anyway because he is primarily getting suggested classification numbers in order to browse.

The Tucson Public Library could not have made the above decisions if it did not have a complete online file of all its holdings (including even reference materials that never circulate). But since this data did exist (after a five-year bar-coding effort) and since more than forty online terminals were already in place throughout the library system to access the online file, the decision not to include locations or holdings in the microform catalog seemed reasonable. In the longer-range future (1990?), it is very likely that the entire catalog will be available online. In the meantime, the Tucson Public Library did not want to divide its resources maintaining two location records, but rather wanted to concentrate resources in maintaining one accurate record of locations available as widely as possible throughout the library system (by installing more online terminals for staff and public use). Was this decision a sound one? We don't know. The microform catalog has not yet been introduced for public use. By the end of this year we should have some preliminary answers to this question.

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A Structure Code for Machine Readable Library Catalog Record Formats

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Libraries house many types of publications in many media, mostly print on paper, but also pictures on paper, print and pictures on film, recorded sound on plastic discs, and others. These publications are of interest to people because they contain recorded information. More precisely said, because they contain units of intellectual, artistic, or scholarly creation that collectively can be called "works."

One could say simply that library materials consist of documents that are stored and cataloged because they contain works. The structure of publications into documents (or "books") and works, the clear distinction between the concept of the information container as opposed to the contents, deserves more attention than it has received so far from bibliographers and librarians.

The importance of the distinction between books and works has been hinted at by several theoreticians, notably Lubetzky. However, the idea was never fully developed. The cataloging implications of the structural diversity among documents were left unexplored. As a consequence, librarians have never disentangled the two terms *book* and *work*. From the Paris principles and the MARC formats to the new second edition of the *Anglo-American Cataloguing Rules*, the terms *book* and *work* are used loosely and interchangeably, now meaning a book, now a work proper, now part of a work, now a group of books.

Such ambiguity can be tolerated as long as each person involved knows at each step which definition is appropriate when the term comes up. But as libraries ease into the age of electronic utilities and computerized catalogs based on records read by machine rather than interpreted by humans, a considerably greater measure of precision will have to be introduced into library work. As one step toward that goal an examination of the structure of publications will be in order.

The items that are housed in libraries, regardless of medium, are of two types. They are either single documents, or they are groups of two or more documents. Items that contain two or more documents are either *finite* items (all published at once, or with a first and a last volume identified) or they are *infinite* items (periodicals, intended to be continued indefinitely at intervals). Schematically, these three types of bibliographic items in libraries can be represented as shown in figure 1.

It should be noted that all publications, all documents, all bibliographic items in li-

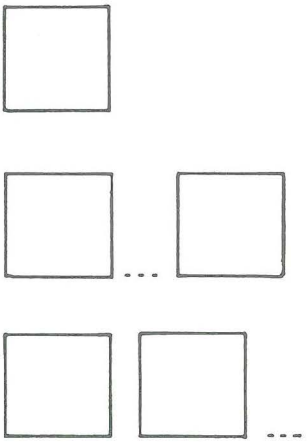


Fig. 1. Three Types of Bibliographic Items: Top, Single-Document Item; Center, Finite Multiple-Document Item; Bottom, Infinite Multiple-Document Item.

braries, can be assigned to one of these three structures. There are no exceptions. All bibliographic items, furthermore, contain works. An item may contain one single work. But an item may also contain several works. Schematically, the two situations can be represented as shown in figure 2.

An item that is composed of several documents and contains several works may have one work in each document, or several per document. Schematically, the two possibilities can be represented as shown in figure 3.

It is possible, of course, for an item to

Fig. 2. Top, Single-Work Document (Example: A Typical Novel); Bottom, Multiple-Work Document (Example: A Collection of Plays).

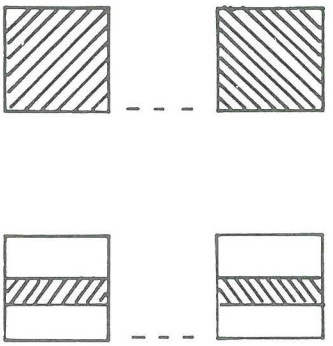


Fig. 3. Top, One Work per Document; Bottom, Several Works per Document.

be composed of several documents but to contain only one work. Figure 4 is a schematic representation of this case.

Mixed structures are also possible, as in the schematic shown in figure 5.

Ignoring the mixed structure that is only a combination of two "pure" structures, the foregoing information can be combined into a table that shows seven possible publication types that differ from each other in terms of structure (figure 6).

All bibliographic items, whether composed of one document or many, are known by a title. These titles can be called *item titles*. In the case of a single-document item (structures *a* and *c*), item title and document title are, of course, identical. But in the case of some multiple-document items (publications of types *d*, *e*, *f*, and *g*, for example), two possibilities exist: the documents that make up the item may or may not have their own individual *document titles*. For purposes of

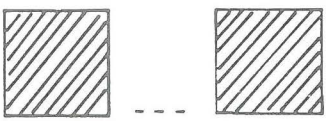


Fig. 4. Multivolume Work (Example: A Very Long Novel in Two Volumes).

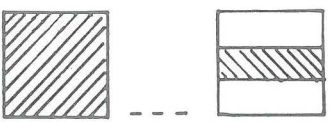


Fig. 5. Finite Multi-Document Item Containing Many Works, Mixed Structure.

