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Video Technologies:
Neologism or Library Trend?

Converging factors are shaping a new environment for libraries, and, as a consequence, the present is full of opportunity. Technical and social changes provide libraries with a host of alternatives for service, growth, and innovation.

In this new environment libraries will, undoubtedly, continue to promote the availability of books and other materials, continue to increase their efforts to furnish patrons with information, and continue to broaden the range of activities offered so that patrons can receive personalized service. Patron information seeking and searching methods we have known, however, will give way to new methods based on computers and telecommunications.

A host of new technologies is growing out of the evolutionary pathway marked by telegraph, telephone, radio, and television. Broadband communications (that's the cable that today brings you predominantly entertainment television), satellite, videotex, teletext, videodisc, videotape, large-screen television, and computer displays (some are as large as the side of a building) are available either today or within the next year or two. Each of these technologies is a new medium within its own inherent capabilities and limitations. Each has the promise of providing faster and more cost-efficient information services than some present forms of printed communication. And each requires a different approach and different knowledge for effective and efficient use, and integration into library operations.

In a growing number of locations, cable communications for delivery of library services have already been made available virtually free of charge. Other technologies, such as videotex, will grow significantly. Estimates suggest that in five years more than 8 million American homes will be able to obtain extensive, automated information services from commercial, private, and government sources. Probably a larger number will receive limited information services over the broadcast airwaves via teletext. Dramatic new services will combine television, computer, telephone, satellite, and cable into home entertainment and information centers . . . potential extensions of libraries.

Some sources suggest more than 50 percent of the American Gross National Product results from the collection, processing, and dissemination of information, much of which involves new technologies. Inev-

itably, this technological trend also will occur in libraries and, in this light, the relatively low level of involvement of computers in providing patron services today is notable. By their natural inertia, individuals and organizations in the library community will be opposed to the acceptance of cable services, videotex, online catalogs, information retrieval, and other video technologies simply because it represents change. But these technologies are technically feasible and are becoming an economic reality. The point of demarcation between computer and library may well become a terminal in a patron's home. Whether or not the service provided is a library's or a commercial competitor's depends to a great extent on how libraries define their role in this environment, and on the degree of library participation in the evolutionary process that's now taking place.

Something besides inertia opposes the acceptance of new technologies, however. To some degree, lack of awareness of technological trends is a factor, but more significant is a lack of clear understanding (both by the proponents of the technology and by librarians) of how new technology can be integrated into the library setting. Understanding the value a technology offers — for increased service or decreased cost, for example — should be paramount, but frequently the technology seems to be offered as an end in itself.

Internal and external factors must be considered to guide the application of technology toward meeting library and patron needs. Financial concerns, social forces, and the consumer/patron appear to be major factors leading libraries toward a future deeply involved in video technologies. Whether the outcome will result from external pressure or internal plan remains to be seen. It's incumbent upon libraries to be informed and active participants in directing their own future in this kind of an environment.

What are the implications of this technical evolution and internal/external factors? One thing is sure: it's a massive industry growing at a very rapid rate, and it is going to grow even faster. Libraries have the opportunity to grow with this trend through application of the technologies to existing technical services, increased availability of patron services, and development of innovative services. If there is a common thread that can identify those libraries which will grow and prosper, that thread is flexibility — the capacity of library management and staff to adapt this library to the new environment, and integrate technology into their library.

Readers and contributors of *JOLA* are the people that can either have an integral part in defining the future direction of libraries, or passively watch patron needs outstrip services. Library schools and people involved in library-related research must play a key role in assessing the value of video technologies and defining how to integrate them into the business and service of libraries. What is going to preserve and enhance

the role of libraries in the 1980s will not only be flexibility but another very critical element — foresight, dedicated to patron needs. Many libraries have met this technological revolution head-on and are intimately involved in testing, developing, and providing innovative library services.

In this and forthcoming issues, we hope to bring a perspective on these changes that is valuable and cogent to the library community. Readers of *JOLA* and practitioners in all areas of video technology are called upon to describe their efforts and share their results drawn from this rapidly changing field through contributions to this journal.

THOMAS D. HARNISH

EDITOR'S NOTES

JOLA will continue to be interesting and useful to its readers to the extent that its readers are willing to expend the efforts to also be its writers. The authors in this issue are all as busy as you and I. They have made time in their already full schedules to write down ideas and information they hope will be useful and provocative. They and we of the *JOLA* staff hope you are pleased with the results.

So what's new by you? How have your patrons reacted to your new online catalog? What do the costs of your acquisitions system look like? How about that idea you had about a new way to do whatever? Do you think the fuss over authority control is worth it? If you have ideas, perceptions, or stories to tell that you feel are of interest to your fellow readers, please write and let them know.

Design Principles for a Comprehensive Library System

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This paper describes a project that takes a step-by-step or incremental approach to the development of an online comprehensive system running on a dedicated computer. The described design paid particular attention to present and predicted capabilities in computing as well as to trends in library automation. The resultant system is now in its second of three releases, having tied together circulation control, catalog access, and serial holdings.

PERSPECTIVE

The use of computers in libraries is no longer a speculative venture for the daring few. Rather, library automation has become the accepted prerequisite for effective library service. The question faced is not "if," but rather "how" and "when." The reasons for this evolution are diverse, but fundamental is the recognition of online computer processing as the most effective means of simultaneously handling inventory control, information retrieval, and networking of large, complex, and volatile stores of data. Most areas of current library practice could now benefit from effective computer-based control. Mature and proven systems exist for cataloging, circulation, serials control, acquisitions, catalog access, and "reader guidance"; the latter by virtue of online literature searching facilities such as DIALOG, MEDLARS, or BRS. The challenge is to find or develop an optimal mix of capabilities.

Two common limitations from which library automation projects suffer are the use of nonstandardized, incomplete records and the lack of functional integration of different tasks. In most cases these limitations are due to historic circumstances. The pioneering systems — say, those online systems introduced between 1967 and 1975 — had to conserve carefully the available computing resources. A decade ago it was unthinkable for any library to store a million MARC records online. Mass

storage costs alone precluded that option. To best realize the benefits of automation, short records, usually of fixed length, were employed.

There is little question that systems based on short records were helpful to their users. However, one characteristic of these systems was their proliferation within a particular library. After the first system was shown to be a success, it became compelling to try another. The problem was that these separate systems were usually not communicating directly with each other because of limitations imposed by program complexity and load on available resources.

Thus, the use of incomplete records breeds isolated, noncommunicating systems. However, system users have come to demand that all relevant data be available *at* a single terminal *from* a single system. It is not enough to know that a particular title is due back in twenty-five days; the user must also know that copy two has just been received, and that copy three is expected to arrive from the vendor in one week. That is, the functions of catalog access, circulation, and acquisitions must be brought together at a single place — the user's terminal. And while the importance of functional integration has been recognized for some time, only a very few report successful implementations. [1,2] The Kafkaesque alternative to functional integration becomes the library that has been "well computerized" but where the librarian must use five different terminals, one for each task.

As computer-based systems have grown to maturity, increasing stress has been placed on standardization. In library automation the measure of standardization is wide-scale use of the MARC formats for documents and authorities; the use of bibliographic "registry" entries such as ISBN, ISSN, or CODEN; the use of standard bibliographic description; and so forth. However, the application of common languages and standardized protocols, data description, and definition has been less pervasive. We find many applications that eschew use of the common high-level languages, database management systems, and standard "off-the-shelf" or general-purpose hardware.

The emergence of powerful and easy-to-use database management systems, the spectacular price reductions in hardware, and the concomitant, and equally spectacular, improvements in system capabilities have made it clear that it is practical to think ambitiously. Perhaps the major articulation of these developments has been the pervasive shift from a central computer shared with nonlibrary users to the utilization of dedicated minicomputers. [3]

Our analysis of the requirements of a comprehensive system led to recognition of the key role played by serials in research libraries. Serials form the most critical factor in automating library service because of the complexity of their bibliographic, order, and inventory records, and because of their importance to research. [4] A fundamental error in designing a comprehensive library system would involve focusing on the require-

ments of monographs and/or other "one-shot" forms of the literature. The reason is, simply, that monographs and other such publications can be treated as an easy limiting case of a continuing set of publications. This observation is borne out by Christoffersson, who reports an application that extends the idea of seriality and develops a means to provide useful control and access to all classes of material.[5]

DESIGN PHILOSOPHY

The concerns outlined above mean that a viable library system should meet the following design criteria:

Functional integration. Functional integration is simply the ability to conduct all appropriate inquiries, updates, and transactions on any terminal. This envisages a cradle-to-grave system wherein a title is ordered, has its bibliographic record added to the database, is received and paid, has its bibliographic record adjusted to match the piece, is bound, found by author, title, subject, series, etc., charged out, and, alas, flagged as missing. In this way a terminal linked to the system will be a one-stop place to conduct all the business associated with a particular title, subject, series, order, claim, vendor, or borrower.

Completeness of data. If the system is to be functionally integrated, it is clear that it must carry the data required to support all functions. In particular, data completeness is required to satisfy the access and control functions. Consider, for example, the problems associated with the cataloging function. A book is frequently known by several titles or authors. Creating these additional access points is a large portion of the cataloger's responsibility. Only systems that allow the user access to these additional entries utilize the effort spent in building the catalog record. Such system capabilities must be present to allow the labor-intensive card catalog to be closed and, more important, to allow maintenance of the catalog *within* the system.

Use of standardized data and networking. In an excellent article, Silberstein reminds us that, in general, the primary rationale for adhering to standards is interchangeability.[6] We give great importance to being able to project our data to whatever systems may develop in the future. We believe this consideration is of the highest priority because, fundamentally, the only thing that will be preserved into the future is the data itself.*

Without interchangeability of data, sharing of resources is impossible. Data interchangeability is, of course, a basic assumption that has been made in speculation concering the national bibliographic network[7] developing from the bibliographic utilities—notably, OCLC, Inc., the Research Libraries Group's RLIN facility, the Washington Library Network, and the University of Toronto's UTLAS facility. Today, nearly all

*This state of affairs seems to be true for all computer-based systems because their lifetime is, typically, no greater than ten years.

research libraries participate in some utility. While their participation is primarily directed to utilization of the cataloging support services, we find an increasing amount of interest and use of additional capabilities, notably interlibrary loan. We expect a steady and continual growth of these library networking capabilities.

However, networking is *not* problem free. Perhaps the biggest single problem in using the network is the misalignment between the record as found on the bibliographic database and the requirements of individual libraries. While such variability between the resource database record and the user's needed version is well understood,[8] the local library frequently has a difficult time adjusting records to meet local needs. One example is OCLC's inability to "remember" in the online database a particular library's version of a record. Another example is the CONSER project's practice of "locking" very dynamic records as soon as they are authenticated. This locking frequently means that required updates cannot be made and users cannot share with one another corrections to the base record. After locking, each must, independently, go about bringing the record up to date. Thus, as Roughton notes, "the next library to call up the record loses the benefit of the previous library's work."[9] This inhospitable state of affairs forces individual libraries to maintain their own records if they wish to change bibliographic records after initial entry.

The problem of local adjustment of bibliographic records in no way conflicts with the goal of standardized bibliographic data. Standardized data provides a quick means of delivering an intelligible package to a variety of users who will adapt the package to meet their particular needs. Standardization does not mean making adaptation inefficient or more costly than it need be; rather, standards provide a framework around which the details are filled in. These observations on standardized data formats imply that the library's data must be based on MARC records for books, serials, authorities, etc.; and on the ANSI standards for summary serials holdings notation, book numbers, library addresses, and so forth.

Microscopic data description. At this point, system administrators face a fundamental problem—many of the library's important records have *no* standard format. The most conspicuous example involves the notation for *detailed* serials holdings.[10] The only alternative one has when trying to build a system without standardized formats is to rely on "microscopic" description. That is, each and every distinct type of data element that makes up (or can make up) a field in a record must be accounted for and uniquely tagged. In this way, whatever standard format is ultimately set, it will be possible, in principle, to assemble *by algorithm* the data elements into an arrangement that will be in conformity with the standard. Only if the library is using microscopic data description will the library be able to maintain its independence of particular lines

of hardware or software. We are convinced that the use of untagged, free-form input will, in the long run, spell disaster.

Use of general purpose hardware and software. Many strategies in dealing with library automation involve redesigning standard hardware or software. For example, one vendor has reported an interesting design of mass storage units that improved access time.[11] We feel that future applications should, as much as possible, steer clear of such customized implementations because the standard capabilities of most affordable systems allow sufficient processing power and storage economies even if these capabilities are suboptimal for a particular application. The use of general-purpose hardware and system software promotes system sharing between different installations. Moreover, an application based on general-purpose hardware and system software will be easier to maintain and far less vulnerable to changes in personnel. For turnkey installations, the greater the degree of use of general-purpose hardware and software, the better shielded will the installation be against changes in product line or the vendor's ultimate demise. A noteworthy application of this principle of compatibility is seen in the system being developed by the National Library of Medicine.[12]

SYSTEM DESCRIPTION

The functional capabilities of the Virginia Tech Library System (VTLS) have been developed in two software releases, with the third release soon to appear. The initial release met the needs associated with circulation control and also provided rudimentary access to the catalog and serials holdings. The present release has benefited from the use of the MARC format, and allows vastly improved catalog access and control. Release III, the comprehensive library system now being developed, will draw together acquisitions, authority control, and serials control with the current capabilities.

VTLS Release I

The initial release of the system was developed in 1976 to meet needs generated by rapid library growth. Circulation transactions had been increasing at about 10 percent annually for the previous decade and were straining the manually maintained circulation files beyond acceptable limits. The main library* at Virginia Tech is organized in subject divisions—each essentially "owning" one floor of a 100,000-square-foot facility. A 100,000-square-foot addition to the library had been approved. Because Virginia Tech's library has only one card catalog, some means was necessary to distribute catalog information throughout a facility that

*Only two quite small branch libraries (architecture and geology) exist on campus. In addition there is a reserve collection located in the Washington, D.C., area that supports off-campus graduate programs in the areas of education, business administration, and computer science. All these sites are linked to the system.

was to double its size. After reviewing the alternative means of distributing the catalog—e.g., a duplicate card catalog, photographic reproduction of the catalog, or a COM catalog—it was decided to attack both problems, circulation control and remote catalog access, within a single online system.

VTLS was installed on a full-time basis in August 1976. Its first release ran continuously on the library's dedicated Hewlett/Packard 3000 minicomputer until December 1979. At that time the system held brief bibliographic data for approximately 325,000 monographs and 25,000 journals and other serial titles—records for about half the collection. While the first release ably met its goals, it became clear that it would prove to be an unsuitable host for additional modules involving acquisitions and serials control, primarily because of the brief, fixed-length bibliographic records. As a result of highly favorable price reductions in computer hardware and improvements in capability, it was possible to think in terms of storing one million MARC records online as well as supporting the additional terminals required for a comprehensive library system.

VTLS Release II

VTLS runs under a single online program for all real-time transactions. The major goals in the design of this program were the following:

1. Two conflicting requirements had to be accommodated: First, the program had to be easy to use for library patrons. This is requisite for a system that will eventually replace the card catalog. Second, the program had to be practical, efficient, and versatile for its professional users. The keystrokes required had to be minimal, and related screens had to be easily accessible from one to another.
2. The response time had to be good, especially for more frequent transactions.
3. The contents of all screens had to be balanced to provide enough information without being overcrowded and difficult to read or comprehend. Further, each screen of VTLS had to be arranged by some logical arrangement of the data it contains—for most screens this meant alphabetical sorting of the data according to ALA rules.
4. The format of all screens, especially those to be viewed by the patrons, had to be visually pleasing. Thus, the use of special symbols (which are so abundant on many computer system displays), nonstandard abbreviations, and locally (and often quite arbitrarily) defined terms were unacceptable.
5. The program had to have security provisions to restrict certain classes of users from addressing particular modules of the program.

Considerable effort was spent to satisfy these goals. The first goal was achieved by the "network of screens" approach. The second goal—prompt system response—necessitated the use of the "data buffer

method," which, in turn, proved to have other uses (both of these techniques are discussed below). To satisfy goals three and four, a committee of librarians and analysts spent months drafting and reviewing each screen until it was finally approved by the design group. Goal five—security provisions—was reached without much difficulty.

Network of Screens

VTLS's data-access system is designed to be used as easily as a road map. This is accomplished by the use of a "network of screens." The network of screens is much like a road map in which a set of related data (a screen displayed in one or more pages) acts as a "city," and the commands that lead from one set to another act as "highways." VTLS has nineteen screens including various menu screens, bibliographic screens (see "The Data Buffer Method" below), serial holdings screens, item (physical piece) screens, and screens for patron-related data.

The user can "drive" from one "city" to another using system commands. The system commands are either "global" or "local." Global commands, as the name implies, may be entered at any point during the execution of the online program. A local command is peculiar to a given screen. Global commands are of two types: search commands and processing commands. Search commands are used to access the database by author, title, subject, added entries, call number, LC card number, ISBN, ISSN, patron name, etc. Processing commands, on the other hand, initiate procedures such as check-out, renewal, or check-in of items. The user first enters a global (search) command to access one of the screens in the network. From there, local commands that are specific to the current screen can be used. There are three different types of local commands: commands that take the user from one screen to another; commands that page within the current screen; and commands that update data related to the screen. For example, it is possible to start by entering an author search command to access the network and then proceed not only to find what books the author has in the system but also the availability of each of the books. If the books are checked out, information about the patrons who have them can also be reached. This display is called the patron screen. From the patron screen, one can "drive" to the patron activity screen, which displays circulation information about the patrons. Thus, each displayed screen leads to another. In fact, the searches can start at ten different screens and proceed in many different ways through the network.

