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Before the development of card catalogs the problem of catalog maintenance was comparatively insignificant. With few exceptions libraries were so small that the remedy for an inadequate catalog was to make a new one. In the Harvard College Library, for example, there were no fewer than thirteen catalogs in succession before the present public and official catalogs were created about 1913.

Naturally then, there was no established program of catalog maintenance to carry over from the nineteenth century, nor was the need of it apparent in the early days of this century. In fact, to some extent it might be said that the very idea of taking steps against obsolescence and of allowing for depreciation was alien to the thoughts of twentieth-century catalogers who, in the face of all cataloging history, thought they could make their records with workmanship of so high a quality that these would endure indefinitely.

Not until the present has the necessity for a regular program of catalog maintenance become apparent. The age, complexity, and size of existing catalogs are the principal factors in bringing about this development. As might be expected, the largest libraries have had to face the problem first and most seriously. Simultaneously, yet independently, the Library of Congress, the New York Public Library, and the libraries of Harvard and Yale Universities all set to work to formulate a plan for the future of their catalogs.

The most ambitious proposal to date is the one at the Library of Congress, which would take over eleven years to carry through and would cost almost \$750,000. There the main or public catalog (incidentally the official catalog too) would be edited because of

. . . unreconciled changes in cataloging policies, rules, and procedures and imperfections in the adequacy of the maintenance of this catalog The authors are Assistant Librarian and Head Cataloger, respectively, in the Harvard College Library.

over the years. In addition, heavy use over a long period has taken a toll of some of the cards. There has been no provision of systematically organized guide cards. Filing errors are too frequent. In short, the use of the catalog by readers and staff alike is continually impeded by conflicts between the cards in the catalog, by cards with wrong call numbers, by cards with no call numbers, and by cards which are misfiled or missing from the catalog altogether. Editing the catalogs will not only correct the important respects in which the catalog is in a run-down condition but will also offer an opportunity to institute methods of counteracting in some degree the increasing difficulty of its use (due to its continual growth) such as simplifications in filing arrangement and the provision of helpful guides to the user where they are most needed. As the trays are edited, it is planned that filing in them in the future will be completely revised in order to prevent the recurrence of the filing error rate which is in excess of 5%.1

Business practice generally allows for depreciation of equipment. But libraries have failed in their budgets to provide for the depreciation of their principal tool, the card catalog. The cumulated effect of this neglect is now making itself felt, as can be seen from studies in several of the largest libraries. Sooner or later institutions of various sizes will have to face the problem squarely too. In an older library with but a single cataloger the problem may even be disproportionately greater than in the large and middle-sized library, where the budget may be sufficient to allow for extra help when necessary.

Filing. The obvious point at which to attack the problem of catalog maintenance is filing, for any general review of a catalog should be undertaken in conjunction with revised filing rules and a complete refiling of all cards, as the Library of Congress has indicated. Simplifications in filing are called for because technicalities not readily grasped by readers or staff make consultation of a catalog difficult and lead to errors in filing. Some of these technicalities derive from the days of the classified catalog. Under the influence of Charles Ammi Cutter, classified arrangements were introduced into the emerging dictionary catalog, and the resulting departures from a straight alphabetical arrangement have died hard. The A.L.A. Rules for Filing Catalog Cards, published in 1942, straddled the issue by providing numerous alternative rules and by recommending straight alphabetical arrangement primarily for the smallest libraries only. In truth, it is the largest libraries that require straight alphabetical filing most.

Failure to come to grips with this fundamental issue was undoubt-

edly a significant factor in the subsequent trend towards division of library catalogs. Automatically, by dividing their catalogs, libraries were able to dispense with many of the classified arrangements. So the filing was simplified. And whenever the filing is simplified, consultation of the catalog should become easier for readers and staff alike.

But even this trend left untouched another basic matter, namely, the contribution that letter-by-letter filing might make towards solving problems of arrangement. American librarians have given scant attention to letter-by-letter filing, which has found some acceptance in Great Britain. Thereby they have lost some theoretical insights which might have resulted from a careful comparison of the word-by-word and the letter-by-letter systems. More particularly, for divided catalogs the letter-by-letter system might have much to offer.

It would be of considerable value if studies existed to show whether the revision of filing is less of a burden under letter-by-letter filing. In theory, it should be; for theoretically letter-by-letter filing should require practically no revision except to catch gross errors due to mistakes by workers. Word-by-word filing adds a plethora of technicalities, so that faults in filing may be due either to the human equation or to a failure to grasp or consistently follow a technicality.

