Effect of Radiation on," or "Fleeing in the Bible," or "Alienation (Social Psychology) in Moving Pictures." Awareness of, and the need for, intricate subject headings like that came later.)

By 1905 Cutter's *Rules for a Printed Dictionary Catalog* had largely supplanted Charles C. Jewett's rules for preparing catalogues³ and had brought about an element of guidance and stability in descriptive cataloging, although it was not the only national code in use. Undoubtedly helped by being originally sponsored by the United States Bureau of Education, it had been published in 1904 in the fourth edition.⁴ By then the profession had by and large agreed that catalogs were to be in dictionary format and on cards that included Cutter-type subject headings, while books were to be shelved in specific classes of the type created by Melvil Dewey.

This does not mean that every library found the Dewey Decimal Clas-

sification suitable. Even in the early years of this century, a wealth of specialized classification schemes existed for special subjects and special libraries ranging from *agriculture* to *zoology*.⁵ Such schemes, as well as special subject heading lists, continued to be produced for several decades, only to be replaced beginning in the 1960s with an ever increasing stream of thesauri in specific fields. The difference, however, is that the former were typically designed for library in-house cataloging whereas the latter are being used exclusively by special bibliographies and information agencies other than traditional libraries. That is, thesauri are used in the information retrieval products that libraries tend to buy or rent rather than to create.

CATALOGING CODES

In the early days of this century few publications were intended specifically for catalogers, apart from the several codes that had evolved largely from Cutter's original 1876 rules. Henderson describes the history and rationale of these and subsequent codes in detail.⁶

From the 1880s up to 1905 Charles Ammi Cutter, Melvil Dewey, and the American Library Association each had printed their own, nationally used catalog codes in varying editions, while the Library of Congress had its own in-house code. While not differing substantially with respect to description and entry headings, the codes represented different subject approaches: Cutter's dictionary versus Dewey's classed catalog. In 1902 the ALA Publishing Board appointed an Advisory Committee on Cataloging Rules that was to reconcile the differences.⁷ With the active cooperation of the Library of Congress, the committee published an advance edition of its coordinated rules in 1902⁸ and a final edition in 1904.⁹ By 1904, then, a consensus had emerged, and the stage was set for the series of cataloging codes (1908, 1949, 1956, 1978) that are limited to description and entry headings, that were consistently influenced by LC practice, and that, except for the 1904 and 1949 editions, were the product of British and North American cooperation.

Comparing the cataloging codes of then and now, one may reach the conclusion that the new codes have added much detail, more rules for newly emerging nonprint materials, and a framework that satisfies up to a point the need for structure, but that the resulting entries and entry headings show nothing that is conceptually new. This is not to say that there have not been changes, and sometimes quite drastic ones. Tate shows very well, for example, how the various main entry heading changes affect a catalog search and that a successful search demands considerable sophistication and a historical knowledge of the codes.¹⁰ But the changes are essentially changes in degree, not in fundamentals. The old principles have basically stood the test of time. Our professional ancestors deserve praise for this. It remains to be seen whether the advent of the computerized catalog will cause during the next twenty years the drastic shift in cataloging techniques, and perhaps in theories and thus in cataloging codes, that some had expected to occur during the past decade. It also remains to be seen whether the recent group of catalog-use studies will influence the next codes of description and of access points of all kinds.

The redundancy of national cataloging codes that existed between the 1880s and 1905 is somewhat paralleled now by the existence of several national audiovisual codes that represent varying attitudes and perceived needs of different professional associations.¹¹ The many local cataloging schemes that existed before 1905 are also somewhat reflected in the many codes for audiovisual material that have been created by local or state library groups since the 1960s, usually for schools or smaller public libraries, such as the audiovisual code for Wisconsin schools.¹² Many librarians evidently feel that the current *Anglo-American Cataloguing Rules*, along with the dictates of centralized cataloging authorities, still do not answer the needs of all libraries, especially the smaller ones.

While descriptive codes were and are plentiful, there has been a consistent dearth of subject heading or classification codes. The early Cutter and Dewey cataloging codes included basic subject rules or policies early in the century, the American Library Association's 1903 *List of Subject Headings for Use in Dictionary Catalogs* also contained basic guidelines in the form of one and one-half pages of "Some Hints on Subject Cataloging in Dictionary Style" by Cutter.¹³ Seventy-five years after Cutter's first edition, David Haykin, late head of the LC Subject Cataloging Division, wrote the first work to explain thoroughly Library of Congress (and therefore national) subject heading practices and, to some extent, policies.¹⁴ Only recently a textbook by Chan¹⁵ and a manual by the Library of Congress Subject Cataloging Division¹⁶ have made LC subject heading policies and practices as commonly and thoroughly available to catalogers as participation in networks demands. In contrast, rules for assigning descriptors are plentiful and fairly consistent. They are published in several codes and in a number of lists of terms.¹⁷

SERIALS ON CATALOGING

A glance at the periodicals available in 1905 and 1985 shows a major change. Apart from the Library of Congress Card Division's *Bulletin*,¹⁸ which served purchasers of LC catalog cards, no serials existed eighty years ago solely for catalogers. Now there are from four to ten, depending on one's definition of the field, plus many others that include cataloging as part of their responsibility.

In the first decade of this century, catalogers had to rely on general library science periodicals. The *Bulletin of the American Library Association*¹⁹ and the few existing state library journals, such as *News Notes of California Libraries*²⁰ and *Indiana's Library Occurrent*,²¹ contained no, or virtually no, articles on cataloging matters. *Publishers Weekly*²² and the *Bulletin of Bibliography*²³ were bare of cataloging matters. *Public Libraries*,²⁴ which began in 1896 to meet the needs of small libraries, was more useful to catalogers. For example, in 1905 it contained a philosophical article by Frank L. Tolman, "Bibliography and Cataloging: Some Affinities and Contrasts,"²⁵ a report on a meeting of the ALA Catalog Section,²⁶ an announcement of a new edition of Esther Crawford's manual on cataloging,²⁷ and a column by J. C. M. Hanson of the Library of Congress on "Cataloging Queries on LC Cards."²⁸ *Library Journal*,²⁹ begun in 1876 as the first American library science periodical, was also the most substantial and included articles on cataloging. For example, in 1905 it

contained an article by W. W. Bishop, "Some Considerations on the Cost of Cataloging,"³⁰ a detailed article by J. C. M. Hanson on "Rules for Corporate Entry,"³¹ William I. Fletcher's "Future of the Catalog,"³² in which he advocates integrating the catalog with bibliographies, an article by Alice B. Kroeger on "Arrangement of Entries in Catalogs,"³³ in which she compares various practices, and a correspondence column, "Questions in Cataloging Rules."³⁴

In contrast, today's cataloger has a bewildering array of journals that may bring matters of interest. Not all are of equal interest to the practicing cataloger, but all have bearing on cataloging matters, especially if viewed in the broader contexts of information retrieval, networks, resources sharing, and administration. At the core are four periodicals: the present publication, *Library Resources & Technical Services*,³⁵ the official publication of ALA's Resources and Technical Services Division, which carries a mixture of pragmatic and scholarly articles; *Cataloging and Classification Quarterly*,³⁶ which tends to have philosophical and theoretical content; *International Classification*,³⁷ which tends to be theoretical in nature; *International Cataloguing*,³⁸ which reports progress in universal bibliographic control and brings news of cataloging concerns from many countries; and the *Technical Services Quarterly*,³⁹ which tends to be problem- and technology-oriented. An essential part of the core are also those publications of the annual conferences of the Graduate Library School of the University of Chicago that deal with cataloging in its widest ramifications. They are published as part of *Library Quarterly*⁴⁰ and as separate monographs. To mention only the last two: *Library Catalogs: Changing Dimensions* (1964)⁴¹ and *Prospects for Change in Bibliographic Control*.⁴²

For the increasing number of people who regard cataloging as merely one aspect of information retrieval, there is also an "outer core" consisting of periodicals such as the *Journal of the American Society for Information Science*,⁴³ with its experimental, historical, and theoretical articles on all areas of information retrieval, and *The Electronic Library, the International Journal for Minicomputers, Microcomputers, and Software Application in Libraries*.⁴⁴ Catalogers will also find essential the newsletter of their central cataloging authority (e.g., the *OCLC Newsletter*).⁴⁵ Then, there are equally good British and other international periodicals which, however, shall remain uncited.

The "outermost core" consists of serials that serve primarily other aspects of library science but that still have, from time to time, articles about special aspects of cataloging that we should know about. The following serials, each with one sample article cited, are merely a selection:

Government Information Quarterly: "OCLC Records for Federal Depository Documents";⁴⁶ *Government Publications Review*: "Prospects for Content Retrieval from Government Documents";⁴⁷ *IFLA Journal*: "Computer Technology as Applied to Rare Book Cataloguing";⁴⁸ *The Journal of Academic Librarianship*: "The Online Catalog: Issues in Planning and Development";⁴⁹ *Journal of Library Administration*: "Coping with Stress: A Technical Services Perspective";⁵⁰ *Law Library Journal*: "Cataloging Microforms Using RLIN";⁵¹ *Library Quarterly*: "Fiche or Film for COM

Catalogs: Two Use Tests'';⁵² *RQ*: "Library Catalogs for Library Users'';⁵³ *Serials Review*: "Planning for Serials Retrospective Conversion."''⁵⁴

If this seems too much—which it is unless one wants to devote most of one's working time to the study of the professional literature—one can take refuge in selective annual reviews of which a number exist, apart from those furnished occasionally by this journal: *Advances in Librarianship*,⁵⁵ the *Annual Review of Information Science and Technology*,⁵⁶ *The Bowker Annual*,⁵⁷ and the *ALA Yearbook of Library and Information Services*.⁵⁸ Each has a special slant on the field and reports on some of its aspects from time to time.

CATALOGING AIDS

Monographs that dealt with cataloging were also scarce in 1905, but in addition to the previously mentioned cataloging codes, a few aids and standard lists existed that helped to set up standards and to create more uniformity than previous generations had known. Dewey's *Decimal Classification* had appeared in its sixth edition in 1899,⁵⁹ and a seventh edition was to appear in 1911.⁶⁰ His *Abridged Decimal Classification* had appeared first in 1894,⁶¹ with a second edition to appear in 1912.⁶² Cutter's *Expansive Classification* was published in 1905 through its seventh expansion,⁶³ and his two- and three-figure author tables, as well as the version improved by Kate Sanborn, also existed.⁶⁴ By 1903, the ALA had also produced the previously mentioned second edition of its *List of Subject Headings for a Dictionary Catalog*. Also, popular demand had caused the Library of Congress to publish early in the century several pamphlets that explained how to order Library of Congress catalog cards.⁶⁵ These tools, or their successors, are still in active use, except for Cutter's *Expansive Classification*, since Cutter made the two mistakes of being born much earlier than Dewey and of not providing for financial continuity and updating of his classification scheme.

While the number of these early cataloging aids is rather limited, today's neophyte and experienced catalogers face an array of aids far too long to list here. Let a partial, unscientific, and undoubtedly biased count of nationally known titles in several categories give a hint of the wealth and specialization of the presently available aids. There are now at least ten nationally distributed works of *AACR2* examples for items like serials and microforms; at least three guidebooks on cataloging computer and microcomputer software, representing various philosophies; at least five major works that deal with cataloging and other bibliographic control of serials; five works that give examples of notes used on catalog cards; a number of works that explain *AACR2*, or the Library of Congress' handling of *AACR2*; there is at least one deeply philosophical-historical work on corporate entry headings; at least two (conflicting) national precise codes of filing rules for card catalogs; at least three works on catalog department administration, including one that pays special attention to the effect of using supplied copy. The list could go on and, if drawn up by someone else, would probably have a different breakdown

but would still show large numbers of categories undreamed of eighty years ago.

TEXTBOOKS ON CATALOGING

It is tempting to look with tolerant hindsight at textbooks written almost three generations ago in our field. We cannot, of course, compare them in number, detail, or specificity with most of today's works. They reflected the still fairly general state of the profession at that time, but they were based on sound principles and definite theoretical concepts, most of which we could still live with today. Most of them gave practical advice well suited for their intended purpose. Only four seem to have been devoted solely to cataloging and/or classification. In 1901, Ernest Cushing Richardson published a general, theoretical work on classification.⁶⁶ In 1899, Esther Crawford, chief cataloger of the public library of Dayton, Ohio, read a paper before the Ohio Library Association on cataloging, covering every then-known aspect, from the purpose of the catalog, the need for uniformity in entry headings, to fairly specific advice on descriptive cataloging (she advocated analytical entries, especially for small libraries) and the need for authority files. This paper was published by the Library Bureau in 1900 as a nineteen-page pamphlet⁶⁷ and was republished in 1906 in a revised edition of forty-five pages that contained many examples.⁶⁸ It was a fine, administratively oriented work that, together with Cutter's easily available rules, should have given confidence to a beginning cataloger.

In 1905 the ALA Publishing Board published Theresa Hitchler's eighty-four-page book, *Cataloging for Small Libraries*.⁶⁹ It contained practical advice on everything from descriptive cataloging to subject headings, a bibliography of cataloging aids, a glossary, and many sample cards constructed according to very brief cataloging methods. Republished with identical text in 1909, it was published in 1915 in a considerably enlarged revised edition of 316 pages⁷⁰ and in an almost identical "third enlarged edition" by Stechert in 1926.⁷¹ The Library Bureau, which did so much in those days to proselytize for libraries, also published in 1903 a small pamphlet entitled *How Shall I Catalog My Library?*⁷²

There were, around 1905, also a few general works which contained substantial sections on cataloging. These works may well have been the reaction to a wish expressed more than once around the turn of the century for a systematic manual of American library economy or practice. As Frederick J. Teggart wrote in 1901 in the *Library Journal*, there was "a great body of valuable but undigested literature . . . awaiting three important pieces of work: (1) a bibliography of library economy; (2) a descriptive appraisal of our library resources; (3) a systematic summing up of our professional experience and knowledge."⁷³ Along similar lines, W. Dawson Johnston suggested in 1904 the need for a yearbook of library literature.⁷⁴ The yearning for guidance, for some degree of the conformity which is by now only too common, seems to have been fairly general. The culmination of this attempt may well have been the American Library Association's series of thirty-two pamphlets of a *Manual of*

Library Economy, published from 1911 to 1930.⁷⁵

Mary Wright Plummer, librarian of the Pratt Institute in Brooklyn, New York, wrote and published one of these general works. In 1902 the third edition of her *Hints to Small Libraries*⁷⁶ appeared, after having first been published in 1894. In 1911 the ALA published the fourth edition. Precise and practical in its advice, the 1902 edition touches briefly but specifically the public services (although this term, of course, was not used in that day), along with the entire technical process, from selection and ordering through cataloging and the “mechanical preparation of books for the shelves.”

John Cotton Dana’s very solid *A Library Primer* was published in its third edition in 1903.⁷⁷ It contains articles, or adaptations of articles, from many sources and is quite substantial for its day—180 pages. Two sentences in its Preface reflect an attitude characteristic of that time: “The prevailing tendency among librarians is to share ideas, to give to one another the benefit of all their suggestions and experiences. The result is a large fund of library knowledge which is common property.”⁷⁸ Dana’s book gives specific advice on most aspects of library work as then known, mostly from the administrator’s point of view. About one-fourth of it deals with cataloging and classification and preparing books for the shelf.

As can be expected, today’s nationally known texts on cataloging are far more numerous and, mostly, far more specific. By now it is also rather difficult to draw the line between textbook, manual, and treatise on some aspect of cataloging. In addition to the various types of cataloging rules and cataloging aids mentioned previously, and in addition to the various texts and manuals distributed and used locally by individual library schools, or by groups of libraries, there are now at least three nationally distributed general textbooks on cataloging, one textbook on LC subject headings, six on classification and on individual classification systems, three on special materials, and one on *AACR2*. Several of these are programmed texts, intended for independent study. With a somewhat broader interpretation of *cataloging* and of the category “textbooks,” the list could easily double.

SELECTED THEMES

When taking a bird’s-eye view of the professional literature on cataloging in 1905 and in 1985, one can see some topics that remain fairly constant and others that are more time bound. The following does not purport to be proportionately accurate; it merely records themes that seemed to stand out.

One theme stressed more around 1905 than now is that of the small library and cataloging for it. Catalog cards and the card catalog were still new enough to be of interest. The Library of Congress Classification, on the other hand, was hardly written about and was just beginning to be available. Cooperative cataloging had been a topic of great interest since the 1850s (a 116-page bibliography on the subject existed in 1903)⁷⁹ and remained so until it began to be dominated in the 1950s by another old

idea, centralized cataloging, especially by the Library of Congress.

For a profession that had at that time a largely empirical basis, it is not surprising that there was, for example, in the early years of this century only implied and general recognition of the relationship between cataloging and reference, or between cataloging policies and costs, but no formal evaluation of cataloging, of the catalog, or of cost-effectiveness. There was much practical advice on specific points such as uniform titles, subject headings for state documents, or the use of abbreviations. The general tone was usually enthusiastic, positive, and full of goodwill, and much writing was evidently based on definite, if often unexpressed, theoretical concepts. But there was no controlled research literature and little solid evidence except anecdotal, personal accounts or statements of opinion. There are those who say that too much of today's literature shows strong traces of the same characteristics.

In the intervening years the literature naturally reflected most of the changing concerns that moved the profession, such as the creation of the National Union Catalog on cards in the 1930s or the increasing role of the Library of Congress as the nation's central cataloging agency in the 1960s and 1970s. Of perennial interest are union lists and union catalogs, cataloging shortcuts of various kinds (sometimes called "Brief cataloging"), the expectations that librarians have of new library school graduates, and the Library of Congress as whipping boy—it is repeatedly chastised for insulting or funny, old-fashioned subject headings, too few cards with DDC numbers, and overly long delays both in cataloging and in response time to card orders. Gone is the positive, respectful tone of the 1905 correspondence. Other perennial topics of interest are the new editions of the Dewey Decimal Classification (but there is hardly any literature on the constant changes in the Library of Congress Classification) and of the national cataloging codes, each with its comet's tail of announcements, adulation, and then, usually, criticism.

Classification, both practical and theoretical, and classification systems are also of continuous interest, but the topic of converting from the Dewey Decimal system to the Library of Congress Classification system is past its prime, having reached its heyday in the 1960s and 1970s.

In the 1930s a growing number of catalog use studies began, and the later ones showed much improvement in technique. Administrative patterns for technical services departments, and the development of the technical services concept itself, began to occupy more space from the 1940s on, along with an increasing number of cost or efficiency studies. These, in turn, brought an occasional plea for statistical standardization. The 1950s through the 1970s brought with them an increasing number of articles on cataloging audiovisual materials and on library systems and networks with centralized cataloging. Catalog card reproduction was much written about for many decades, until it began to taper off in the 1970s, probably thanks to OCLC and similar services.

One can see, over the years, a broadening of the field of cataloging. In the 1940s the literature began to include items on punched cards, and there began a growing number of articles on a widening range of subject

retrieval systems, and of evaluations of subject retrieval systems other than the traditional classification and subject heading systems. In the 1960s and 1970s computers began to be a reality in at least a few brave libraries, and there came a large number of articles on the Library of Congress' automation program, MARC, and, later on, connected programs like RECON.

The recent literature shows, interestingly enough, many of the old themes such as cooperative cataloging and authority control, but with entirely new wrinkles or from an entirely new perspective: the computer, which is now a reality, opened entirely new windows in the field of bibliographic organization and retrieval, which is what cataloging is all about. It made possible the several centralized cataloging utilities like OCLC, RLIN, and WLN, as well as other centralized projects like the retrospective conversion project of existing National Union Catalog entries. The advent of the microcomputer in many libraries made possible entirely new ways of storing data and of using working files such as the binding or order file. The existence of computerized catalogs—if they are done properly—increases the number of access points to an entry manifold. It made unobtrusive study of patrons' catalog use (without invasion of their privacy) possible. In other words, all the old standard topics, such as catalog use studies, authority control, optimum location of the catalog, and cost-effectiveness studies, can and must be done again, but from the new given situation, the advent of the computer in a library. We are only beginning to see such studies in the literature, but there will undoubtedly be more.