Database Design

IMAGE/3000, Hewlett-Packard's database management system used by VTLS, is designed to be used with fixed-length records. This fact, coupled with the need to sort entries on most screens, created serious problems in the early stages of the system design. But various tech-

niques were devised to overcome these apparent road blocks.

Figure 1 illustrates the breakdown of the bibliographic record in the database and the way it is linked with piece-specific data. Bibliographic data are stored in three distinct groups for subsequent retrieval:

1. Controlled vocabulary terms. (Authority Data Set)
2. Title and title-like data. (Title Data Set)
3. All remaining bibliographic data; i.e., data that is not indexed. (MARC–Other Data Set)

This grouping of the MARC record extends to subfields, thus splitting mixed fields such as author-title added entries. When individual fields are parsed in this way, a single field may contribute more than one access point, such as variant forms of author, title, series name, subject, and added entries. Access by the standard bibliographic control numbers is effected by use of inverted files (not shown in the figure).

A fundamental characteristic of this layout involves the storage of controlled vocabulary terms (i.e., authors and subjects). Regardless of the number of references made to an authority term from different bibliographic records, the controlled vocabulary term is stored only once. The system assigns a unique number (Authority ID) to each such term and uses this number to keep records of the references made to it in a separate data set (Authority Bibliographic Linkage Data Set). This particular structure makes an authority control subsystem possible, speeds up online retrieval and display, and economizes mass storage.

The Data Buffer Method

The system displays bibliographic records in two different formats. If the terminal used is designated for librarians, the records are displayed
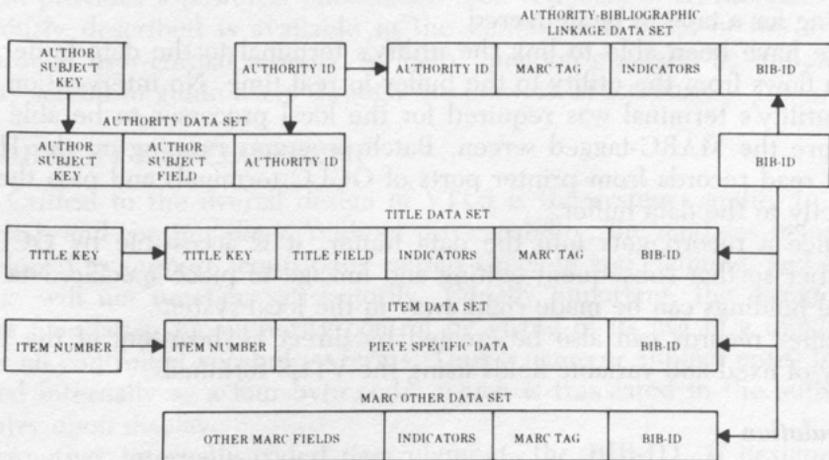
FIGURE 16   BIBLIOGRAPHIC LAYOUT OF THE CFS-II DATA BASE. (SIMPLIFIED)

Fig. 1. Bibliographic Layout of the VTLS Database (Simplified).

in the MARC format (the resulting screen is referred to as the MARC screen); otherwise, they are displayed in a screen that is formatted similar to a catalog card. Before displaying these screens, the online program collects and formats the data to be displayed and stores it in one of the two "buffer" data sets. The records stored in the buffer data sets are called buffer records. Buffer records can be edited, as required, by adding new lines, deleting, or modifying existing character strings. These updates can be executed quickly and without placing much load on the system since they involve little, if any, analysis, indexing, and sorting. Thus, the buffer data sets store all bibliographic updates and new data entry of the day. At night, these records are transferred to the rest of the database by a batch program.

The data buffer method has had several pronounced effects on the system. By transferring periods of heavy resource demand to off-hours, the system can work with full MARC records in a library that has a heavy real-time load of data entry, inquiry, and circulation. The data buffer approach also improves access efficiency because once a buffer record is prepared for a screen, subsequent searches for the same record are satisfied by the buffer record.

Data Entry and the OCLC Interface

The most frequently encountered method of entering MARC records into a local computer involves use of tape in the MARC II communications format. Alternative methods include the use of microprocessors or digital recorders which "play back" a MARC-tagged screen image from OCLC or some other bibliographic utility. These alternative methods have the strong advantage of shortening the delay introduced while waiting for a tape to be delivered.

We have been able to link the utility's terminal to the data buffer.[13] Data flows from the utility to the buffer in real time. No intervention in the utility's terminal was required for the local processor to be able to capture the MARC-tagged screen. Batch programs running on the H/P 3000 read records from printer ports of OCLC terminals and pass them directly to the data buffer.

Once a record gets into the data buffer, it is accessible by OCLC number so that subsequent editing and linkage to piece-specific data or serial holdings can be made right away in the local system.

Buffer records can also be created by direct keyboarding of the full array of fixed and variable fields using the VTLS terminals.

Circulation

As with most other online circulation systems, VTLS uses machine-sensible bar-code labels to identify books and borrowers to the system. All efforts have been made to humanize the system. One consequence is

that the system does not make decisions better made by responsible staff. Thus, two kinds of circulation stations reside side by side. The first is staffed by students who typically work a ten-to-twenty-hour week and historically have shown high turnover. Their circulation stations only deal with inquiries and with heavily used but nondiscretionary transactions: check-out, renewal, and check-in. Should problems arise, the borrower is directed to the adjacent station staffed by a full-time employee who, using the system, can articulate circulation policy to borrowers and make decisions with regard to any questions concerning fines, lost books, or reinstatement of invalidated or blocked privileges.

START-UP

We found system start-up to be a relatively easy task. It was convenient to use the so-called rolling conversion in which items were labeled upon their initial circulation through the system. The greatest benefit was seen in the first year when the probability that items brought to the circulation desk were already known to the system increased exponentially. After six months this probability had risen to 65 percent with only 10 percent of the circulating collection having been labeled. At the end of the year the probability increased linearly at 0.7 percent per month. After three years of operation, the probability was 90 percent, with approximately 50 percent of the circulating collection having been labeled.

REFERENCE USE

The ability to distribute catalog access as well as circulation information provides a powerful information tool. A subset of all functions previously described is available to the nonlibrarian users of the system through user-cordial screens. A "help" function may also be initiated at any screen to guide users through the network of screens.

CURRENT DEVELOPMENT

Critical to the overall design of VTLS is the system's ability to treat serials and continuations. Without this capability, the modules being developed to support acquisitions, serials check-in and claiming, and binding, will not function satisfactorily. Equally important, the design lays the foundation for authority control by virtue of its use of a dictionary for all controlled vocabulary terms. Thus a name or subject entry is carried internally as a four-byte code, which is translated to the authority entry upon display.

Another internally coded data element, the BIB-ID, is designed to handle many of the linkage problems associated with serials and continuations. The BIB-ID is unique for each MARC record.

Prior to establishing the serials control modules governing receipt,

claiming, and binding, the coded holdings module must be functioning. This module will allow automatic identification of volume (or binding unit) closure and automatic identification of gaps in holdings or overdue receipts. Thus, highest priority has been given to the development of this module so that these other modules can, in turn, develop. The holdings module serves two functions: first, it allows the detailed recordings of serials holdings consistent with the principle stated earlier concerning microscopic data description; and second, these microscopic data are *coded* so that the system can recognize (and predict) particular pieces or binding units in terms of enumerative and chronological data.

The next three areas of development are modules for acquisitions and fund control, serials receipts and binding, and authority control. The final development will be comprehensive management reports.

It should be noted that each one of these developments will result in a specific benefit to the user community. The project is *incremental* in that the development of area *A* does *not* mean that area *B* must be developed for *A* to have lasting value. This incremental approach offers designers and administrators the advantages associated with an orderly growth in complexity and budget requirements. Further, the capabilities of the host hardware and software are stressed in smaller steps than would be the case if the comprehensive system were written and then turned on. The key move appears to be predefining the scope and capabilities of each stage so that a useful product emerges at its completion, and so that it lays a foundation for the next.

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OCLC Search Key Usage Patterns in a Large Research Library

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Many libraries use the OCLC Online Union Catalog and Shared Cataloging Subsystem to perform various library functions, such as acquisitions and cataloging of library materials. As an initial part of the operations, users must search and retrieve a bibliographic record for the desired item from the large OCLC database. Various types of derived search keys are available for retrieval. This study of actual search keys entered by users of the OCLC online system was conducted to determine the types of search keys users prefer for performing various library operations and to find out whether the preferred search keys are effective.

INTRODUCTION

In the last decade, many information systems have been developed that use search keys to retrieve bibliographic records from large databases. The OCLC Online Union Catalog and Shared Cataloging Subsystem in particular is one of the larger of these systems.[1-6] There are currently more than 7 million bibliographic records in the OCLC database.

The OCLC online system uses search keys to access various index files that locate bibliographic records in the database. Index files are maintained for name/title, personal author, corporate author, CODEN, ISBN, and LCCN indexes. The first four of the above index files contain search keys that are derived from information (e.g., author, title) present in the piece or citation. Search keys in these four indexes are in general not unique, because the derived key could be the same for different bibliographic records. The last three indexes (CODEN, ISBN, and LCCN) contain search keys or identifiers that are unique in general. A user enters a search key consisting of characters (letters, numbers, symbols, commas, hyphens) formatted according to specific rules that identify to the system which index file to search. For example, to search the name/title index, the user enters a search key consisting of the first four characters of the author's last name and the first four characters of

the first nonarticle word of the title of the work, separated by a comma. To search the title index, the user enters a search key consisting of the first three characters of the first nonarticle word in the title, the first two characters of the second word, the first two characters of the third word, and the first character of the fourth word, each separated by a comma.[7]

The system compares the user-entered search key with the search keys contained in that index file. This comparison results in one of three possible cases:

1. Only one index file search key matches the user-entered search key.
2. More than one index file search key matches the user-entered search key.
3. No index file search key matches the user-entered search key.

In the first case, the system retrieves the unique bibliographic record corresponding to the search key and displays it on the user's terminal screen. In the second case, the system retrieves all records that correspond to the search key, prepares truncated entries (consisting of author, title, imprint data, etc.) for those records, and displays the truncated entries on the user's terminal screen. The user then selects the truncated entry that corresponds to the desired record and requests the system to display the full record for that item. In the third case, the system responds with the reply that a record matching the user-entered search key was not present (a "not found" response) in the index.

In the OCLC online system, 2,500 member libraries using 3,800 terminals search the OCLC database to perform various library functions such as acquisitions, monograph cataloging, and serials cataloging. Users can choose to enter any type of search key from the various types of search keys permitted by the system. Users' preferences to enter a particular type of search key will depend in part upon the kind of information they have about the item to be searched and the type of library function they wish to perform. If users receive a "not found" response after entering a particular type of search key, they may then try a different type of search key that they consider next best.

The purpose of this study was to determine what types of search keys are preferred to perform various library functions and whether the preferred search keys are effective. The study also investigated what type of search key is used next when particular types of search keys are unable to retrieve the desired record to determine if there are any discernible search patterns.

MATERIALS AND METHODS

For conducting this study, data were needed on the pattern of search-key use in OCLC member libraries. Further, the data had to include the actual time of day when work was performed for a particular library

function on a specific terminal. This requirement would permit iden-
tification in the Online System Use Data collected by OCLC of search
keys entered to perform specific library functions. Ideally, a library with
several OCLC terminals, each used exclusively for only one library
function, was desired. The Ohio State University (OSU) Library met
this requirement. The OSU Library has eleven terminals: two of the
eleven terminals are used exclusively for performing acquisition func-
tions, seven are used for monographic cataloging, and one terminal each
is used for serials cataloging and public use. The terminal assigned for
serials cataloging is used for monograph cataloging after 5 p.m. Library
staff at OSU use all the terminals exclusively, except for the public-use
terminal. This public-use terminal can be used by anyone, including
faculty, students, and library staff.

Two full days' transactions for each of the OSU terminals were
obtained from the OCLC Online System Use Statistics (OLSUS) file.
During the online operation, the system writes a record on the OLSUS
file for each message entered by the user. This record includes the in-
stitution number, a number identifying the terminal from which the
message came, the time of the transaction, and the first nonblank six-
teen characters of the message. If the user-entered message is a search
key, the system response is either a "not found" response or a "found"
response.

With the "found" response, the system displays the bibliographic rec-
ord (if unique) or displays a truncated entry screen. However, a "found"
response does not necessarily mean that the truncated entry screen in-
cludes information about the bibliographic record the user was actually
seeking.

For the study, a program was written to scan the records in the
OLSUS file for two full days in October 1978. The program extracted all
the records for messages that came from the eleven OSU terminals and
wrote the records on two tapes—one for each day's activity. These tapes
were sorted first by the terminal number and then within each terminal
number by the time of transaction. Each sorted tape was fed to another
program that printed, for each terminal, the actual messages in chrono-
logical order and the associated system response.

From this printout, it was possible manually to go through the com-
plete sequence of messages entered to search a single bibliographic
item. The printout for an entire day's activity for each terminal was thus
divided into sections, each section containing all transactions that were
performed to search for a single item. For each section, the type of
search key first entered and the system response was noted. In case of a
"not found" response, the type of search key next entered (if the search
process was continued for the item) also was noted. The results were
combined for all the terminals used to perform a specific library function
(e.g., acquisitions) and for the two days.

RESULTS AND DISCUSSION

Table 1 and figure 1 show the different types of search keys used as the first choice to perform various library functions. Note that at the time of data collection for this study, the Interlibrary Loan Subsystem was not operational.

Table 1. Different Types of Searches for Various Applications

Type of Search	Acquisitions		Monograph Cataloging		Serials Cataloging		Public Use	
	Items Searched	% of Total	Items Searched	% of Total	Items Searched	% of Total	Items Searched	% of Total
Name/Title	111	37.5	313	51.7	15	15.9	77	48.7
Title	49	16.6	48	7.9	72	76.6	44	27.8
Personal Author	0	0.0	9	1.5	0	0.0	16	10.1
LCCN	122	41.2	201	33.2	1	1.1	13	8.2
ISBN	14	4.7	34	5.6	1	1.1	3	1.9
ISSN	0	0.0	0	0.0	5	5.3	3	1.9
CODEN	0	0.0	0	0.0	0	0.0	2	1.3
Total	296	100.0	605	100.0	94	100.0	158	100.0
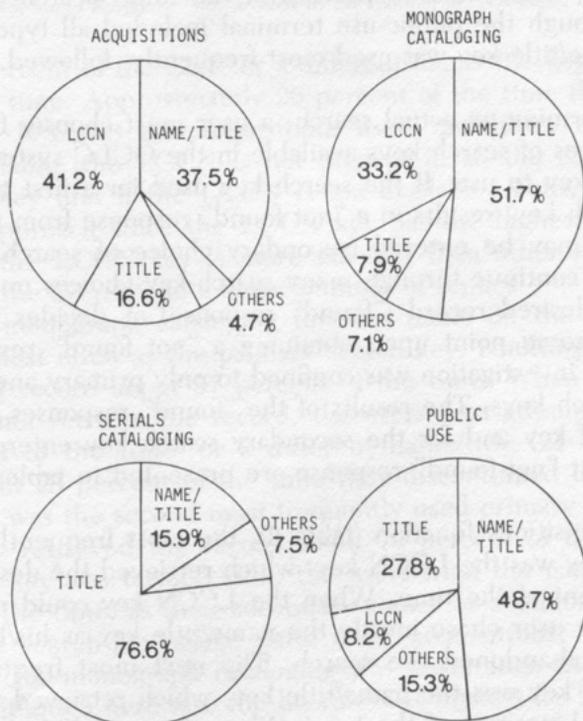
Fig. 1. Number of Different Types of Search Keys for Various Applications.

During the two-day period, a total of 605 items were searched for monograph cataloging, 296 items were searched for acquisitions operations, and 94 items were searched for serials cataloging. A total of 158 items were searched on the public-use terminal. Most types of search keys were used to some extent. The use of ISBN and ISSN search keys was quite limited for all types of library functions. The CODEN search key was used only twice, and both times through the public-use terminal. The corporate author search key was not used at all. The use of the personal-author search key was much smaller than expected. This was probably because at the time of the study the system did not permit use of personal author keys during peak hours (9 a.m. to 5 p.m.) of online system operation.

For the acquisitions function, the LCCN search key was used most often, followed by the name/title key. These two types of keys together were used for about 80 percent of the acquisitions items searched. For the monograph cataloging function, the most frequently used search key was the name/title key. This key was entered for about 52 percent of items searched. The next most frequently used key for monograph cataloging was the LCCN key, used for about 33 percent of the items searched. For the serials cataloging function, the title key was used most often, for more than 75 percent of the items searched. Searches performed through the public-use terminal included all types of search keys. The name/title key was used most frequently, followed by the title key.

Before performing an actual search, a user must choose, from among the various types of search keys available in the OCLC system, the particular search key to use. If the search key used for a first try (primary choice of search key) results in a "not found" response from the system, a second key may be entered (secondary choice of search key). This sequence may continue through many search-key choices until the user retrieves the desired record ("found" response) or decides to abandon the search at some point upon obtaining a "not found" response. For this study, the investigation was confined to only primary and secondary choices of search keys. The results of the "found" responses for the primary choice of key and for the secondary search key entered after receiving the first "not-found" response are presented in tables 2 through 5.