The descriptive cataloger has quite generally overlooked the need for a clear, unambiguous, and close-knit filing medium. Fortunately most catalog entries have one naturally, but in any large catalog tens of thousands of imprecise entries are a constant source of trouble and error. For instance, a wooden entry like the following suggests an autobiography:

> Descartes, René, 1596–1650 Descartes.

But what is really meant is either

Descartes, René, 1596–1650 [Works]

or

Descartes, René, 1596–1650 [Selections]

This type of entry is also fairly common in the field of art, and difficulties naturally ensue. In the Fogg Art Museum at Harvard they have been sidestepped by not considering the artist as the author of a volume of reproductions. In general we have paid attention to the

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problem of books without authors, but no systematic study has been made of the problems that arise in connection with books without titles.

The following represent some of the more obvious types of entry that cannot be filed without interpretation.

Heading Actually Filed as Brontë **Bronte** De La Mare Delamare Eckhart, Meister Eckhart Huntington, A. M., ed. Huntington, A. M. Iones, Mrs. Colonel **Tones** New York City. Metropolitan New York. Metropolitan Museum of Art Museum of Art Terry, Dame Ellen Terry, Ellen Williams, William, Williams, William, 1717-91 called Pant-y-celyn, 1717-91

Some Harvard Solutions. The Harvard College Library has recently taken several steps towards the establishment of limited and self-evident filing mediums. It observed that some controls already exist. For example, a reference from "Labour" to "Labor" enables the two to be interfiled without complication, and the same is true of words that are sometimes hyphenated and sometimes not. But controls needed to be worked out for other cases, notably for modified vowels, forenames with titles or epithets, initialisms, and numerals.

The diaeresis is the principal complicating factor as far as modified vowels are concerned. Thus Brontë and Viëtor are filed as though they contained no diaeresis, whereas Müller is treated as Mueller. It was embarrassing at Harvard to find that some filer had carefully arranged the entries for the distinguished Professor Viëtor under Vieetor. Ignorance? Yes, but who can recognize the technicalities in all languages, including Hungarian and Turkish? Lack of revision? Yes, but how can an adequate yet economical program of revision be carried out in a large catalog? Surely it is more important to ask why the root of the trouble should be allowed to persist.

Three courses of action were possible, any one of which would end the uncertainty and confusion: (1) Ignore both the umlaut and the diaeresis. The name Goethe and the Americanized name Mueller do not lend themselves to this scheme, but in any event the German Department vetoed the suggestion. (2) Omit the diaeresis from the

filing medium altogether, leaving the field to the umlaut. (3) Spell out the modified vowel when it affects the main filing medium. This is the solution that has actually been adopted, as exemplified below:

On the Title-page	As Transcribed	
Ågren, Sven	Aagren, Sven	
Aland Islands	Aaland Islands	
Müller, Carl	Mueller, Carl	
Ørsted, Hans	Oersted, Hans	

A similar practice is not followed in the secondary filing medium because the chance of conflict is slight.

It is true that Library of Congress printed cards, and entries from other libraries that do not follow the new convention, must still be interpreted. Old-style Harvard cards must on occasion be refiled too. But the back of the problem has been broken.

For forenames with titles or epithets a strictly alphabetical system has been adopted in place of the former catchword arrangement, as shown by the following:

> Mary Lawrence of Jesus, Mother Mary I, Queen of England, 1516-58 Mary, Queen of France, 1496-1533 Mary II, Queen of Gt. Brit., 1662-94 Mary, Queen of Gt. Brit., 1867-1953 Mary, Queen of Scots, 1542-87 Mary Stuart, Queen of Scots, 1542-87

In this connection, the form of heading for some rulers has been changed to bring about a more desirable arrangement. Thus, Mary, Queen of Gt. Brit., 1867-1953, replaces the former style, which read: Mary, Queen Consort of George V, 1867-1953. Another simplification has been to intercalate forenames among the title entries and corporate names, following, instead of preceding, the relevant surnames.

Initialisms always give a certain amount of trouble, unless in a letterby-letter scheme they are uniformly treated as words. The new Harvard rule reads: "File as words combinations of initials that are equated with words, e.g., FIAT, RUS, Unesco. In the filing medium initials which are filed as words are written without spaces or periods between the letters; initials that are filed as such are written with either a space or a period between the letters." The problem has been reduced in size, too, by eliminating a major part of the initialisms. The straight-

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forward form, such as H.D., has been retained, and the inverted form D., H. given up.