Automation with its various ramifications is one topic that seems to be strongly represented in today's literature. Another one is centralization of various kinds, such as the use of cataloging utilities or participation in nationally organized projects. A third theme, also still in the ascendancy, is research, that is, the evaluation of a library's performance. Undoubtedly there are other themes, omitted in this review, but a reviewer does get the impression that we are at the threshold of an age that is as exciting, as heady as the years 1876 to 1905 were. We can be proud of the basis that our forerunners have created. Many of their principles have been proven successful, many of their techniques have stood the test of time. We can only hope that our new solutions, compelled by changing technology, will stand the test of time as well.

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"A Most Necessary Discipline" The Education of Technical Services Librarians

Margaret F. Maxwell

Today's information professional with an M.L.S. from an ALA accredited school of library and information science may find difficulty in relating to the education for technical services available to the prospective librarian of 1905. Yet stripped of outward trappings, the curricular patterns and practices of that day still serve in many ways as faint mirror images that reappear in modern guise in our curriculum of 1985.

IT HAD BEEN a satisfying day, beginning with a relaxing steamer trip down the Hudson River from Albany to New York City and continuing with good conversation and an ample dinner with friends and fellow members of the New York Library Club. Now Melvil Dewey, founder of the club, a big man in his fifties, bald, with rugged, handsome features, stood on his feet to address the group.¹ April 27, 1905, and the school year 1904-05 winding down at the New York State Library School. His library school—and as he thought of the developments in library education since that landmark date, May 5, 1884, when the Board of Trustees of Columbia College had approved the establishment of a "school for the instruction of persons desiring to qualify themselves to take charge of libraries, or for cataloging, or other library or bibliographical work,"² he felt a glow of satisfaction.

Who could believe that it had been only a little more than eighteen years since that first earnest group of prospective librarians had presented themselves, on January 5, 1887, in a makeshift classroom in the Columbia College Library fitted out with odds and ends of donated furniture? Mary Wright Plummer, now director of the library school at Pratt Institute and a leader herself in library education, had been a

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member of that first class. While still a student, she had set down her impressions of those first days of library education. As she remembered, We began at once on our work under the instructors appointed, applying ourselves first to the attainment of the library hand. Later we were allowed a choice between this and a printed hand, and several adopted the latter.

More than one family were astonished in these first days to receive letters written and superscribed in characters abjured since childhood, for the enthusiasm went so far as to make this almost a test of class spirit.

If I remember right, the next step was acquaintance with the accession book, as being simplest. . . . From this we went on to gain a slight knowledge of the writing of shelflists and condensing of titles, giving but a short time to this as we were to return to it later. The writing of catalog cards came next. For some time this was done on slips of author and subject sizes, until we could be trusted to take the regular cards. Piles of books were brought up to us to be cataloged, and we took them as they came, without selection. Our previous instruction on the slips had been in systematic order—biographies for a few days, the analyticals, then works in series, etc., so that we might master the writing of one kind of card before going to another.

During practice hours the instructors remained with us, overseeing our work, making suggestions, and answering questions with almost infinite patience. The time was all too short, however, to conquer thoroughly the vast amount of detail. . . . From carding we went to classification, which proved fascinating but difficult. Only a few of the class elected to devote themselves to this during the apprenticeship term, the majority preferring to work at cataloging. Some weeks were spent in carding according to the dictionary system, and with this the term virtually ended.

It was not merely during the appointed hours of practice that we worked, for there seemed to be a general disposition to fill up the odd moments. Some busied themselves with cyclostyling,³ some with the Hammond typewriter, others with reference work and the elaboration of their lecture notes.

The Library School, of course, was no longer at Columbia. It had gone with Dewey to Albany when he had been named state librarian, and renamed the New York State Library School in 1889. Sixteen years in Albany, in commodious quarters in the imposing granite New York state capitol building—what progress he and the men and women of his faculty had made. Dewey smiled as he remembered the faculty's first efforts to distill conventional library routines into universal principles and practices that would apply not only to the library with which the library school was connected, but to libraries everywhere. The forty students in the classes of 1905 and 1906³ then in attendance at Albany didn't realize how fortunate they were in the variety of courses that made up the curriculum that year. The library hand, cataloging, accessioning, shelf listing, and classification: these had formed almost the entire course of study for that first library school class in 1887. Of course, Dewey thought, technical courses still dominated the library school curriculum, but this was to be expected. After all, were not technical services the backbone of the library operation?

Yes, students at Albany in 1905 simply did not realize how fortunate they were, how pleasant and rewarding the prescribed curriculum was in comparison not only with earlier days at Albany but also with the

other half dozen or so library schools that had come into being since those pioneering days at Columbia. Dewey smiled philosophically. Of course students complained. That was to be expected. But the enlightened faculty of 1905 had gone the extra mile in considering student opinion. Unlike other library schools such as Simmons; where study of formal library handwriting was still a requirement,⁶ students at Albany no longer spent hours of class time practicing this skill. Dewey remembered Edwin Hatfield Anderson, a student in the class of 1891, who claimed that he felt “like an elephant trying to do fancy needlework,”⁷ as he laboriously fashioned the handwritten letters on his cards in cataloging class. Only four years later, in 1895, the faculty had decided that this skill, tedious but obviously important for the transcription of uniformly legible cards, was one that should be mastered before the student entered library school, and that it would no longer be taught as a formal course.⁸ Of course, it was assumed that practice catalog cards turned in by students would still follow the “Specimen alfabet” (sic) as illustrated in Dewey’s own *Simplified Library School Rules*, a wonderful compendium, the distilled wisdom of the director himself written in the most enlightened simplified spelling, and including in its ninety-six pages not only simplified catalog rules, but also accession rules, book numbers, shelf list rules, rules for capitalization, punctuation, and abbreviations, as well as, of course, a section on library handwriting.⁹

If there was anything Melvil Dewey took pride in, it was in being up to date, and in encouraging librarians and library school students at the State Library to make use of the latest laborsaving devices. Knowing how conservative some catalogers were—some of them were still suspicious of the accuracy of the new printed cards now available from the Library of Congress—he insisted that Albany graduates must be proficient in the library hand. But the typewriter—ah, that was the wave of the future! The State Library had a permanent exhibit area for the demonstration of the latest library machinery and equipment. Students were encouraged to experiment with the sample typewriters on display in this area. Again, unlike Simmons, which required a course in typewriting for graduation from the Library School,¹⁰ this was a voluntary activity. But most students seem to have pecked away diligently at the available machines in their spare time, realizing that the typewriter might revolutionize library work in many ways, even possibly to the extent of relieving librarians of the tedious labor of handwriting catalog cards.¹¹

If Melvil Dewey was aware of any undercurrents of discontent, either with the library school’s faculty and curriculum or with himself as the director,¹² he did not share these with his New York Library Club audience that balmy April evening. Instead, he talked to the group of the profession in general, of the great changes the past twenty years had brought, and of the bright outlook he saw for librarianship in the future.¹³

And taking it all in all, had they heard his speech, most of the New York State Library School students that year would have agreed with his assessment. They were an earnest group, the eighteen members of the

beginning class¹⁴ who began their labors at the Library School on October 4, 1905. The Library School quarters were on the fifth floor of the state capitol building, an area normally accessible by a creaking elevator of uncertain disposition. This meant that students often not only puffed their way up the steep hill to the capitol building, but then, if they were unlucky, they trudged up five flights of stairs to Room 51, the Library School study room where they spent most of their free time. Classes were held in Room 71 on the seventh floor, a room "cold beyond anything I had ever experienced indoor," according to one student,¹⁵ a room of such legendary frigidity, in fact, that when the State Library burned in 1911, taking the Library School quarters with it, another student was heard to remark, "Well, Room 71 is warm at last!"¹⁶ This commodious but chilly room was accessible only by means of a steep stairway, which must have presented problems to some of the heavier, less agile students, and may have contributed to the chronic nervous prostration that some students complained of.

So up the stairs to Room 71 panted the eighteen new students that October where, according to the recollection of one of their number, "A start was made in classification . . . [and] then came the deluge—classification, book selection and cataloging, with this order reversed every forty-eight hours, until all sense of time and direction were lost."¹⁷ According to Fremont Rider, another member of the class, the teacher was the legendary Ada Alice Jones, "who inculcated the true gospel of cataloging (it was a fundamentalist gospel) in a way her students never forgot."¹⁸

Corinne Bacon of the class of 1903, later to be director of the Drexel Institute Library School, and younger than Miss Jones, also taught cataloging. Sydney B. Mitchell remembered Miss Bacon as being "a blonde, not lissome, but very erect. Today she would have a nice curly bob, and I would not so often have been concerned that her back hair might fall down. Beneath a somewhat schoolmarmish exterior and manner she was by no means rigid. She had keen intelligence and understanding and a lively enough wit. I became quite fond of her and appreciative of her handling of a difficult and unpopular subject."¹⁹

Though Mitchell may have appreciated Miss Bacon's efforts to make the cataloging course palatable, few others did. Many spoke of the difficulty of the entire program, which as Helen Lathrop of the class of 1905 said, gave the Library School students "a hunted look."²⁰ Leon M. Solis-Cohen, also of the class of 1905, claimed with considerable conviction that "the strain is so great and is so aggravated by the unfortunate physical conditions of the State Library that the break-down of a student each year should be no surprise. . . . Of course, none of the courses are actually exhaustive, but the cataloging courses are, for example, carried too far. . . . Principles are more important than precepts. Why, therefore, teach so much detailed cataloging and have several compulsory courses in this one subject?"²¹ Student dissatisfaction was so general that year that the junior (beginning) class submitted a formal list of grievances, the burden of excessive attention to detail in the cataloging class

being high on the list. Said a member of the class, "The faculty listened politely and cataloging continued without a break."²²

It would seem, however, that student opinion carried some weight. An official announcement headed "Changes in the course" appeared in *Library Journal* shortly thereafter stating "Three instead of five cataloging lectures a week will be given in order to allow students time to assimilate properly the mass of details."²³

Cataloging might have been bearable, had it not been for the reviser, Miss Dorcas Fellows, then one of the members of the cataloging staff at the state library, and later editor of the Dewey Decimal Classification. Miss Fellows was a tall, gaunt woman of melancholy disposition, "burdened," according to one author, "by an unhealthy amount of self pity."²⁴ As she said in later life of herself, "At least as far back as when I was 20 life seemed to me a thing not greatly to be desired, & that view has in the main pervaded my life ever since."²⁵ Her liberal use of red ink on student cataloging exercises together with her visible disdain for students made her universally disliked.

The endless drudgery of recopying cards with all the "gory red of the reviser's corrections,"²⁶ was the main reason students loathed what they termed "doing State Time." One of the stipulations under which the State Regents had agreed to Dewey's transferring the Library School to the state library at Albany was that the Library School students would serve as unpaid apprentices to the cataloging staff in the library. As Charles Barr of the class of 1902 put it, "The long hours of durance vile devoted to the State were sometimes regarded as a means by which the toil of the [library] staff was lightened at the expense of the unremunerated student, who *must* have experience."²⁷

And if Dorcas Fellows, reviser, was not bad enough, the same lugubrious lady taught accessioning, "discussing that overburdened and overrated record in all its harrowing details," according to a former student. Woe be unto the wretch who essayed a little originality in filling out the huge practice accession book! Such an intrepid mortal would find his or her work "covered with red ink like a bloody battlefield."²⁸ This particular student learned to hate accessioning with such a passion that when later he came to a position of authority in a library he "shamelessly, even joyfully, recommended—and effected—the liquidation there of this unnecessary and expensive record in favor of using the order cards for essential information."²⁹

Walter Stanley Biscoe, now chiefly remembered as the inventor of a minor adjunct to some of the Library of Congress Classification schedules, called appropriately the Biscoe tables, taught a wide range of subjects at the Library School, including the Dewey Decimal and Cutter Expansive Classifications, both subjects required of all New York State Library School students in 1905.³⁰ In one former student's opinion, Biscoe would "not soon be forgotten by his students, . . . never while they can remember how many hours it took to do some of his assignments. Physically and in his manner he might have been the model used by novelists in describing male librarians. . . . He was long, lean, his nervous

face somewhat shrouded by a sparse crop of whiskers. I think he was a bachelor—he looked like one. In his manner there was a high degree of precision, and, once started, he could—and did—talk endlessly. . . . He certainly knew his subject and could pass on to us endless details,³¹ obviously many more than anyone in that captive audience cared to know.

So much for the students, who in retrospect seem to have been rather more fond than otherwise of most of their professors, despite the reputation of these worthies for an overdelight in nitpicking detail and their practice of burying their hapless charges beneath a staggering load of undigested, unorganized information. Whatever students might have thought of the matter, Alice B. Kroeger, then Director of the Drexel Institute Library School, and already well known as the author of the still used *Guide to the Study and Use of Reference Books*,³² knew very well why every detail taught in the cataloging course was important. In the first place, as she pointed out,

The principles of cataloging underlie almost all the clerical records of a library. A knowledge of the rules is helpful in accession work, in shelf-listing, in preparing lists of various kinds, in all bibliographic work. From the pedagogic side, instruction in cataloging is most necessary in developing the powers of attention, accuracy, observation, neatness, order. . . . There is no discipline in the whole library school curriculum of more value than that obtained in the instruction in cataloging. The endless detail is irksome to many, but it is often on that account one of the things most needed.³³

As to what should be included in the cataloging course, Kroeger was definite: Cutter's *Rules for a Dictionary Catalog* (4th ed., 1904) must be studied together with the still unfinished *ALA Catalog Rules*, which would appear in final form in 1908.

The theoretical study of cataloging, said Kroeger, must be supplemented by practice. Though Drexel students did not do "State Time," they put in many hours cataloging for the Drexel Library. As Kroeger put it,

Practical work in cataloging must be given to the students, and if it is possible to do this, students' work should go into the card catalog of the library. . . . Of course no card should be inserted in the catalog without careful revision, the cards being returned to the student for even the smallest error. Students must be taught the importance of consistency in a catalog, consistency in the use of punctuation, capitals and other small details as well as in the larger points of entry and heading. Accuracy in small things is a step towards accuracy in larger things. Students must be made to appreciate the gravity of inaccuracy.³⁴

Kroeger was as aware as Dewey of the potential importance of the typewriter in the modern library of the early twentieth century. As she pointed out,

The use of the typewriter for cataloging purposes is becoming so common that some knowledge of the subject is desirable. . . . Typewriting is taught in some of the schools, such courses being usually optional. . . . Instruction consists in showing students how to use the typewriter with just enough practice to permit them to write somewhat slowly indeed but correctly. Instruction in writing on

catalog cards is also given, but in a short course practical cataloging with the typewriter must be omitted, because the students cannot afford to spend the time in such slow work.

Therefore, concluded Kroeger,

it is necessary that some time shall be devoted by students in acquiring a slight proficiency in the art [of the library hand].³⁵

As Melvil Dewey reviewed the state of the profession with his friends and colleagues in the New York Library Club that April evening in 1905, he must almost have been dazzled by the progress that had been made in the past two decades. Although a few libraries still clung to the old fashioned book catalog, most progressive libraries now had card catalogs and many were taking advantage of Library of Congress printed cards. This was the new era of cooperation and centralization. Not only did libraries have access to Library of Congress printed cards, but they now had indexes such as Poole's *Index*, the *ALA Index*, and the *ALA Catalog and Portrait Index*. Well might Dewey's recently deceased colleague Charles Ammi Cutter, thinking of the revolutionary impact of Library of Congress printed cards on cataloging practice, have lamented, "Still I cannot help thinking that the golden age of cataloging is over, and that the difficulties and discussions which have furnished an innocent pleasure to so many will interest them no more. Another lost art."³⁶ And a few catalogers—to say nothing, probably, of many disgruntled library school students—were beginning to speculate as to whether the new age of cooperative technology might actually bring an end to library cataloging. No, thought Dewey. That was hardly likely. He was inclined to agree with F. P. Jordan, who had stated the year before that though the Library of Congress had more than one hundred thousand titles in stock and was already serving close to three hundred American libraries with its printed card service, "this fear is without foundation. There is plenty of other work which can be done for the guidance and help of the readers."³⁷ Indeed, thought Dewey, cataloging was far from a lost art! Certainly Cutter would have agreed, had he lived to see the ferment in ALA committees at Conference that year as the new *ALA Catalog Rules* were being formulated. An international code! Who ever would have thought such a thing possible, even twenty years ago? Truly, thought Dewey, never had there been such a period of rapid change and technological development in the profession.

How could library schools best prepare neophyte librarians for the brave new world of cooperation and change? It would seem from the 1905 report of the ALA Committee on Library Training that the schools themselves were none too sure. The conclusion of the report stated that "first . . . the library schools are themselves somewhat uncertain as yet as to the necessary foundations of their work, and second, that it is time thought was being given to the subject."³⁸

Eighty years have brought us full circle from the industrial revolution to the communications revolution, and in library technology from the age of the typewriter and the LC printed card to the age of the computer

and the national bibliographic database. Information science is the buzzword of our decade. And surely in eighty years much thought has been given to the subject of the proper education of neophyte information specialists. Most library educators would agree with Robert D. Stueart in his statement that

Information science, or at least its technological applications component, has an impact upon many courses in the curriculum, from basic reference, cataloging, and management, to advanced bibliography, systems analysis, and research. Faculty and students have thus become involved in technological applications, and hands-on experience with technology is commonplace. Most programs now have separate introductory courses or at least workshop modes for developing terminal skills and related proficiencies in online database systems.³⁹

This is probably a valid summary of the state of the art in library education for technical services in 1985. But have schools of library and information science, despite a certain amount of window dressing and a great quantity of sophisticated technology, advanced greatly in their philosophical objectives from those heady days near the turn of the century when Mary Wright Plummer's analysis of the current library school curriculum concluded that "the chief stress [was] on technique"?⁴⁰ Are "separate introductory courses . . . for developing terminal skills" different in their basic purpose from the components, formal or informal, of the 1905 library school curriculum that stressed the desirability of developing typing skills, or, perish the thought, a fine touch with the library hand? We have come a long way in library education in eighty years, but it would seem that in all too many instances we are still guilty of teaching information technology as an end in itself rather than as a means to an end—that being the possibility of enriching conventional library functions as well as opening new options for the future.

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Processing Services 1905: Putting the Library's House in Order and the Country's Cataloging in Gear

David A. Smith

In 1905 what is now Processing Services consisted of about one hundred employees, deployed in two divisions of the Library of Congress: Catalog and Order. Herbert Putnam, Librarian of Congress since 1899, his cataloging chief, James Hanson, and his chief classifier, Charles Martel, were engaged in the monumental task of restoring a degree of order to the library's collections. During Ainsworth Rand Spofford's tenure as librarian during the latter third of the nineteenth century, the collections, while growing tremendously, had become very difficult to use for lack of an ongoing, systematic scheme of bibliographic display and retrieval. Putnam's resolve to get his house in order was accompanied by his equally compelling determination to centralize cataloging activity for the entire country at the library, a possibility now that standard size cards were being printed for its copyright accessions. By 1905 the twin strands of bringing order internally and cooperating externally were being pursued vigorously, as the era of the printed catalog card took form.