For the acquisitions function (table 2), the most frequently used primary search key was the LCCN key, which retrieved the desired record about 89 percent of the time. When the LCCN key could not retrieve the record, the user chose mostly the name/title key as his/her secondary choice or abandoned the search. The next most frequently used primary search key was the name/title key, which retrieved the desired record about 51 percent of the time. When the name/title key was unsuccessful, the users entered as their secondary search key a title key

Table 2. *Number of Primary and Secondary Choices of Search Keys for Acquisitions*

Type of Search Key Used First	Items Searched	Found Responses	% of Found Responses	Not-found Responses	Types of Search Key Used after the First Not-found Response					Search Discontinued after the First Not-found Response
					Name/ Title	Title	Personal Author	LCCN	ISBN	
Name/Title	111	57	51.3%	54	17 (31.5%)	22 (40.7%)	0 (0.0%)	1 (1.9%)	0 (0.0%)	14 (25.9%)
Title	49	17	34.7%	32	6 (18.8%)	11 (34.4%)	0 (0.0%)	2 (6.2%)	1 (3.1%)	12 (37.5%)
Personal Author	0	—	—	—	—	—	—	—	—	—
LCCN	122	109	89.3%	13	5 (38.4%)	1 (7.7%)	0 (0.0%)	2 (15.4%)	1 (7.7%)	4 (30.8%)
ISBN	14	1	7.1%	13	8 (61.5%)	3 (23.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (15.4%)
ISSN	0	—	—	—	—	—	—	—	—	—
CODEN	0	—	—	—	—	—	—	—	—	—
Total	296	184	62.2%	112	36 (32.1%)	37 (33.0%)	0 (0.0%)	5 (4.5%)	2 (1.8%)	32 (28.6%)

Note: To calculate the percentage given in parentheses, the number of "Types of Search Key Used after the First Not-found Response" was divided by the number of "Not-found Responses."

about 41 percent of the time, or a different name/title key about 31 percent of the time. Approximately 26 percent of the time they abandoned the search. It seems that acquisitions users mostly try the LCCN key first if available (the LCCN is not present in all the records) and the name/title key first if the LCCN is not available. Thus, users adopted the right approach since the LCCN key has the highest hit rate. Furthermore, the LCCN key is more efficient than other keys because it results, on the average, in a fewer number of replies.

For the monograph cataloging function (table 3), the name/title key was used most often as the primary search key, resulting in retrieval of the desired record about 57 percent of the time. When the name/title key could not retrieve the record, the users next attempted a title key (52 percent of the time) or a different name/title (21 percent of the time). About 23 percent of the time they discontinued the search. The LCCN key was the second most frequently used primary search key and successfully retrieved the record about 79 percent of the time. When the LCCN key was unsuccessful, the users tried the name/title key (58 percent of the time) as their secondary choice or abandoned the search. Unlike the search-key usage pattern for acquisitions, the use of the LCCN key for monograph cataloging was lower than use of the name/ title key, although here also the hit rate was highest for the LCCN key. The reason the LCCN use was lower is that Ohio State University, being a research institution, processes a large number of items from var-

Table 3. *Number of Primary and Secondary Choices of Search Keys for Monograph Cataloging*

| Type of Search Key Used First | Items Searched | Found Responses | % of Found Responses | Not-found Responses | Types of Search Key Used after the First Not-found Response | | | | | Search Discontinued after the First Not-found Response |
					Name/ Title	Title	Personal Author	LCCN	ISBN	
Name/Title	313	180	57.5%	133	28 (21.1%)	69 (51.9%)	1 (0.7%)	4 (3.0%)	1 (0.7%)	30 (22.6%)
Title	48	24	50.0%	24	9 (37.5%)	2 (8.3%)	1 (4.2%)	3 (12.5%)	2 (8.3%)	7 (29.2%)
Personal Author	9	3	33.3%	6	4 (66.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (16.7%)	1 (16.7%)
LCCN	201	158	78.6%	43	25 (58.1%)	4 (9.3%)	0 (0.0%)	2 (4.7%)	1 (2.3%)	11 (25.6%)
ISBN	34	3	8.8%	31	20 (64.5%)	4 (12.9%)	1 (3.2%)	1 (3.2%)	3 (9.7%)	2 (6.5%)
ISSN	0	—	—	—	—	—	—	—	—	—
CODEN	0	—	—	—	—	—	—	—	—	—
Total	605	368	60.8%	237	86 (36.3%)	79 (33.3%)	3 (1.3%)	10 (4.2%)	8 (3.4%)	51 (21.5%)

Note: To calculate the percentage given in parentheses, the number of "Types of Search Key Used after the First Not-found Response" was divided by the number of "Not-found Responses."

ious sources other than regular acquisitions channels, and many of these sources do not have LCCN information.

For the serials cataloging function (table 4), the title key was the first primary choice and retrieved the desired records 44 percent of the time. If this key failed to retrieve the desired records, the users entered as their secondary key a different title key 55 percent of the time and a name/title key 17 percent of the time. Approximately 23 percent of the time, users decided to discontinue the search. Although for serials cataloging the title key was used most frequently, its hit rate was less than 45 percent. On the other hand, the ISSN key was used very little, but its hit rate was as high as 80 percent. The use of the ISSN key is likely to increase in the future, however, because the United States Postal Service now requires the ISSN to be present on serials.[8] Therefore, the ISSN will be more readily available to the user.

Among the searches performed through the public-use terminal (table 5), the most frequently used primary search key was the name/title key, which resulted in a successful search about 29 percent of the time. When patrons encountered a "not found" response, they tried as their secondary choice a different name/title key 29 percent of the time, or a title key 29 percent of the time. They abandoned the search 38 percent of the time. As mentioned earlier, the public-use terminal can be used by anyone, including faculty and students. The hit rate for name/title

Table 4. *Number of Primary and Secondary Choices of Search Keys for Serials Cataloging*

Type of Search Key Used First	Items Searched	Found Responses	% of Found Responses	Not-found Responses	Types of Search Key Used after the First Not-found Response					Search Discontinued after the First Not-found Response
					Name/ Title	Title	Personal Author	LCCN	ISBN	
Name/Title	15	3	20.0%	12	6 (50.0%)	4 (33.3%)	1 (8.3%)	0 (0.0%)	0 (0.0%)	1 (8.3%)
Title	72	32	44.4%	40	7 (17.5%)	22 (55.0%)	2 (5.0%)	0 (0.0%)	0 (0.0%)	9 (22.5%)
Personal Author	0	—	—	—	—	—	—	—	—	—
LCCN	1	0	0.0%	1	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
ISBN	1	0	0.0%	1	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
ISSN	5	4	80.0%	1	0 (0.0%)	1 (100.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
CODEN	0	—	—	—	—	—	—	—	—	—
Total	94	39	41.5%	55	14 (25.5%)	28 (50.9%)	3 (5.4%)	0 (0.0%)	0 (0.0%)	10 (18.2%)

Note: To calculate the percentage given in parentheses, the number of "Types of Search Key Used after the First Not-found Response" was divided by the number of "Not-found Responses."

Table 5. *Number of Primary and Secondary Choices of Search Keys for Public Use*

Type of Search Key Used First	Items Searched	Found Responses	% of Found Responses	Not-found Responses	Types of Search Key Used after the First Not-found Response					Search Discontinued after the First Not-found Response
					Name/ Title	Title	Personal Author	LCCN	ISBN	
Name/Title	77	22	28.6%	55	16 (29.1%)	16 (29.1%)	0 (0.0%)	2 (3.6%)	0 (0.0%)	21 (38.2%)
Title	44	20	45.4%	24	11 (45.8%)	9 (37.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (16.7%)
Personal Author	16	5	31.3%	11	0 (0.0%)	0 (0.0%)	3 (27.3%)	0 (0.0%)	0 (0.0%)	8 (72.7%)
LCCN	13	5	38.5%	8	2 (25.0%)	2 (25.0%)	0 (0.0%)	1 (12.5%)	1 (12.5%)	2 (25.0%)
ISBN	3	2	66.7%	1	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (100.0%)	0 (0.0%)
ISSN	3	1	33.3%	2	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	2 (100.0%)
CODEN	2	0	0.0%	2	0 (0.0%)	1 (50.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (50.0%)
Total	158	55	34.8%	103	29 (28.2%)	38 (27.2%)	3 (2.9%)	3 (2.9%)	2 (1.9%)	38 (36.9%)

Note: To calculate the percentage given in parentheses, the number of "Types of Search Key Used after the First Not-found Response" was divided by the number of "Not-found Responses."

key at this terminal was rather low. From this study, it is not possible to say whether this was due to patrons' lack of knowledge in key construction or lack of sufficient information needed for the construction of the key.

SUMMARY AND CONCLUSIONS

Among various types of search keys available to the users, the name/title, LCCN, and title search keys were entered most frequently. The use of personal-author, ISBN, ISSN, and CODEN search keys was very limited for all library functions. Corporate-author search keys were not used at all.

For the acquisitions function, system users most frequently entered the LCCN key, followed by the name/title key. For monograph cataloging, the users entered the name/title key most frequently, followed by the LCCN key. For serials cataloging, the use of the title key was the most common. Persons using public-use terminals entered mostly name/title and title search keys.

For acquisitions and monograph cataloging functions, the LCCN key was most successful in retrieving the desired records. The next most successful key was the name/title key. For both of these functions, when the name/title key failed to retrieve the record, users next tried the title key most of the time.

For serials cataloging, the title key was used most frequently but was not very successful in retrieving serial records. On the other hand, the ISSN key was the most successful but it was used very little.

Individual identifiers such as LCCN, ISSN, ISBN, and CODEN are very efficient search keys because they retrieve, on the average, far fewer numbers of replies than other types of search keys. With the exception of LCCN, the individual indentifiers were used only to a small extent. From this study, it is not possible to answer questions such as: Why weren't individual identifiers' search keys not used more often? Did a searcher use a name/title key even when the LCCN was available? To answer such questions, data will have to be collected concerning what kind of information is available to the searcher when constructing the search keys.

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Communications

The Evolution of an Online Acquisitions System

Jenko LUKAC: Lewis and Clark College Library, Portland, Oregon.

About two years ago a home-grown online acquisitions system was developed and implemented at Pacific University. The program, written in BASIC for the Data General Nova Computer, performs all the necessary functions such as ordering, receiving, fund accounting, etc.[1] This program was offered to the library community, and about one hundred libraries from around the world have availed themselves of it.

One of the libraries that obtained and adopted Pacific's Electronic Acquisitions System (PEAS) was the Watzek Library at Lewis and Clark College. The advantage of a home-grown system is that it can be freely modified to suit the evolving needs of a particular library. This communication describes some of the changes made by Lewis and Clark College to the PEAS program, in order to illustrate how software developed at one institution can be "imported" into and enhanced by another institution. Although matters were particularly simplified by having the same person who developed PEAS at Pacific be responsible for the enhancements at Lewis and Clark, the procedure and conclusions are still generally applicable.

The first change made to the PEAS program was to rename it CLAS—the Computerized Library Acquisitions System. The most important change, however, was to translate it from Data General BASIC to Digital Equipment Corporation BASIC, since the computer at Lewis and Clark is a DEC VAX-11. (Each hardware manufacturer implements a slightly different version of a programming language.) The translation requires changing things such as square brackets to parentheses, the word *read* to *get,* the word *write* to *put,* etc. These changes would have to have been done repeatedly throughout the program, but, in fact, were quite easily accomplished by using a text editor—a metaprogram that can be instructed to change all occurrences of, for example, the word *read* to the word *get* in a single pass.

CLAS retained all of the features of PEAS, and became fully operational at Lewis and Clark in February of 1980. Since then, new features have been added as the staff expressed a need for them. Some are minor, such as having the computer recognize initial articles in titles. Others are more significant:

1. Searching for records in CLAS by author and title makes use of unlimited right- and left-handed truncation. This makes possible subject searching through key words in the title. For this purpose an extra terminal is provided at the reference desk.

2. CLAS permits the file to be searched by the name of the faculty member who requested the item, in addition to the eight other access points available in PEAS.

3. CLAS provides an activity report for any given period showing, for each fund, the amount ordered, the amount received, and the average cost per item.

4. CLAS can produce vendor reports showing for each vendor the average discount and the delivery schedule.

5. CLAS asks the operator to verify the cost of an item if the list price and cost differ by more than 30 percent.

6. CLAS allows the receipt of partial shipments.

Some of the enhancements to CLAS involved successive modifications. For example, one of the features of PEAS was the

prevention of duplicate orders by matching new orders being input with records already in the database. A potential duplicate is reported if there is a match on both the author and the title fields. It was decided at the time of implementation at Lewis and Clark that this criterion was too restrictive, and CLAS was programmed to report a duplicate if only the title fields matched. After some months of experience, it turned out that even this requirement was excessively restrictive: a slight variation in the way a title was input would prevent a duplicate from showing up. The criterion was then further relaxed to signal duplicates if either the title or the author's last name matched. This, however, was too broad a net: although no duplicates were missed, ordering a book by Wilson or Smith produced a tedious list of potential duplicates. Hence, the requirement was tightened slightly to look for a match in either the title or the author's last name and first initial. This final criterion is currently serving well the needs of the Watzek Library. What is important about this evolutionary process is that it illustrates the dynamic way in which a library can "fine-tune" an automated system that is receptive to user modifications.

Since PEAS is supposed to be a self-explanatory system, it lacks any documentation. CLAS is still a self-explanatory system, but nevertheless a manual has been produced to describe all its features and to record programming information such as the structure of the files. One version of the documentation is kept in machine-readable form so that it can be easily updated to correspond to developments in the program.

In conclusion, it can be stated that a library-application software package has been successfully transplanted from one institution to another, from one hardware environment to another, and in doing so has matured into a fuller and more flexible system, which it is hoped will, in turn, benefit other libraries contemplating the automation of their acquisitions operation.[2]

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The Significance of Information in the Ordinary Conduct of Life*

Robert NEWHARD: Torrance Public Library, Torrance, California.

The information benefit provided to the general public by the developing telecommunications systems will be highly dependent upon the provider's perception of the current and potential role of information in the ordinary interests of life.

Assessing this role cannot easily be done by standard questionnaire or survey methods because information does not have a conscious function in people's lives.

Some paradigms from the past and present may, therefore, be of use in articulating the everyday importance of information.

THE TOOL PARADIGM: INFORMATION AS A LINK BETWEEN MAN AND HIS TOOLS OR REPAIRING A LOST CONFIDENCE

Prior to the industrial revolution, most production was carried on in the home, using tools either made or repaired mainly at home. In this cottage industry, each person was very close to and secure in the use of his tools. With the advent of the industrial revolution and the factory system, the worker no longer owned his tools, but went to one place to use someone else's tools. Man and his tools began to separate. Many used the tools, fewer understood them. This process began to create the "expert."

Today most of the tools we use—the automobile, telephone, computer termi-

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nal, etc.—we cannot repair. This has led to a set of latter-day "high priests" upon whom, because of their specific knowledge, we are dependent.

I suggest that this trend toward information experts is inimical to a democratic society because of the dependency it creates and because of the pervasive-hopelessness it engenders in the public mentality regarding matters as diverse as appliance repair and politics.

This process, in a milieu of rapidly developing technology, may seem irreversible.

I would suggest, however, that well-packaged and targeted information could do much to reduce frustration, restore the judgmental effectiveness and the self-confidence of the ordinary citizen (we are all ordinary for more purposes than not), and to improve citizen confidence in society.

For example: I am told I need a clutch job on my car. I can check the flat-rate manual in the library to determine the amount of time that job should take for my make, model, and year of car. The manual will even give the price, but, being a book, it is out of date. In California, each garage must post its hourly rate. Suppose the flat-rate manual indicated the clutch job should take three hours and the posted rate is $20 per hour. If the estimate comes back at $150 instead of $60, I know something is wrong. Either there is more to the job than clutch repair or it is a rip-off.

In either case, even though I cannot repair my car, I can, because of information, make a rational judgment. I am effective in dealing with this problem despite my technological incompetence.

The flat-rate manual is a packaged set of information targeted on a specific range of problems, and can function as an imperfect paradigm for what information development commensurate to technological development should be.

THE WORD "THEY" AS A PARADIGM

Another indicator of the "information gap" in this society, is a particular use of the word "they." If one listens to the fre-quency with which people say "they do this," "they don't care," "they're all politicians," etc., one can grasp the pervasiveness of the "information gap."

I suggest that the word "they," so used, almost always indicates an absence of information. This absence is frequently accompanied by suspicion and distrust.

THE YELLOW PAGES PARADIGM

Another measure of the importance of information to people in general consists of imagining what would happen if the yellow pages of the telephone book were suddenly withdrawn. There would, I suggest, be a minor revolution.

FREEDOM AS A PARADIGM

A final perspective on the importance of information may be found in its bearing on human freedom.

In the earlier phases of this society's development, freedom consisted of enough space as in Horace Greeley's "Go West, young man," or in Frederick Turner's observations on the frontier as a release valve for social pressure in the eastern United States, or Daniel Boone needing elbow room.

Today we live on top of each other and this aspect of freedom is rapidly diminishing.

One might view time as a delineator of freedom, as we often say: "If only I had enough time." The absence of the time found in simpler societies, the temporal pressure cooker of today where one's days off are filled with running one's personal business (errands, bill paying, etc.), suggests we have lost much of this temporal freedom.

I would suggest that the basic de facto support of freedom now lies with information.

Information, like knowledge, as observed by Francis Bacon, is power, and distributed information is distributed power.

INFORMATION AWARENESS

Contrast these indicators of the public importance of information with a lack of conscious awareness of the significance of information.

We do not have an information-prone society. When faced with a problem or interest, I suggest, we are more prone to ask, "What do I have to do?" rather than, "What do I have to know?" Part of this reaction is probably due to the fact that when we ask "What do I have to know?" we are faced with another problem in addition to the initial one; i.e., where to get the information. This added effort simply confirms in us our indifference to information, and we take our best shot at solving the problem through decision and action. I sometimes think we have made a virtue of the information incapacity by the way we laud decision making as an indicator of ability.

If the foregoing examples are reasonably accurate, we are then faced with a situation in which information is fundamentally important to societal and individual well-being, but is not perceived to be so by people in the conduct of their daily affairs. Computer-supported telecommunications systems can be the instrument for accelerating information control by a few (this has been much of the trend, so far, as indicated by corporate, research, and technical use of these systems), or it can be used to build information confidence, use, and desire throughout society.