Perhaps at long last a reasonably satisfactory solution has been found for the vexed problem of numerals. Not much difficulty has been encountered in filing the simple basic numbers as words, such as one through twenty, as well as thirty, forty, hundred, thousand, and million. But a confusing jumble has resulted whenever numbers composed of more than one element are arranged in alphabetical sequence, witness the following:

60 acres	65	60 odd	66
68	64	61	63
65th	60 letters	60 selected	62
61st	69	67	60 years

The new Harvard plan is to file numerals, whether they occur on the cards as words or as figures, in terms of a base number which is interpreted as a word, followed when necessary by figures. A table of the base numbers in several languages has been prepared for the benefit of the filers. Figures added to these numbers are arranged numerically, with the result that sixty is followed by sixty-one, sixty-two, and so on.

When a numeral occurs in the main filing medium, in either a main or an added entry, the conventional form is inserted on the cards for the benefit of the filers, the exception being for English numerals through a hundred. Examples are:

The first part of the formula shows the alphabetical position of the entry in the catalog; any subsequent figure, which may be part of the formula or self-evident, exhibits the secondary numerical position.

In the secondary filing medium the conventional form is inserted only when the numeral appears in figures. It is given, for example, in the following case:

One troublesome technicality was ruled out from the very start. No distinction is made between figures or words that stand for years and those that stand for regular numerals.

Possibly the new filing rules have made their biggest gain in the arrangement of the works of an author. If an author is not officially declared to be voluminous—as determined both by the number and the complexity of the entries under his name—all cards are arranged in a simple alphabetical sequence, with no artificial arrangement for collected works or other special features. If, on the other hand, he is listed in the filing code as a voluminous author, the complete filing medium is made explicit in the heading, e.g.,

Shakespeare. Macbeth. English. 1939. Kittredge

Names such as Shakespeare and Beethoven are being reduced to the mere surname, and take precedence over those of lesser people of the same name. When forenames are used in addition to the surname, the balance of the filing medium goes on a second line. By the time a catalog comes to contain millions of cards, it is necessary to consider building up explicit filing mediums so the entries can be kept under control.

Revision of Filing. New and improved filing rules are not, of course, a complete panacea. So the problem of revision of filing must be faced.

In a multimillion card catalog revision of filing is not easy to plan, nor is it a simple matter to justify or find the money for the process at a time when cataloging costs are at an all-time high. Filing on the rod is obviously out of the question during normal working hours. The choices seem to be between a pre-library-opening schedule for the filers and removal of the trays on booktrucks to reasonably accessible workspace, thus ignoring the convenience of users of the catalog.

The decisions reached in the Harvard College Library are as follows: (1) A supplementary file is maintained, and the cards from it are incorporated in the public catalog on a six-week cycle. This supplementary catalog contains all entries except for Class I publications, that is, new items in demand. (2) Filing Class I entries is to be done early each day by competent filers whose work does not require revision. Cards from the supplementary file are to be transferred to the public catalog by removing the trays to a convenient location where the filers can sit more or less comfortably, and where their work can be revised as long as necessary for beginners. This method will reduce the element of fatigue, and thereby increase accuracy. (3) Known trouble spots are to be listed, and the filing in these places reviewed every year or so.

Weeding and Improving the Catalog. All that has been said so far

is incidental to the main task of rehabilitating a catalog, for clearly it would not cost the Library of Congress \$750,000 or take eleven years merely to refile its colossal card catalogs. The following are some of the matters that need to be considered in planning rehabilitation.

There is much to be done in the way of replacing broken guide cards and providing large numbers of new ones unless an adequate program has been maintained currently. There may be cards with outmoded class designations or location marks which ought to be corrected or discarded. Many cards have outlived their usefulness and can now be eliminated. Under the heading "American Library Association," the Harvard College Library canceled over a hundred needless addedentry cards for items the A.L.A. had merely published, and the remaining file is now much less complex. Also hundreds of subject cards for personal and corporate names have been withdrawn from the official catalog, with the result of reducing bulk and creating valuable space.

In any catalog there may be numerous short cards or other early forms that ought to be replaced by new typed entries. Messy and worn cards occur in most hard-used catalogs too, and should have replacements when desirable. In fact a large retyping program should accompany any reworking of a catalog. In the Harvard project, the equivalent of three full-time typists is kept occupied with retyping. And it has been found essential, though time-consuming, to edit the cards before they are retyped.

Much time and attention should be devoted to the amelioration or elimination of trouble spots. These occur, for example, when there are numerous entries of mixed types, as under a term like "Washington." Each situation needs to be studied, and appropriate remedial measures should be planned for each.

