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LIBRARY NETWORKS: CATALOGING AND BIBLIOGRAPHIC ASPECTS

In *The Future of the Research Library*, Verner Clapp comments on the “two principles which have controlled the growth of libraries—the principle of local self-sufficiency and the principle of sharing the resources.”¹

It is becoming increasingly clear, however, that adherence to the principle of self-sufficiency is no longer economically feasible or rationally desirable for libraries. Pragmatic problems of spiralling costs of labor and material, physical problems of space, and intellectual concern over bibliographic control of the burgeoning information explosion all play their part in contributing to the demise of such an insular concept.

Sharing—in the guise of cooperation, centralization, regionalization—is the “in” concept of the day. This concept is not new; shared resources through interlibrary loan, centralized cataloging through LC, and regional systems through state and other agencies have existed at varying levels for many years. Serendipitous development of such programs, however, no longer seems sufficient and the rapid growth of new technologies has given impetus to the development of the more sophisticated concept of networks. The computer, graphic display techniques, TWX hook-ups, and facsimile transmission all portend far more encompassing cooperative ventures than heretofore envisioned.

To define precisely and with certainty what it is that distinguishes a network from the cooperative efforts we have known by other names in the past has proved to be a difficult task. Becker and Olsen who define a network in the broadest of terms in their survey, “Information Networks,” refines the concept somewhat as it applies to information networks, but still admits that “since the network concept is very young, the terminology associated with it is still evolving, and some confusion regarding definitions must be expected.”² When personal colleagues, both librarians and computer people, were asked to

define what makes a library network a network they produced many interesting viewpoints but no clarification, leading to my concluding, with Hiatt, that "we librarians will find ways to share the processing of materials whenever we feel it necessary and will find labels and definitions later."³

According to Becker and Olsen the main characteristics of an ideal automated information network (none of which, they claim, is operationally extant "at present") are:

1) *Formal Organization*. Many units sharing a common information purpose recognize the value of group affiliation and enter into a compact.

2) *Communications*. The network includes circuits that can rapidly interconnect dispersed points.

3) *Bi-directional Operation*. Information may move in either direction, and provision is made for each network participant to send as well as to receive.

4) *A Directory and Switching Capability*. A directory look-up system enables a participant to identify the unit most able to satisfy a particular request. A switching center then routes messages to this unit over the optimum communications path.⁴

If one concept can be said to be common to the various views expressed, it would be that networks involve the use of sophisticated (electronic) equipment and sophisticated communications techniques. Accepting then this rather loose definition, this paper will be dealing with those cooperative efforts among libraries which involve sophisticated equipment. The discussion will be restricted to cooperative processing operations—in particular cataloging—excluding the consideration of those processing operations involved in acquisitions, as well as consideration of networks devoted to the sharing of resources. The problems that have always faced cooperative cataloging processing operations will be discussed, as well as the impact of computer technology as it offers solutions to some of these problems, but poses complications of its own. The experiences of the New England Library Information Network (NELINET) as they relate to the topic of cooperative cataloging processing will be reported. Since the author's background and experience have not been in public or school libraries, this paper will be slightly slanted towards college and university libraries.

COOPERATIVE PROCESSING

Among the advantages usually claimed for centralized processing are the bringing together of able staff and expensive tools and equipment, and making these tools and skills jointly available to many libraries that could not have afforded them on their own. Cooperative participation in computer processing facilities may, likewise, be prompted by considerations of money and manpower. Such cooperative efforts can be expected especially in those areas of library automation that are most difficult and most expensive for libraries to develop and operate on their own.

The processing involved in a cataloging operation is one such difficult and expensive area. First, the developmental costs for a computerized system are high. It is much more difficult to specify the requirements for a catalog

card production system and translate these requirements into terms programmers can understand than it is to specify a circulation system. And once specified, there is still a long hard road ahead before programs are running smoothly. As is the case with most text processing, considerable amounts of programming talent and time are required to produce efficient systems.

Second, equipment requirements must be considered. The computing center in any one library's parent institution may not have the special output devices to produce the quality of printing libraries consider necessary for displaying cataloging data satisfactorily. If the more sophisticated concept of on-line access to bibliographic data is considered, the additional cost of storing such large files can also be expected to encourage, if not to require, the sharing of the high cost of equipment for such a data base.

Third, if libraries are to make use of the machine-readable bibliographic data being issued by the Library of Congress, it will again mean, for most libraries, that they do it cooperatively. How many libraries can afford to search MARC tapes independently?