This option, I suggest, is central to the significance of telecommunications systems for a democratic society.

If the latter option is to be obtained, I suggest that information will have to be packaged and targeted so well on people's everyday problems and interests that it will be easier and more productive to say "What do I have to know?" before saying "What do I have to do?"

A basic approach to articulating an information service of this kind consists of the following steps:

1. Determine and prioritize the individual and societal problems and interests of a given community.
2. Ascertain the information parameters of those problems and interests.
3. Locate and obtain the information necessary to address those problems and interests.
4. Organize this information so as to optimally target the specified prob-

lem or interest to be as easily retrievable as possible. This requires an understanding of the context in which the information is used so that it is optimally relevant, and an understanding of the language and problem articulation common to the individuals in the community in order to ensure rapid retrieval.

A Lesson in Interactive Television Programming: The Home Book Club on QUBE

W. Theodore BOLTON: OCLC, Inc., Columbus, Ohio.

On December 1, 1977, Warner Communications christened what has become the most publicized and talked about technological development in the field of cable television: QUBE, its two-way interactive cable system. Publicity posters claimed that this would be "a day you'll tell your grandchildren about," and broadcasters added the word "interactive" to their cocktail-party vocabulary. Academicians who ten years ago forecast a technological revolution initiated by the marriage of computer to cable television, smugly grinned and saw their dreams turn into reality.

Response to QUBE, however, has been mixed. Participatory television brings, to some, futuristic images of instant democracy; others warn of its potential demagogic power.[1] Regardless of your critical persuasion, there now exists what former CBS executive turned Warner Amex[2] consultant Mike Dann calls "a whole new utility."[3] This whole new utility, whether in the form of QUBE cable television, or some other combination of computer, cable television, telephone, and standard over-the-air broadcasting, will change the way we conduct our lives and interact with other people.

THE HISTORY OF THE HOME BOOK CLUB

Early in 1979, the OCLC, Inc., research staff appraised the nature and context of the QUBE facilities (located in Co-

lumbus, Ohio, only five miles away). Discussions, which at times centered around far-fetched and lofty ideas, eventually led to realistic and inventive concepts that made use of QUBE's interactive technology. The most promising of these concepts was a book discussion program where the audience determined the content and direction of the discussion itself. Hoping to take advantage of this new technology, and at the same time expand library services available to the general public, OCLC proposed a book discussion program to QUBE.

In a previously released statement, QUBE Vice-President Harlan Kleiman had stated that the polling capabilities of the QUBE system should be treated like a "time bomb."[4] Yet OCLC's proposal indicated an interest in exploring these very same devices. This factor, coupled with QUBE's "closed door" policy toward outside researchers and scholars, seemed to indicated that the Home Book Club research proposal would be rejected. But QUBE executives did the unexpected: they agreed to air six Home Book Club programs, one each month. And so, on July 18, 1979, at 7 p.m., the Home Book Club premiered.

AN INTERACTIVE BOOK DISCUSSION

What makes QUBE unique is its two-way, or upstream, capability. The QUBE technology is made up of three complementary computers that are used for monitoring, tabulation, and billing purposes. Each QUBE console in a viewer's home has thirty channels to choose from and five response buttons to press when answering questions posed to home viewers on QUBE programs. By monitoring and tabulating data that show which TV sets are on, which programs viewers are watching, and which response buttons they last touched, QUBE therefore has a virtually error-free system of audience research. This allows for a staggering amount of audience data to be compiled theoretically *every six seconds*.

Apart from the thirty-channel capability of standard television, community programs, and pay-per-viewing feature films,

the most intriguing aspect of QUBE is its five response buttons. OCLC felt that the use of these buttons should be emphasized and the concept of interaction should be fully incorporated into the Home Book Club. At the beginning of each Home Book Club program, home viewers were asked to select, from three alternatives, the opening topic of conversation about the book. After the home viewers had "touched in" their preference on one of the prespecified buttons, the QUBE polling computer tallied and displayed the results. Once the book discussion was under way, the home viewers were given additional opportunities to "democratically" determine whether the panelists should continue in a particular topic area, or move on to new topic areas.

If a controversial issue emerged within the course of a discussion, the Home Book Club panelists were encouraged to spontaneously pose interactive questions to home viewers. This form of instantaneous polling was extended to telephone participants who were also periodically incorporated into the book discussion. A sampling of these opinion-type questions included: from the *Wifey* program, "Should Sandy have left Norman?"; from the *Metropolitan Life* program, "Is this book too subjective for non–New Yorkers?"; from the *Eye of the Needle* program, "Was the violence portrayed a necessary part of this book?"; from the *World According to Garp* program, "Was this a feminist novel?"

Toward the end of each one-hour Home Book Club program the QUBE system broke new ground in interactive television history: home viewers selected, from five alternatives, the book to be discussed on next month's program. In addition, home viewers were able to request a copy of the book to be sent to their home at no charge from the Public Library of Columbus and Franklin County (PLCFC). These two transactions took place with a mere touch of the prespecified button on the QUBE console.

PLCFC provided a major contribution to the Home Book Club. Once the QUBE computers had compiled the names and addresses of those viewers who requested next month's book (earlier, all home view-

ers had been told that their names would be entered in the QUBE computer if they responded to a book request), the QUBE computer printed the names on mailing labels. These labels were forwarded to the PLCFC Books-by-Mail Office, which then filled each request. The total time from "touch-in request" to "in-home mail delivery" was usually two to three days. Indeed, a form of electronic catalog ordering actually took place each time the Home Book Club program was cablecast in Columbus. It should be noted that Home Book Club viewers were also given the opportunity to order the alternative book choices.

WHO WATCHED
THE HOME BOOK CLUB?

An additional use of QUBE's two-way capability was also incorporated into the first six Home Book Club programs. Prior to selecting and ordering the next months' books, home viewers were asked to respond to a series of demographic-type questions. From these questions, a profile of the typical Home Book Club viewer was compiled to PLCFC and QUBE management. This portion of the program also provided the OCLC research department with data with which to explore the market-research potential of an interactive television system.

From the beginning of the Home Book Club research project, a few obvious limitations of interactive polling became apparent. First, not all home viewers made use of, or were willing to participate in, QUBE's interactive technology. Response rates ranged from 20 to 85 percent, with an approximate mean rate of 55 percent. Second, only one viewer in a multiple-person household could respond. Third, it can be logically assumed that certain kinds of people will and did interact more often than others.

Taking these limitations into consideration, a few generalizations were still able to be made regarding the Home Book Club audience. The demographic data traced over the *first six programs* showed the audience to be primarily composed of younger (below thirty-nine years of age), college-educated (65 percent had college

or postgraduate degrees), middle to upper income (60 percent earning $25,000 or more per year), females (approximately 70 percent of the interacting audience). These figures should not surprise anyone who is either familiar with previous profiles of the general library users or who may in passing conjure a guess as to what kind of person might be interested in viewing a televised interactive book discussion. A closer inspection of the instantaneous audience demographics, however, led to some disappointing implications.

CAN A DEMOCRATIC
TELEVISION PROGRAM SURVIVE?

As was pointed out earlier, home viewers were permitted to select the next month's book at the conclusion of a program. This was strictly a democratic process where the majority ruled. *The World According to Garp*, the premier Home Book Club book, was followed by *Eye of the Needle* and *Wifey* for programs two and three respectively. The QUBE computer indicated that each of these programs were viewed by approximately 175 households, or almost 420 individuals. In a competitive structure where there are twenty-nine television program alternatives from which a viewer can choose, QUBE, OCLC, and the PLCFC felt that a successful programming concept had been born. QUBE management enthusiastically reported that the Home Book Club had achieved audience levels that at times rivaled their more extravagant and broadbased entertainment/interview program, "Columbus Alive."

This enthusiasm was short-lived as audience-level figures from program four came in. At the end of program three (*Wifey*), the audience selected James Michener's weighty novel *Chesapeake* for the next month's program. The respectable figure of approximately 375 viewers for *Wifey* dwindled to slightly less than 210 viewers for *Chesapeake*. And to make matters worse, the audience-level figures did not improve for programs five and six.

There are several alternative and sometimes complementary explanations for this substantial loss in audience. First, many viewers may not have been able to get

through the some one thousand pages of "Maryland's Eastern Shore" history in *Chesapeake*, and thus chose not to participate in the Home Book Club. Second, the new fall syndicated programs offered at that time by local network affiliates may have led many viewers to choose alternative programming. Additional hypotheses can also be gleaned from the interactive demographic data: whereas in programs one through three approximately 40 percent of the audience indicated their educational level to be either some college or below, only 20 percent of the *Chesapeake* audience (program four) fell into this category. This statistic remained constant for programs five and six of the Home Book Club.

In the democratic television environment that the Home Book Club provides, what happens to the minority interest group? Could this democratic television system be systematically eliminating specific viewer types? It might be that the outvoted minority group book reader can withstand being overruled just so many times before ceasing to participate. What recourse does this minority interest group have other than to be dominated by higher-educated viewers who heavily stuff the electronic ballot box in favor of their own book preferences? Quite clearly the recourse for the minority interest group was to select a competing television program, as evidenced by the declining viewing audience–level figures. The loss of these viewers becomes *especially* disheartening because this particular audience segment may represent a group of individuals who never before participated in a book discussion.

THE FUTURE OF THE HOME BOOK CLUB

Given the somewhat disappointing results of the Home Book Club reported thus far, one would expect the program to be recorded in history as a noble, but unsuccessful, attempt at interactive television programming. The Books-by-Mail program did send out some 760 paperback books as a result of the Home Book Club (a 79 percent overall increase), and twenty-six new library cards (not a prerequisite) were issued to Home Book Club viewers. But the fact remains that a for-profit company such as Warner Amex most definitely cannot substantiate the continuation of a program that has the audience ratings as low as the Home Book Club. . . . Or can it?

Not only has the Home Book Club been continued (it's now in its twentieth month), but a morning edition of the Home Book Club premiered in June 1980. What explanations can account for this somewhat bewildering corporate behavior? On a very idealistic level, Warner Amex could be fulfilling its obligation to serve all facets of the Columbus community. The Home Book Club certainly offers a viewing alternative to an often neglected segment of the viewing population. OCLC, Inc., and public libraries throughout the United States applaud this kind of responsible programming.

On a more practical level, there may be other strategies behind the renewal of the Home Book Club contract. A 1978 study completed by the Argus Research Corporation concluded that "no profits are expected from QUBE until the system is successfully replicated in cities other than Columbus, and at considerably lower costs."[5] To replicate the QUBE system, Warner Amex must expand its cable territory into new communities throughout the United States. This can at times be a very difficult task.

The right for a company such as Warner Amex to wire a local municipality to its QUBE system is determined by local government. Normally, a city council reviews and contrasts alternative cable systems in terms of the services each system proposes in return for franchising rights. The final decision usually is based on costs, the programming made available, and, most importantly, the kind of community service the cable system proposes to extend to its viewers. One definition of extended community service might be a televised book discussion program that involves the local public libraries. The alluring notion of an *interactive* book discussion may even be more appealing to community-minded city council members. In fact, QUBE is currently using an edited composite tape of Home Book Club highlights in their franchising efforts. The success of such

efforts remains to be seen. Whether Warner Amex's motives are community- or commercial-minded, the fact remains that other communities may have the opportunity to develop a program of this kind. Since local governments can legally specify what services the cable company must provide, the inclusion of a televised book discussion program could become part of a contract fulfillment. Advice for those interested in developing alternative television programs for special-interest groups: Don't be caught napping when your national cable representatives come knocking on your city council door.

As for the Home Book Club, QUBE and the Public Library of Columbus and Franklin County are working at reestablishing a solid baseline audience. As is the case for any television program, promotion is a key ingredient for success. When viewers were asked where they first found out about the Home Book Club, more than half indicated they obtained program information through the free *Qube Program Guide*. Approximately 15 percent heard from a friend and 12 percent found information at the public library. A coordinated promotional effort is highly recommended for a public-service program of this nature.

THE FUTURE OF INTERACTIVE TELEVISION

QUBE must be thought of as more than just a two-way television system. In fact, it is more than interactive television. QUBE is actually a computer hooked to a cable communication system. That cable communication system is a network providing a pathway for a wide variety of services from central facility to home subscribers. In the future, not only will systems such as QUBE provide "local loop" communications for these services, but undoubtedly will be interconnected by a satellite with other similar systems throughout the country and indeed the world.

The five buttons on the existing QUBE consoles are just the first evidence of the future possibilities of interactive broadband communications systems currently delivering television. Because the early applications of cable were to provide entertainment television, and more often

than not were provided by people in the television business, cable television is naturally oriented toward the entertainment business. But the future of these broadband communications systems is in interactive retrieval of information as much as it is in entertainment. This goes far beyond the simple polled system so frequently used in a two-way mechanism: the talk show host asks how many people have read a particular book, the audience responds, and the net result *has no effect* on the program itself. It is also a lot more than interactive television: the host asks what you want to discuss, the audience says the plot of the book, and the answer *has an effect* on the outcome of the show. In fact, these broadband communications systems have the potential for placing at the fingertips of Americans a vast storehouse of information services about, for example, the best auto routes to your favorite spots, baby care, banking, buying a house, dressmaking, good buys, hobbies, jobs, legal facts, properties for sale or rent, sports scores, technology, and wine.

As QUBE expands into its QUBE III system with more than a hundred channels of services, it will be technically positioned to support all aspects of this burgeoning information age.[6] Besides simple information retrieval, a QUBE subscriber will be able to conduct banking and shopping transactions, to provide information such as who is on what side of community issues, and also (incidentally) to watch television. If all of that does not seem like enough, remember that cable is really a very large pipe through which any variety of electronic information can be pushed. Passive home security, fire alarm, and energy management are also services either in existence or contemplated by a number of cable operators. For that matter there is no reason to believe the computer processing services can't be made available to individual subscribers. A subscriber could call up the program to balance his checkbook, to perform his small-business payroll calculations, or to complete a statistical analysis of data for a school project.

Most people thought (as we initially did) that interactive cable (QUBE) means interactive television. But OCLC's research

has shown that interactive television programs:

1. serve as an initial introduction to naive audiences of what a truly interactive system is all about;
2. are difficult to implement;
3. really aren't democratic;
4. are basically polling devices.

It has been said that the reason that railroads went out of business was because they insisted that they were in the railroad business and wouldn't admit that they were in the transportation business. If cable operators insist that they are in the television business, they may well miss the opportunities that are possible in the communications business or, in fact, in the information business.

By the same token, if *libraries* miss the significance of what cable television is bringing to *their* business, their role in the community will be diminished and libraries may go the way of railroads. Modern communications and computers offer an opportunity for libraries to become the information choice in their community. In the near future, applications such as the Home Book Club may well be a way to provide increased accessibility of library services to library patrons, and to "condition" those patrons to the coming electronic nature of libraries. Over the long term, libraries, if they have the courage and the foresight, can be the focus of the coming information and telecommunications revolution. The message is quite clear: opportunities abound.

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An Informal Survey of the CTI Computer Backup System

Joseph COVINO and Sheila INTNER: Great Neck Library, Great Neck, New York.

In order to help decide whether or not to purchase computer backup systems from Computer Translation, Inc. (CTI),* for use when the CLSI LIBS 100 automated circulation system is not operating, Great Neck Library conducted an informal survey of libraries using both systems. Eleven institutions, including both public and academic libraries, responded to a brief questionnaire. They were asked what size CTI system they had purchased and why, how easily it was installed, how well it performed, how it was maintained, and if CLSI acknowledged that the addition of the backup did not affect their LIBS 100 maintenance agreements.

Before summarizing the responses, the structure of the two systems and how they interact should be outlined.

CLSI LIBS 100

The CLSI automated circulation system consists of a stand-alone minicomputer console with local and/or remote terminals connected to it through individual ports by means of electrical and/or dedicated telephone line hookups. When it operates, the terminals are online and interactive with the database, which is stored on one or more multiplatter disc packs.

CTI BACKUP

The CTI backup system is based on an Apple II microcomputer with two minidisc drives, which take 5¼-inch floppy discs, a TV monitor, and a switching system that can be connected to the LIBS 100 console or its terminals. The CTI system can also be used alone. When the LIBS 100 is down (inoperative), the CTI system is connected to a terminal, and data is recorded on its discs for later dumping (data entry) into the database via a port connection. It

*CTI is a profit-making company wholly owned by Brigham Young University. The CTI backup system was originally developed to support the CLSI installation at BYU.

appears to the public and the library's staff member operating the backup-terminal combination that the terminal is working. There is, however, no connection between the backup unit and the database in this mode. When the LIBS 100 is up (operating) once again, the backup is connected and data is automatically dumped. Naturally the port cannot be used by both the CLSI terminal and the backup unit at the same time without the addition of other hardware. The terminals attached to other ports may operate normally while dumping is completed.

The CLSI and CTI software, which operate compatibly, are owned by the respective companies, not the library.

THE RESPONSES

1. *Size of System:* CTI systems are available in two sizes, 32K and 48K. Two libraries purchased the smaller system, nine purchased the larger system, and one purchased both. Greater programming capabilities of the larger system were considered its greatest asset.

2. *Reason for Purchase:* Five libraries indicated they use the backup for other purposes in addition to substituting for the LIBS 100 when it is down. Among these other purposes were development of a community information database, personnel and financial reports and files, use as an RLIN terminal, and as a bookmobile terminal, and as an aid in converting short-title bibliographic records to expanded format.

3. *Installation:* Respondents were unanimous in having no problems with installation. Seven did their own installation, while CTI gave instructions over the phone. Three were installed by CTI, who also trained the library staff in its operation. One library indicated the accompanying documentation was enough to install the system without assistance.