BY 1905 MANY OF THE ISSUES that had marked the emergence of the Library of Congress from its congressional womb to a more visible position as the American national library had not only taken shape, but were being actively pursued. Processing services had been established along lines still recognizable today, and though the throes of automation were a way off, the throes of modernizing certainly were not. Then as now, processing was in the midst of revolution, and though the direction for the next half-century had been mapped, many details were still under development and the work of repairing the disarray stemming from many years of benign neglect in organizing the collections and affording

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access to them was far from done. The years approaching and surrounding the turn of the twentieth century were turbulent and exciting ones as the library approached its centenary with the determination to shore up its weak spots and radically overhaul its machinery and its image.

During the long era of Ainsworth Rand Spofford's stewardship as Librarian of Congress (1861-97) the library, still located in its quarters in the Capitol, had certainly increased in the amount of wisdom accumulated, and Spofford's grasp of the storage and retrieval system needed to locate that wisdom was remarkable (he seems to have never experienced "down time"). But as the collections began to approach one million titles, two things became obvious: more space was needed to house the library's books, and a new method to approach the library's holdings was mandatory.

The first of these needs culminated in the magnificent, for its time and our own, new building, which was occupied in 1897. With the transfer from the Capitol completed (except for the 100,000 or so law volumes to be retained there), the library was at last free to accommodate not only its own growing collections, but also the ideas of expanded service to the nation—for example cooperative cataloging endeavors—that had been percolating for many years. Mere space could not solve the problems of accessing these growing collections or implementing expanded programs, but at least an appropriate setting was at hand.

During the comprehensive 1896 congressional hearings on the condition of the library, a sort of probing physical exam just prior to the strenuous relocation activities it was about to undergo, many of the country's most eminent librarians had testified to its current health, and more importantly, what might be done to improve its services to Congress and local users, and through its relations with other libraries, to the country as a whole. One of these librarians, whose testimony and supplementary letters to the investigating committee had been most eloquent, was Herbert Putnam of the Boston Public Library. Putnam, a fervent advocate of restoring internal order to the collections and then cooperating with others to disseminate the fruits of the cataloging work that bringing order to chaos entails, was, to the great good fortune of libraries and their users everywhere, appointed Librarian of Congress in 1899, upon the death of John Russell Young. Young's two years of service as librarian, though brief, had been marked by far-reaching reorganization and staffing policies and had proved particularly beneficial to the impending crucial decisions and movements in cataloging by his appointment of the library's principal shapers of the catalogs and cataloging of the next fifty years: James Hanson and Charles Martel, both from the Newberry Library. These two men, in very active and constant consultation with the energetic Putnam, pursued a regimen of putting the library's new house in order, and, with the further assistance of the American Library Association and prominent American librarians like Melvil Dewey and Charles Cutter, catapulting the library to the center of the cooperative cataloging movement. By 1905 marked, even astonishing, progress had been made on each front.

To appreciate that progress, the hallmarks of which were a dictionary

catalog available to the public, a classification scheme suitable to the library's interests in process of formulation and concurrent execution, and a card printing and distribution system in its infancy, the library's condition (from a "processing services" perspective) that first confronted Hanson and Martel, and, a bit later, Putnam, must be looked at more closely.

CLASSIFICATION AND CATALOGUING

In connection with his testimony to the congressional examiners in 1896, Putnam, decrying the lack of an adequate catalog and classification system, noted it was high time to "introduce into the Library the mechanical aids which will render the Library more independent of the physical limitations of any one man or set of men; in other words, that the time has come when Mr. Spofford's amazing knowledge of the Library shall be embodied in some form which shall be capable of rendering a service which Mr. Spofford as one man and mortal cannot be expected to render."²

How had this worrisome condition been reached? Since 1802 a succession of printed catalogs displaying the library's holdings had been issued, the first several listing the collection by categories of size and, beginning in 1815 when the Jeffersonian library was purchased and became the library's core, according to Jefferson's own adaptation of Bacon's scheme for the division of knowledge. This printed catalog arrangement by "chapters" of knowledge, with subdivisions, prevailed for almost fifty years, the 1861 catalog of 1,398 pages distributing titles in 179 alphabets. The 1864 catalog veered from the alphabetic-classed arrangement, rather listing the entire collection by author in a single alphabet. This in fact was the library's last comprehensive author catalog to be issued for more than eighty years. A dozen annual supplements followed the 1864 catalog, and a proposed new edition undertaken in 1878 reached only to "Craigin" before lack of funding for the project forced a halt. A printed subject catalog to the collections was published in 1869. From then until the new subject headings were developed for the printed cards, more than thirty years later, subject access was achieved only through the Spofford memory bank.

Following the appearance of the 1864 author catalog, a card file, the first "official catalogue," was begun in order to keep track of current acquisitions. This author file, on 7-by-4¹/₂-inch cards, included full bibliographic descriptions, some accessions information, the items' shelf numbers, but no subject approach. Even in 1901 this catalog was "still the source of information concerning the contents of the larger part of the Library, and . . . the key to the location of the books on the shelves."³ By then reclassification and recataloging had at least begun, and gradually the old cards were being replaced by the newly standardized 3-by-5-inch cards in a new set of card catalogs available both to staff and the public. Putnam's "mechanical aids" were supplanting Spofford's encyclopedic but idiosyncratic recall mechanisms.

Removal of the collections to the spacious new building had stimulated the reassessment of the bibliographic apparatus available to access

the materials. The other force operating powerfully in this assessment was the desire, particularly strong on Putnam's part, to centralize the cataloging effort of the nation's libraries to the greatest possible degree at the Library of Congress. Throughout the last quarter of the nineteenth century the idea of centralized cooperative cataloging had been high on the profession's agenda, but, aside from two rather limited efforts being carried on under ALA's auspices, the concept had not taken on full dress. In July 1898, with the printing of cards for books submitted to the Copyright Office for copyright, the seed for the printing of cards for all the library's acquisitions was planted, and the basis for a national distribution system established. Formalized in 1901, and functioning to this day, the distribution of information concerning the library's acquisitions and holdings forced the pace to both improve and standardize the records for the million-plus volumes to which the library had by now grown.

Putnam recognized that the mountain of work facing his processing staff could be accomplished only with significant—very significant—increases in cataloging positions. A new dictionary catalog was to be started, a new classification scheme developed, a card distribution system inaugurated, subject heading work to be re-instituted, and massive recataloging and reclassifying to be undertaken. Congress had been convinced and was generally cooperative. John Russell Young had acquired the best cataloging (Hanson) and classifying (Martel) minds available, as well as effecting a workable reorganization of the entire library. By 1901 Young's Catalog Department of twelve had grown to Putnam's Catalog Division of sixty-seven. Putnam's plan, submitted shortly after assuming office in 1899, called for a total of ninety-one persons needed during the next five years for cataloging and classifying activities.

Buttressed now by the presence of an adequate processing staff, Hanson and Martel, always after thorough study and probing by Putnam, made their first far-reaching decisions in the critical areas of the new classification scheme and the nature of the card catalogs for staff and public use.

The LC classification scheme, today so familiar, was not birthed easily. The 1896 hearings had clearly demonstrated the need for some new system: the forty "chapters" (increased to forty-four by Spofford) in effect since 1815 were no longer adequate, but what was to replace them? Dewey's decimal classification and Cutter's "expansive" scheme, both with possible modifications, were the main contenders from among existing systems. Putnam, always eager to seek a widely agreed-upon standard, personally preferred Dewey, but this time he was convinced by Martel and Hanson—after much "toing and froing"—that an entirely new system, geared specifically to the library's own collections and emphases, was appropriate. Hence the "eclectic" LC scheme was approved and the final impediment to full-scale reclassifying removed. Putnam, reconciled but not altogether happy, explaining the decision at the 1905 ALA annual meeting in Portland, Oregon, observed: "We have proceeded to construct a system of our own, and have thus added one more crime to the calendar, and future confusion."⁴ He recognized

the need for providing a printed system of the scheme, so provisional editions of schedules being prepared were to be issued before the end of 1910. By 1905 the "Z" schedule of Bibliography (the prototype undertaken by Martel in 1898) and several other portions of the schedules were finished.

Another of Putnam's strong commitments in regard to subject access was to the concept of a dictionary catalog, again a trend among other libraries and therefore attractive as a standardizing device. Though Hanson believed it might have been more economical and perhaps have better served the library's own interests to adopt either a classed catalog with subject index or an alphabetic-classed catalog, he recognized that roughly half the subscribers to the printed cards did so because of the subjects assigned, and concluded, in the cooperative spirit of the day, "the time and money applied on a dictionary catalog has been well expended."⁵ Further, the LC tendency to bring related subjects together by inversion of headings, combination of subject words, and subordination practices was itself evidence of the effort to establish a sort of compromise between the dictionary and alphabetic-classed catalog.

In 1905 there was of course no LC "red book" of subject headings; and recall that all subject work had been terminated for lack of funds after the issuance of the 1869 printed subject catalog. With the decision taken to establish a complete author and subject dictionary catalog, some basis for standardization of subjects was needed. The basic list chosen was the 1895 ALA list of subject headings, though this list was slanted to the small or medium-sized public library.⁶ Various supplementary lists were examined (Lane's subject headings for Harvard and the subject index of the Public Library of New South Wales, to name but two) and terms and ideas incorporated. Cutter's ideas on individual entry; inversion of headings; combination of terms; subordination of place to subject; direct and indirect subdivision—all the "non-dictionary" concepts—were heatedly discussed and gradually the rules were fashioned. New topics, arising rapidly (as is always true), upon approval were circulated to catalogers for interfiling with the basic list and instructions. Printing of the entire list was deferred until completion of another major project in the works: the Anglo-American cataloging code of 1908. The first volume of the first list, issued on an "as is" basis, did not appear until 1910, although oddly the first supplementary list of additions to the main list preceded the list itself by two years. The decision to publish at all was in response to the clamor of libraries now using the well-established LC printed cards, though even by 1908 subject headings appeared on only about half of those cards. Subject headings were not assigned to printed cards until the systematic reclassification and re-cataloging of the particular subject area had been reached.

Hanson and Martel had, by 1905, labored mightily to set the subject control policies for the rational physical organization and topical access to the library's collections on a solid footing. As Hanson wrote in 1909: "When I recall the status of the catalogs and classification early in 1899, and consider the efforts necessary to bring them to the point where they are today . . . I am more and more convinced that if the reorganization

had been deferred another ten years, it is extremely doubtful if it could have been carried out at all. At any rate no such elaborate system of classification or catalogs could then have been attempted as we have today."⁷ Once the major policies were adopted, Hanson deferred to Martel, the "chief classifier," to develop the practical steps necessary to implement the new classification and subject heading policies.

Hanson's own special effort during the new century's earliest years centered on the library's steps to bring its descriptive cataloging policies and practices into harmony not only with the work done during the Spofford era but more to the point with the groundswell developing for a new standardized set of rules that all American libraries could apply. With the development of the printed card distribution system, the latter need assumed major importance, if the goals of centralized, efficient, non-duplicative cataloging were to be realized.

From 1900 to 1908 the cataloging community was immersed in the effort to produce this code. ALA's role in catalog code creation reached back as far as 1877, when the first committee to fashion rules was appointed. Their work, submitted in 1883, was still a basic document. But other competitors had emerged, Cutter's *Rules for a Dictionary Catalog* (3d edition, 1891), being the most prominent, and in general significantly divergent practices had developed. The ALA Cataloging Committee appointed in 1900, with Hanson as chair, was charged with the immediate consideration of matters of typography and form, as reflected in the newly appearing Library of Congress printed cards, and then a full review of the cataloging rules in force, "mainly the points on which American libraries had failed to reach an agreement."⁸

To telescope several years of interesting cataloging history, Hanson, a great reconciler, managed to settle most of the "disputed points"—particularly those involving corporate entry (name or place?)—to his own satisfaction and in conformity with already existing Library of Congress practices. "Advance" editions of the rules appeared in 1902 and 1904. Cutter's death in 1903 required additional sections to be written into the new code, for the previous plan of referring certain matters to his own venerable code was now impossible. Perhaps this was just as well, for Cutter's enthusiasm at the end had waned: "Still I can not help thinking that the golden age of cataloging is over, and that the difficulties and discussions which have furnished an innocent pleasure to so many will interest them no more. Another lost art. But it will be all the better for . . . other parts of the service—the children's room and the information desk, perhaps."⁹

But LC catalogers in 1905 did not have the promised code in hand after all: international cooperation, another thread so prominent in today's cataloging affairs, intervened. In fact it was to be three more years before the *Catalog Rules: Author and Title Entries*, compiled by committees of the American Library Association and the (British) Library Association, made its appearance. Though agreement was reached on most points, British and American practices diverged enough that separate editions of the code, a familiar modern pattern, were published. Starting from rather different traditions, though, the amount of agreement was

surprising. As the acknowledgement in the American edition puts it: "First of all, we wish to express our most cordial appreciation of the kindly and generous way in which the British committee has invariably met our suggestions. The spirit in which it has received our proposals is in a large measure responsible for the success which has attended the negotiations."¹⁰

Fashioning the descriptive cataloging rules had been an enormous task for Hanson, but a very successful one as far as not overturning too many existing LC practices. Where the LC view did not prevail, LC practice was often given as an alternative, or a footnote. Though admitting the library had made some concessions "in order to bring its own rules into approximate agreement with those of the American Library Association," concessions which "have served to retard its own work and have at times been the cause of some confusion in its records,"¹¹ Hanson considered the variations minor. Amplifications of the rules might be published as *Supplementary Rules*; and, in any case, as Hanson noted in a 1909 memorandum to Putnam, it was LC's prerogative to "interpret the rules in the light of its own practice whenever the language of the rule or principle in it would permit such an interpretation."¹² Of overriding import, though, "the fact that the rules . . . have been accepted by the two associations . . . represents in itself a great advance in cooperation and uniformity of methods, and will have an influence in its future relations to libraries and students, at home and abroad, the importance of which can hardly be overestimated."¹³ Nevertheless, the seven-year process had been an exhausting experience, and overcoming the difficulties to obtain the degree of harmony he did led Hanson in a 1923 letter to his British counterpart in the 1905-07 negotiations, Mr. Minto, to observe: "If there is to be another War of the Rules, I think I shall prefer to remain a passive observer."¹⁴

The 1908 Anglo-American rules, then, were not really so different from the established Library of Congress policies, policies that Hanson had developed considerably from those he inherited in 1897. Spofford's system, though unrecorded and inconsistent, had emphasized the need, doggedly, for getting an author's name in full. In the 1896 hearings Spofford stated: "The cataloguer has to write down the name of the author . . . his full name, if he can get it. If it is not revealed in the book and the author's initials are M. A., he has to find what they stand for. He may pursue half a dozen sources to get that information as to his full name, but he has to get it if he can. Failing, he has to write the publisher of the book and get it."¹⁵ Hanson largely concurred, though without Spofford's downright mania for fullness. He observed, in a 1923 letter to William Lane, it was "very difficult to get the average assistant to make the most necessary investigations before putting down author's name and other items of the entry. The tendency was very strong to follow lines of least resistance, i.e., to omit the drudgery incidental to securing information from reference books. Results were at times disastrous in spite of eternal vigilance on the part of the revisers. We must not seem to encourage laxity, at the same time I agree that unnecessary fullness and over-elaboration of the entry should be discouraged."¹⁶

Fullness of name (especially inclusion of unused forenames) was one of the main issues in the code of rules under evolution; and even with its own practices largely supported, "of the concessions made by the Library of Congress in its practice, the searching for full names and dates had the most serious effect on the Library's own work."¹⁷ (A drop of 35,500 volumes in cataloging production was experienced in the first year following adoption of the committee's recommendation (1901/1902), attributable to various factors, but partially to the making of authority cards securing dates as well as "best form of entry for authors' names.")¹⁸

In a directive resonant with the "compatibility" doctrine associated with the library's adoption of AACR2 more than seventy-five years later, Hanson in 1903 decreed: "When an author's name is found in the old catalogue only and the form of name given there does not conflict with that of other authors already in the new official catalogue, the form as given on the old cards is to be adopted, provided always that the new rules do not demand any attention. . . ."¹⁹

Though fullness of name represented fundamentally a continuation of Spofford's preferences, Hanson's efforts in overhauling almost all other aspects of the descriptive practices he found in effect were more profound. Spofford, for example, was a strong believer in title abridgment, and his ideas on edition, imprint, and collation were an odd mix of the ALA, Cutter, and other precepts then in use. Hanson too began preparing catalog entries according to his own eclectic ideas, but he based most of these ideas on Cutter's *Rules* and attempted to bring the entries into what was then recognized as the prevailing national tendencies. Title transcription, for instance, was done without abridgment, a radical change for the Library of Congress. In fact, though, Hanson treated all his rules as tentative, and assumed that changes would be made as printed cards came into wider circulation and as the new cataloging code was being further developed.

As has been noted, the Anglo-American cataloging code finally appeared in 1908. Meanwhile, as part of the formulation process, "Advance" editions in 1902 and 1904 both announced progress in decision making and served as stimuli for yet further discussion of the points not yet resolved. Complementing these editions, beginning in 1903, the Catalog Division issued supplementary rules and illustrations on cataloging to serve as guides to Library of Congress practice in areas either as yet not covered or in need of amplification. These issuances, both in pamphlet form and on printed cards, served as the predecessor of today's *Cataloging Service Bulletin* and *Rule Interpretations*, announcing matters as diverse as the specific routines involved in recataloging, treatment of Indian schools, and every cataloger's favorite, "Heraldic visitations." In addition to these "numbered" series of supplementary rules distributed to other libraries, other rulings in a "dated" series for use only at the Library of Congress were distributed to LC catalogers. Thus the cataloger of 1905, though not overwhelmed by the documentation today's LC practitioner must absorb, was nevertheless well supplied with instructions and aids to enlightenment.

Library of Congress catalogers in 1985 routinely work against a "new" catalog, a catalog most easily thought of as "nonprinted-card," an electronic catalog. Implementation of TOSCA (Total Online Searching for Cataloging Activities) in 1983 severed the link with the "new official" card catalog that was but five years old in 1905. Just as for cataloging codes, so the universes against which cataloging is applied are subject to upheaval. The "new" catalog of 1900 was dictated by a revolution as powerful in its time as automation has been recently: the standardization in the size of the catalog card and the concurrent printing of those cards.

DISTRIBUTION OF PRINTED CATALOGUE CARDS

The early history of card size standardization, the library's card printing activities, and the development of the card distribution system has been well documented in Paul Edlund's "A Monster and a Miracle: The Cataloging Distribution Service, 1901-1976."²⁰ After decades of dreaming, the distribution service was inaugurated in November 1901. Card printing at the library had begun three years earlier, in July 1898, when entries for books received through copyright were printed on the 3-by-5 inch standard size cards. Beginning in January 1901, cards for *all* newly cataloged or recataloged books were printed. A very brief look at the Card Section's volume of activity in 1905 indicates how quickly this service was growing: 221 new subscribers were added during the year, bringing the total to 608; a 106 percent increase over the previous year's sales was experienced; about 180,000 different titles, 40 copies of each card, were in stock; 31 depository libraries were receiving full card sets;²¹ Card Section staff were traveling far afield (in that year to Portland, Oregon, in connection with the ALA meeting at the site of the Lewis and Clark Exposition), to field questions and illustrate ways in which libraries were adapting the LC cards to their own catalogs. So successful was the distribution service in terms of savings to other libraries that Putnam, estimating it was five and one-half times more expensive to provide original cataloging than to acquire the LC card, observed: "This saving is equal to the total sum (\$88,140) expended by the Government during the year for the maintenance of our entire force of classifiers and cataloguers, 91 in number. That force was established for our own immediate needs," but could be justified if "we were not a library, but a mere cataloguing bureau."²²

Allied to this marvelous new external outpouring of the library's cataloging bounty was the reconfiguration of the internal catalogs. Printing of the first 3-by-5-inch cards for copyright books in 1898 marked the inauguration of the "new" catalogs. The "old" card catalog, it will be recalled, was composed of 7-by-4¹/₂-inch cards. Included in the latter were clipped and mounted entries from the last of the printed author catalogs (1864) and the dozen annual supplements. The record of all acquisitions for the last quarter of the nineteenth century, as represented by manuscript cards, fairly complete but for lack of subjects, made up the bulk of this, the "online" access (beyond Spofford's almost total recall) to the collections. Putnam decided that this catalog should terminate as the century turned.