In addition to fostering cooperation, computers have had an impact on libraries in another area—that of encouraging standardization. Standard rules and practices have been the goals of librarians for years and the effect that the increasing number of processing centers has had in encouraging standardization should not be overlooked. The "Guidelines for Centralized Technical Services" state that the "adoption of uniform policies and regulations is the key to efficient and economical operation."⁵ It has, however, taken the computer to add a sense of urgency to these efforts.

The uninitiated might question the need for such pronouncements on standardization; those who have worked in more than one library will not. The variations in practice that may be found in libraries' cataloging processing operations are seemingly endless. Functionally speaking these variations can be divided into three main categories: I) those which evolve in the intellectual efforts of cataloging and classification, II) those which evolve in the generation of catalog cards, spine labels, and book cards, and III) those which evolve in physical preparation of the book.

I. Variations in cataloging and classification practice cover the following major areas of concern:

- 1) the choice of main entry;
- 2) the making of added entries;
- 3) the establishing of names and titles;
- 4) the amount of descriptive detail given in the title paragraph, collation, or notes;
- 5) the subject heading list used;
- 6) the classification scheme used. If Dewey, which edition? The treatment of fiction and biography; and
- 7) the book numbering scheme used. Library of Congress or another Cuttering scheme? If Cutter tables, which ones? How are different titles and editions indicated?

Variations in areas 1 through 4 are to be expected if libraries follow different cataloging codes. But even when libraries follow the same cataloging rules, differing interpretations of these rules can lead to variations.

II. If we were to examine the practices of libraries relating to the generation of catalog cards, spine labels, and book cards we would again find many variations, including:

- 1) the format of the catalog card;
- 2) the distinction between subject headings and added entries;
- 3) the indication of copies in multiple locations within a library system. Are separate sets of cards made for each location or is the card set in the main catalog annotated (e.g., "copy also in Reference")?;
- 4) the number of each type of card (e.g., main entries, shelvest card, etc.) required for each title processed;
- 5) the symbols used to indicate special locations such as Reference;
- 6) the printing of branch location symbols on spine labels, on book cards, and on the catalog cards for the branch catalog;
- 7) the formatting of Library of Congress call numbers on catalog cards and labels;
- 8) the determination of an oversized book, the symbols used to represent oversize, and the positioning of this symbol;
- 9) the data put on the shelvest card—e.g., date and price as well as copy and volume data;
- 10) the printing of copy and volume numbers on spine labels;
- 11) the use of book cards;
- 12) the size of the type used on spine labels (bulletin, pica, other);
- 13) the copy numbering system used. Is it one over-all system for all locations within a library system or do different locations have separate numbering schemes? and
- 14) the type of card stock, spine labels, and book cards used.

III. If a processing center were involved in book preparation for a number of libraries there would also be differences in:

- 1) how ownership is indicated (perforations or stamping) and where it is placed;
- 2) where book plates, book pockets, and date slips are placed in the book;
- 3) where a spine label is positioned on the spine of a book;
- 4) if and where the call number is pencilled in the book;
- 5) if shellac or lacquer is used on the book and if so, on the entire book or the spine only;
- 6) if covers are used, and if so what size and type;
- 7) if and where price and source are written in the book. If price is written, what price—list, net, other;
- 8) if books are lettered rather than labelled, are they lettered in white, gold or black; and
- 9) if and where the blurb is posted in the book.

Since the actual physical preparation of the book continues to be unaffected by automation, a major concern of this paper, further consideration of the problem of variations in this area will not be included here.

If a processing center were to include the entire range of catalog processing operations for a number of libraries, it would probably encounter all the differences in practice noted above plus a few more. Examination of the practices of an experimental processing center will illustrate the relative significance of these variable factors, as well as their implications, in terms of cooperative processing procedure.

NELINET

The New England Library Information Network (NELINET) project is an attempt to establish a computerized processing center for New England libraries. It is sponsored by the New England Board of Higher Education and funded by a series of grants from the Council on Library Resources. The state university libraries of Connecticut, Massachusetts, New Hampshire, Rhode Island, and Vermont are the present participants, but NELINET is envisioned as a regional system, eventually capable of serving any New England library.

Early in NELINET's development, the decision was made to begin with the area of technical processing, giving initial attention to cataloging. Additional services contemplated include acquisitions, union lists, book form catalogs, circulation and interlibrary loan control, library management information, and remote data base interrogation.

A MARC I-based pilot operation to produce catalog cards and Selin labels began in December 1967 and continued through July 1968. A new MARC II-based system has been designed and is presently being programmed.