4. *Performance:* All eleven respondents were enthusiastic about system performance. Some comments were, "It's the best thing since buttered popcorn," and "We love it dearly . . . . It saves hours . . . works just fine." Many commented on the slow dumping time as the biggest drawback, but noted that increased accuracy over manual entry and decreased pressure on their circulation staff during downtime were assets.

5. *Maintenance:* Backup system maintenance is not uniform. Six respondents said that software was maintained by CTI, but hardware was maintained by an Apple dealer; or they were undecided about who would be responsible for hardware repairs. A seventh library contracted with an Apple dealer for hardware repairs, but was contending over software maintenance with CTI. Three libraries answered that CTI was maintaining the system, but did not specify both hardware and software. The last respondent expected to take hardware repairs to an Apple dealer and did not mention software.

6. *CLSI Maintenance Agreements:* One library stated that they had written assurance from CLSI that the installation of the backup system would not affect their LIBS 100 maintenance contract. Three more said they had verbal assurances. Five respondents indicated no assurances from CLSI that the LIBS 100 contract was not affected. One library sent a copy of a CLSI letter defining company policy in this area. It said, in part: "CLSI does not prohibit the attachment of foreign devices to the systems. . . ." Qualifications to this statement involved an institution's attempt to repair the LIBS 100 itself, to hold CLSI responsible for damage resulting from the attachment of the device, or to have CLSI maintain the device.

The Great Neck Library decided to purchase two CTI backup systems for use when the LIBS 100 is down. Experience bears out the findings of the survey; i.e., it is easy to install the system with only telephone assistance; it works well, and, though data transmission to the main unit is slow, it is accurate and removes some of

the desperation from a downtime situation.

Great Neck Library is also planning to use the Apples for other functions, which, it is hoped, will be implemented soon.

Multimedia Catalog: COM and Online

Kenneth J. BIERMAN: Tucson Public Library, Tucson, Arizona.

Like many public libraries, the Tucson Public Library (TPL) is closing its card catalog and implementing a vendor-supplied microform catalog. Unlike most of these other libraries, however, the TPL microform catalog will not include location or holding information. The indication of where copies of a particular title are actually available (i.e., which of the fifteen possible branch locations) will be available only by accessing a video display terminal connected to the online circulation and inventory control system.

Conceptually, the TPL catalog will be in two parts with each part intended to serve different functions.[1] The microform catalog (copies available in both film and fiche format) will fulfill the bibliographic function of the catalog. This catalog will contain bibliographic description and provide the traditional access points of author, title, and subject. The online catalog (online terminals are in place at all reference desks and a few public access terminals will also be available) will fulfill the finding or locating function of the catalog. This catalog will contain very brief bibliographic description and will only be searchable by author, title, author/title, and call number, and will contain the current status of every copy of every title in the library system (i.e., *on shelf, checked out, at bindery, reported missing,* etc.).

Why did the Tucson Public Library make this decision? There are two major reasons:

1. *Accuracy*. The location information, if provided in the microform catalog, would *always* be inaccurate and out of date. Assuming that the locations listed in the latest edition of the microform catalog were completely accurate when the catalog was first issued (an unrealistic assumption to begin with as anyone who has ever worked with location information at a public library with many branches well knows!), the location information would become increasingly less accurate with each day because of the large number of withdrawals, transfers, and added copy transactions that occur (more than 100,000 a year). In addition, at any given time, one-quarter to one-third of the materials in busy branches are not on the shelf because they are either checked out or waiting to be reshelved. Thus, the microform catalog would indicate that these materials were available at specific branches when a significant percentage would in fact *not* be available at any given time. In short, even in the best of circumstances, easily half of the location information would be incorrect in telling a user where a copy of a title was actually available at that moment.

2. *Cost*. A study done at the Tucson Public Library indicated that close to half of the staff time of the cataloging department was spent dealing with location and holding information. This time includes handling transfers, withdrawals, and added copies. All of this record keeping is already being done as a part of the online circulation and inventory control system (the Tucson Public Library has no card shelflist containing copy and location information but rather relies completely on the online file for this type of information). To "duplicate" the information in the microform catalog would cost an estimated $40,000 to $60,000 a year and the information in the microform catalog would never be accurate or up to date for the reasons outlined above.

Figure 1 is a brief summary of how the bibliographic system will work.

Would the system in figure 1 be improved if holdings were included in the microform catalog? On the surface, the obvious answer is yes—more information is

KNOWN-ITEM SEARCH

(37 percent of TPL catalog use according to catalog use survey conducted at the TPL in 1971)

User searches microform catalog by author and/or title.

If user does not find desired bibliographic entry, user either leaves unsatisfied or goes to desk (or public access terminal) for help.

If user finds the desired bibliographic entry, he/she writes down call number (or author for fiction) and proceeds to shelf.

If user finds book on shelf he/she checks it out.

If user does not find book on shelf, user either leaves unsatisfied or goes to desk (or public access terminal) to obtain holdings information or ask for help (put on reserve, borrow from another library, possible purchase of additional copies, etc.).

SUBJECT SEARCH

(63 percent of TPL catalog use by public according to catalog use survey conducted at the TPL in 1971)

User searches microform catalog.

User writes down call number(s) and proceeds to shelf.

If user finds appropriate material(s), he/she checks it out.

If user does not find appropriate material he/she leaves unsatisfied or goes to desk for help (reference interview, etc.).

Fig. 1. Summary of How System Will Work.

always better. But, if we examine the situation in depth, perhaps not. Let us look at some hypothetical situations.

If the user is doing a search and does not find the desired entry/entries in the microform catalog, it makes no difference whether holdings are included in the catalog. The user will still either leave unsatisfied or go to the desk for help.

If the user is doing a known-item search and finds the desired item and notes, and the agency he/she is at is listed as a holding agency, he/she will proceed to the shelf. If the desired material is found, fine. If not (because the material is checked out, reported missing, or withdrawn), he/she will either leave unsatisfied or go to the desk (or public access terminal) for help.

If the user is doing a known-item search and finds the desired item in the microform catalog but notes that the agency is not listed as a holding agency, what are his/her choices? The user can go away unsatisfied without checking the shelves (although there may be a copy on the shelf because a copy may have been added to that agency since the microform catalog was last recumulated) or he/she can go to the desk (or public access terminal) to obtain help; here he/she will have access to the "real" holdings information—on the

online system. The user could notice from the holdings in the microform catalog that another branch has the item and drive to the other branch. However, when the user gets there he/she may discover that the item is not available—information that could have been found in the online system at the original branch if he/she had gone to the desk (or public access terminal).

The purpose of the above exercise is to demonstrate that in all cases the user is still going to require access to the online catalog in order to determine holdings more accurately. With time, this access will become increasingly self-service through public access terminals. From the user's point of view, providing inaccurate holdings in the microform catalog does very little good and can actually do harm by leaving the impression that, if a library is listed as a holding library, that library will have the item (a false conclusion because of checkouts, reported missings, and withdrawals) or leaving the impression that if a library is not listed as a holding library, that library will not have the item (a false conclusion because a copy could have been added recently but that fact is not yet reflected in the microform catalog).

If the user is doing a subject search, holdings are of less value in the catalog

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 collec-

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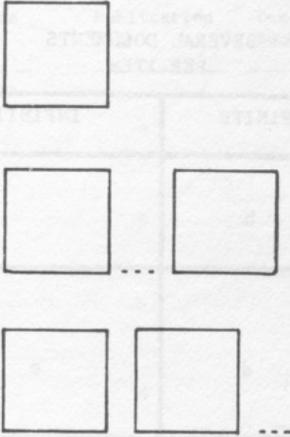
Fig. 1. *Three Types of Bibliographic Items: Top, Single-Document Item; Center, Finite Multiple-Document Item; Bottom, Infinite Multiple-Document Item.*

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
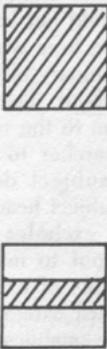
Fig. 2. *Top, Single-Work Document (Example: A Typical Novel); Bottom, Multiple-Work Document (Example: A Collection of Plays).*
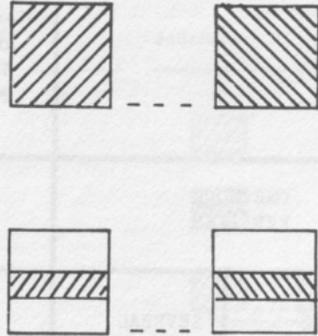
Fig. 3. *Top, One Work per Document; Bottom, Several Works per Document.*

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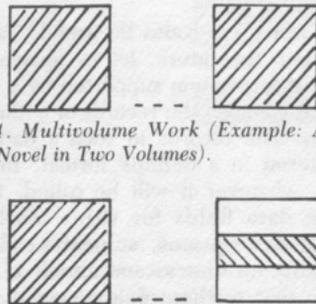
Fig. 4. *Multivolume Work (Example: A Very Long Novel in Two Volumes).*

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 in-

formation. 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.

REFERENCES

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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-

perative that the records meet the standards set by OCLC and that the cataloging and formatting of the records be free of errors. Member libraries are requested to follow the nationally accepted cataloging code (*Anglo-American Cataloging Rules, North American Text,*[1,2] for records input before December 12, 1980, and *Anglo-American Cataloguing Rules, Second Edition,*[3] for records input later), the Library of Congress' application of the cataloging code, and the various MARC formats in preparing records to be input.[4,5]

The cataloging rules dictate what kind of bibliographic information should be included in the cataloging records, a prescribed system of punctuation that identifies the various fields of the cataloging record (International Standard Bibliographic Description, ISBD), which access points should be provided, and what form the entries should take. The MARC formats provide a standardized method of identifying the various fields and subfields in a cataloging record and, through the use of indicators, information necessary to make the record easily manipulated by computers. In addition, fixed fields provide coded information about the cataloging records.

The form of main, added, and series entries can be verified in the National Union Catalog to ensure that member libraries are following the Library of Congress' application of the cataloging code. By the same token, subject entries can be verified in the appropriate subject heading list (e.g., Library of Congress subject headings, Sears subject headings, etc.).

A STUDY OF OCLC MEMBER CATALOGING

A major problem with the use of contributed cataloging is the amount of revision needed to bring the records up to the standards described above. In 1975, a study of the quality of a group of member-contributed catalog records was conducted by C. C. Ryans.[6] The first 700 monographic records input into OCLC after September 1, 1975, to which Kent State University attached its holdings were examined.[7] The analysis included changes in or additions to main, added, or series

entries, changes in descriptive cataloging, and changes in or additions to subject headings. The study dealt only with the revision of cataloging; revision of the formatting of records was not noted. The Kent State study found that 393 revisions were necessary to 283 records. The remaining 417 records were considered to be acceptable, i.e., they adhered to *AACR* and ISBD rules and to the OCLC standards for input cataloging.

RECENT DEVELOPMENTS RELATING TO QUALITY CONTROL

Since these records were studied, the Internetwork Quality Control Council was formed in 1977 by the OCLC Board of Trustees.[8] Its primary purpose is to identify problem areas regarding quality control and distribute information to networks concerning problems and solutions. Its role is to promote quality control through education and by monitoring the implementation of standards.

In addition, OCLC's documentation has steadily improved. The recent publication of the Books Format[9] and the recent revision of the cataloging manual[10] provide clear and specific information on OCLC's formatting requirements.

With these developments in mind, it would seem likely that the quality of the contributed cataloging has improved since 1975. In order to test this assumption, a number of cataloging records were analyzed in an effort to replicate the Kent State study. The analysis of these records differed from the earlier study in that differences in the treatment of series were not noted because one library's treatment of series can reasonably be expected to differ from that of another.

METHODOLOGY

The records included in this study consist of 1,017 monographic catalog records to which the State University of New York at Albany (SUNYA) Library added its holding symbol during an eight-month period from November 1979 to July 1980. The records included only those that were entered into the OCLC database after 1976.

Cataloging revisions that were noted

consisted of changes in main and added entries to make them consistent with Library of Congress form of entry, and the inclusion of other added entries that were deemed necessary to provide adequate access to the material. In addition, corrections or additions to the imprint and the collation were noted, as were typographical errors in all fields. Subject headings that were changed to make them consistent with Library of Congress subject headings and subject headings and/or subdivisions added to provide better subject access to the material were also noted.

ANALYSIS OF CATALOGING

Cataloging revisions were required for 43 percent of the 1,017 records examined (596 changes or additions were made to 437 records). Changes or additions to subject headings were made to 22.4 percent of all the records in the SUNYA sample, and represented the most common revision. Changes in descriptive cataloging were made to 20 percent of the records, and changes or additions to main or added entries were made to approximately 16 percent of the records.

Table 1 compares the results of this analysis with the findings of the earlier study. It should be emphasized that the two studies are not exactly comparable because the Kent State study included differences in the treatment of series, while this study noted only typographical errors in series statements.

The findings of this analysis do not bear out the hypothesis that the quality of member-contributed cataloging has improved since 1975. The overall percentage of records requiring cataloging revision is similar in both the Kent State and the SUNYA samples. The percentage of changes made in the various areas of the cataloging records was similar, with the exception of added entries and subject headings. In the SUNYA sample, more revisions and additions were made to these two areas. This difference between the two samples may reflect variation in the cataloging policies of the two libraries rather than the presence or absence of more errors in member-contributed catalog records.

ANALYSIS OF OCLC REPORTABLE ERRORS AND ADDITIONS

In the fall of 1979, OCLC distributed its revised cataloging manual, which includes a chapter dealing with quality control.[11] The chapter delineates the errors and changes that are to be reported to OCLC for correction or addition. The cataloging records examined in this study were also analyzed with these criteria in mind.

This analysis (table 2) revealed that 661 reportable errors or changes were found on 486 records (47.8 percent of all the records). Reportable errors or changes included formatting errors or omissions such as incorrect assignment of tags, incorrect or missing indicators, subfield codes or fixed fields, and errors affecting retrieval or card printing. Other types of errors in-

Table 1. Comparison of Two Studies of Cataloging Revision

Area Needing Revision or Addition	Kent State Sample*		SUNYA Sample	
	Number	*Percentage*	*Number*	*Percentage*
Main Entry	44	6.2	46	4.5
Title Statement	28	4.0	76	7.5
Edition Statement	4	0.6	2	0.2
Imprint	29	4.4	64	6.3
Collation	111	15.9	58	5.7
Series	55	7.9	3	0.3
Subject Heading	88	12.6	228	22.4
Added Entries	44	6.2	119	11.7
Total Records in Study	700	100.0	1017	100.0
Records Requiring Revision	283	40.4	437	43.0
Number of Revisions Made	393		596	

*Source: Constance C. Ryans, "A Study of Errors Found in Non-MARC Cataloging in a Machine-Assisted System," *Journal of Library Automation* 11:128 (June 1978).

Table 2. Errors and Additions Reportable to OCLC

	Number	Percentage of Total Records	Percentage of Total Errors and Additions
Errors in Transcription of Data	19	1.9	2.9
Incorrect Assignment of Tags	6	0.6	0.9
Incorrect or Missing Subfield Codes	13	1.3	2.0
Incorrect Assignment of 1st Indicator	17	1.7	2.6
Incorrect Assignment of 2d Indicator	59	5.8	8.9
Incorrect Fixed Fields	313	30.8	47.4
Incorrect ISBD	8	0.8	1.2
Incorrect Form of Entry (less than LC)	87	8.6	13.2
Errors Affecting Retrieval or Card Printing	3	0.3	0.5
Bibliographic Information Missing	1	0.1	0.2
Addition of Access Points	135	13.3	20.4
Total Number of Records Containing Reportable Errors or Additions	486	47.8	
Total Number of Reportable Errors or Additions	661		100.0

cluded incorrect or omitted access points (added or subject entries, ISBN, LC card numbers, etc.), errors in transcription of data, incorrect ISBN, and the omission of needed bibliographic information.

Approximately 40 percent (408) of the records contained formatting errors, with over 29 percent (300) of the records containing incomplete or incorrect fixed fields. The apparent unconcern with fixed fields may stem from a lack of understanding of the value of correct fixed-field information. The recent addition of date and type of material as qualifiers in a search of the database is one example of the use of fixed fields. In order to underscore their importance, it might be useful for OCLC to highlight this use of fixed fields and further explain to its members how other fixed fields might be used in online search strategies in the future.

Errors in or omission of access points were found in 222 records (21.8 percent). These errors were also noted in the study of cataloging revisions discussed above, as were errors in transcription of data, in ISBD, and in omission of necessary bibliographic information.

SUMMARY OF FINDINGS

Although the quality of the SUNYA sample seems equivalent to that of the Kent State sample, an analysis by date of input of the records examined indicates a slight decrease in the percentage of rec-

ords needing correction for those records input in 1979 and 1980 (table 3). Perhaps this is the beginning of a trend toward more careful cataloging and formatting of records input by members.

In summary, 589 of the 1,017 member-contributed records studied were found to require revision. Of these, 486 records contained errors or omissions that may be reported to OCLC, and 437 required cataloging revision. It is discouraging to realize that approximately 60 percent of the member records used required revision. Such a high percentage of records needing revision necessitates the review of all member records used if a library wishes to adhere to OCLC standards for cataloging. This leads to tremendous duplication of effort and negates, in part, the purpose of shared cataloging.

Table 3. Yearly Breakdown of Catalog Records

Year of Input	Total Number of Records	Records Needing Correction	Percentage Needing Correction
1977	186	115	61.8
1978	332	202	60.8
1979	339	184	54.3
1980	160	88	55.0

INFLUENCES FOR CHANGE

The implementation of *AACR2* in 1981 provides the impetus for greater adherence to standards. Since all catalogers

have had to learn the new cataloging requirements, greater care may be used in the formulation of records by member libraries.

The publication of clear and specific guidelines for reportable errors may help to alleviate the situation in two ways. First, the careful articulation of errors or desirable additions may impel member libraries to place more emphasis on the quality control of input. Second, member libraries may report more errors, thus allowing OCLC to correct the master records.