		ONE DOCUMENT PER ITEM	SEVERAL DOCUMENTS PER ITEM	
			FINITE	INFINITE
ONE WORK PER ITEM		a	b	
SEVERAL WORKS PER ITEM	SEVERAL WORKS PER DOCUMENT	c	d	e
	ONE WORK PER DOCUMENT		f	g

Fig. 6. Publication Types.

the bibliographer or cataloger, items that consist of several documents bearing individual document titles can be described under one of two principles. The entire item can be treated as a unit. Elsewhere I have coined a term for this treatment: the *set description principle*.[1] But it is also possible to treat each document as a separate publication, to describe it under the *book description principle*.

If we combine all these considerations we find that we can assign to each bibliographic item that is added to a library's collection one of the thirteen codes shown in figure 7.

How can these codes be useful? Taking a look into the future, let us imagine an online catalog system supported by a database that contains the records of a library's holdings. The records in such a database are entered in a definite format. In this format, whatever it will be called, there will be data fields for titles, authors, physical descriptions, subject headings, document numbers, and much else. I propose that to these fields one other be added: the *structure code*.

The structure code would add a new dimension to the retrieval of recorded information. Here are a few specific examples. Consider a search for material on subject *X*. Qualify the search argument by structure codes 1, 3, 7, and 12. Result: the search will yield only major monographic works, defined as items of types *a*, *b*, *f*, and *g*.

Note that subject *X* assigned to such items is a true subject heading. The materials retrieved in this example would all be works dealing specifically with the topic *X*. But the same term assigned to an item coded, say, 6, would not be a true subject heading. The term here would only give a broad general summary of what the works in the item are about. The structure code adds sophistication to the retrieval process by enabling a searcher to distinguish between specific subject designators and mere summary subject headings.

A search that excludes codes 2, 4, 5, and 6 limits output to materials that are not just collections of essays. The stratagem used in card catalogs to reach the same result is the qualification of a subject heading by terms denoting format, such as the subdivisions *Congresses* or *Addresses, essays, lectures*. This method of qualifying subject headings has never been done

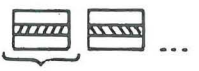
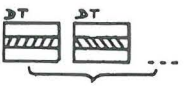
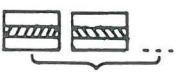
Structure Code	Publication Type	Description Principle: Book (B) or Set (S)	Schematic
1	a	B	
2	c	B	
3	b	S	
4	d	B	
5	d	S, with individual document title	
6	d	S, without indiv. document title	
7	f	B	
8	f	S	
9	e	B	
10	e	S, with individual document title	
11	e	S, without indiv. document title	
12	g	B	
13	g	S	

Fig. 7. Structure Codes.

consistently, however. The proposed structure code would ensure uniform treatment of all affected publications.

Qualify the search by codes 9, 10, 11, 13 and all periodicals can be excluded. In the card catalog, format qualifications such as *Periodicals*, or *Societies, periodicals, etc.*, or *Yearbooks* are sometimes added to subject headings to reach similar results. Again, the structure code would introduce uniformity and consistency.

Present-day card catalogs list publica-

tions only. They do not list the individual works that may be contained in publications. If an analytic catalog were to be built into a computerized system at some time in the future, the structure code would be a great help in the redesign, because it makes it easy to spot items that need analytics, namely those that contain embedded works, or codes 2, 4, 5, 6, 8, 9, 10, 11, and 13.

A searcher working with such an analytic catalog could use the code to limit output to manageable stages—first all items of type *c,* for example; then broadening the search to include those of type *d;* and so forth, until enough relevant material has been found.

The structure code would also be useful in the displayed output. If codes 5 or 8 appeared together with a bibliographic description on the screen, this would tell the catalog user that the item retrieved is a set of many separately titled documents. A complete list of those titles can then be displayed to help the searcher decide which of the documents are relevant for him. In the card catalog this is done by means of *contents notes*. Not all libraries go to the trouble of making contents notes, though, and not all contents notes are complete and reliable. The structure code would ensure consistency and completeness of contents information at all times. Codes 10 and 13 in a search output, analogously, would tell the user that the item is a serial with individual issue titles. There is no mechanism in the contemporary card catalog to inform readers of those titles. Codes 4 and 7 would tell that the document is part of a finite set, and so forth. It has been the general experience of database designers that a record cannot have too many searchable elements built into its format. No sooner is one approach abandoned "because nobody needs it," than someone arrives on the scene with just that requirement. It can be anticipated, then, that once the structure code is part of the standard record format, catalog users will find many other ways to work the code into search strategies.

It can also be anticipated that the proposed structure code, by adding a factor of selectivity, will help catalogers because it strengthens the authority-control aspect of machine-readable catalog files. If two publications bear identical titles, for example, and one is of structure 1, the other of structure 6, then it is clear that they cannot possibly be the same items. However, if they are of structures 1 and 7, respectively, extra care must be taken in cataloging, for they could be different versions of the same work.

Determination of the structure of an item is a by-product of cataloging, for no librarian can catalog a book unless he understands what the structure of that book is—one or more works, one or more documents per item, open or closed set, and so forth. It would therefore be very cheap at cataloging time to document the already-performed structure analysis and express this structure in the form of a code.

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Revisions to Contributed Cataloging in a Cooperative Cataloging Database

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INTRODUCTION

OCLC is the largest bibliographic utility in the United States. One of its greatest assets is its computerized database of standardized cataloging information. The database, which is built on the principle of shared cataloging, consists of cataloging records input from Library of Congress MARC tapes and records contributed by member libraries.

OCLC STANDARDS

In order to provide records contributed by member libraries that are as usable as those input from MARC tapes, it is im-