As might be expected, numerous variations in practice were found among the five libraries. Most of these were in the second category noted earlier, the generation of cards and labels, but some were due to differences in cataloging and classification practices. Some of the variations were accommodated through programming, while others were not. The card production program included a "profile" for each library containing information about the processing practices of the library. The cards were then generated according to these specifications.

Perhaps the biggest hurdle for any cooperative effort to overcome is defining what should be standardized and what variations will be allowed. In making these decisions for the NELINET system, two factors were taken into account—the burden it would impose on the library to change its existing practice and the amount of programming that would be required to provide for different practices. On the basis of these two considerations the following decisions were made:

I. In the area of cataloging and classification

A. Standardize

Since Library of Congress cataloging copy is being used at present, standardization has been achieved on most of the points in this area.

B. Allow Variations

1. *Making added entries*

Each library's profile specifies whether subject added entries are to be made for main entries that are subjects. Libraries with divided catalogs where names as subjects are filed in the subject catalog may then receive the subject cards desired.

2. *Printing Library of Congress conventional titles*

The NELINET system is programmed to accommodate the options regarding conventional titles allowed in the MARC II format. A library may choose to have all Library of Congress conventional titles printed on their cards, to have them all omitted, or to print only those that appear on Library of Congress printed cards.

3. *Classification scheme used*

Three of the five libraries use the Library of Congress classification; the other two use Dewey. If the library does not wish to use the call number established at the Library of Congress, it may enter its own call number. This may be a Dewey-based number or another Library of Congress number.

II. In the area of generating catalog cards, spine labels, and book cards

A. Standardize

1. *The format of the catalog card*

There is one standard format for print out. The class number and the main entry begin on line four. The call number is limited to six characters per line appearing in print positions 2 through 7. The main entry begins in print position 10. Indentions, whether hanging indentions for title main entries or regular indentions beginning new paragraphs, are at print position 12. There are no spaces between lines. Subject overprint headings are in upper case.

2. *The indication of copies in multiple locations*

Three of the five libraries used separate sets of cards in the main catalog for each book location. The other two libraries used only one set, indicating on this set the other copy locations.

The NELINET system decided to make separate sets of cards for each copy location.

3. *The printing of branch location symbols*

The branch symbol appears on all labels and on all catalog cards.

4. *The formatting of the Library of Congress call number*

Each of the three libraries using Library of Congress classification broke up their call numbers differently in formatting the call number in the margin of the catalog card and on the spine labels. Since breaking up the call number string into line segments involves a considerable amount of programming, it was decided to standardize and only one way was programmed. The format chosen is: class letters on one line, class numbers and numeric decimal subdivisions on the next line (if this exceeds six characters, the decimal and the numbers following are put on the next line), chronological (year) class subdivisions on a new line, each Cutter number on a line, eliminating the period before the first Cutter. The data following the Cutter is segmented in what the computer can determine to be reasonable units.

5. *The printing of copy numbers and volume numbers on the spine labels*

If more than one copy is owned, the copy number is printed. Volume number designations are also printed.

6. *The type size used on spine labels*

Bulletin, executive, and pica types were all being used by the libraries in their existing systems. The NELINET labels are typed on a Dura with pica type.

7. *The type of card stock and spine labels*

No variations were provided for because of the trouble involved in changing forms. At present, Remington Rand continuous card stock is being used. Since one of the libraries has complained about the quality, the system may change to another card stock. Selin labels are used. One of the libraries does not want Selin labels so labels are not made for them. The profile for each library indicates whether labels are wanted.

B. Allow Variations

1. *The number of each type of card*

The system accommodates the differences in card requirements among the libraries and within each library system. The profile for each library contains the number of main entries, added entries, subject entries, and shelflist cards desired for titles held in the main stacks of the main library, for each special shelf location within the main library, and for each branch. The appropriate number of cards are then generated automatically, triggered by the location symbol of the title being processed. For instance, if the title being processed is for the main stacks of the main library of the University of New Hampshire, the profile calls for four main entry cards (one for the catalog and three to be sent to three neighboring New Hampshire state colleges), one copy of each added entry, and a shelflist card, all of which are generated by the computer program.

If a library wishes more main entries than their usual requirement for a particular title, they may obtain them by indicating on their processing-request worksheet the number of extra copies desired.

2. *Symbols used to indicate special locations such as Reference*

No attempt was made to have the libraries standardize such symbols. The profile for each library contains the location symbols used with the desired number of catalog cards indicated for each location.

3. *The determination of an oversized book*

Rather than have the libraries change to a standard oversize determination, the system allows for variations in oversize determination among the libraries (but not within a library). It also allows different oversize symbols to be used. It does not allow for differences in positioning of the symbol. The symbol is placed on the line above the class number.