A change in the method of correcting errors and the rate at which they are corrected might be beneficial. Presently, errors on the master records can only be corrected by OCLC or by the inputting library if it is the only library that has used the record. Such an arrangement is clumsy and time-consuming. If other member libraries were trained and authorized to correct errors on master records, errors might be corrected as often as they are detected.

In the long run, however, the responsibility for inputting catalog records that meet the standards for cataloging and formatting rests with the member libraries. OCLC and the networks must develop methods of encouraging libraries to input records that are correctly formatted and cataloged. One way of alleviating the problem might be to develop training programs conducted by OCLC or by network staff that are aimed at those libraries identified as having high error rates. Another approach might be to give public recognition to libraries that contribute cataloging of high quality to the database. One example of this approach is the Pitts-

burgh Regional Library Council's Fred Award, which annually honors the library with the lowest error rate in the PRLC network.[12] Through the use of peer pressure the member libraries and networks of OCLC can encourage adherence to the standards. In addition, they must continue to insist that OCLC address this annoying, expensive, and seemingly perennial problem.

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News and Announcements

REDI or Not . . .

"Public Libraries and the Remote Electronic Delivery of Information (REDI)," a working meeting, was held in Columbus, Ohio, on Monday and Tuesday, March 23 and 24, 1981. The meeting, jointly sponsored by the Public Library of Columbus and Franklin County (Ohio) and OCLC, Inc., considered the issues that public libraries must examine before becoming involved in electronic information services. Subjects explored included technology, communications, information providers, information users, social implications, and financial, legal, and regulatory responsibilities.

Tom Harnish, program director of OCLC's Home Delivery of Library Services Program, was moderator of the two-day event. Participants at the conference represented a variety of public libraries from throughout the U.S., including New York, Georgia, Texas, California, Colorado, and Illinois. Don Hammer represented LITA at the meeting; Mary Jo Lynch of the ALA Office for Research also attended.

"Geographic distances," said Harnish, "were the only points of separation among the meeting participants. There was an overwhelming agreement on the concerns for the future of libraries and universal access to information in the electronic age."

On the second day of the conference it became apparent that the REDI agenda could not be properly dealt with in two days. "We need an organization which will address these issues on an ongoing basis," said Richard Sweeney, executive director of PLCFC. "Librarians at the conference agreed to promote and lead the development of the electronic library. To that end, this group is seeking recognition by ALA as a membership initiative group with a special interest in the electronic library."

The group's founders prepared the following mission statement for the membership initiative group:

To ensure that information delivered electronically remains accessible to the general public, the electronic library association shall promote participation and leadership in the remote electronic delivery of information* (REDI) by publicly supported libraries and nonprofit organizations.

Goals of the organization are to:
• identify services and information that are best suited to remote electronic delivery;
• plan, fund, and develop working demonstrations of library REDI services;
• communicate the availability of electronic library services to the user community;
• inform the library profession of trends, specific events, and future directions of REDI;
• create coalitions with organizations in allied fields of interest.

Public libraries and nonprofit organizations with information interests, such as information and referral groups, are invited to join the electronic library association. The group plans to meet at the ALA Annual Conference in San Francisco. Meeting details will be announced as soon as they are available.

It was the goal of the "Public Libraries and the Remote Electronic Delivery of Information" meeting to provide the framework within which to address the myriad issues in REDI. The electronic library group will validate the role of libraries in technology. . . . REDI or not here we come.

*Information delivered electronically where and when it is needed, in the library and elsewhere (home/office/off-site).

ARL Adopts Plan
for Improving Access to Microforms

A plan aimed at improving bibliographic access to materials in microform by building a nationwide database of machine-readable records for individual titles in microform sets was approved in principle by the ARL Board of Directors on January 30, 1981. The plan concentrates on monograph collections, and is aimed at providing records for individual titles in both current and retrospective sets. Records added to the database will also aid cooperative efforts in preservation microfilming.

Elements of the plan include:

• inputting of records conforming to accepted North American standards to the major bibliographic utilities by libraries and microform publishers;

• development of "profile matching" by the bibliographic utilities permitting the cataloging of all individual titles in a series or microform collection with single operation;

• cooperative cataloging of current and retrospective microform sets by libraries and publishers;

• compensation for publishers who input acceptable bibliographic records to the bibliographic utilities to offset loss of revenue from card set sales.

Cooperation among libraries, publishers, networks, and others has been stressed throughout the development of the plan, and initiatives on a number of fronts are necessary and encouraged in order to accomplish the goal of improved bibliographic access to microforms. ARL will seek outside funding for a program coordinator to facilitate implementation of the elements outlined above, and recruitment for the one-year position will begin shortly. The coordinator, advised by a committee of librarians (from ARL and non-ARL institutions) and microform publishers, will work with libraries, publishers, and the bibliographic utilities to help get the plan off the ground.

The plan is the result of a one-year study funded by a grant from the National Endowment for the Humanities and conducted for ARL by Richard Boss of In-formation Systems Consultants, Inc. During the course of the year, he interviewed librarians, microform publishers, representatives of the bibliographic utilities, and others interested in bibliographic access to microforms, gradually building the plan from elements on which there was agreement and discarding ideas that were not widely accepted. The effort to build a consensus among the various interested parties was aided by the advisory committee, comprising both ARL librarians and microform publishers, which assisted and advised throughout the course of the project. ARL will publish the study this spring.

ARL sponsorship of this project and its follow-up reflects the long-standing commitment the association has had to improving access to microforms. Two earlier ARL studies on improving bibliographic access contributed to the development of standards for descriptive cataloging of microforms, reinforced the importance of microforms for preserving and disseminating scholarly materials, and identified some of the problem areas that the current study has addressed. Today, as the amount of materials in microform in ARL libraries continues to grow—ARL libraries hold more than 146,660,000 units of microform—improving access to these materials has taken on even greater urgency.

The Association of Research Libraries is an organization of major research libraries in the United States and Canada. Members include the larger university libraries, the national libraries of both countries, and a number of public and special libraries with substantial research collections. There are at present 111 institutional members.

Battelle Studies Using Computers
to Access Unpublished
Technical Information

Engineers may be able to use computers to store, call up, and otherwise display some technical information not currently published in professional journals as a result of a study recently begun by Battelle's Columbus Laboratories.

In a four-month study sponsored by the

American Society of Mechanical Engineers (ASME), Battelle researchers are examining ways to use computers as an alternative to publications for communicating with the technical community.

ASME is a technical and educational organization with a membership of 100,000 individuals, including 17,000 student members. It conducts one of the largest technical publishing operations in the world, which includes codes, standards, and operating principles for industry.

According to Battelle's Gabor J. Kovacs, certain types of information traditionally are not covered in monthly or quarterly technical journals, yet they often have widespread appeal among engineers.

"Recent advances in computer and telecommunications technologies, coupled with rapidly rising publication costs and postal rates, have created an ideal environment for organizations to consider using computers as an alternative mode of communication," Kovacs said. "Data bases can be used to maintain information that is impractical for conventional publication, and it is now possible to use them for many other types of communication as well."

During the study, researchers will determine the feasibility of using a computer database to disseminate to ASME members such information as short articles dealing with design and applications data, catalog data, and teleconference messages. With the help of the ASME, Battelle specialists will define the information requirements for such a system.

While technology is sufficiently advanced to accommodate virtually any type of information, costs can become prohibitive unless practical compromises are made, Kovacs said. As part of the study, Battelle researchers also will analyze the costs associated with systems of varying capabilities.

Researchers then will define several alternative database systems, which will include such attributes as:

• online, interactive retrieval features

• simple-to-use retrieval language

• user-aid features

• a minimum of seventy-five simultaneous users

• ability to send, store, and broadcast messages

• compatibility with a variety of hard copy and CRTs (cathode ray tube terminals)

• sixteen or more hours per day availability to accommodate different time zones

• a minimum of thirty-characters-per-second transmission rates

Two of these alternative system designs—one representing a minimum capability and the other a maximum capability—then will be selected for further evaluation by Battelle and the ASME.

Book Reviews

Theory and Application of Information Research. Edited by Ole Harbo and Leif Kajberg. London: Mansell Publishing, 1980. 235p. £16.00. ISBN: 0-7201-1513-2.

This book reproduces twenty-one papers presented at the Second International Research Forum on Information Science, which was held at the Royal School of Librarianship in Copenhagen during August of 1977. The title of this work may be misleading since the majority of the papers could better be described as the foundations of information science. The papers that advanced the theory of information science were the exception, and the contributions dealing with practical applications were even rarer. The contributors included many familiar names: Kathleen T. Bivins, Anthony Debons, William Goffman, Manfred Kochen, Allan D. Pratt, and Hans H. Wellisch from the United States; Nicholas J. Belkin, J. M. Brittain, B. C. Brookes, Robert A. Fairthorne, J.-M. Griffiths, M. H. Heine, S. E. Robertson, B. C. Vickery, and T. D. Wilson from the United Kingdom; and many names from Europe that may be less familiar on this side of the Atlantic. The forum was organized into five sessions: general models of information science, information science in relation to other scientific disciplines, measurement, the information retrieval process, and the future tasks of information scientists in Europe. Within the book, the distinction between these sessions generally is not obvious. Appendixes give the forum program, summarize the discussions of the papers, and report on group discussions.

In the introduction, it was stated that it was hoped that the forum would *bridge the gap between theory and research on one side and practice on the other.* The book does not fulfill this hope, but it does present a good collection of papers dealing with a variety of aspects in information science. The view that the main problems of information science are cognitive rather than technical is evident in many of the papers. However, Bradford's law, Shannon's theory, and the epidemic model are addressed in several of the papers. With a few exceptions, the papers are quite readable and do not require a mathematical background to be understood and appreciated. The summaries and group discussions are disappointing, possibly because several of the authors were unable to attend the forum. Kathleen Bivins was the only American contributor present. There is no index, although one would have been helpful.

The book is valuable and should be part of any library collection covering information science. Anyone interested in information science should be able to find several highly relevant papers. However, only a limited number of scholars will find it necessary to read the entire work.—*Edward T. O'Neill, Matthew A. Baxter School of Information and Library Science, Case Western Reserve University, Cleveland, Ohio.*

Personal Documentation for Professionals—**Means and Methods,** by V. Stibic. Amsterdam: North-Holland Publ. Co., 1980. 214p. $29.25 (Dfl 60.00). ISBN: 0-444-85480-0.

While there have been many a number of books written on the design, development, and use of large-scale database systems, there have been few that focus on the control of one's own personal collection of reprints, memoranda, reports, drafts, slides, and related miscellanea, which accumulate so rapidly in any professional "information-handler's" office.

Stibic's book addresses this problem in a thoroughly professional and competent manner. His first two chapters introduce the general nature of the problem, and discuss professionals' information needs and sources. The third, "Document De-

scription," covers the record structure, abstracting, subject descriptions, keywords and classification methods, and their various combinations. The fourth chapter details the various technical means for storage of original documents, microfilm, and such control mechanisms as card indexes, peek-a-boo cards, and computer-supported indexes.

All of these chapters draw on the experience and practices familiar to users of large-scale systems. Stibic recommends the use of ISO and other standardized practices, and endeavors to emphasize the need for constructing one's own system in accord with generally accepted design principles.

Stibic is careful to point out, however, that if one is in fact designing a *personal* documentation system, then personal idiosyncrasies and preferences can be built into it. It is not necessary to use an established and standardized vocabulary or classification system without modification. One may alter it to suit one's own purposes. However, the *structure* of the system (whether descriptors, classification numbers, or other means) must be controlled; otherwise the system will become useless.

The next four chapters are case studies of different systems. The first is a card index technique used by an individual. The second describes a computerized index to support the documentation needs of a project team. (Essentially an augmented KWIC index, published quarterly.)

The third case study is one of particular interest to many professionals at the moment—the use of a personal computer as an indexing control system. The system, though not explicitly identified, is roughly comparable to many of those available in the U.S.; a microcomputer with 64K RAM, a display of 80x24 lines, two floppy disks with 512K bytes/disk, and an 80-character-per-line printer. The indexing is done via a faceted classification system of about 250 terms, which are hierarchically linked, providing automatic up-posting from specific to generic terms. A hash-coding technique is used to minimize the storage space required on the disk, and searching is performed by simple serial

searching of the index records.

The fourth case study is an examination of the upgrading of the manual card index described in the first study to a system supported by a large main-frame computer, using a terminal in the professional's office. A combination of automatic keyword extraction and manual classification is used for indexing. Complex Boolean searches are possible with this system.

Stibic concludes with a chapter on future prospects, touching briefly on such things as internal and public viewdata/teletext systems. He also provides a checklist of desirable features of "a multi-purpose personal work station." Such a station is not merely a special-purpose device used to aid in some parts of one's work, such as retrieval, but is an integral part of all of one's work; computer, calculator, text-processor, mail-dispatch system, calendar, in/out box, and so forth.

The author, a scientist of long standing with Philips in Holland, has provided a valuable guide to this area. There are two relatively minor points of criticism, however. Whether it was the author's or the publisher's choice is not clear, but there is an excessive use of italics throughout the text. This lavish use seems more appropriate to teenagers' romantic novels than to a serious work. In this case, it is more distracting than helpful. Secondly, but more understandably, the extensive references Stibic gives are frequently to documents not easily available in the U.S. Some are OECD papers, some refer to the German DIN standards, and some to internal Philips technical reports. These are minor points, however, regarding an excellent book. It is recommended not only for the information professional, but for anyone who is seriously concerned with the problem of keeping track of what one needs to know.—*Allan D. Pratt, University of Arizona Graduate Library School, Tucson.*

Viewdata Revolution, by Sam Fedida and Rex Malik. A Halsted Press Book. New York: Wiley, 1979. 186p. $34.95. LC: 79-23869. ISBN: 0-470-26879-4.

Sam Fedida is the inventor of Prestel,

the British Post Office's viewdata system. With this as his license, he and Rex Malik have written a 186-page volume explaining the Prestel system. Prestel is a series of databases, which are accessed by a keypad similar to a calculator. The common television takes on the characteristic of a CRT for viewing alphabetical and numerical information. The connection to the computer is by telephone, and, in Britain, the post office is in charge of the telephones. Overall, in spite of several printing errors, this book does provide information about the system.

The authors explain the types of information that will be available on the Prestel system, such as "Buying a Car," "Houses for Sale," "Entertainment," "Education," "An Evening Out," and "News." They have also devoted individual chapters to electronic mail, electronic funds transfer, and education, explaining how each works in the system.

The authors stress the benefits and attributes of their system almost to the point of redundancy. In each of the chapters, the manner in which the information is going to be accessed is repeated. Despite the repetition, the primary focus is what Prestel will do for the betterment of mankind.

The uniqueness of Prestel is the simplicity of its access process. According to the authors, being able to access the information in one's own home will make Prestel a major tool for dissemination of information for many agencies and businesses. At times, the "hard sell" is very obvious throughout the volume. However, the diagrams are good and help to explain the authors' points.

The problems Fedida and Malik anticipate in the electronic mail and protocols are realistic. In the chapters "Future I" and "Future II," the authors go off on a tangent, using a time line, on what they see in the future. Again, it is basically a repetition of what was said in the previous chapters, only from a futuristic point of view. Here, the reader gets a distinct feeling of what is really bothering them now in the system; that is, government bureaucracy. They cite the different groups trying to control the information by means of legislation. They delve into the problem of uniformity of standards. Television is an example. What will be standard for convertors and adapters for the computer hookup? This is a real problem that was well explored throughout the work.

This volume is good for librarians who are interested in cable, telecommunications, and computers. However, be aware of its poor organization. There are numerous printing errors that affect its readability. Nevertheless, if a person can wade through these errors and the repetition of ideas, he/she can obtain some useful information from this text. There is a distinct feeling throughout this work that it was put together hastily. Nonetheless, there is a dearth of information on this subject, and this book will serve some useful purpose for libraries.—*Robert Miller, Memphis/Shelby County Public Library and Information Center, Memphis, Tennessee.*

ALA Filing Rules. Filing Committee, Resources and Technical Services Division, American Library Association. Chicago: American Library Assn., 1980. 50p. $3.50. LC: 80-22186. ISBN: 0-8389-3255-X.
Library of Congress Filing Rules. Prepared by John C. Rather and Susan C. Biebel. Washington, D.C.: Library of Congress, 1980. 111p. $5. LC: 80-607944 ISBN: 0-8444-0347-4. Available from Customer Services Section, Cataloging Distribution Service, Library of Congress, Washington, DC 20541.

These two works represent the culmination of over a decade of effort within the library profession to overhaul the techniques by which entries are arranged to form catalogs. The impetus for this work came from recognition that computer technology would soon be enlisted to perform the arrangement of entries for the production of catalogs, and that filing rules current at the time would be impossible to implement in their entirety on the computer.

Although the original intention was to develop rules appropriate for the arrangement of entries by computer, those at the Library of Congress and the ALA commit-

tee working on the problem soon realized that, from the point of view of catalog users, it would be very undesirable to have different sets of filing rules in operation depending on the physical medium of the catalog. Therefore, the scope of the effort was broadened to rules that could be applied both manually and by machine using headings that were formulated according to more than one set of cataloging rules.

Now that we have these new rules, the question arises whether they are better than what preceded them. The criteria for "better" ought to be whether the rules make entries easier to find both for known-item searches and browsing within the complex device called a library catalog. Or to state the same criteria negatively: it should be more difficult to lose an entry in the catalog if it has been filed according to the rules. The evaluation of these rules against other possible approaches to catalog arrangement ought to be centered on observation of the needs of a variety of both experienced and unsophisticated catalog users and on measurement of the effectiveness of the alternative approaches to meet these needs.

The complex problems of filing clearly exemplify the need for research as recently expressed by Herb White in his columns in *American Libraries*. Lacking any empirical data on which to base an evaluation, we must rely on our professional judgment and personal biases to argue the case for the new rules.