Thereafter no further entries were added to it and steps were taken to include at least some of the entries found in it (another clipping and mounting operation) in the newly established dictionary catalogs: one for the public, and one for the catalogers (the New or Second Official). From the outset these two catalogs contained slightly different categories of cards (the New Official, for instance, contained no title added entries), a problem that has vexed Library of Congress catalogers ever since. In general, though, the New Official was the official record for all items henceforth cataloged, to the point that the original manuscript cards serving as copy for the printer were preferred to the finished product. The recently initiated authority cards, recording "best" forms of entry for an author, were also found only here. But the Public Catalog was no slouch, containing uniquely as it did the main entry cards for "serial, incomplete, and ephemeral publications" as well as the pasted slip entries for books in the 1864 printed catalog and the twelve following annual accessions lists.²³ The two catalogs grew not only with the current accessions, but also as reclassification and recataloging reclaimed cards from the oversize Old Official and deposited them in the sleeker New Official cabinetry. Even by 1907, though, the Old Official still numbered about 200,000 cards. The "bibliographic flip" (in modern terminology) required many years indeed to be fully accomplished. Then, as now, a cataloger at the Library of Congress was confronted not with "a" catalog: several contended for attention.

The ninety-one Catalog Division members cataloged a total of 111,373 volumes in Fiscal Year 1905, an increase of about 13,000 over the previous year. Of these, 38,300 were recataloged items, part of the reclassification of the collections systematically being pursued. Of the approximately 73,000 new items cataloged that year, almost exactly half qualified for inclusion in the new classification scheme, the other half still being accommodated in the old Jeffersonian "chapter" classification. Additionally forty-six thousand volumes already on the shelves were reclassified. The reclassification wave, by 1905, had rolled over the following subjects: History and topography (D-F), General geography (G), Physical geography (GB), Oceanography (GC), Anthropogeography (GF), Sports and games (GV), Statistics (HA), Economic theory (HB), Economic history and situation, by countries (HC), most of Transportation and communication (HF), Literature of music (ML), Mathematics (QA), Physics (QC), Chemistry (QD), Botany (QK), General works on technology and engineering (T, TA), and the first to be done, Bibliography and Library science (Z). Recataloging in many other areas was partially complete.²⁴ But in several major areas (literature, religion, education, and fine arts), books were still being crammed into the old classification.

It had probably been a huge relief to the entire staff in 1905 simply to concentrate on the library's own collections. Far too much time had been devoted the previous year to another of Putnam's involvements in cooperative schemes: work on the revised edition of the two-volume *A. L. A. Catalog: 8,000 Volumes for a Popular Library, with Notes*.²⁵ The original edition of 1893 was published by the Bureau of Education, but Putnam agreed that the revision would be published by the library. Pre-

pared by the New York State Library and LC under the auspices of the ALA Publishing Board, the target for issuance was October 1904 at St. Louis, where the Louisiana Purchase Exposition provided the setting for that year's ALA convention. The second volume, the *Dictionary Catalog* (Part I was the classified list prepared by Dewey) was entrusted to Hanson. Its compilation was extraordinarily difficult for a variety of reasons, perhaps chief of which was the uncertain status of the items finally to be included, the selecting, de-selecting, and re-selecting being done at the State Library in Albany, N.Y., thereby continually frustrating to patience's limits Hanson's attempts to supply the dictionary catalog's proper connective tissue (references). He called it "the darkest, most hopeless, and most disagreeable" summer he ever spent in library work.²⁶ Between January and September of 1904, nine catalogers spent 3,378 hours, nine revisers 1,833 hours, and six copyists and filers 2,400 hours on the project. A major effort was required the following year "to regain the ground that was lost" in the catalog's preparation, which, while it lasted, was a "veritable nightmare."²⁷ Though it may have been a nightmare to compile, involving as it did the provision of a printed card for every item included in the printed catalog, it provided smaller libraries especially—to whom both volumes of the catalog were distributed for no charge—their best chance ever to obtain printed cards for all the items listed, since LC card numbers were a part of each entry. A dozen sets of the catalog's entire complement of cards (at a cost of \$154.56 per set) were sold by the Card Section in 1905, and the demand for individual cards was largely responsible for the dramatic 106 percent increase in sales that year.²⁸

The Louisiana Purchase Exposition provided a splendid opportunity for the library to display the products of its card production program. The Catalog Division's exhibit was extensive: it included the old printed catalogs, sections of the old official catalog; shelf lists, both on sheets, or in the case of the reclassified sections, on cards; the entire catalog of existing LC printed cards (almost 130,000 at the time); cards for books in the *A. L. A. Catalog* (see above); "traveling catalogs," i.e., subject groupings (Civil War and Bibliography, e.g.) made available to libraries for selection and ordering purposes; card samples; and a variety of other card files illustrating the uses to which the printed cards might be put. An attendant from the Card Section was on hand, and "library workers . . . using the cards [were] invited to discuss with the attendant any difficulties which may have been experienced."²⁹ This kind of dialogue has never stopped. As Putnam stated in his testimony during the rather grueling hearings on the 1907 appropriation bill for the library: "The assistant in charge . . . every once in a while, when the Library has a special problem or where our method in printing the cards has to be explained, visits a library or attends a meeting of a library association. There is hardly a conference of libraries in the country in which our system of distribution is not discussed, and it needs explanation."³⁰ Is it much different today?

(Those particular hearings make interesting reading, and Putnam and Superintendent of Buildings Bernard R. Green are put to the test by

several grumbly members. In that dawn of the automobile era things had not yet gone well for the library's motorized fleet. Green asserted a need for two more vehicles, the initial purchase of a "2-ton affair" in 1901 having proved disastrous. Repair costs had been prohibitive, "more than it was worth. It was a white elephant on the hands of the Librarian, but at the time it was purchased it seemed to be the best thing on the market." The members comment:

Mr. Littauer. "It would appear that it was an unfortunate purchase."

Mr. Tawny. "So have all the rest of them been."

Mr. Littauer. "Yet these great companies, like the express companies, are trying to develop a more economical way of delivery. Now as to the stacks . . .",³¹

Introduction of new technology is, we keep rediscovering, not without risk.)

INCREASE OF THE LIBRARY

Putnam's passion at that time for "putting the house in order" should not obscure his equally great interest in increasing the scope and depth of the collections themselves. In his landmark *Annual Report* for 1901, the second half of which is a very detailed manual of library operating procedures, he expressed appreciation to the Congress for the increases in appropriations for acquisitions, but hastened to add that "the present sum is below that requisite if the Library is to become a collection comprehensive in scope. It has no endowments, no emergency fund, absolutely no resources for purchase save the appropriation for the current year."³² In fact there was no separate acquisitions unit until an Order Division was created by the appropriation act effective July 1, 1900. Before that the acquisition activity was subsumed under the Catalog Division.

Putnam was quite disturbed over what he considered to be major deficiencies in the collections, and his early annual reports systematically list the many purchases aimed at remedying those deficiencies. That he was aware of every purchase was typical of the tight control Putnam exercised over every detail of library administration, at least at the very beginning of his forty-year term as librarian. *All* recommendations for purchase, whatever the source (current trade lists, prospectuses, dealers' catalogs of noncurrent books, auction catalogs, recommendations of other library officials or readers) went to the librarian for approval before moneys were committed. (Putnam, at least, did not insist on approving every catalog record being generated, though Hanson did just that).

Purchase was, of course, but one avenue for increase of the collection. Copyright, gift, international exchange, and the long-standing arrangement with the Smithsonian Institution for deposit of portions of that institution's holdings, especially publications of learned societies, were the other means available. Through vigorous pursuit of all these channels, by 1906 the book and pamphlet collections alone had grown to almost 1,400,000 items, a 40 percent increase in five years.³³ The special collections—music, maps and charts, prints, manuscripts—greatly inflated the total figure. Enough deficiencies had been remedied that "Se-

lect Lists of Recent Purchases'' were omitted from the reports; rather, particularly notable gifts and holdings were articulated.

In 1905, new exchange agreements were made with, among other countries, Egypt, Malta, Nicaragua, Salvador, and the Empire of China. Among notable gifts were 191 volumes and 50 pamphlets from the Imperial Free Economic Society, Saint Petersburg, comprising reports of the Russian local governments.³⁴

But Congress was, as is understandable, most interested in how the library spent the \$98,000 of appropriated funds for the library's increase. Again in the appropriations hearings of 1906 Putnam was pressed to explain how the thirteen-member Order Division operated. "Now if books were bricks and you could place an order for them at such and such a price for a lot by a classified description, that would be one thing. But the books we are buying are not one in five of them current publications. . . . They are books often very difficult to get. The editions are to be had only at second-hand shops, and the determination of how the order shall be placed and what is the right price to pay for it and the collation are often very laborious matters, and we have to keep in that division very accurate records that will prevent duplication. They keep such records." Mr. Brick, noting that 22,000 books had been purchased in 1905, asks: "That would be over \$4 apiece?" Putnam: "Yes, but you must remember that these are not ordinary books." Brick: "Yes. These are ones that cost money?"³⁵

Putnam, perhaps feeling he hadn't done full justice to his case, forwarded a supplementary memorandum (February 9, 1906) re-emphasizing the difficulties his Order Division faced in securing material: "It is remote, often obscure, fitful in the market. For the most of it the prices are not fixed or uniform, but varying and at times arbitrary. Long experience and expert knowledge have to be applied to guard against deception, extortion, defect, duplication. The work is intricate and the cost of error serious."³⁶ The same idea might be put in dry bureaucratic jargon today, but Putnam manages to invest the order librarian not only with importance, but intrigue and romance as well.

High morale indeed pervaded the processing services workplace at the library in the year 1905. Putnam was immediately involved in the great adventures of collection building, cooperative cataloging, printed card distribution, and the immense tasks of recataloging and reclassification necessary to put his house in order. That job had reached the midpoint and was humming along under the leadership of the skillful masters Hanson and Martel. Jens Christian Bay, a 1900 cataloging appointment of Putnam's and later a bibliographer and author of note, summed up the atmosphere fifty years later. Attacking the mountains of books transferred in 1897 from the Capitol to the new building, as well as the ever increasing new accessions, the cataloger would "dig into the mass of material we had and try to bring logical order and system to it. . . . We cataloged, first in accordance with Cutter's system and later with the A.L.A. catechism. One never completes the rules for cataloging. As soon as a card is being prepared, a new revision creeps in. It is a never-

ending task and Hanson, who was extremely liberal in his interpretation of the rules, was continually immersed in monumental piles of cards. . . . Our work consisted primarily of renewing the old cards and printing new ones. Enormous card-catalogs resulted." Furthermore, "there was no overtime pay. Nobody ever demanded remuneration for extra service, but we liked the work and it had to be done. This of itself was rewarding."³⁷ And the kindly and gracious Hanson was respected and thoroughly liked: "Our supervision was liberal and pleasant."³⁸ Martel, his later boss, was equally admired as a philosopher and bookman who believed that "ideally one should be able to get an answer to any question in some book because human beings, generation after generation, review past development" in the process of becoming educated. "It was only when Martel began to philosophize over Nietzsche's 'Theories' and their meaning that I lost interest."³⁹

But it was James Hanson who best set the tone for his staff of cataloging assistants. A veteran of all the campaigns in the battle to re-establish order over the inherited chaos, he clearly understood the limitations of what any single person—whether Spofford or himself—could accomplish. He frequently experienced "the extraordinary delusions which exist in the popular mind in regard to the ease with which catalogs of any size or character can be turned out."⁴⁰ His credo, though expressed in 1909, is surely not outdated:

"Here the intellect comes into play with all its niceties, and while several minds may work at different parts of a catalog, there must also be a central co-ordinating influence to insure harmonious development. It is for the purpose of maintaining this co-ordination and harmony that so many rules, regulations, and guiding principles are laid down. If it were not for the necessity of having all these directions, and also people with sufficient knowledge and experience to apply them properly, the making of a large catalog would be a relatively simple business. Unfortunately the history of various cataloging enterprises teaches us that it is very far from being simple, and that there is little prospect of it ever becoming a mechanical operation dependent mainly on physical numbers and organization. . . . Every library must have on its staff persons who understand the system according to which the printed cards and other aids supplied through co-operation are prepared. They must be able to harmonize differences between entries secured from the outside and those prepared within the library. A failure to keep a sharp lookout for discrepancies would undoubtedly . . . lead to a series of conflicting forms and practices, which experience has repeatedly shown is likely to lead to a chaotic condition . . . The larger the library therefore, the more important that foundations be firmly laid and lines of development be clearly marked out."⁴¹

In 1905 those foundations of the library's printed card era were being laid. Many survive intact in 1985; technology has modified others. But pursuit of the coordination and harmony so earnestly sought eighty years ago is no less important to the present generation of the library's processing services practitioners. Though now fifteen times as large, the

essential functions remain the same: acquiring and cataloging items for the library's collections and disseminating to the widest possible community of users the fruits of our bibliographic labors.

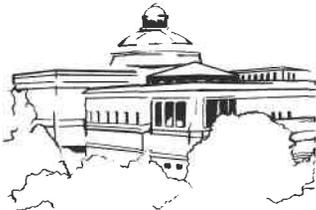
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Processing Services 1985: Technical Services in the Age of Electronic Information

Laurie E. Smith

In 1985 the technical services staff at the Library of Congress number approximately fifteen hundred. Still engaged in cataloging library materials for the collections of the Library of Congress and in producing centralized cooperative cataloging for the benefit of the library community, LC's Processing Services staff also work to develop standards and formats for machine-readable bibliographic data that can be used in libraries and information centers worldwide. Printed card technology is being supplanted largely by products generated from machine-readable data, such as bibliographies in computer-output microform and compact disks. Processing Services attempts to demystify cataloging practices and technological developments with outreach programs. Computer-to-computer links for the exchange of bibliographic data are emerging in the Linked Systems Project.

IN 1985, THE PHYSICAL SURROUNDINGS of technical services activities at the Library of Congress have changed dramatically and the number of items processed by an expanded staff have increased geometrically since the turn of the century. However, many of the major concerns which occupied the librarian and the technical services staff remain the same. The terminology and the technology may be different, but the Processing Services staff are still primarily engaged in the production of catalog records for items in the LC collections and in activities that support the development of a national database of bibliographic records for library materials, the promulgation and use of uniform codes, the development and adoption of standards and standard formats for bibliographic data, the acquisition of useful research materials, the distribution of cataloging data, the preservation of the collections, and the means of access to them.

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At the turn of the century, Library of Congress staff were gratefully spreading out in a magnificent new building; in 1985, Processing Services staff are once again reunited on Capitol Hill after a couple of decades when several divisions occupied distant annexes. All but three divisions are located in the James Madison Memorial Building, which was fully occupied in 1983 after a series of staff relocations which lasted for nearly three years. Those three divisions are about to undergo a series of moves as a major renovation and restoration project begins for the Thomas Jefferson and John Adams buildings. The construction and renovation activities will take place in one-half of each building at a time and are expected to be completed by the early 1990s. Processing Services staff are also located in the overseas field offices in Cairo, Karachi, Jakarta, Nairobi, New Delhi, and Rio de Janeiro.

The collections of the Library of Congress, a major portion of which pass through Processing Services' hands, had grown to 81.9 million pieces by the end of fiscal year 1984. There are more than thirteen million volumes in the classified book collections, more than one million audio disks and tapes, more than thirty-five million manuscript pieces, nearly four million maps, atlases, and globes, nearly six million microform items, twelve million other printed materials (books in large type and raised characters, incunabula, music, bound newspapers, technical reports, etc.), and more than ten million visual items (motion pictures, video tapes and disks, still pictures, posters, prints and drawings, etc.).¹

In 1985, the organization of Processing Services shows its roots in the divisions organized by Librarian Putnam; the three directorates are Acquisitions and Overseas Operations, Cataloging, and Bibliographic Products and Services, with a staff totalling nearly fifteen hundred. The Cataloging Directorate is the largest and is organized into divisions which correspond to the progression of cataloging materials (from the entrance of materials into descriptive cataloging through subject and decimal classification and the addition of subject headings to the input of bibliographic data into the MARC database). The Acquisitions and Overseas Operations Directorate handles the acquisition of library materials by purchase, exchanges, and gifts and operates the Cataloging-in-Publication and overseas field office programs. The Directorate for Bibliographic Products and Services includes the Serial Record activities, the production of the *National Union Catalog* publications, the development of automated systems to support technical services needs, the marketing functions for bibliographic data and technical services, the MARC Distribution Services, and cataloging data in various formats.

BIBLIOGRAPHIC CONTROL IN THE COMPUTER AGE

Since 1969, LC has been systematically creating a machine-readable database of cataloging data. Beginning with current English-language monographs, LC's cataloging in MARC has expanded to include prospective and retrospective titles in all languages (with some appearing only in romanization) in the book, serial, map, music, machine-readable data file, and film formats. Staff at the Library of Congress

have led the way in the development of the MARC formats which provide the framework for machine-readable bibliographic data to be created and distributed for cooperative use. Led by the three latest department heads, Henriette D. Avram (currently Assistant Librarian for Processing Services), Joseph H. Howard (currently Director of the National Agricultural Library), and William J. Welsh (currently Deputy Librarian of Congress), the Processing Services department has maintained a strong and active role in the development of the standards and guidelines which allow the national and international exchange of bibliographic data. MARC has thrown wide the doors opened by Herbert Putnam, who envisioned the dissemination of centralized cataloging for the benefit of American libraries. Today, the scope of bibliographic data exchange has gone international. LC has exchange agreements for MARC data with an increasing number of countries, including Australia, Brazil, Canada, Chile, England, France, Norway, and Venezuela. Additional agreements are being considered using the exchange format of either USMARC or UNIMARC. The UNIMARC format was specifically developed to provide a common exchange format for countries whose national MARC formats differ.

The content of today's bibliographic record has been shaped by the need for standardization for machine processing in the various national databases and the increasing numbers of shared bibliographic processing networks. The Library of Congress has been actively involved in these developments from initial implementation of MARC, the creation of the MARC formats, and the creation of an extended character set for use in bibliographic records to the development of the International Standard Bibliographic Description (under the auspices of the International Federation of Library Associations and Institutions), participation with the Joint Steering Committee for Revision of AACR, coediting the second edition of the Anglo-American cataloging code and participation in a multitude of national and international standards organizations.

The Library of Congress has provided leadership and training to the American library community in the application of the new cataloging code, together with the Resources and Technical Services Division of the American Library Association. RTSD/LC institutes were mounted in multiple locations for training in the new rules, and especially in the creation of name authorities. Continuing education and further interpretations of the application of the code at the Library of Congress are provided in the rule interpretations published in LC's *Cataloging Service Bulletin*. Additional institutes for serials cataloging procedures are being planned to begin in 1986.

CURRENT COOPERATIVE PROJECTS

A basic concern for sharing the cataloging data since the inception of the printed card distribution by LC has been to save costs at other libraries and to avoid duplication in cataloging. This concern is still the basis for a sequence of cooperative cataloging ventures which the Library of Congress pursues to this day. The CONSER (CONversion of SERIALS) program was developed to provide a consistent, standardized,

nonduplicative database of North American serials and holdings. The database is housed at OCLC. The serial records were initially authenticated by LC and the National Library of Canada, and the MARC serial records are distributed to other libraries and to the information community through LC's MARC Distribution Service. Research libraries throughout North America participate to produce this unique cooperative database. Recently LC has worked with OCLC and the CONSER participants to open up the authentication for non-Canadian titles to a self-authentication procedure. Participant authentication will allow LC to reduce existing backlogs of unauthenticated records, to authenticate the serial records held by LC on a more timely basis, to resolve reported problems in CONSER records more quickly, and to accelerate the distribution of CONSER records to MARC serial tape subscribers.