4. *Data put on the shelflist card*

Since some of the libraries use an over-all copy numbering scheme including all locations, while others have separate copy numbering for each location (and one includes branches with the main scheme but uses separate numbering for each special shelf location within the main library, e.g., Reference), printing copy-volume data on shelflist cards is rather complex. The system does not as yet print copy-volume data on shelflist cards. The data is identified and stored, but further systems work is required before it can be printed properly in all cases.

We have seen in the NELINET experience that computerized systems can accommodate many different processing practices with little expense of human effort. Since it is possible to program a system which can accommodate almost any variation, the question of what to standardize and what variations to allow becomes a question of economics, not of technical feasibility. Allowing variations does involve additional expense—the cost of the additional programming required, plus the cost of the additional machine-running time to operate the system. The additional programming time is a one-time expense; the additional running time is not.

The libraries participating in the development of NELINET are university libraries. With the exception of using Library of Congress catalog copy and cards, university libraries have not entered into cooperative or centralized arrangements to any extent. That five libraries have been willing to accept products in some respect different from their own is indicative of the cooperative spirit and realistic attitudes of the librarians involved.

MACHINE-READABLE FORMATS FOR BIBLIOGRAPHIC RECORDS

Before assuming that computers have solved the problem of standards in the bibliographic world, let us consider the variations that computers themselves introduce. Machine-readable bibliographic records may vary in a number of ways including:

- 1) the content of the record—the data that is included to describe the item processed;
- 2) the recording of the data. Is it recorded in natural language, in coded form, or both? If in natural language, is the data normalized to an authorized form?;
- 3) the determination of items that are to be separately identified in the record;
- 4) the manner of identification of these items—as tagged fields, delimited subfields within a tagged field, or assigned positions within a field;
- 5) the structure of the machine record. Are the identifying tags interspersed with the data?; and
- 6) the character set used to represent the data.

With the acceptance of the MARC II format, the library community has achieved standardization in all the areas mentioned above. This is no minor achievement, and the importance of acceptance of the MARC II standard to the development of library automation in this country and elsewhere cannot be overestimated.

It should be noted, however, that the MARC standard was able to build upon the standardization already present in the bibliographic records produced for library catalogs. Since libraries generally follow the ALA cataloging code, the content of the record and the form of names are already more or less standardized. Such, however, is not the case with all producers of bibliographic records—the abstracting and indexing services, for example.

The proposed “U.S.A. Standard Format for the Communication of Bibliographic Information in Digital Form” covers only the structure of the

machine record (number 6, above). Whether abstracting and indexing services will ever achieve the same level of standardization as libraries is open to question. Also open to question is the desirability and feasibility of combining both traditional cataloging records, and the records of abstracting and indexing services in a single machine file. Can the differences in processing practices be reconciled in a single machine file? Perhaps a more basic question to ask is, will librarians continue to consider the journal article and other non-book forms to be outside their province?

As in most discussions of cooperative processing for libraries, this paper has dealt mainly with the topic of standardization. It might well have been subtitled "Standards vs. Local Options." What to standardize, what to mechanize, and what to centralize are decisions that every processing network will have to make in terms of its own needs and capabilities. This paper has indicated that such decisions can be made and can be implemented.

Whether libraries should unite because of location of members, size of collection, type of library (college, public, school), or configurations of subject holdings remains to be seen. NELINET incorporates two of these criteria: the members (at present) are all university libraries (type of library) and are all in the New England area (location of members). But whether this represents the best combination, whether others are better, or whether any combination would be equally valid has yet to be determined.

Can the dichotomous needs of shared-resources networks and shared-cataloging networks be reconciled, and, if so, to what extent? On what level? The strength and purpose of shared-resources networks lie in the diversity of the holdings of its members. A major advantage, on the other hand, of a shared-cataloging network lies in the economics attainable through elimination of duplicative efforts and this, in turn, predicates similar rather than disparate collections. Yet, the composite data base which can be derived from shared cataloging systems constitutes a powerful finding tool for use in shared-resources networks.

Also facing such networks is the problem of evaluating their cost and efficacy. What will their services cost? What do the manual, independent systems which they expect to replace cost now? How timely will network services be? How much delay, if any, will there be in the data from MARC tapes as opposed to the availability of the book itself?

Last, but not least, is the human factor. As Sarah Vann has put it:

However sophisticated, technically superior, and feasible a centralized information flow may be, it seemingly has little effect unless the individuals involved in such a program change their present habits and agencies modify their organizational structure. Any plan for statewide activity should incorporate, therefore, a balancing of technological feasibility with human resource adaptability.⁶

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