The point is simply this, that as a catalog becomes bigger and older, and especially as it gets into the million and multimillion card range, difficulties multiply, so the only proper course of action is to attempt to restore both order and relative ease of consultation. It is not enough, for example, to say that references and added entries will take care of difficulties. Some readers may find a lone card under Salazar referring to Oliveira Salazar for works by and about the Portuguese dictator, but others will have difficulty when there are two or three hundred cards for various people with the name Salazar and the reader is not aware of the dictator's forename. The remedy is to change all cards from Oliveira Salazar to Salazar, the entry under which most persons

will look, put in a guide card, and make a reference from Oliveira Salazar which the few people who go to that form should find with relative ease. Again, one can say that a reader who is looking for the Kittredge edition of Macbeth should know enough to go to the added entry instead of plowing through an extensive file under Shakespeare. Maybe he will; maybe he won't. But should he be forced to adopt such a procedure? Is it not better to bring the Shakespeare file under control, so it can be used with a minimum of effort?

These two types of problem bring up the major matter of concern in a program of catalog rehabilitation, namely, the question of readily findable entries. The large catalog buries far too many items under technical headings, so that readers and staff may fail to discover items in the collection, and hundreds of duplicates may be acquired annually as a result. It ought, for instance, to be easy to find in the catalog an item listed in Winchell's Guide to Reference Books, but this is not always the case, particularly in a union catalog. And a reader or a staff member should not meet trouble in arriving at the entry for a gazette for a country like Australia, for United States Army publications, for census publications, or for congressional hearings. Nor should there be any complication over getting to the Beveridge report or the Hoover Commission reports, or to works about them. But real difficulties are constantly encountered in large catalogs in attempting to find important items. These are in addition to the ones brought on by sheer size, for in a large catalog the user is confronted by problems caused both by the bulk of the items and by entries that are not direct or clear.

So revision of entries is an important part of catalog rehabilitation. Studies leading to a new code of catalog rules should take this factor into account. Attention to such matters can make the large catalog easier to use than the traditional middle-sized catalog, and the middle-sized catalog easier to use than the typical small catalog.

Much attention must be devoted also to overhauling the subject entries, which in most catalogs include many outmoded headings. There are many confusing practices, for want of definition or for lack of desirable references; and there are an astonishing number of headings represented by a single card only, although somewhere in the collections there may be a wealth of material on its subject. Likewise deficiencies in service arise through failure to bring out many specific topics. For instance, a number of works exist about the Viennese Circle. Should the catalog not bring them out under that, instead of leaving the reader to fumble for them or to turn to bibliographies

for help? The whole philosophy of subject entries is in urgent need of clarification. Proposed studies at the Library of Congress and the New York Public Library are highly desirable, though these should be supplemented, because both institutions have closed stacks, whereas most other libraries do not.

Continuing Program. Except in libraries that weed their book collections extensively the problem of catalog maintenance will grow steadily worse, simply because an additional hundred thousand cards in a year means another million cards in ten more years. So a rehabilitation program is necessary in the first instance to get the catalog in hand before it is hopelessly out of order. And thereafter provision should be made for a curator of the catalog who has sufficient time and staff to make improvements on a continuing basis.

The initial program may call for capital outlay, as is anticipated at the Library of Congress. The continuing plan should be financed in the same way that depreciation is allowed for in any business budget.

Two cooperative measures can help. First, studies in catalog maintenance, as well as the development of new cataloging rules and practices, can be made on the basis of common experience and judgment. Second, the publication of book catalogs, in full or in part, can be thought of as a joint venture. In particular, volumes to represent the holdings for voluminous authors can simplify the card-catalog problem, make the arrangement of entries clearer, and at the same time provide valuable bibliographies. It is to be noted in this connection that prolific authors, both individual and corporate, attract to themselves a high proportion of the filing problems and the difficulties of consultation. Moreover, they may even represent better than an eighth of a total catalog, so a concerted attack on them might bring significant gains in a variety of ways.

The dictionary catalog has served American libraries well for fifty years. The next fifty years may tell a different story if timely and adequate steps are not taken. It would be courting disaster to go on into the second half of the twentieth century without fundamental rethinking of the nature and function of the dictionary catalog. Multimillion card catalogs can be expected to double in size before the century ends. The difficulties will be far more than doubled if a large measure of control is not forthcoming.

Reference

1. Revised Proposal for Editing the Main and Official Catalogs. A memorandum dated Dec. 29, 1952, from C. Sumner Spalding, Chief of the Catalog Maintenance Division of the Library of Congress, to the Director of the Processing Department.