The CONSER database is the logical repository for records created in the United States Newspaper Project (USNP), a cooperative effort of the Library of Congress, the National Endowment for the Humanities, and CONSER. Funding for USNP is provided by the endowment to various state agencies who operate either as state or national repositories of American newspapers. Grant funds are provided to the agencies for preservation and for bibliographic control of the newspapers. The Library of Congress acts as technical monitor and training resource for participants in USNP, who contribute their bibliographic records as CONSER members for the duration of their project component. LC is also a national reporting participant; staff at LC completed a revision of the *Newspaper Cataloging Manual* (the CONSER/USNP edition), which provides the basic bibliographic control guidelines for the participants.²

CONSER provided a model for the Name Authority Cooperative Project (NACO), which is coordinated at the Library of Congress. To fulfill the need for a comprehensive, cooperative national database of name authority records, the Library of Congress works with designated state and federal agencies and libraries. Beginning in 1977 with the U.S. Government Printing Office (GPO), NACO has expanded to include thirty-one participants by the end of 1984. Among these participants are two of the U.S. national libraries (National Library of Medicine and National Agricultural Library); the participants create name authority records according to the practices and procedures of the Library of Congress, which distributes the records in machine-readable form and in computer-output microform (COM) editions to interested subscribers worldwide.

In 1985 NACO will change dramatically under the influence of the Linked Systems Project (LSP), a joint effort of the Library of Congress, the Washington Library Network (WLN), and the Research Libraries Group (RLG) and its Research Libraries Information Network (RLIN). NACO members will be able to contribute to the national name authority database online in their own bibliographic utilities or cooperatives. Through LSP's system-to-system link, the different computers can communicate data. The first LSP application (in which OCLC has announced it will participate) is the transmission of name authority records from NACO participants to LC via the link and the distribution of records from LC via the link to WLN, RLIN, and

OCLC. LSP will significantly improve the timeliness of authority record distribution and will contribute to more effective cooperative database building. The determination of a unique name authority is the most costly part of cataloging. Through this cooperative NACO/LSP program, LC and the library community save time and resources needed for other cataloging and library activities.

In 1979, RLG and the Library of Congress signed a memorandum of understanding to cooperate in the development of a bibliographic control system for cataloging data containing elements in vernacular characters for the Chinese, Japanese, and Korean languages. By 1983 RLG had developed the system and installation began for the specially designed terminals. The project expands cooperative cataloging between LC and the members of RLG participating in the project with all twenty using or building upon records created by the others. LC inputs all of its Chinese, Japanese, and Korean cataloging into RLIN and will distribute its records in a separate MARC Distribution Service. The romanized versions of LC's records will also be available in the *National Union Catalog*. LC and RLG have begun discussions about cooperating in a similar bibliographic control system for cataloging Arabic and Hebrew language materials in vernacular characters.

Directly descended from the dictionary card catalog through a line of book catalogs, the *National Union Catalog* is now produced from machine-readable records. Only a few publications in the *NUC* family continue to be produced in paper form (i.e., *Symbols of American Libraries and Music*, *Books on Music*, and *Sound Recordings*). In April 1983, the *National Union Catalog* was first issued in computer-output microform (COM) with records derived from the MARC and *NUC* databases. The COM *NUC* is issued in a register-index format (a break with tradition from the alphabetically arranged dictionary catalog). The microfiche *NUC* is issued in four parts (*NUC U.S. Books*, *NUC U.S. Books*, *NUC Audiovisual Materials*, and *NUC Cartographic Materials*), with entries listed in random order in the register and with indexes to the register entry by author, title, subject and series, and for cartographic materials only, by geographic area codes. By mid-1985, modifications to the *NUC* system will allow reporting libraries and institutions to send records in machine-readable form for loading into the *NUC* database.

SUBJECT ACCESS

Subject access to LC's cataloging data has evolved considerably since 1905. The development of the initial schedules in the LC classification system is nearing completion. Special efforts are being undertaken to complete the K schedules for law materials. Revisions are a continuous process; in 1985 revisions are being issued to *Class L*, *Education* and *BL-BQ*, *Religion*. Revisions to *BR-BV* and *BX* are planned for 1986. A major effort is underway to develop an automated subject authority system at LC to accommodate the creation and revision of subject authorities. The new system will be used to generate a revised format of machine-readable subject authority tapes for distribution by the Cataloging Distribution Service (a lineal descendant from the old Card Section in the Catalog Division via the Card Division). The system will be used to gen-

erate other subject authority products for subscription services.

A preliminary edition of the *Subject Cataloging Manual* was issued in June 1984.³ The looseleaf publication, partially funded by the National Commission on Libraries and Information Science, consists of internal memoranda relating to LC subject heading policies and practices, such as authority work, construction of subject headings, cross references, and the assignment of headings to individual works. The manual is a tangible result of intensified efforts to make policy and procedures for LC's subject cataloging more accessible to the library community. Subject cataloging staff from the library participated in the development and presentation of a series of regional institutes on the use of subject headings. The institutes were sponsored by RTSD and were given in 1983 and 1984 to explain the basic principles of LC subject heading usage, to clarify the impact of AACR2 on subject headings, and to discuss future automation intentions for subject authorities.

The Library of Congress has assigned *Dewey Decimal Classification (DDC)* numbers to titles which LC catalogs since 1930, when a special section was established at LC. The decimal numbers are assigned to most books in English (except city directories and most current fiction), to as many foreign language books as possible, and to nearly all serial publications. Since the sixteenth unabridged edition of *DDC*, the editorial responsibility for preparation of the schedules has also resided at LC. Current activities relating to *DDC* include a special study of the use of *DDC* in online public catalogs as a tool for subject access, browsing, and online display. The experiment is based on the machine-readable print tapes used by Forest Press to produce the nineteenth edition of *DDC* and is supported by a grant from the Council on Library Resources.⁴

Since the publication in 1979 of the nineteenth edition, staff at LC have given workshops in multiple locations in the U.S. and Canada on its use and interpretation. The interpretation of the nineteenth edition has also been communicated by the *Manual on the Use of the Dewey Decimal Classification*, which was published by Forest Press in 1982 and prepared by staff at LC.

Several international editions of the *DDC* have been supported actively by the staff at LC. In 1980 a three-volume Spanish edition was issued which adapted *DDC* to the needs of Spanish- and Portuguese-speaking countries. The editor and staff have also worked closely with the team which produced an Arabic version of the abridged eleventh edition, with expansions based on the nineteenth unabridged edition. An Italian team is planning to produce a three-volume abridged edition in 1985. In each instance, the international editions go beyond the scope of merely translating the *DDC* to incorporating an interpretation of the schedules from a different cultural and language tradition or philosophy.

LC ACQUISITIONS

While the cataloging staff deal with materials once they have been received and selected for retention or for cataloging, the acquisitions staff concentrate on bringing the materials in. The Library of Congress is in a unique position to acquire publications because of its history and its

multiple missions. The Copyright Office is advantageously located at the Library of Congress and receives a majority of the U.S. trade (and other copyrighted) publications, nearly six hundred thousand items a year.

The Library of Congress is also fortunate to be the historical point of receipt for library materials acquired by the U.S. government in exchanges with other countries. More than fourteen thousand informal exchange partners and more than sixty official exchange partners send nearly two million pieces a year to LC. Library materials produced by other federal government agencies or unneeded in their collections bring in another two to three million pieces a year. Gifts of all types of library materials bring in an average of two million pieces per year.

The special foreign acquisitions programs at LC benefit not only the Library of Congress but also the library community. Since the 1960s, shared cataloging centers and field offices have acquired and cataloged local and regional library materials for the benefit of the Library of Congress and participating research libraries (primarily American and now expanding beyond the U.S. borders through the participation of several overseas research libraries). Offices currently exist in Tokyo, Rio de Janeiro, Nairobi, Cairo, Karachi, New Delhi, and Jakarta and provide broad acquisitions coverage of research materials either directly through the office staff or through special representatives under the offices' supervision. In addition, a microform unit in the New Delhi office has filmed or fished documents for preservation purposes since 1965. Where the local publications are issued in nonpermanent paper or where multiple copies are difficult to obtain, preservation in microform ensures their availability for scholarly use. Many of the microform materials are also made available for purchase through LC's Photoduplication Service.

The *Accessions Lists* produced by the special foreign acquisitions offices have provided valuable bibliographic information to the international library community, particularly when they are able to document publishing output in countries which lack formal or consistent national bibliographies.

In 1984 the Library of Congress office in New Delhi installed three microcomputers with specially designed software. With this installation, the first field office cataloging production was automated. Preliminary records and minimal-level cataloging records for South Asian language materials can be keyed by staff in India (who are fully knowledgeable in the local languages) for loading into LC's MARC database in Washington. Building on this initial use for brief records, the New Delhi staff is now being trained and will gradually be assuming fuller responsibilities for descriptive cataloging, including name authority work, and will be given training later for subject cataloging in particular portions of the LC classification schedules. It is foreseen that additional field offices could be given fuller responsibility for cataloging activities in machine-readable form. This project (called NEWDOC, for New Delhi Cooperative Cataloging) has the potential for reducing duplicative cataloging activities within the Library of Congress and for generating MARC records for foreign language titles with fewer production delays.

In 1985 Processing Services is beginning to evaluate the components

necessary for an automated acquisitions system to support the large volume of recommendations, orders, requests, and receipts in the Library of Congress. A consultant laid the groundwork for this study in 1984 with a comprehensive description of current acquisitions procedures. In most cases the acquisitions activities have been manually conducted. One exception has been LOIS (Library Order Information System), an automated batch-production system in operation for over a decade in the Order Division to maintain order and fiscal data for regular and subscription orders. The Order Division is responsible for the acquisition of all purchased materials for the Library of Congress. The division works with a worldwide network of dealers and special representatives to acquire library materials, primarily those published outside the U.S. or materials from the U.S. when the required copyright deposit copies are not sufficient for the library's needs. The LOIS system, which tracks the acquisitions data for nearly three million pieces annually, is a candidate for reconstruction in the early phases of the development of LC's acquisitions system.

Since 1971 the Cataloging in Publication Division has functioned as an acquisitions source of American library materials which are in the scope of the CIP program. A cooperative effort between the American publishing community and the Library of Congress, the CIP program coordinates the preparation of standardized cataloging data. The data can be printed in published books (or other media) and can be utilized in MARC or card form by libraries (supplied through the services of the Cataloging Distribution Service). New CIP projects being developed in 1985 include a pilot project to provide CIP cataloging for up to one thousand computer software titles; this pilot is the direct outgrowth of suggestions and proposals by the school and public library community. Development work has begun at LC to implement the MARC format for machine-readable data files, and coordination has begun to resolve cataloging issues related to the descriptive and subject cataloging of the software and data files.

BIBLIOGRAPHIC CONTROL AND TODAY'S TECHNOLOGY

In 1905 printed catalog cards were the wave of the future; in 1985 cataloging data is produced in card form, in book catalogs, in microfiche editions, in MARC tapes, and in Compact Optical Disks. The basic product of Processing Services (the bibliographic record and its accompanying authority records) is produced for library materials in more than 450 languages with original full-level and minimal-level cataloging prepared for between two hundred thousand and two hundred fifty thousand titles annually. In online catalogs these records can be accessed through dozens of data elements, a far cry from the not-so-distant days when millions of cards had to be added to the Library of Congress' card catalogs to provide several different access points for retrieval.

In 1984, a major microfilming project was undertaken to reproduce the public card catalog in LC's main reading room. A contract was signed with K. G. Saur, Inc., to film the cards using high-speed computer-driven photographic equipment. The project is due to be

completed within four years, during which more than twenty-five million cards representing 7.5 million titles in the general collections will be reproduced. The Catalog Management and Publication Division has undertaken the task of reviewing the cards to correct gross filing problems and to prepare the cards for filming. Once filmed, the public card catalog will be replaced by copies of the catalog in microfiche and by the automated bibliographic database (which includes MARC records and the PREMARC database of bibliographic records which are non-MARC records converted to machine-readable form). Maintenance of the bibliographic file will be done, henceforth, in the LC's online database rather than through the filing of reprinted cards.

The Cataloging Distribution Service has kept pace with the changing technology of bibliographic control and text processing. In 1985, CDS is exploring the distribution of MARC records in optical compact disk format. The service is also increasing its market research activities to evaluate the needs of the library community marketplace, to study the uses of the bibliographic data or information provided, and to expand the availability of information on CDS products and product lines. An initial study is being conducted on the need for different products resulting from the automation of subject authority data. CDS is also actively promoting different methods of supplying bibliographic data to libraries involved in retrospective conversion projects. Special versions of the database are available to these libraries to help them specify which specific titles or records are needed. CDS has also been exploring the exhibition of their products at regional or special library conferences in an effort to publicize their services more fully. As word processing capabilities expand in the department, Processing Services is in the early stages of development of a system to produce technical publications (such as MARC formats, the CONSER editing guide, etc.) through electronic means. While the technology has altered the form of product design and delivery, the services provided by CDS remain similar to those in 1905—to deliver bibliographic data and technical publications (including those which explain or describe standards) to the library community for the common reduction in expenses through the elimination of duplicative processing. In this way Processing Services works within the Library of Congress to fulfill one of its major missions—fulfilling the role of de facto U.S. national library in the provision of bibliographic services and leadership in the technology of bibliographic control.

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The Frequency of Personal Name Headings in the Indiana University Music Library Card Catalogs

Arsen R. Papakhian

Previous studies of general library catalogs have found that about two-thirds of the personal name headings occur only once. The card catalogs of the Indiana University Music Library were sampled to see if this observation applied in the case of a special materials catalog. For printed music materials, the proportion of single-incidence names was found to be about 61 percent and for sound recordings about 48 percent. These findings suggest that the structure and configuration of library catalogs may be altered by the integration of nonbook formats.

PREVIOUS STUDIES of the frequency of personal name headings in library catalogs, such as the investigations of Potter, Koel, and McCallum and Godwin, have focused on general library card catalogs or MARC bibliographic files. Until recently, nonbook materials have been excluded from many general catalogs. Special separate catalogs, located in branch or departmental libraries, have provided the means of access to such collections. But current developments, such as the adoption of an integrated cataloging code (AACR2) and the growth of the multifformat OCLC Online Union Catalog, have tended to encourage the creation of unified catalogs representing all types of library materials. While considerable work has been accomplished in studying the structure of general catalogs of monographs and serials (a process now expedited by means of automated statistical analysis of MARC files), little is known of the characteristics of special materials catalogs. The determination of these characteristics should be useful in the development of multifformat catalogs. This paper will deal with one characteristic—the frequency of personal name headings in a music library catalog.

In a study of the frequency of personal name headings occurring in two academic library card catalogs, William Gray Potter concluded that “in general around two-thirds of all personal authors appear only once.”¹ The study was based on random samples of name headings (excluding subject headings) from general library catalogs at the University

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of Wisconsin-Whitewater and the University of Illinois at Urbana-Champaign. In the Wisconsin case, the proportion of name headings occurring only once was 69.33 percent. The proportion in the Illinois catalog was 63.50 percent. Potter concluded that "the two sample proportions are statistically different,"² and suggested that additional catalogs should be sampled in order to draw valid conclusions.

It is of interest that the two catalogs were sampled using different techniques. For the Wisconsin catalog, a cluster sample was drawn by selecting and tabulating all personal names from 18 of 763 catalog drawers. But in the Illinois catalog, a systematic sample was taken, selecting the first personal name in every other drawer from the more than 6,000 drawers in the catalog. This provided a "spread over the entire alphabet."³ (Since both samples did not provide a similar alphabetic spread, a question arises whether the difference in the proportions could have resulted from differing probabilities of selecting personal name headings relative to the distribution of the headings in the alphabetic arrangement of the catalogs. This question will not be addressed here.)

One purpose of Potter's study was to compare the incidence of personal name headings in library catalogs to the bibliometric frequency known as Lotka's Law. This distribution, based on a study of periodical literature in the fields of chemistry and physics, indicates that the proportion of principal authors occurring only once is 60.79 percent. While recognizing that the nature of personal name headings in library catalogs is different from the definition of authorship used by Lotka, Potter found that the data from the Illinois catalog fit Lotka's distribution. However, the data from the Wisconsin catalog did not. He suggested that "more important than the exact fit of the distributions is the appearance of a general pattern that between 60 percent and 69 percent of all authors produce only one work."⁴

Potter's results were corroborated by Sally H. McCallum and James L. Godwin. Their analysis of the updated MARC records on the books, serials, maps, and films tapes distributed by LC from 1969 through October 1979 revealed that 65.65 percent of the personal name headings occurred only once.⁵ In this case, the count also included name headings occurring as subject headings. The format, language, and other characteristics of these particular files were obviously determined by the gradual development and implementation of the MARC program at the Library of Congress. For example, the MARC file for serials did not begin until 1973. Bibliographic records for nonroman alphabet materials, music scores, sound recordings, incunabula, and microforms were not included in the MARC program during that period. Given these limitations on the files analyzed, it seems relevant that the proportion of personal name headings occurring only once (65.65 percent) falls between the percentages found by Potter for the Illinois and Wisconsin catalogs, 63.50 percent and 69.33 percent, respectively.

Ake Koel gave similar results in 1969 for a frequency count of normalized headings from a sample of Library of Congress and Yale University machine-readable records.⁶ The normalized headings include corporate headings as well as personal name headings. The proportion of headings occurring only once in the sample of Library of Congress

records was 65.764 percent, that in the sample of Yale records was 60.025 percent. Since this finding was not limited to personal names, it is not comparable to the studies mentioned above. But it does tend to confirm the observation that the proportion of single-incidence headings in library catalogs is about two-thirds.

The object of this paper is to report the results of a replication of portions of Potter's study using the Indiana University Music Library catalogs as the source of data. The statistical results, describing the frequency of personal name headings in the Music Library catalogs, will be compared to those of Wisconsin and Illinois. Although both are general library catalogs, the Illinois and Wisconsin catalogs differ dramatically in terms of the size and scope of the collections they represent. The Illinois catalog studied by Potter does not include bibliographic records for printed music and sound recordings, which are represented in a separate branch Music Library catalog. Although printed music and sound recordings are included in the Wisconsin catalog that was studied, these materials represent no more than 5 percent of the collection. The Music Library catalogs are both relatively small and obviously they are narrowly defined by subject and format. The results of this study would be useful in catalog code construction or in practical matters associated with implementing new codes on existing catalogs. Additionally, this information can be helpful in designing either manual or automated authority control systems.

INDIANA UNIVERSITY MUSIC LIBRARY CATALOGS

The Indiana University Music Library was established in 1924. It serves the Indiana University School of Music, which includes 135 faculty members and approximately seventeen hundred students majoring in music, as well as the general university community. The Music Library comprehensively collects monographs, scores, serials, and recordings in most areas of Western art music. Collection development concentrates on musicology, music theory, music education, composition, and performance. Significant collections have been developed in the following categories: Afro-American music, Latin American music, opera, early keyboard music and instrumental performance materials. Ethnomusicology (which is supported by other departments and libraries of the university), popular music, and art music of Africa and the Far and Near East are not emphasized. There are two public dictionary catalogs—one representing printed materials (monographs, scores, and serials); the other, sound recordings (disks, tapes, and cassettes). A considerable amount of local material (e.g., theses and phonotapes of graduate student recitals, faculty recitals, and university ensemble performances) is acquired and cataloged. The printed materials catalog (360 drawers) contains bibliographic records for about 32,000 book and serial titles and about 45,000 music score titles. The sound recordings catalog (301 drawers) contains bibliographic records for about 31,000 disk titles and about 21,000 phonotape titles. In contrast, the Wisconsin catalog contained 763 drawers and the Illinois catalog more than 6,000.