To this reviewer, it seems that common sense supports a set of rules that are simple, consistent, and easy to explain to library users. The need for simplicity and consistency directly implies the "file-as-is" principle (i.e., file exactly as the heading is visually constructed, not by some interpretation of it), which should be applied even at the cost of having to search in more than one place in the arrangement; e.g., numeric digits and numeric words, Mac and Mc, Müller and Mueller.

The file-as-is principle has been more consistently applied in the ALA rules than the LC rules, the latter undoubtedly a result of the anticipated complexity and size

of LC's catalogs, although there is no justification argued for these departures from the basic principle.

Of specific interest to readers of the journal is whether these rules can be implemented for computer sorting of catalog entries. Do the rules succeed in meeting their original objective?

The ALA rules certainly appear to be amenable to very straightforward systems analysis and programming. For this the committee and its chairperson, Joe Rosenthal, need to be commended. From some sources there are already claims of systems that fully implement the new ALA rules, which certainly could be the case. However, it would be interesting to know how these systems deal with the following, which seem to be potentially troublesome:

• The lack of consistent support in the MARC format for handling initial articles when the rules call for ignoring initial articles in corporate names other than personal or place names, title subheadings ($t subfield), and subject headings. The English articles obviously present no problem, but the table of articles in appendix 2 shows more than thirty words that can be both an article and the cardinal numeral 1. In addition, the footnote, "In Hawaiian, the 'O emphatic' must be carefully distinguished from the preposition O, but O also serves the Hawaiian language as a noun and a verb (each with several meanings), an adverb, and a conjunction," must surely give pause to the diligent systems designer.

The recent Library of Congress practice of dropping nonfiling initial articles from heading fields still does not solve the problem of initial articles in the several million MARC records that already exist in library catalogs.

• The requirement that Roman numerals be filed numerically presents an opportunity to construct an interesting but not overly complex algorithm. However, although the MARC format makes the identification of Roman numerals in heading fields fairly straightforward (the $b subfield), the identification of Roman numerals embedded in a long title is much more ambiguous. For example, does *IV* mean "4" or "intravenous"?

• The rules require that punctuation in an Arabic numeral that is included to increase its readability is to be ignored in filing, but decimal points are significant in determining the numeric value of the number (i.e., .003 files before 1). How does one specify an algorithm to deal with the title, "5.000 kilomètres dans le sud"? Using European practice, this number is obviously 5,000, but why not 5 according to the computer algorithm?

• The special rule for nonroman alphabets (rule 7) is interesting: "If, in the arrangement of bibliographic records, it is necessary to distinguish access points containing characters in different nonroman alphabets, scripts and syllabaries (cf. Rule 1, Order of Characters) the following order of precedence is used. . . ." There follows a table beginning with Amharic and ending in Tibetan. That is the entire rule. Systems designers who have implemented this rule clearly have transcendent skills! Reliance on the MARC language code in the 008 field has both theoretical and practical problems.

• The introductory text advises libraries to include in the file information notes and references that explain filing practices to catalog users. However, the rules do not specify where these references are to file in relation to other headings. Admonishment to provide these at "appropriate points" is not much help.

• The ampersand is ignored in filing (for which we should be grateful). But, by including the optional rule 1.3, which allows filing the ampersand "as its spelled-out language equivalent," the ALA committee has put systems designers in the position of having to explain why this rule cannot be implemented on the computer—at least not until the MARC format includes a code for language of the field (not a likely development, and even then not all ambiguity would be eliminated). Interestingly, the Library of Congress treats all ampersands as a character filing between blank and the letter A.

• The optional rule 9.1, which allows the inclusion of "the role of a person or a corporate body in a legal action in arranging access points," presents a problem when the rule requires suppression of all other relators. How is the computer programmed to recognize a legal action? Is there a finite list of such relator words? Differences between AACR2 and previous cataloging practices further complicate the use of this option.

Admittedly, many of these problems are marginal in terms of the number of entries in a catalog affected, but to a systems designer, even though there is only one instance, it must be accounted for in the computer programs if the system can claim a "full" implementation of the rules. Clearly, full implementation will require some changes in the MARC format before all rules can be applied absolutely consistently and unambiguously.

The Library of Congress rules, although applying similar principles, depart significantly from the ALA rules in detail and complexity. A full analysis of the implementation problems would require much more space than this review will allow. Suffice it to say that although the Library's LIBSKED program has been under development for twelve years, and its strengths and limitations have undoubtedly influenced the development of these filing rules, there are elements in these rules that have not yet been implemented in LIBSKED, and several where no one has yet figured out how to do it.

Although the work on these rules is complete, there are two more projects the profession should undertake that would be most useful for those concerned with catalog development. In both sets of rules, there is mention in the introduction of the need for a brief version of the essential rules, which could be handed out to catalog users. Why did the committee not develop such a brief guide and include it as an appendix to the rules? Those of us who work on computers are familiar with the reference cards for programming languages put out by computer manufacturers. A similar format for the filing rules would be very useful.

Another more difficult but equally useful project would be the publication of a standard design implementation of the ALA filing rules expressed in terms of the MARC format. Such a design would include the MARC fields and subfields

necessary for each possible entry from a bibliographic record and a description of any special processing required for particular data elements. The design would be expressed at a level that is independent of programming languages and computer hardware. We need a standard reference that translates the filing rules into the language of the MARC format. The ALA rules, in some tantalizingly brief instances, begin this process.

Both sets of filing rules are significant improvements over those previously available to systems analysts. Reference librarians should find these rules easy to explain

to beleaguered catalog users. For their simplicity and relatively slight departure from the "file-as-is" principle, the ALA rules are to be recommended. The Library of Congress rules, in their attempt to retain the classificatory structures that support the browsing user, further complicate the task of the user performing a known-item search. Library research has indicated that the preponderance of catalog searches in research libraries are known-item searches.—*John F. Knapp, Ringgold Management Systems, Beaverton, Oregon.*

Highlights of LITA
Board Meetings

The highlights of LITA board meetings are published here to inform division members of the activities of their board. The highlights are not the official minutes of the meetings.

1981 ALA Midwinter Meeting
Washington, D.C.

First Session
February 1, 1981

The meeting was called to order by S. Michael Malinconico, president. The following board members were present: S. Michael Malinconico, Barbara Evans Markuson, Brigitte L. Kenney, Nancy L. Eaton, Kenneth J. Bierman, Ronald F. Miller, Bonnie K. Juergens, Marilyn J. Rehnberg, Heike Kordish, and Donald P. Hammer, LITA executive director. Staff: Laura Stewart.

The minutes of the 1980 Annual meetings were approved and adopted with the correction that Brigitte Kenney be reported as present at the Wednesday, July 2, 1980, meeting.

MARBI COMMITTEE REPORT (report by Eleanor Montague). Montague reported that the MARBI Committee is continuing its work, and that the members do not feel that the value of their work has been lessened by the new arrangement with the Library of Congress. The committee has discussed changing its mode of operations by introducing teleconferencing and by establishing a steering committee, but these things may be in the future.

Board discussion took place on the value of ALA input to the MARC format and whether or not LITA should support a representative to the two LC-sponsored meetings.

Montague requested a budget of $2200 to support that representative and the board decided to vote on that matter when it considers the 1981/82 LITA budget later in the week.

NEW LITA BUTTON AND NEW AVS BROCHURE (report by Donald Hammer). The new LITA button, "LITAship Is for Everyone," was introduced, and copies of the Audiovisual Section's membership recruitment brochure "Who Says ALA Doesn't Do Anything about AV?" were distributed to the board members.

JOINT LITA/RTSD BOARD MEETING. Malinconico announced and discussed the joint LITA/RTSD board meeting to take place later in the week. He pointed out that there are many areas of joint interest and many activities the two divisions could cooperate in. He mentioned specifically discussion groups,

cosponsorship of programs, Z39 representation, problems concerning ALA policies, the coming five-year review of the ISBD, and other things.

TELECOMMUNICATIONS COMMITTEE REPORT (report by Joan Maier). The board was brought up to date by Maier on the preconference the Telecommunications Committee plans to sponsor at San Francisco. It will be concerned with the "office in the home" concept and the support the library should provide to that "electronic cottage" mode of operating. The second day will consist of a tour of "Silicon Valley's" Mission College where that college will demonstrate its new approach to education and its use of automation. Additionally, the Silicon Valley electronic manufacturers will demonstrate their technology. Joyce Capell, who represented Mission College, gave the board information about the college and the potential exhibitors from Silicon Valley.

VACANCY IN DIVISION COUNCILOR POSITION. Hammer reported that the request was made to the ALA Bylaws Committee to ask Council to change the ALA bylaws to allow for an alternate councilor to be elected by each division, and for that alternate councilor to have the vote if a division's councilor cannot complete the term of office. LITA will elect an alternate councilor in the coming ALA election and it is expected that the ALA Bylaws Committee will present their proposal to Council this week.

PROPOSED INCREASE IN ALA OVERHEAD CHARGES. Hammer reported that the ALA controller has proposed that ALA raise its overhead charges from 13 percent to 16.5 percent. This is the ALA charge against institutes, preconferences, and other special activities.

The board decided to establish a task force to determine how these overhead charges are arrived at and exactly what items are included in them.

The task force will consist of Ronald F. Miller, chairperson; Barbara Markuson, Bonnie Juergens, and Donald Hammer, resource person.

The following motion was made by Ronald Miller, seconded by Kenneth Bierman, and passed:

That a Task Force be formed to obtain additional information about overhead charges which are assessed the Division. Toward that end, the Task Force will accomplish the following:

(1) Describe in writing the steps required for determination and approval and adoption of an overhead rate;

(2) Define the component costs included in the overhead rate;

(3) Suggest services which overhead covers which might be contracted for in other ways.

The Members of the Task Force are:

Ronald F. Miller, Chairman

Barbara E. Markuson

Bonnie K. Juergens

Donald P. Hammer, Resource Person

The dates for accomplishment of the three items are:

(1) May 1, 1981

(2) June 1, 1981

(3) ALA Annual Meeting

REPORT ON FREE JOLAS. To date, twenty-six requests have been received from LITA members for free copies of back issues of JOLA. This offer was approved by the board at the last Annual Conference as a means to reduce the supply of back issues of JOLA. It was suggested that new members of LITA should be notified that these issues are available.

REPORT ON FUNDS ALLOCATED FOR SAN FRANCISCO PROGRAMS. The ALA Conference Program Committee allocated to the LITA units the following funds for programs at the San Francisco Annual Conference.

ISAS/TESLA "Technical Standards: The Good, the Bad, the Missing"	$100.00
VCCS "Use of Video by and for the Deaf "	$350.00
VCCS "Viewdata—The Electronic Delivery of Information"	$700.00

End of first session.

Second Session
February 2, 1981

The meeting was called to order by S. Michael Malinconico, president. The following board members were present: S. Michael Malinconico, Brigitte L. Kenney, Barbara E. Markuson, Nancy L. Eaton, Kenneth J. Bierman, Ronald F. Miller, Bonnie K. Juergens, Marilyn J. Rehnberg, Heike Kordish, and Donald P. Hammer, LITA executive director. Staff: Laura Stewart.

LITA STANDARDS COMMITTEE. A problem has arisen concerning an overall standards committee in LITA in that those seeking information about technical standards have no one or no unit within LITA to contact except TESLA, which is concerned only with computer and data processing standards. An example of the situation is that of Steve Salmon who was appointed liaison to LITA from the ALA Standards Committee. He can only contact TESLA and has nowhere to go concerning standards in any of the other areas of interest to LITA. There is also no unit in LITA empowered to establish standards policy for the entire division.

After discussion, the board asked the LITA executive director to contact Mr. Salmon and discuss the matter with him to determine what, if any, problems he felt the present arrangement made for him. The board will later reconsider the matter.

RTSD CATALOG FORM, FUNCTION, AND USE COMMITTEE. This is a committee RTSD is proposing that would be an interdivisional committee concerned with the evolving and the proliferation of library catalogs and with development of programs and workshops "to inform and develop professional thinking on the form, function, and use of library catalogs."

It was decided to bring the matter up at the LITA/RTSD joint board meeting and to ask for additional information at that time.

LITA LEGISLATION AND REGULATION COMMITTEE (report by Judith Sessions). The Legislation and Regulation Committee has made arrangements to hold a reception in the Russell Senate Office Building at which librarians will be able to meet their legislator and/or the legislators' staff members. The re-

sponse to the invitations has been excellent as about one hundred RSVPs have been received from legislators and their staff members.

A report was given on the revision of the Communications Act of 1934 and the provisions that librarians should be working to have included. The Copyright Law was also discussed, especially the lack of a clear definition for "fair use."

INFORMATION BILL OF RIGHTS. About a year ago the Information Industry Association compiled and published a statement called the "Information Bill of Rights." The LITA executive director brought the statement to the attention of the board because it was felt that the statement was written from the aspect of the profit-making organization only and perhaps should be broadened.

The board decided that this was not in its province and asked the LITA executive director to forward the matter to the ALA Office for Intellectual Freedom for any action they feel is warranted.

MARC USERS & LIBRARY AUTOMATION DISCUSSION GROUPS. The Marc Users Discussion Group has decided that it would like to merge with the Library Automation Discussion Group (formerly COLA) but would like to retain the four-hour time slot it has had for many years.

A motion was made by Kenney, seconded by Ron Miller, and passed:

That the LITA Board permit the merger of the MARC Users Discussion Group (MUDG) and the Library Automation Discussion Group (LADG) and that they be called Library and Information Technology Discussion Group.

A motion was made by Kenney, seconded by Juergens, and passed:

That the discussion groups (MUDG & LADG) after they merge retain the four-hour time slot for the combined new group.

A motion was made by Juergens, seconded, and passed:

That the chair of the Library and Information Technology Discussion Group be instructed to contact the LITA Program Planning Committee chair for coordination of discussion topics prior to each LITDG meeting.

A motion was made by Kenney, seconded by Ron Miller, and passed:

That the Library and Information Technology Discussion Group elect a deputy chair to assist the chair from now on.

End of second session.

Third Session
February 2, 1981

The meeting was called to order by S. Michael Malinconico, president. The following board members were present: S. Michael Malinconico, Brigitte L. Kenney, Barbara E. Markuson, Nancy L. Eaton, Kenneth J. Bierman, Angie W. LeClercq, Helen Cyr, Bonnie K. Juergens, Marilyn J. Rehnberg, Heike Kordish, Charles Husbands, and Donald P. Hammer, LITA executive director. Staff: Laura Stewart.

APPLE EDUCATION FOUNDATION GRANTS. Brigitte Kenney reported that the Apple Foundation had been flooded with grant requests and that they

have decided to restrict their grants to software development only. President Malinconico asked Kenney to determine exactly what the limitations are before the board considers the matter further.

HONORARIA PAID TO LITA SPEAKERS. The question raised was whether or not the people on the LITA Board of Directors or any of the LITA Program Planning Committees should be paid honoraria when they serve as speakers at LITA institutes.

A motion was made by Juergens, seconded by Helen Cyr, and passed:

That LITA will not pay honoraria to LITA Board members or LITA members of program committees for participation in institute programs.

(This will take effect after end of next Annual Conference.)

(This will take effect immediately for Board members.)

ALA SURVEY OF PRIORITIES OF MEMBERSHIP (report by Ron Miller). Five priorities the ALA Membership Priorities Committee has determined are access to information, legislation and funding, intellectual freedom, public awareness, and professional and staff development.

Some board members expressed surprise that some of the areas of concern to the White House Conference were not included as ALA priorities and that one of the expressed priorities (legislation) is only a means to an end.

Malinconico asked the board members to send their comments by April 1 to Miller, who will then distribute a proposed amendment to the board. A task force of three, Barbara Markuson, Brigitte Kenney, and Ron Miller, was appointed by consensus to write the proposed amendment. It was suggested by Juergens that the LITA statement be published in *American Libraries* as a letter to the editor in the same issue that the proposed ALA priorities are published.

LITA TELECONFERENCING SYSTEM. A representative, John Sehnert, from The Source, gave a presentation of that system to the board. After a long discussion about the capabilities of such systems and the needs of the board, it was decided that by March 1 the recommendations for a pilot project would be provided, by March 15 the system should be operational, by April 1 a set of criteria should be made up to evaluate the project, and by the next board meeting (in San Francisco) an evaluation should be held with a decision made as to the permanency of the system.

It was suggested by Barbara Markuson that the "electronic mail" system should be demonstrated during the LITA President's Program and input should be sought from the members as to what their needs are along this line.

PROGRAM PLANNING COMMITTEE (report by Kaye Gapen). The committee is in the midst of a transition of the chair. Sue Tyner will be the new chairperson.

Gapen discussed the joint RTSD/LITA/RASD preconference on online catalogs to be held in Philadelphia.

NATIONAL CONFERENCE PLANS. Berna Heyman reported on plans for the LITA national conference planned for Baltimore in the spring of 1983. If for

any reason it cannot be held in the spring of 1983, she stated that the fall of 1984 would be their second choice. The Maryland Library Association would be interested in cosponsorship. The committee is considering asking for help from the Council on State Governments.

The conference format would include exhibits, workshops prior to the conference, invited papers, contributed papers, a poster session, and panel sessions. A survey of the LITA members is being considered in order to get ideas on subjects of interest.

Discussion followed, but no action was necessary.

End of third session.

Joint LITA/RTSD Board Meeting
February 2, 1981

INTRODUCTIONS. Both boards, guests, and staff introduced themselves.

AGENDA. There was no set agenda. Karen Horny, RTSD president, suggested that one topic that might be discussed or at least recognized is that both LITA and RTSD have retrospective conversion discussion groups. Both appeared to have different focuses on their discussion of retrospective conversion.