DATA COLLECTION

To determine a minimum sample size, Potter assumed Lotka's proportion (60 percent) and sought a 95 percent confidence interval within a halfwidth of 2.5 percent. He determined the minimum sample size to be 1,475 but selected actual samples of 2,762 (Wisconsin) and 2,345 (Illinois).⁷ A minimum of 2,300 was established for each of the Music Library catalog samples so that the results would be based on samples similar to Potter's actual samples.

The procedure for drawing the sample was the same as that used by Potter in the case of the Wisconsin catalog. Drawers were selected by means of a random number table, until the minimum sample size was surpassed. Each personal name heading, including main and added entries but excluding subject headings, was counted. The number of occurrences of each heading was tabulated, excluding headings appearing on continuation cards. If the last name in a drawer continued to the following drawer it was included in the sample. If the first name in a drawer continued from the preceding drawer, it was excluded. (The rare case of a name continuing from the preceding as well as to the following drawer was not encountered. It is regarded as insignificant with respect to this study.)

The printed materials catalog consists of 360 numbered drawers. Thirty drawers were selected (of that number 6 contained no names because they consisted only of subject headings). The final sample size was 2,440 and the results are shown in table 1. For this catalog, the sample percentage of name headings occurring only once was 61.22 percent. A 95 percent confidence interval for the proportion (p) was calculated to be: 59.28 percent $\leq p \leq$ 63.16 percent.

An identical procedure was used for sampling personal name head-

TABLE 1
INCIDENCE OF PERSONAL NAME HEADINGS IN THE
INDIANA UNIVERSITY MUSIC LIBRARY
PRINTED MATERIALS CATALOG

Number of Occurrences	Number of Personal Names	Percent of Total Sample	Cumulative Percent	Total Number of Entries
1	1494	61.23	61.23	1494
2	383	15.70	76.93	766
3	163	6.68	83.61	489
4	100	4.10	87.71	400
5	71	2.91	90.62	355
6	30	1.23	91.85	180
7	28	1.15	93.00	196
8	27	1.11	94.11	216
9	23	.94	95.05	207
10	12	.49	95.54	120
11	8	.33	95.87	88
12	8	.33	96.20	96
13	4	.16	96.36	52
14	13	.53	96.89	182
15	6	.25	97.14	90
16	6	.25	97.39	96

TABLE 1
(CONTINUED)

Number of Occurrences	Number of Personal Names	Percent of Total Sample	Cumulative Percent	Total Number of Entries
17	8	.33	97.72	136
18	5	.20	97.92	90
19	2	.08	98.00	38
20	3	.12	98.12	60
21	6	.25	98.37	126
22	1	.04	98.41	22
23	2	.08	98.49	46
25	1	.04	98.53	25
27	2	.08	98.61	54
28	2	.08	98.69	56
29	2	.08	98.77	58
30	2	.08	98.85	60
31	1	.04	98.89	31
32	1	.04	98.93	32
33	1	.04	98.97	33
34	3	.12	99.09	102
35	3	.12	99.21	105
37	2	.08	99.29	74
38	1	.04	99.33	38
39	1	.04	99.37	39
41	2	.08	99.45	82
45	2	.08	99.53	90
52	1	.04	99.57	52
61	1	.04	99.61	61
73	1	.04	99.65	73
132	1	.04	99.69	132
159	1	.04	99.73	159
164	1	.04	99.77	164
194	1	.04	99.81	194
227	1	.04	99.85	227
330	1	.04	99.89	330
410	1	.04	99.93	410
1194	1	.04	99.97	1194
Totals	2440	99.97	99.97	9420

Mean number of entries per personal name: 3.861

95% C.I.: 2.752 to 4.969

ings in the sound recordings catalog. Thirty-one drawers were selected from a total of 301. (Of the 31 drawers, 3 contained no names because they consisted only of subject headings.) The final sample size was 2,393 and the results are given in table 2. The sample percentage of names occurring only once was 47.64 percent and a 95 percent confidence interval for the proportion (p) was calculated to be $45.64 \text{ percent} \leq p \leq 49.64 \text{ percent}$.

DISCUSSION

For the purpose of comparison, data from table 1 (Wisconsin) and table 2 (Illinois) from Potter's study have been incorporated into tables 3 and 4. Cumulative percentages and statistics derived from the tables have been added.

Potter found that the difference in the proportions of single-incidence personal names in the Illinois and Wisconsin catalogs was statistically significant.⁸ He rejected the hypothesis that the proportions were the same. By using the same procedure (shown in figure 1), it was found that the proportion in the Music Library printed materials catalog (61.22 percent) was not statistically different from that in the Illinois catalog (63.50 percent). However, it is clear that this proportion is noticeably different from that found in the Wisconsin catalog (69.33 percent) or in the sound recordings catalog (47.64 percent). The procedure given in figure 1 can be used to confirm the statistical difference. (The calculations are not shown.) The relatively small proportion of single incidence personal names in the sound recordings catalog is particularly noteworthy.

TABLE 2
INCIDENCE OF PERSONAL NAME HEADINGS IN THE
INDIANA UNIVERSITY MUSIC LIBRARY
SOUND RECORDINGS CATALOG

Number of Occurrences	Number of Personal Names	Percent of Total Sample	Cumulative Percent	Total Number of Entries
1	1140	47.64	47.64	1140
2	400	16.72	64.36	800
3	221	9.24	73.60	663
4	115	4.81	78.41	460
5	85	3.55	81.96	425
6	71	2.97	84.93	426
7	62	2.59	87.52	434
8	31	1.30	88.82	248
9	27	1.13	89.95	243
10	32	1.34	91.29	320
11	18	.75	92.04	198
12	12	.50	92.54	144
13	18	.75	93.29	234
14	18	.75	94.04	252
15	9	.38	94.42	135
16	10	.42	94.84	160
17	4	.17	95.01	68
18	10	.42	95.43	180
19	6	.25	95.68	114
20	5	.21	95.89	100
21	10	.42	96.31	210
22	4	.17	96.48	88
23	3	.13	96.61	69
24	6	.25	96.86	144
25	3	.13	96.99	75
26	6	.25	97.24	156
27	2	.08	97.32	54
28	4	.17	97.49	112
30	1	.04	97.53	30
31	4	.17	97.70	124
32	3	.13	97.83	96
33	1	.04	97.87	33
34	4	.17	98.04	136
35	2	.08	98.12	70

TABLE 2
(CONTINUED)

Number of Occurrences	Number of Personal Names	Percent of Total Sample	Cumulative Percent	Total Number of Entries
36	2	.08	98.20	72
38	1	.04	98.24	38
39	2	.08	98.32	78
40	1	.04	98.36	40
42	1	.04	98.40	42
45	1	.04	98.44	45
51	2	.08	98.52	102
52	1	.04	98.56	52
53	5	.21	98.77	265
56	1	.04	98.81	56
57	2	.08	98.89	114
62	1	.04	98.93	62
66	1	.04	98.97	66
67	1	.04	99.01	67
70	2	.08	99.09	140
71	1	.04	99.13	71
72	2	.08	99.21	144
73	3	.13	99.34	219
75	1	.04	99.38	75
80	1	.04	99.42	80
96	1	.04	99.46	96
99	1	.04	99.50	99
100	1	.04	99.54	100
121	1	.04	99.58	121
161	1	.04	99.62	161
193	1	.04	99.66	193
195	1	.04	99.70	195
245	1	.04	99.74	245
252	1	.04	99.78	252
290	1	.04	99.82	290
353	1	.04	99.86	353
554	1	.04	99.90	554
570	1	.04	99.94	570
1125	1	.04	99.98	1125
Totals	2393	99.98	99.98	14323

Mean number of entries per personal name: 5.985

95% C.I.: 4.694 to 7.277

Next, Potter used the Kolmogorov-Smirnov statistic to show that the Illinois distribution matched Lotka's theoretical distribution while the Wisconsin distribution did not.⁹ The same test applied to the distributions of the music catalogs demonstrates that the distribution of the printed materials catalog matches Lotka's distribution, but that of the sound recordings catalog does not (the test is shown in tables 5 and 6). Potter's suggestion, that "the larger the catalog, the more closely it will fit Lotka's Law,"¹⁰ is not sustained by these results. The printed materials music catalog is much smaller than either the Illinois or Wisconsin catalog and it matches Lotka's distribution.

Alternate hypothesis:

$$H_0: P_2 - P_1 = 0$$

$$H_1: P_2 - P_1 \neq 0$$

Weighted average of sample proportions = \bar{p}'

$$\bar{p}' = \frac{n_1\bar{p}_1 + n_2\bar{p}_2}{n_1 + n_2} = \frac{1494 + 1489}{2440 + 2345} = .6234$$

Standard deviation of the difference between the two sample proportions = $s(\bar{d})$

$$s(\bar{d}) = \sqrt{\bar{p}'(1-\bar{p}')(1/n_1 + 1/n_2)} = \sqrt{(.6234)(.3766)(.0008362)} = .014$$

Difference between two sample proportions = \bar{d}

$$= .6350 - .6122 = .0228$$

Action limits, using alpha value of .01

$$A_1 = 0 + z(a/2)s(d) = 0 + (-2.576)(.014) = -.036064$$

$$A_2 = 0 + z(1-a/2)s(d) = 0 + (2.576)(.014) = .036064$$

Decision rule:

$$\text{If } A_1 \leq \bar{d} \leq A_2, \text{ then } H_0$$

$$\text{if } \bar{d} < A_1 \text{ or } \bar{d} > A_2, \text{ then } H_1$$

Analysis:

$$\bar{d} = .0228 > -.036064$$

Conclusion: The two sample proportions are not statistically different.

TABLE 3
UNIVERSITY OF WISCONSIN-WHITEWATER

Number of Occurrences	Number of Personal Names	Percent of Total Sample	Cumulative Percent	Total Number of Entries
1	1915	69.33	69.33	1915
2	413	14.95	84.28	826
3	173	6.26	90.54	519
4	87	3.15	93.69	348
5	46	1.67	95.36	230
6	34	1.23	96.59	204
7	28	1.01	97.60	196
8	18	.65	98.25	144
9	7	.25	98.50	63
10	5	.18	98.68	50
11	3	.11	98.79	33
12	9	.33	99.12	108
13	1	.04	99.16	13
14	4	.14	99.30	56
15	1	.04	99.34	15
16	2	.07	99.41	32
17	1	.04	99.45	17
18	1	.04	99.49	18
20	1	.04	99.53	20
21	2	.07	99.60	42
22	1	.04	99.64	22
23	2	.07	99.71	46
26	1	.04	99.75	26
30	1	.04	99.79	30

TABLE 3
(CONTINUED)

Number of Occurrences	Number of Personal Names	Percent of Total Sample	Cumulative Percent	Total Number of Entries
31	1	.04	99.83	31
32	1	.04	99.87	32
33	1	.04	99.91	33
34	1	.04	99.95	34
57	1	.04	99.99	57
116	1	.04	100.03	116
Totals	2762	100.03	100.03	5276

Mean number of occurrences per personal name: 1.910

95% C.I.: 1.784 to 2.037

Source: This table is based on data published as table 1 in William Gray Potter, "When Names Collide," *Library Resources & Technical Services* 24:6 (Winter 1980) and reproduced here with the author's permission.

TABLE 4
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Number of Occurrences	Number of Personal Names	Percent of Total Sample	Cumulative Percent	Total Number of Entries
1	1489	63.50	63.50	1489
2	343	14.63	78.13	686
3	160	6.82	84.95	480
4	92	3.92	88.87	368
5	44	1.88	90.75	220
6	35	1.49	92.24	210
7	27	1.15	93.39	189
8	18	.77	94.16	144
9	12	.51	94.67	108
10	11	.47	95.14	110
11	10	.43	95.57	110
12	9	.38	95.95	108
13	2	.09	96.04	26
14	6	.26	96.30	84
15	9	.38	96.68	135
16	8	.34	97.02	128
17	3	.13	97.15	51
18	2	.09	97.24	36
19	2	.09	97.33	38
20	5	.21	97.54	100
21	5	.21	97.75	105
22	1	.04	97.79	22
23	1	.04	97.83	23
24	2	.09	97.92	48
26	1	.04	97.96	26
27	1	.04	98.00	27
28	4	.17	98.17	112
30	2	.09	98.26	60
31	1	.04	98.30	31
32	3	.13	98.43	96
33	1	.04	98.47	33

TABLE 4
(CONTINUED)

Number of Occurrences	Number of Personal Names	Percent of Total Sample	Cumulative Percent	Total Number of Entries
34	1	.04	98.51	34
35	1	.04	98.55	35
36	3	.13	98.68	108
38	2	.09	98.77	76
39	1	.04	98.81	39
40	2	.09	98.90	80
42	2	.09	98.99	84
44	2	.09	99.08	88
47	1	.04	99.12	47
48	1	.04	99.16	48
49	1	.04	99.20	49
51	1	.04	99.24	51
58	1	.04	99.28	58
63	1	.04	99.32	63
66	1	.04	99.36	66
70	1	.04	99.40	70
90	1	.04	99.44	90
111	1	.04	99.48	111
115	1	.04	99.52	115
149	1	.04	99.56	149
167	1	.04	99.60	167
231	1	.04	99.64	231
266	1	.04	99.68	266
298	1	.04	99.72	298
379	1	.04	99.76	379
592	1	.04	99.80	592
652	1	.04	99.84	652
835	1	.04	99.88	835
1374	1	.04	99.92	1374
1490	1	.04	99.96	1490
Totals	2345	99.96	99.96	13148

Mean number of occurrences per personal name: 5.607

95% C.I.: 3.552 to 7.662

Source: This table is based on data published as table 2 in William Gray Potter, "When Names Collide," *Library Resources & Technical Services* 24:7-8 (Winter 1980) and reproduced here with the author's permission.

The tables also provide the sample means and 95 percent confidence intervals for the means of the number of occurrences of personal name headings. Of the four catalogs, the sample mean is highest for the sound recordings catalog (5.985) and lowest for the Wisconsin catalog (1.910). Because of the asymmetric nature of the results, a comparison of the means may not be fruitful. Note that the confidence intervals of the means in three of the tables overlap. An alternative point of comparison may be the proportion of name headings that occur more than three times. This proportion is derived from the cumulative percentage column of tables 1-4. Table 7 gives this proportion for each of the cata-

logs and a 95 percent confidence interval for the proportion. By using the procedure given in figure 1 (calculations are not shown), it was found that the proportions of the Illinois catalog (15.05 percent) and printed materials music catalog (16.40 percent) are not statistically different. However the proportions are statistically different when comparing any other pair. The proportion for the Wisconsin catalog (9.46 percent) is relatively small and that for the sound recordings catalog (26.4 percent) is considerably larger than the others. These results demonstrate that the distribution of personal name headings in the sound recordings catalog does not conform to the distribution in either the printed materials music catalog or the two general library catalogs.

The peculiarity of the distribution in the sound recordings catalog might be a result of the function of personal name headings or the specific characteristics of sound recordings collections. Personal name headings in library catalogs generally are entries or access points indicating authorship. Frequently they also represent individuals with various other functions related to the works described: editors, translators, honorees of festschriften, and so on. In the case of sound recordings, personal name headings would represent composers (as main entries but often as analytical name-title entries for works contained in collections) and performers. The more frequent use of analytical entries in the cataloging of sound recordings than in the cataloging of books or scores, is surely a factor in explaining the distribution. It may also be the case that, on the average, performers produce more recordings than authors publish books (this was not tested in the study).

TABLE 5
 LOTKA'S LAW AND THE
 MUSIC LIBRARY PRINTED MATERIALS CATALOG

Occurrences per Personal Name	Theoretical (Lotka)	$F_o(x)$	Observed (PMC)	$S_n(x)$	$ F_o(x) - S_n(x) $
1	.6079	.6079	.6123	.6123	.0044
2	.1520	.7599	.1570	.7693	.0094
3	.0650	.8274	.0668	.8361	.0087
4	.0380	.8654	.0410	.8771	.0117
5	.0243	.8897	.0291	.9062	.0165
6	.0169	.9066	.0123	.9185	.0119
7	.0124	.9190	.0115	.9300	.0110
8	.0095	.9285	.0111	.9411	.0126
9	.0075	.9360	.0094	.9505	.0145

$D = \text{Max } |F_o(x) - S_n(x)| = .0165$

At .05 level of significance K-S statistic =

$$\frac{1.36}{\sqrt{n}} = \frac{1.36}{\sqrt{2440}} = .0275$$

$D < .0275$

Therefore the distribution from the Music Library Printed Materials Catalog fits Lotka's Law.

TABLE 6
 LOTKA'S LAW AND THE
 MUSIC LIBRARY SOUND RECORDINGS CATALOG

Occurrences per Personal Name	Theoretical (Lotka)	$F_o(x)$	Observed (SRC)	$S_n(x)$	$ F_o(x) - S_n(x) $
1	.6079	.6079	.4764	.4764	.1315
2	.1520	.7599	.1672	.6436	.1163
3	.0650	.8274	.0924	.7360	.0914
4	.0380	.8654	.0481	.7841	.0813
5	.0243	.8897	.0355	.8196	.0701
6	.0169	.9066	.0297	.8493	.0573
7	.0124	.9190	.0259	.8752	.0438
8	.0095	.9285	.0130	.8882	.0403
9	.0075	.9360	.0113	.8995	.0365

$$D = \text{Max } |F_o(x) - S_n(x)| = .1315$$

At .05 level of significance K-S statistic =

$$\frac{1.36}{\sqrt{n}} = \frac{1.36}{\sqrt{2393}} = .0278$$

$$D > .0278$$

Therefore the distribution from the Music Library Sound Recordings Catalog does not fit Lotka's Law.

TABLE 7
 PROPORTION OF PERSONAL NAME HEADINGS
 OCCURRING MORE THAN THREE TIMES

Illinois	Wisconsin	Music Library Printed Material	Music Library Sound Recordings
15.05%	9.46%	16.4%	26.4%
$13.6 \leq p \leq 16.5$	$8.36 \leq p \leq 10.56$	$14.93 \leq p \leq 17.87$	$24.63 \leq p \leq 28.17$
95% C.I. = $\bar{p} \pm z(1 - .05/2) \cdot s(\bar{p})$			
$s(\bar{p}) = \sqrt{\frac{\bar{p}(1 - \bar{p})}{n - 1}}$			

Other factors that probably affect the distribution include the specific characteristics of sound recording collections which emphasize performance. Such collections would contain: (a) numerous recordings of the same work by different performers; (b) numerous recordings by the same performer of different works; (c) an emphasis on standard repertory for the purpose of instruction and study; and (d) different formats of the same recording to accommodate a variety of playback equipment. Any of these factors would tend to increase the frequency of occurrence of personal name headings.

CONCLUSION

This study has demonstrated that the frequency of personal name headings in a sound recordings catalog can be substantially different from the frequency found in other library catalogs. It was shown that the

proportion of personal name headings occurring once in the sound recordings catalog (47.64 percent) was much smaller than that in general library catalogs (about 66 percent) or in the printed materials music catalog (61.22 percent). Also, the proportion of name headings occurring more than three times in the sound recordings catalog (26.4 percent) was larger than that in the other catalogs. Of course, this disparity must be a result of the peculiarities of the specific catalogs investigated.

These findings suggest that the known or expected structure of general library catalogs might be altered by the inclusion of musical sound recordings. Such an alteration should have an impact on the development of catalog codes. The need for a system to identify unique headings is probably greater in a catalog which has a large proportion of headings occurring more than once than in a catalog in which that proportion is small. In terms of implementing or imposing new catalog codes on existing catalogs, the impact of rules changing the forms of headings obviously will be greater in those catalogs with a large proportion of multi-incidence headings.

Changes in catalog structure can also influence authority control system designs. For example, McCallum and Godwin, in the report discussed above, suggested that the name authority file could be reduced by 55 percent if name authority records were created only for headings which occurred more than once and for headings which required references.¹¹ The possible reduction in the authority file is based on their finding that 66 percent of personal names in the MARC bibliographic files occur only once. But the percentage of the reduction is a function of the proportion of single-incidence name headings.

Alterations in catalog structure may result from the inclusion of sound recordings or other nontraditional library formats in integrated catalogs. Assuming the tendency to create integrated catalogs will continue, manual or automated bibliographic and authority-file configurations should be designed to accommodate these new structures.

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Compacting a Large Card Catalog

Marilyn Kramer

Since card catalogs generally occupy prime public service space, when a catalog ceases to grow, it may be desirable to compact the catalog into the smallest usable space. This article presents a procedure for compacting a large card catalog quickly and with minimal impact on catalog users.

AS PART OF ITS IMPLEMENTATION of AACR2, the Libraries of the State University of New York at Buffalo (SUNY/Buffalo) closed the existing union catalog and opened a new one for all post-1980 cataloging. Since the existing union catalog contained significant growth space, the libraries decided to squeeze that unneeded space from the old catalog to provide housing for the new catalog. The compaction of the old catalog proved a real challenge. While there is literature dealing with the process of expanding a card catalog, there is none on the reverse process, and rigorous planning is necessary to assure an orderly and consistent compaction. This article, outlining the procedures devised for the SUNY/ Buffalo compaction, may be useful for other libraries facing a similar project, perhaps in conjunction with the installation of an online public access catalog.

THE CATALOG BEFORE AND AFTER

The existing union catalog (figure 1) contained some 3.5 million cards and was housed in 70 cabinets which were arranged in 5 double rows, each single row containing 7 cabinets. Forty-nine cabinets were used for the author/title portion of the catalog and the remaining 21 cabinets for the subject portion. At the completion of the project the compacted catalog (figure 2) was housed in only 48 cabinets, 32 for the author/title portion of the catalog and 16 for the subject portion. This final configuration was adopted as the best compromise between the conflicting needs of minimizing the space required for the old union catalog and retaining sufficient space for limited growth within the old catalog.

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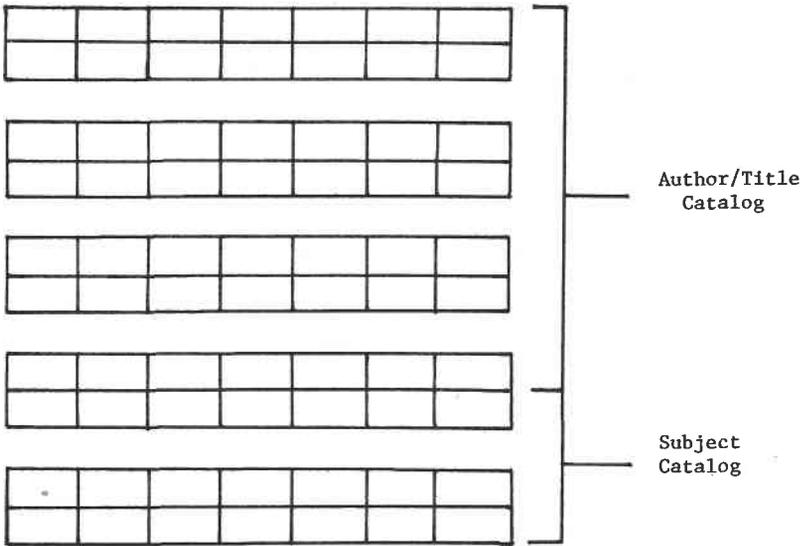


Figure 1
Catalog Before Compaction

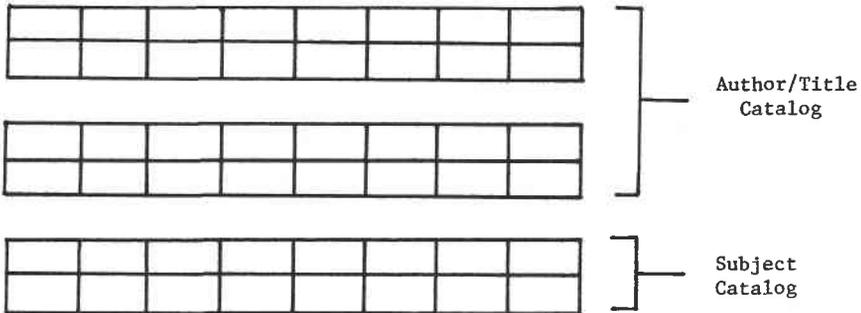


Figure 2
Catalog After Compaction

DEVISING THE COMPACTING FORMULA

Planning for the project began about three months before the scheduled date of the compaction. The compaction itself was scheduled to be completed during a one-month break between academic sessions to minimize the disruption of catalog use. The first step was to estimate how much card stock was in fact held in the existing catalog. An average figure was derived by measuring a sample of 3 drawers from each of the 70 cabinets. The sampling was done by three people, each of whom was instructed to proceed through the catalog from *A* to *Z* choosing one drawer at will from within a column of 12 drawers; the column, however, was to rotate among the 6 columns making up a cabinet as follows. The first sampler began in column 1 in the first cabinet, then moved to column 2 in the second cabinet, etc., while the second sampler began

with column 2 in the first cabinet, then moved to column 3 in the second cabinet, etc., and the third sampler began in column 3 in the first cabinet, then moved to column 4 in the second cabinet, etc. Although there were no criteria for selecting a particular drawer within the appropriate column, the samplers were careful to choose drawers at various positions within the columns. This method of sampling, while perhaps not truly random, did give a quick figure free of gross distortion.

The use of three people for sampling not only speeded up that operation but also provided a test of standardized measuring techniques. Reliable figures of card stock density were crucial for planning, and they could be achieved only if measurements were made in a consistent manner by everyone involved in the project. To maximize consistency two techniques were used. First, measurements were recorded only in quarter-inch increments, and any overage was rounded up to the next higher quarter inch. Second, drawers were measured only while upended on a supporting surface; in effect gravity was used to uniformly compress the card stock before measuring. Drawers that were full would, of course, compress more tightly than less full drawers, but the variation would be uniform. It was anticipated that the rounding-up technique would offset the underestimation of card stock in drawers filled beyond average.

Once an estimate of the amount of card stock to be housed was available it was possible to project alternative catalog configurations. A number of factors had to be balanced in developing the most satisfactory configuration. First, since the new union catalog was to have an exact archival parallel in machine-readable form, any record not producible on a bibliographic utility would have to go into the "closed" catalog. Copyrighted commercially produced records analyzing microform sets are an example of cataloging not currently reproducible on a bibliographic utility. SUNY/Buffalo has acquired and holds unfiled some 730 inches of such copyrighted records. On the assumption that the copyright restrictions will continue to prevent their reproduction on a bibliographic utility, space sufficient to allow such cataloging to be filed alphabetically into the closed catalog would have to be retained. An examination of the records suggested that roughly two-thirds of the cards would file in the author/title section and one-third in the subject section. These figures established only the minimum amount of space that would be needed for such cataloging since in coming years additional microform sets with copyrighted analytics may be acquired.

A second factor influencing the choice of configuration was the relationship between the old and new catalogs. It was desirable that the two catalogs and the sections within catalogs be clearly differentiated by a physical break. There should not, for example, be a transition between catalogs or sections within a row of cabinets but only at the end of a row of cabinets. And, finally, the maximum depth to which a 15-inch long drawer could be compacted and still be easily usable had to be established. Experiments with a drawer filled to varying depths showed that a minimum of 2 inches of free space was necessary to allow adequate manipulation of card stock, permitting a maximum of 13 inches of cards to be filed.

The figures actually involved in the SUNY/Buffalo project will illus-

trate the process. This initial sampling of the catalog produced the estimate that the 3,432 drawers in use in the author/title section (excluding 96 empty drawers seeded through the section) contained an average 7 inches of card stock for a total of 24,024 inches, while the 1,512 drawers in the subject section contained an average of 8.75 inches of card stock for a total of 13,230 inches. Since the underlying goal of the compaction project was to utilize most effectively the prime area occupied by the catalog, a substantial compaction was desirable. Prudence, however, dictated that growth space sufficient to accommodate copyrighted cataloging be reserved to avoid the need for later shifting in the compacted catalog.

Therefore, several parameters were used to calculate alternate catalog sizes and retained growth space. In the first set of calculations 10 inches per drawer in the author/title section and 11 inches per drawer in the subject section were used. These fill rates would have resulted in a 51-cabinet catalog containing 34 author/title cabinets and 17 subject cabinets. The calculations follow:

Author/Title

72 drawers/cabinet \times 10 inches/drawer = 720 inches of card stock/cabinet
 24,024 inches of card stock \div 720 inches = 33.36 cabinets (i.e., 34)

Subject

72 drawers/cabinet \times 11 inches/drawer = 792 inches of card stock/cabinet
 13,230 inches of card stock \div 792 inches = 16.70 cabinets (i.e., 17)

This configuration had two problems. First, since the area in which the catalog is located can accommodate no more than eight cabinets in a row, the author/title section and the subject section of the old catalog could not be neatly divided in this configuration. Second, because each drawer had 13 inches of usable space, each author/title drawer would have 3 inches of unused space for a total of 7,344 inches (72 drawers per cabinet \times 34 cabinets \times 3 inches). Each subject drawer would have 2 inches of unused space for a total of 2,448 inches (72 drawers per cabinet \times 17 cabinets \times 2 inches). In addition, because only 33.36 cabinets were required to house the author/title section and 16.7 to house the subject section, the process of rounding partial cabinets up to full cabinets also gave 690 inches of unused space (i.e., in the author/title section 720 inches of card stock per cabinet \times 34 cabinets equalled 24,480 inches of usable space, but in fact there were only 24,024 inches of card stock to be accommodated, a difference of 456 inches; likewise in the subject section, 792 inches of card stock per cabinet \times 17 cabinets equalled 13,464 inches of usable space, but in fact there were only 13,230 inches of card stock to be accommodated, a difference of 234 inches). In total this unused space equated to 11 cabinets left empty, and since the libraries had on hand only 730 inches of copyrighted cataloging, this compaction rate seemed overly cautious.

By contrast, a compaction allowing 11 inches per drawer in the author/title section and 12 inches per drawer in the subject section would require only 31 author/title cabinets and 16 subject cabinets. This rate would permit row-end transitions between the old and new catalogs and

between the sections in the old catalog. It left 3,816 inches of unused space, plus 2,224 inches unused within the 11- and 12-inch parameters, a 6,040-inch total equating to almost 6 cabinets.

Finally, a compaction allowing 12 inches per drawer in the author/title section and 13 inches per drawer in the subject section would have required 28 author/title cabinets and 14 subject cabinets. This rate also permitted row-end transition both between catalogs and between sections. Growth space was a problem, however; the author/title section would have 2,002 inches of unused space, but no overage within the 12-inch parameter. The subject section would have no unused space and only a 4-inch overage from the 13-inch parameter.

The second model was clearly the most satisfactory, and it was the one adopted. A tighter match could have been made by working with fraction-of-inch compaction figures, but for ease of calculation and to protect against the effects of possible sampling error, the 11- and 12-inch parameters were adopted with the modification that the author/title section would consist of 32, not 31, cabinets to give more space for copy-righted cataloging.

Once the size of the compacted catalog had been decided, it was necessary to devise a strategy that would allow for a rapid compaction while only minimally disrupting routine use of the catalog. A linear approach which treated the catalog as a single unit to be compacted drawer by drawer from the first to the last drawer would be too slow; instead it was decided to divide the catalog into several units, each of which would be compacted independently. This approach had several advantages. Most obviously, it allowed work to proceed simultaneously in each of the units, cutting the time necessary for the compaction by the number of units identified. In addition, working in smaller units meant that deviations from estimated card stock density would not be allowed to accumulate for the length of the entire catalog to be accommodated only at the end. Instead deviations could be accommodated within each unit.

It was crucial to the success of this approach that the catalog be divided into units that would be easily compactible, that would provide relatively consistent compaction ratios throughout the catalog, and that were numerous enough to allow substantial time savings. The units were, therefore, identified mathematically rather than arbitrarily. A general approach to identifying compaction units is outlined below, and its use is then illustrated.

Step I. Determine the compaction ratio

1. Establish the raw compaction ratio as the fraction (new configuration)/(old configuration) (A).
2. Divide the number of cabinets in the new configuration by the number in the old to get a decimal compaction ratio.
3. Locate the resultant decimal fraction, or its nearest equivalent, in table 1 and convert it back to a simple fraction, i.e., the simplified compaction ratio (B).

Step II. Determine the number of units to be compacted at ratio B.

1. Subtract B from A to get the remainder fraction R ($A - B = R$).
2. Subtract B from R to get a second remainder fraction ($R - B = R_2$).
3. Repeat step 2, substituting each successive remainder fraction ($R_2 -$

B = R3, R3 - B = R4, etc.) to obtain Rn, the point at which R = 0/0, or B can no longer be subtracted from the remainder fraction without producing a zero or a minus number in the numerator or denominator.

4. If Rn = 0/0, use the simple fraction B for compacting in all units of the catalog.
5. If Rn does not equal 0/0, the last unit must be compacted at a different ratio and it is necessary to select the compaction ratio to be used.
 - a) If Rn is in itself a workable ratio, e.g., 2/3, Rn can be used as the compaction ratio for the last unit.
 - b) If Rn is not a workable ratio, e.g., 1/4, combine it with the preceding R (Rn - 1) or, if necessary, with the preceding two R's to give a more workable compaction ratio.
6. Cross-check the process by adding the R series; the sum should equal A.

TABLE 1
SIMPLIFIED COMPACTION RATIO CONVERSION TABLE

Decimal	Fraction	Decimal	Fraction
.100	1/10	.500	1/2
.111	1/9	.556	5/9
.125	1/8	.571	4/7
.143	1/7	.600	3/5
.167	1/6	.625	5/8
.200	1/5	.667	2/3
.222	2/9	.700	7/10
.250	1/4	.714	5/7
.286	2/7	.750	3/4
.300	3/10	.778	7/9
.333	1/3	.800	4/5
.375	3/8	.833	5/6
.400	2/5	.857	6/7
.429	3/7	.875	7/8
.444	4/9	.889	8/9
		.900	9/10

APPLICATION TO
THE SUNY/BUFFALO PROJECT

Again the figures of the SUNY/Buffalo project will illustrate the complete process. The author/title catalog consisted of 49 cabinets; in the new configuration it would consist of 32 cabinets. The raw compaction ratio was, therefore, 32/49, which converted to the decimal fraction .653. The nearest equivalent decimal fraction in table 1 was .667, equaling a simplified compaction ratio (B) of 2/3. The number of units which were independently compacted at the 2/3 ratio equaled

$$\begin{aligned} \frac{32-2}{49-3} = \frac{30}{46}, \frac{30-2}{46-3} = \frac{28}{43}, \frac{28-2}{43-3} = \frac{26}{40}, \frac{26-2}{40-3} = \frac{24}{37}, \frac{24-2}{37-3} = \frac{22}{34}, \\ \frac{22-2}{34-3} = \frac{20}{31}, \frac{20-2}{31-3} = \frac{18}{28}, \frac{18-2}{28-3} = \frac{16}{25}, \frac{16-2}{25-3} = \frac{14}{22}, \frac{14-2}{22-3} = \frac{12}{19}, \\ \frac{12-2}{19-3} = \frac{10}{16}, \frac{10-2}{16-3} = \frac{8}{13}, \frac{8-2}{13-3} = \frac{6}{10}, \frac{6-2}{10-3} = \frac{4}{7}, \frac{4-2}{7-3} = \frac{2}{4}. \end{aligned}$$

Fifteen subtraction steps were required before R_n 's numerator was less than B 's numerator. Since R_n was not $0/0$, the use of the $2/3$ compaction ratio throughout the catalog would have resulted in too little space in which to house the existing card stock. One section, therefore, had to be compacted at a higher ratio. R_n in this case was $2/4$, meaning that if 4 old cabinets were compacted into 2 new cabinets, the remaining 15 units of 3 could be compacted at the $2/3$ ratio. Alternatively by retracing one subtraction step, an accommodation ratio of $4/7$ was possible, meaning that if 7 old cabinets were compacted into 4 new cabinets, the remaining 14 units of 3 cabinets could be compacted at the $2/3$ ratio. This second alternative was adopted for two reasons: first, it offered a slightly less drastic accommodation ratio, and second, because the existing catalog was composed of rows of 7 cabinets, it meant that compaction units could be aggregated into full row groups.

The subject catalog consisted of 21 cabinets; in the new configuration it would consist of 16 cabinets. Since, however, the last cabinet in the subject catalog included headings for both *United States* and *women*, two files that were likely to grow more rapidly than other files given the subject matter of the microform sets owned by the libraries, this last cabinet was exempted from compaction. This meant that the raw compaction ratio equalled $15/20$, which converted to the decimal fraction .750. This decimal fraction had an exact match in the chart and equaled the simplified fraction of $3/4$. The number of units which were independently compactible at the $3/4$ ratio equaled

$$\frac{15-3}{20-4} = \frac{12}{16}, \frac{12-3}{16-4} = \frac{9}{12}, \frac{9-3}{12-4} = \frac{6}{8}, \frac{6-3}{8-4} = \frac{3}{4}, \frac{3-3}{4-4} = \frac{0}{0}.$$

Since R_n equaled $0/0$, the number of units that could be compacted at the $3/4$ ratio was 5, the tally of the subtraction steps through $0/0$.

The total catalog was, therefore, divided into 4 compaction units, units 1 through 3 constituting the author/title section and unit 4 the subject section. The first unit consisted of 7 cabinets to be compacted at the rate of $4/7$, the second and third units both consisted of 7 subunits of 3 cabinets, each subunit to be compacted at the rate of $2/3$, and the fourth unit consisted of 5 subunits of 4 cabinets, each subunit to be compacted at the rate of $3/4$. A team composed of one professional librarian and several support staff and students were assigned responsibility for compacting each of the 4 units, and work began in preparation for the actual shifting of card stock.

The teams first measured the card stock, drawer by drawer, within their units. The techniques of measuring in quarter-inch increments, rounding up to the next highest quarter inch for any overage and using gravity to control premeasurement compression, were again used at this stage to insure consistent measurement. The measurements were recorded on a form divided into 3 columns with 12 boxes marked off in each column, two such forms being needed to record the holdings for a single cabinet. The existing drawer number was recorded at the top left corner of every box and below it the number of inches of card stock in the drawer. Next, the card stock figures for each subunit were added to-

gether. That total was then divided by the number of drawers allocated in the new configuration for that subunit to give the number of inches per new drawer necessary to house existing card stock. Hereafter this figure will be called the fill rate. For unit 1 this process gave a single figure, but groups 2, 3, and 4 had to repeat the process through each of the subunits of which their respective units were comprised. Fortunately, the actual amount of cards in the drawer of the existing catalog was relatively uniform so the fill rate for the new drawers fell within a one-inch range of the desired 11- and 12-inch densities for all of the subunits. Had this not been the case, subunits would have been combined to even out deviation.