BACKGROUND. Michael Malinconico, LITA president, gave background on the reason for the joint board meeting. There has been created an uneasy sort of division between technology, application of technology, and technical services systems. This uneasy division is thinking of technology as the form in which library services are delivered, thinking of the technical-services interests as reflected in RTSD as concerned primarily with the content of that service. The distinction between form and content obviously falls apart very rapidly. In previous LITA discussions, Barbara Markuson pointed out that there are perhaps three stages of implementation of technology. In the first phase, there is exploration of the potential of technology. That is the domain of LITA. In the second phase, there is an implementation and a certain amount of acclimatization that is necessary. This is the gray area. The third phase is where the technology becomes integrated into the operation of a library. This is the concern of the traditional technical services. The gray area needs to be addressed.

With automated cataloging systems in particular, they are beginning to mature, and it is no longer clear who should be concerned and addressing the problems. Thus there is overlap. We need to meet together to consider ways to make more efficient use of time that is expended at ALA meetings.

Currently there are a number of joint ventures: cosponsorship of the Catalogs Preconference, 1982; the establishment of a Joint Committee on Catalog Form, Function, and Use; cosponsorship of a program in San Francisco on union lists of serials.

Three things should be considered:
1. How to organize to take joint action on matters that concern us mutually.
2. Think of the joint programs as pilot ventures and attempt to set up a structure that can be used for future joint ventures.

3. Consider what other projects we might want to do jointly.

Bill Gosling, RTSD past president, stated that one of the points in terms of overlap is the factor of growth of both divisions. The factor of growth is related to two things: (1) interest and (2) the desire or need to have official affiliation with the association. This is not unique to RTSD and LITA. ALA, as well as the divisions, is growing; more and more people are involved and want to be involved.

Michael Malinconico stated that we should let the growth be a result of conscious action, it should not be something that happens without our conscious intent or control. It may be that there are instances where overlap is necessary and desirable. Let the overlap occur as something done by intention.

Norman Dudley stated that ALA does have mechanisms for resolving overlap, which we are just beginning to use. We can never identify the gray areas because of the very nature of the technology. Every new application of technology presents us with new or possible gray areas. What is needed is the sensitivity, willingness, and ability to approach the other unit and ask for cosponsorship.

Michael Malinconico stated that the divisions had experimented with liaisons to their boards. The meetings often conflict, so this seems an enormously inefficient method of communication.

Another example of perhaps peripheral interest to LITA is the ISBD five-year program. There might be some value in having a joint review of the ISBDs.

Arnold Hirshon suggested that the division executive directors exchange minutes or summary board minutes. At this time RTSD does not do summary minutes. The *RTSD Newsletter* reports RTSD board action as well as section and committee reports, however.

Bill Gosling, RTSD past president, stated that when talking about units of a division, even as an officer, it is difficult to ensure information communication. An orientation session is very important. If two or three people miss this, the information has to be picked up by sitting in meetings. For programming, a mechanism to be used is a screening for all programs. The planners have to include what affiliation is appropriate and what contact has been made. Perhaps, to return to Mike Malinconico's point about structure, we should charge our Organization committees, who review recommendations for new committees, also to look at possible affiliation. This happened with the Catalog Form, Function, and Use Committee.

It was suggested that RTSD and LITA ought to exchange representatives to the Organization and ByLaws committees. Michael Malinconico suggested expanding this to exchanging representatives to the Division Level Programming Committees. RTSD does not have one as yet. Bill Gosling agreed that when the structure becomes defined, this is another area of exchange.

Michael Malinconico suggested two other areas that LITA and RTSD could explore—the proposed increase in the ALA overhead rate for workshops, institutes, preconferences, etc., and the difficulty of getting publicity for forthcoming programs in *American Libraries*.

LITA has formed a task force to look into the proposed change in the overhead rate to look at what ALA central provides for the overhead charges and to identify those things that might be more economical to contract for separately.

This is perhaps another area for cooperation. The sense of the LITA Board was that they would like RTSD participation in the task force. Nancy Williamson agreed to sit in on the task force as an RTSD observer. The task force's function statement has three aspects:

1. To identify the procedural steps that a dues increase would have to go through and how to effect those steps.
2. Determine what it is we get for the overhead we pay.
3. Determine those things that we get that might more economically be contracted for separately.

STUDENT DUES AND GRADUATED DUES. The LITA Board acted in support of student dues. RTSD had a concern about the impact of student dues on publications as the current $7.50 fee from the $15.00 membership fee does not cover the cost of publications. RTSD on the proposed graduated dues structure for new members, felt that it was difficult to assess the impact of new division members until they saw the effects on the ALA general membership. The LITA Board was in favor of the graduated dues structure for new division members.

INTERDIVISIONAL COMMITTEE ON CATALOG FORM, FUNCTION, AND USE. This committee would replace the Book Catalog Committee. Currently RTSD is receiving responses from other divisions on their interest in forming such an interdivisional committee. ALA/COO would have to look at this committee. Michael Malinconico stated that the formation of this committee would be one way of addressing some of RTSD and LITA's mutual concerns.

ON-LINE PRECONFERENCE. The division executive directors were charged with writing an agreement on the responsibilities of each division with respect to this program and then circulate it to the respective boards.

The joint board meeting was adjourned at 5:42 p.m.

Fourth Session
February 3, 1981

The meeting was called to order by S. Michael Malinconico, president. The following board members were present: S. Michael Malinconico, Brigitte L. Kenney, Barbara Evans Markuson, Nancy L. Eaton, Kenneth J. Bierman, Angie W. LeClercq, Helen Cyr, Bonnie K. Juergens, Marilyn J. Rehnberg, Heike Kordish, Charles Husbands, Donald P. Hammer, LITA executive director. Staff: Laura Stewart.

DISCUSSION OF MARBI COMMITTEE REQUEST FOR FUNDS. A discussion of the MARBI Committee and LITA representation at its meetings took place.

The following motion was made by Barbara E. Markuson, seconded by Bonnie K. Juergens, and passed:

The LITA Board approves the expenditure of up to $2200 to cover expenses for one LITA representative at the two 1981 MARBI meetings held

outside the two annual ALA meetings. This matter will be reviewed again at the next Midwinter meeting.

(Amended by S. Michael Malinconico, and approved unanimously.)

LITA'S PLACE IN STANDARDS SETTING. A long discussion took place on the past contribution of LITA in standards setting and what its position should be now and in the future in the standards field. The place of MARBI, TESLA (ISAS), and the ISAS International Mechanization Consultation Committee was considered. The discussion culminated in a decision to ask the executive director of LITA to write a background paper on the history of LITA's involvement with all standards activities, including actions with other groups, and what results were achieved. The report is to be available at the next Annual Conference.

NATIONAL CONFERENCE REPORT (report by Berna Heyman). It was reported that the National Conference Program Committee would ask the ALA Executive Board to approve a conference for LITA in the spring of 1983.

A discussion took place on the audience at which the conference would be aimed. Concern was expressed for the inclusion of beginning-level programs and papers as well as activities for the more knowledgeable. The tutorial approach to all aspects of areas of interest to LITA members and others was advocated by several board members.

After a discussion on the registration fees and on the individuals who should be present to represent the LITA board before the ALA Executive Board, a motion was made by Bonnie K. Juergens, seconded by Brigitte Kenney, and passed:

The board approves the request of the Program Planning Committee to proceed with current plans to hold a LITA conference entitled "Information/Technology: LITA Brings It All Together." Such approval includes a vote of appreciation to the Committee for the effort that has gone into this plan.

End of fourth session.

Fifth Session
February 3, 1981

The meeting was called to order by S. Michael Malinconico, LITA president.

FUNDS ALLOCATED BY ALA TO LITA FOR SAN FRANCISCO PRO-GRAMS. Hammer reported that $900.00 was allocated by ALA to each division to be distributed by their boards for San Francisco conference programs.

Also—$100.00 was given to TESLA by ALA.

Also—$350.00 was given to LITA VCCS "Video for the Deaf " program.

Also—$700.00 was given to LITA/VCCS "Viewdata" program; VCCS requests at least $300.00 more for this.

A motion was made by Kenneth J. Bierman, seconded by Bonnie K. Juergens, and passed:

That TESLA be awarded $550.00 and VCCS Program Planning Committee be awarded $350.00 for additional support for their programs for the San

Francisco conference. These funds are to come from the "Regular Conference Program Funds."

BYLAWS AND ORGANIZATION COMMITTEE (report by Heike Kordish). No action items to report.

PROGRAM PLANNING COMMITTEE (report by Sue Tyner). No report given as Sue Tyner had just recently become chair.

TELECOMMUNICATIONS COMMITTEE (report by Joan Maier). After discussion it was decided to double the number of registrants expected for the "Office in the Home" preconference from 150 to 300. A revised budget was presented to the board.

The LITA Telecommunications Committee would like to publish in the *LITA Newsletter* a listing of electronic mail systems, a listing of paperless information technology consultants, and a dial-order-type services listing. These items have been turned down by the editor of *JOLA*, but have been accepted by the editor of the *LITA Newsletter*. The LITA Board gave its enthusiastic endorsement.

NOMINATING COMMITTEE. Malinconico reported on the 1981 elections slate as follows:

Vice-president/President-elect: Kevin Hegarty, Carolyn Gray
Director-at-Large: Hugh Atkinson, Emma Cohn
Council: Bonnie Juergens, George Abbott, Lynne Bradley

LITA SECTION REPORTS: ISAS (report by Bonnie K. Juergens). No action items to report.

PUBLICATIONS COMMITTEE (report by Charles Husbands). Brian Aveney has augmented the *JOLA* staff by getting David Weisbrod to be Book Review editor, and Tom Harnish to be an assistant editor for Video Communications—which we think will bring some new focus to those areas.

As the committee has begun to organize the division's publications program, it is questioning whether or not an editorial board and a publications committee are needed. The committee proposes that LITA have a publications committee, and that the journal and the newsletter have editorial boards. The committee recommends the chairperson of the Publications Committee be an ex officio member of each of the editorial boards, and that the chief editor of each of those publications be an ex officio member of the Publications Committee. The newsletter editorial board would consist only of the staff, i.e., the chief editor, and the section editors; and the journal editorial board would consist of the chief editor, the various assistant editors, and additional people to serve as a core of reviewers (but not necessarily limited to that function).

The relationship to the LITA Board is something of a question. The bylaws state that the *JOLA* editor is a member, ex officio, of the LITA Board. The roster shows that Charles Husbands, as chair of the Publications Committee, is the ex officio member. There is a question as to whether either needs to be a member of the LITA Board. The Publications Committee feels that there should be only one ex officio member on the LITA Board—the chair of the Publications Committee—and asks the LITA Board to resolve this question.

After discussion it was moved by Ronald F. Miller, seconded by Brigitte L. Kenney, and passed:

That the Board officially recognizes and approves the establishment of two editorial Boards; the first for the Association's newsletter, the second for its journal. Furthermore, the Chairperson of the Publications Committee should appoint a liaison to the LITA Board for reportorial purposes, and the bylaws shall be amended to delete the journal editor as an *ex officio* member of the Board.

The Publications Committee recommends that the LITA budget be published each year in the newsletter. The committee suggests changes in the form of the LITA budget that would more accurately and/or more specifically indicate expenditures. The Publications Committee also suggested that some narrative be included with the budget to explain various aspects of it. No board action was necessary.

The suggestion came up, in reference to items for the newsletter, that it might be interesting to try getting the headlines from the newsletter into some kind of electronic distribution. NEXIS was suggested. Tom Harnish suggested The Source as another possibility, keeping in mind legal and copyright considerations. The LITA Board is considering an electronic mail pilot project, but the LITA Telecommunications Committee is already in the process of setting up such a project of its own at this time. The board asked the Newsletter Editorial Board to draw up a proposal for the LITA Board to consider at the San Francisco Annual Conference.

AMERICAN NATIONAL STANDARDS INSTITUTE COMMITTEES. Hammer brought to the board's attention two recent problems concerning LITA's representation on American National Standards Institute (ANSI) committees.

1. ANSI sent LITA an invoice for $50.00 for membership in ANSI. When it was pointed out to ANSI that LITA is a division of ALA and ALA is a member of ANSI, the $50.00 charge was dropped.

2. As was reported to the board at the last Annual Conference meetings, the Computer & Business Equipment Manufacturers Association (CBEMA) billed LITA for $1,125.00 for a partial-year 1980 membership on X4 ($1,500.00 for a full year), and later information revealed that membership on X3 would cost $2,500.00. X3 and X4 have now been combined, but no information has been received on what the dues are for the "new" X3 committee.

The problem is that letters to CBEMA asking what provision has been made for representation from nonprofit users groups are ignored. LITA, therefore, no longer has any representation on the computer-standards-setting committees.

After discussion, it was suggested that the LITA executive director continue to try to communicate with CBEMA.

SPONSORSHIP OF LITA INSTITUTES BY OUTSIDE ORGANIZATIONS. Bonnie Juergens, chair of ISAS, brought up the matter of outside organizations asking to hold LITA institutes for their members. The specific incident concerned is that of the Law Library Association's request for sponsoring the "Data Processing Specifications and Contracting" workshop as a preconference workshop prior to their conference in June. The board indicated a willingness to allow such arrangements, but felt that LITA should gain some financial return from them.

In this case, the board, by consensus, indicated that the Law Library Association should be asked for 20 percent of the costs (with 15 percent being least acceptable) as remuneration to LITA.

LITA BIBLIOGRAPHY. Juergens brought up the question of continuing the *LITA Bibliography on Library Automation*. The last one published included the years 1973–1977. She wanted board reaction as to whether or not it is a viable project and whether or not ISAS should prepare a working plan and a budget to be presented to the board at the next Annual Conference. The board, by consensus, asked ISAS to proceed to develop a plan.

LITA REPRESENTATIVE TO IFLA (International Federation of Library Associations). IFLA REPRESENTATIVE NOMINATIONS. Kenney presented a statement concerning the need of, and the requirements for, nominees to IFLA. Her recommendations for nominees were Fred Kilgore, Susan Martin, Russell Shank, and Dick DeGennaro. Members of the LITA Board were invited to submit additional names of possible nominees, especially as there is no limit to the number of nominees.

ALA OPERATING AGREEMENT WITH DIVISIONS. At one of the COPES meetings, there emerged a new ALA operating agreement for the divisions written by Robert Wedgeworth, now being discussed by all units. There was a negative reaction to the vagueness of the document as it now stands. The president of the board suggested that the board members put their comments in writing to send to him around March 1.

STUDENT MEMBERSHIP DUES PROPOSAL. Ron Miller asked the board if it wanted to reconsider its approval of the reduced student dues proposal in the light of recent discussions and actions in ALA Council. After discussion, the board confirmed its approval of reduced student dues and also took the position of being in favor of "local," i.e., divisional control of dues.

ALA MEMBERSHIP PROMOTION TASK FORCE (reported by Blanche Woolls). The Membership Promotion Task Force is going to arrange special discounts to members of ALA to go to museums and so forth in San Francisco. LITA might want to mention in the *LITA Newsletter* places of interest and things to do that the members might not otherwise know about. More specifically, LITA might want to highlight the technology that exists in the San Francisco area that LITA members might be interested in going to see on their own.

MEMBERSHIP COMMITTEE (Blanche Woolls). The LITA Membership Committee recommends that LITA prepare information for ALA members who are not members of LITA, to suggest that they should belong to LITA by stressing those areas of the division that could attract individual participation in the association, such as the discussion groups and programs.

It was moved by Brigitte L. Kenney, seconded by Kenneth J. Bierman, and passed:

That the LITA Board authorize up to $700.00 for a mailing to ALA members who are not LITA members.

The Membership Committee requests support of the LITA Board for student chapters. Though there is only one, University of Michigan, there should be a letter sent to welcome the students into LITA. Woolls offered to write the "greetings" letter.

Bringing into LITA people who are not librarians was presented to the board and discussed.

AECT is having their national meeting in Philadelphia in April. As a member of AECT as well as LITA, Blanche Woolls would like authorization to arrange a very small reception at this meeting to attract members to LITA.

It was moved by Kenneth J. Bierman, seconded by Brigitte L. Kenney, and passed:

> That the LITA Board authorize up to $300.00 to the Membership Committee for a reception for the AECT national convention, April 5–9. The purpose of this reception is to encourage new members for LITA.

Membership Committee is going to have a microcomputer in the LITA booth at ALA with a "LITA game" on it—telling what LITA is all about. They are aiming at zero cost to LITA for both the microcomputer and the game.

LITA ORAL HISTORY TASK FORCE. S. Michael Malinconico suggested that board members read the report on this subject that was made to the board by Robert Miller.

AVS & VCCS PROPOSED MERGER. Brigitte L. Kenney announced that both the AV Section and the VCCS Section have expressed an interest in merging into one section and in expanding the telecommunications interests in LITA into another separate section.

S. Michael Malinconico suggested that the AV Section and VCCS meet in San Francisco and, in a joint meeting, discuss this matter and see that their memberships are informed of the results of that meeting.

End of fifth session.

LITA BOARD OF DIRECTORS MEETINGS
RECORD OF VOTES—1981 MIDWINTER

Board Member	Motions (In order of appearance in the "Highlights")												
	1	2	3	4	5	6	7	8	9	10	11	12	13
S. Michael Malinconico	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Brigitte L. Kenney	0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Barbara E. Markuson	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Nancy L. Eaton	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Kenneth J. Bierman	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ronald F. Miller	A	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Angie W. LeClercq	0	0	0	0	0	Y	Y	Y	Y	Y	Y	Y	Y
Helen Cyr	0	0	0	0	0	Y	Y	Y	Y	Y	Y	Y	Y
Bonnie K. Juergens	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Marilyn J. Rehnberg	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

KEY: Y = Yes   N = No   A = Abstain   0 = Absent

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Filing Committee of the Resources and Technical Services Division, ALA

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