The next step was to flag the contents of each new drawer. A series of calculations was performed, subtracting the subunit fill rate figure from the actual number of inches of card stock in each existing drawer. The remainder from this subtraction step equalled the number of inches of card stock in the next existing drawer needed to fill the new drawer. This figure, preceded by the new drawer number, was then noted on the right side of the boxes on the recording form. For example, old drawer 2449 was the first drawer in a subunit whose fill rate figure was to be 10.75 inches. The flag for the new drawer 1585 was placed at the beginning of the old drawer 2449, which contained 6.75 inches of card stock; subtracting 10.75 from 6.75 gave a negative remainder of 4 inches. The flag for new drawer 1586 was, therefore, placed 4 inches into old drawer 2450. Since it in turn contained an additional 2.25 inches of card stock, 10.75 inches was subtracted from 2.25 giving a negative remainder of 8.50 inches. Old drawer 2451 contained only 7.25 inches of card stock, and that figure was subtracted from 8.50, giving a negative remainder of 1.25. The flag for new drawer 1587, was, therefore, placed 1.25 inches into old drawer 2452. These calculations were performed on the forms for the entire catalog.

Using these calculations the staff went back to the catalog and placed numbered flags at the predetermined intervals. Now a division of the catalog conforming to numbers had been achieved. It was necessary, however, to temper mathematical precision with concern for the content of individual drawers. It made no sense, for example, to split a small file between 2 drawers; to do so would complicate the labeling of the drawers and, more importantly, annoy catalog users. Senior staff, therefore, revised the placement of all new drawer flags to insure a reasonable content division. At the same time they formulated the new labels on worksheets numbered for the compacted catalog. This process proved frustrating and time-consuming; it seems to require a special mind-set to devise labels that accurately describe not the existing contents of a drawer but rather the potential contents. The trick is, of course, to recognize the minimum number of letters that will limit a drawer and yet dovetail with the next drawer. For example, if *Bauder, John* ends a drawer and *Bauding, Philip* begins the next drawer, the appropriate label for the first drawer ends with *BAUDH*, and the label for the second drawer begins with *BAUDI*. In theory it's a straightforward task, but in practice it can be difficult.

Once the label worksheets were completed, they were distributed to the typing staff. Full-sized sheets of paper stock had been preprinted with label-size spaces, a procedure that made typing relatively easy. Since the label holders in the SUNY/Buffalo catalog drawers are divided into a number slot and a contents slot, number labels were separately typed. When the labels were completed and proofed, the card stock was cut and matching content and number labels were clipped together. The typing of labels also proved to be more time-consuming than anticipated. The SUNY/Buffalo experience suggests that a generous amount of time for devising and typing labels be provided in planning a large scale compaction.

With labels to describe the new drawers in hand, card stock was shifted within each subunit, and the drawers relabeled. This step took several days of work, and it left the catalog checkered with empty cabinets. For example, cabinets 1 through 4 were filled and labeled while 5 through 7 were empty; cabinets 8 and 9 were full while cabinet 10 was empty, etc. The contents of units 1 through 3 and the first 4 subunits in unit 4 were shifted forward toward the beginning of the old configuration; the last subunit was shifted toward the end of the old configuration, leaving its first cabinet empty and its last 3 cabinets full. This differing treatment of the last subunit left the contents of the last 3 cabinets in what would be their final position in the reconfigured catalog with no other move necessary.

The final step was the actual shifting of the compacted card stock leaving the first 3 rows of cabinets empty for the new AACR2 catalog. The shift was accomplished as follows. The drawers of all empty cabinets were removed and stored for use in the AACR2 catalog. Then filled drawers were moved into the cabinets which had been emptied during the first step. The newly emptied cabinets were in their turn used to house drawers from cabinets even closer to the beginning of the old configuration. The sequence of such a shift can be easily determined by creating a list of the newly numbered cabinets with their location in the old physical configuration and by indicating which cabinets are already empty. In the SUNY/Buffalo project, for example, newly numbered cabinet 1 would occupy old cabinet 22; since old cabinet 22 was already empty, that shift was simple. Newly numbered cabinet 2 would occupy old cabinet 23; the cards in old cabinet 23 would in turn occupy old cabinet 37, which was empty. After shifting 23 into 37, 2 could be shifted into 23. The SUNY/Buffalo project required 10 such chain shifts, the longest of which involved 7 cabinets. Each chain could be independently shifted, so this process, the only truly disruptive step in the project, was completed quickly. Using eight teams of two people each, the final shift took less than ninety minutes.

The procedure outlined may seem overly elaborate at first reading. While that may be true in a small catalog environment, for a large catalog such elaborate precautions are essential if a shift is to be made quickly, confidently, and with little disruption of catalog use.

Vietnamese-Chinese Romanization

James E. Ross

Chinese words and names as written in Vietnamese are compared with the Wade-Giles and pinyin romanization systems for Chinese. Examples show some of the patterns of change that occur in converting Wade-Giles romanizations to Vietnamese or Vietnamese to Wade-Giles. For libraries that wish to maintain name authority control for Chinese authors translated into Vietnamese, these examples can illustrate the relationships between the different systems.

THE CATALOGING of Vietnamese-language materials translated from Chinese has presented a number of problems for the Seattle Public Library since the Vietnamese collection was established in the late 1970s. Typical Vietnamese publications seldom give Chinese names or original titles in Chinese characters or in either of the romanization systems often seen in U.S. libraries—the Wade-Giles and pinyin systems. Instead, names and titles are given in Vietnamese, which at first glance may appear to have little similarity to the two familiar romanization systems for Chinese. Publishers' bibliographies, cataloging, and authority records available from the Library of Congress and other sources have been inadequate for the purpose of name authority control for Vietnamese-Chinese translations. Libraries that wish to collocate all catalog entries for a given author under a single name will thus be required to establish the links between the different spellings of names. This paper will present a list of personal names in Chinese characters, Vietnamese, and Wade-Giles and pinyin romanization systems. A brief comparison of other words (including Chinese loan words seen in Vietnamese) written in the three systems will show some typical shifts of letters and may serve as an aid for converting Chinese names or words not found on this list from Vietnamese into Wade-Giles or pinyin without the necessity of beginning with a Vietnamese-Chinese dictionary and converting the Chinese characters into Wade-Giles romanization.

Little has been published in English on Vietnamese publications or Vietnamese cataloging, according to tools such as *Library Literature*. There may be material written and published in Vietnam, but I have

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been unable to gain access to it. One of the few publications addressing problems encountered in Vietnamese cataloging is *Cataloging and Classification of Non-Western Material: Concerns, Issues and Practices*, which has a brief explanation of the writing systems used in Vietnam and the problems encountered in cataloging Vietnamese literature that is written in Chinese characters, the system in use up to the twentieth century.¹ Vietnamese literature written in Chinese characters was being confused with Chinese literature, so LC decided to romanize appropriate areas of the bibliographic record both as Vietnamese and as if it were Chinese, according to the Wade-Giles romanization system. Since so little has been written on this topic and the evidence seen in many bibliographies suggests that Chinese-Vietnamese name authorities are poorly understood, the brief summary presented here may help to make the features of Chinese names and words written in Vietnamese clearer to those libraries with an interest in library service to Asian users.

ROMANIZATION

The problem of romanizing or transliterating non-Roman languages is a familiar topic and an ongoing source of problems in a system like the Washington Library Network (WLN), which generally attempts to use one AACR2 name authority for each author, rather than using various romanization systems or previously valid pre-AACR2 name forms together with newer ones. The skill and knowledge of the cataloger are often the factors that determine how many name variations may be encountered for a given non-Roman name, and the growing use of the pinyin romanization system by publishers is a factor in what seems to be an increasing number of authority conflicts seen in WLN for Chinese names entered under both Wade-Giles and pinyin systems. For example, the Chinese surname Chang (Wade-Giles) is also Zhang (pinyin) or Truong (Vietnamese). Both forms of this same Chinese surname in the two Chinese romanizations have been established at LC for different authors, according to the rules for form of entry in AACR2 as interpreted by LC. All three spellings may be represented by a single Chinese character. An authority file or bibliography that contains any of these surnames should have an adequate system of linking references so that users will be able to locate the works of a particular Chinese author, regardless of what spelling has been employed by a publisher, in reference tools, or in cataloging.

BIBLIOGRAPHIC CONTROL OF CHINESE-VIETNAMESE TRANSLATIONS

The Library of Congress catalogs few translations of Chinese language materials into Vietnamese, so it is sometimes impossible to find cross-references in LC-derived bibliographic tools that link Vietnamese romanizations of names to the Wade-Giles system usually used at LC for Chinese authors. Non-LC contributors to the National Union Catalog have followed different name authority practices over the years. Some libraries have used Vietnamese romanizations for Chinese names; oth-

ers have used Wade-Giles. Since the two systems use spellings which file far apart, even duplicate titles have been listed in two separate alphabets. The largest Vietnamese bibliographies I have been able to inspect, those from Cornell, likewise use both Wade-Giles and Vietnamese systems, though, to my knowledge, not for the same author.

Certain popular Chinese authors such as Ch' iung-yao (Quynh Dao in Vietnamese) have been credited with many titles that we have been unable to identify in the original Chinese, even when a romanized Chinese title is present. It has been suggested that titles written by different authors may be attributed to Ch' iung-yao since her books are so popular. The effort of obtaining and translating both Chinese and Vietnamese editions for possible matches has been too great for the Seattle Public Library, considering the volume of material involved and the high demand for it on the part of the reading public. One verified example of this is seen in Chin T' ung's (Kim Dong in Vietnamese) novel *Ch' i chueh mo chien* (*That-tuyet ma-kiem*), which was published in Vietnamese under the pseudonym of Wo-lung-sheng (Ngoa Long Sinh). LC has established both Chin T' ung and Wo-lung-sheng as unrelated authors, and we have been unable to provide evidence either that this is an incidence of one person using two pseudonyms or that the Vietnamese publisher has mixed up the names. Online Chinese bibliographic records are not yet available for our Chinese collection, so perhaps future keyword title search capability will help to identify additional titles attributed incorrectly to an author, at least when a romanized Chinese title is given in Vietnamese.

CHINESE-VIETNAMESE ROMANIZATIONS

Table 1, derived from the *Chinese-English Electrical Engineering Dictionary*, compares the Wade-Giles and pinyin romanization systems.² I have added one equivalent word as found in Vietnamese, with an additional alphabetical arrangement (table 2) from Vietnamese to the other systems. The Vietnamese tables are not in traditional Vietnamese alphabetical order. Certain patterns of consistent change may be observed in the syllables. Bar D in Vietnamese, for example, becomes T, and D becomes Y in Wade-Giles Chinese. Some syllables, such as those with the basic letters seen in Tu, present more complex patterns. The tables are only a brief, simplified version of what may be observed in Vietnamese publications since more than one Vietnamese syllable has been seen to represent some Wade-Giles syllables and one Vietnamese word may be represented by several different Chinese characters. Likewise, each Wade-Giles syllable may represent a number of different Chinese characters with different meanings. This is one reason why Wade-Giles romanizations are difficult or impossible to translate back into Chinese without the original Chinese characters to identify which specific word is intended by the romanized form. Correctly written, Vietnamese incorporates a number of diacritical marks, including tones, which assist conversion into Chinese by a person knowledgeable in Chinese and Vietnamese. It should be stressed that this table is just a partial list of a much larger, growing file of equivalents I have compiled and that any conver-

TABLE 1
WADE-GILES TO PINYIN TO VIETNAMESE

W-G	P-Y	Viet	W-G	P-Y	Viet
chai	zhai	trai	kuan	guan	quán
chang	zhang	trương	la	la	lo
chiao	jiao	giáo	lieh	lie	liệt
chien	jian	kiếm	mao	mao	mao
ch'ung	qiong	quỳnh	nan	na	nam
ch'uan	chuan	xuyên	pa	ba	bát
chung	zhong	trung	pao	bao	báo
fei	fei	phi	ping	bing	binh
feng	feng	phong	san	san	tam
han	han	hán	sun	sun	tôn
hsia	xia	hiệp	tai	dai	đài
hsing	xing	tin	tung	dong	đồng
hsüeh	xue	học	wen	wen	văn
jen	ren	nhân	yao	yao	dao
ju	ru	nho	yüan	yuan	duyên
juan	ruan	nguyên	yüan	yuan	nguyên
kai	gai	giới	yüeh	yue	việt
ko (ke)	ge	cát	yung	yong	dung

sion of words or names from Vietnamese into Chinese romanization should be verified using a Vietnamese-Chinese dictionary.³

The following lists of personal names (tables 3 and 4) include both current and past names. These lists include many of the authors of works available in the recent past from Vietnamese publishers in the United States. Online inspection of the bibliographic records linked to most of these name authorities in the WLN system will provide additional information regarding uniform titles, Vietnamese romanizations of Chinese

TABLE 2
VIETNAMESE TO WADE-GILES TO PINYIN

Viet	W-G	P-Y	Viet	W-G	P-Y
bát	pa	ba	nam	nan	nan
báo	pao	bao	nguyêi ⁴	juan	ruan
binh	ping	bing	nguyêi ⁴	yüan	yuan
cát	ko (i.e)	ge	nhâi	jen	ren
đái	tai	dai	nho	ju	ru
dao	yao	yao	phi	fei	fei
đồng	tung	don _g	phong	feng _g	feng _g
dung	yung	yong	quán	kuan	guan
duyên	yüan	yuan	quỳnh	ch'üung	qion _g
giáo	chiao	jiao	tam	san	san
giới	kai	gai	tin _h	hsing	xing
hán	han	han	tôn	sun	sun
hiệp	hsia	xia	traí	chai	zhai
học	hsüeh	xue	trung	chung _g	zhong _g
kiếm	chien	jian	trương	chang _g	zhang _g
liệt	lieh	lie	văn	wen	wen
lo	la	la	việ ⁴ t	yüeh	yue
mao	mao	mao	xu ⁴ vên	ch'uan	chuan

titles, and other bibliographic information that may be of interest.

While the WLN online authority file and bibliographic database have become unique sources of information on Vietnamese-Chinese name authorities and bibliographic data, other bibliographic tools contain a wealth of information, much of which is not available in WLN. These tools include *Vietnamese Holdings in the Library of Congress: A Bibliography*,⁴ the three published catalogs of the Cornell University Asian collections,⁵

TABLE 3
CHINESE NAMES IN
WADE-GILES/VIETNAMESE/PINYIN/CHINESE CHARACTERS

W-G	VIET	P-Y	CHINESE
Ch'en, Ch'ing-yün	Trần Thanh Vân	Chen, Qingyun	陳青雲
Chin, T'ung	Kim Đổng	Jin, Tong	金童
Chin, Yung	Kim Dung	Jin, Yong	金庸
Ch'ung-yao	Quỳnh Dao	Qiongyao	瓊瑤
Chu-ko, Ch'ing-yün	Gia Cát Thanh Vân	Zhuge, Qingyun	諸葛青雲
Hsü, Su	Từ Tốc	Xu, Su	徐速
I, Ta	Y Đạt (Y Taz)	Yi, Da	依達
Juan, Wei-ch'in *	Nguyễn Duy Căn	Ruan, Weiqin	阮惟勤
Ku, Lung	Cổ Long	Gu, Long	古龍
Kuan, Chung	Quản Trọng	Guan, Zhong	管仲
K'ung Tzu	Khổng Tử	Kong Zi	孔子
Li, Chin-yang	Lý Cẩm Dương	Li, Jinyang	黎錦揚
Lin, Yutang	Lâm Ngữ Đường	Lin, Youdang	林語堂
Lo, Kuan-chung	La Quán Trung	Luo, Guanzhong	羅貫中
Lo, Lan	La Lan	Luo, Lan	羅蘭
Mao, Tse-tung	Mao Trạch Đông	Mao, Zedong	毛澤東
Nan-kung, Po	Nam Cung Bác	Nangon, Bo	南宮樺
P'ü, Sung-ling	Bồ Tùng Linh	Pu, Songling	蒲松齡
Sun-tzu	Tôn Tử	Sun Zi	孫子
Ts'ao, Hsüeh-ch'in	Tào Tuyết Căn	Cao, Xueqin	曹雪芹
Tu-ku, Hung	Độc Cô Hồng	Dugu, Hong	獨孤紅
Wang, Yuan-mei	Vương Nguyên Mỹ	Wang, Yuanmei	王元美
Wo-lung-sheng	Ngọa Long Sinh	Wolongsheng	臥龍生
Wu, Ch'eng-en	Ngô Thừa Ân	Wu, Chengen	吳承恩
Wu-ming-shih	Vô Danh Thị	Wumingshi	無名氏
Wu-tzu	Ngô Tử	Wu Zi	吳子

* This author is Vietnamese.

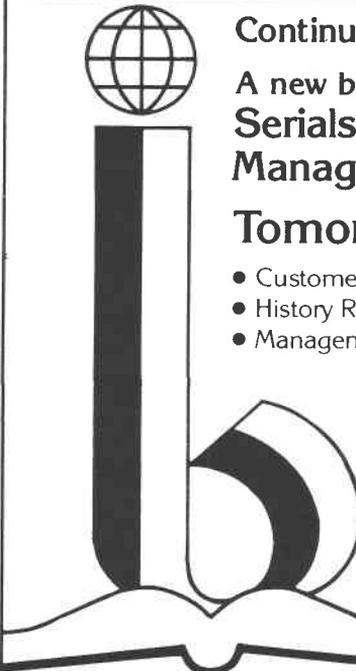
TABLE 4
CHINESE NAMES IN
VIETNAMESE/WADE-GILES/PINYIN

<u>VIET</u>	<u>W-G</u>	<u>P-Y</u>
Bồ Tùng Linh	P'ü, Sung-ling	Pu, Songling
Cổ Long	Ku, Lung	Gu, Long
Độc Cổ Hồng	Tu-ku, Hung	Dugu, Hong
Gia Cát Thanh Văn	Chu-ko, Ch'ing-yün	Zhuge, Qingyun
Khổng Tử	K'ung Tzu	Kong Zi
Kim Đồng	Chin, T'ung	Jin, Tong
Kim Dung	Chin, Yung	Jin, Yong
La Lan	Lo, Lan	Luo, Lan
La Quán Trung	Lo, Kuan-chung	Luo, Guanzhong
Lâm Ngũ Đường	Lin, Yutang	Lin, Youdang
Lý Cẩm Dương	Li, Chin-yang	Li, Jinyang
Mao Trạch Đông	Mao, Tse-tung	Mao, Zedong
Nam Cung Bác	Nan-kung, Po	Nangon, Bo
Ngô Thừa Ân	Wu, Ch'eng-en	Wu, Chengen
Ngô Tử	Wu-tzu	Wu Zi
Ngọa Long Sinh	Wo-lung-sheng	Wolongsheng
Nguyễn Duy Cận	Juan, Wei-ch'in	Ruan, Weiqin
Quản Trọng	Kuan, Chung	Guan, Zhong
Quyển Dao	Ch'ing-yao	Qiongyao
Tào Tuyết Cận	Ts'ao, Hsüeh-ch'in	Cao, Xueqin
Tôn Tử	Sun-tzu	Sun Zi
Trần Thanh Văn	Ch'en, Ch'ing-yün	Chen, Qingyun
Từ Túc	Hsü, Su	Xu, Su
Vô Danh Thi	Wu-ming-shih	Wumingshi
Vương Nguyên Mỹ	Wang, Yüan-mei	Wang, Yuanmei
Y Đạt (Y Taz)	I, Ta	Yi, Da

and *Books in Four Asian Languages*,⁶ which lists about one-fourth of the Vietnamese titles at the Seattle Public Library. Total bibliographic control of Vietnamese-Chinese translations is far from being a reality. It is hoped that the information presented here will be a step in that direction.

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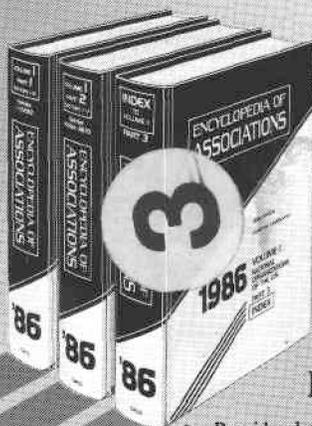


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