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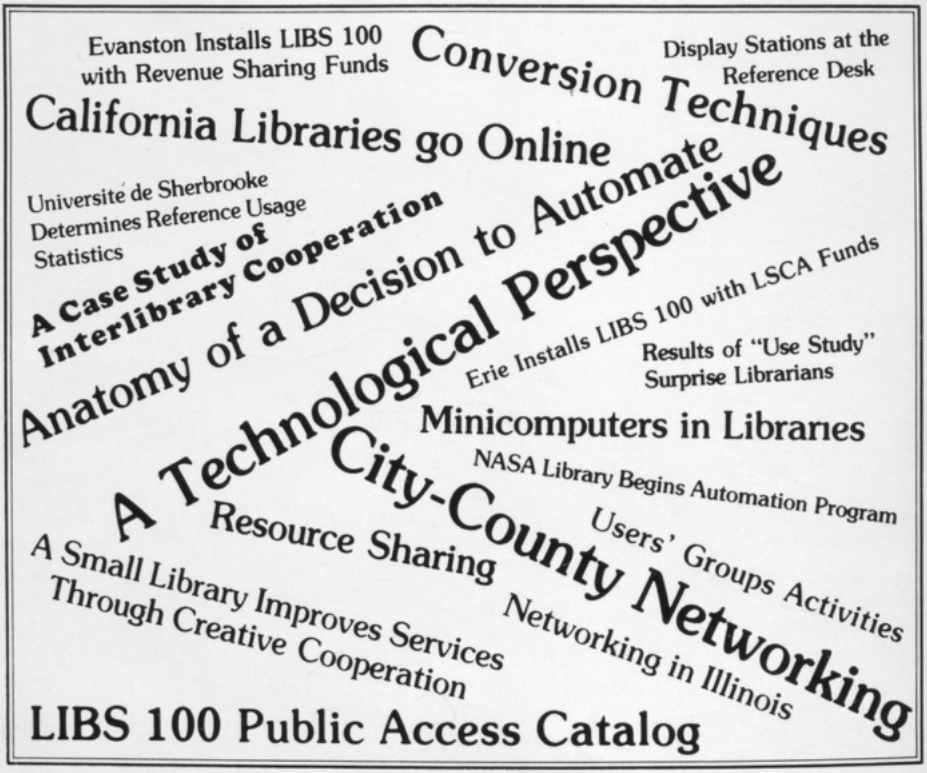

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JOURNAL OF LIBRARY AUTOMATION

Volume 11, Number 3: September 1978

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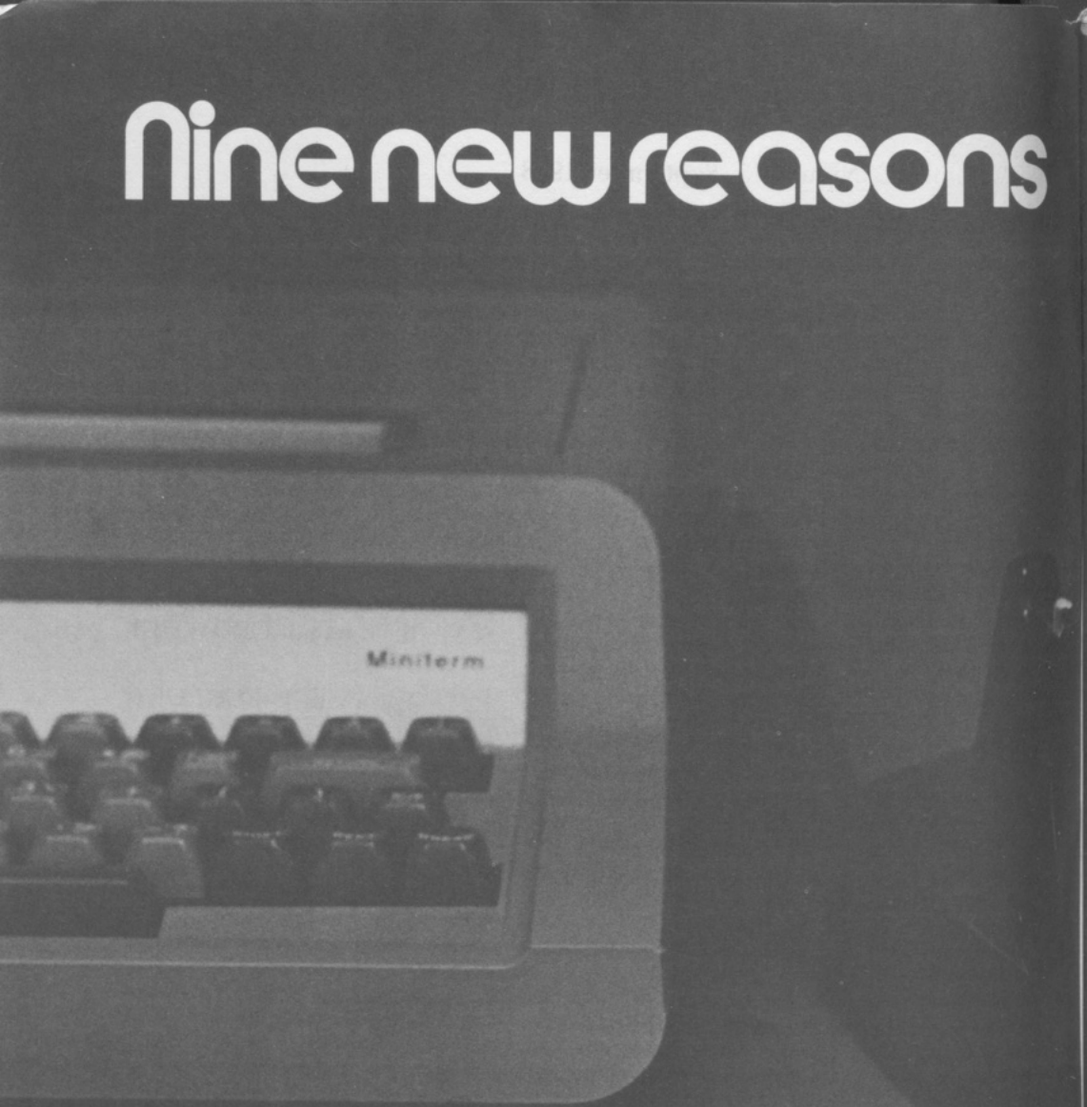

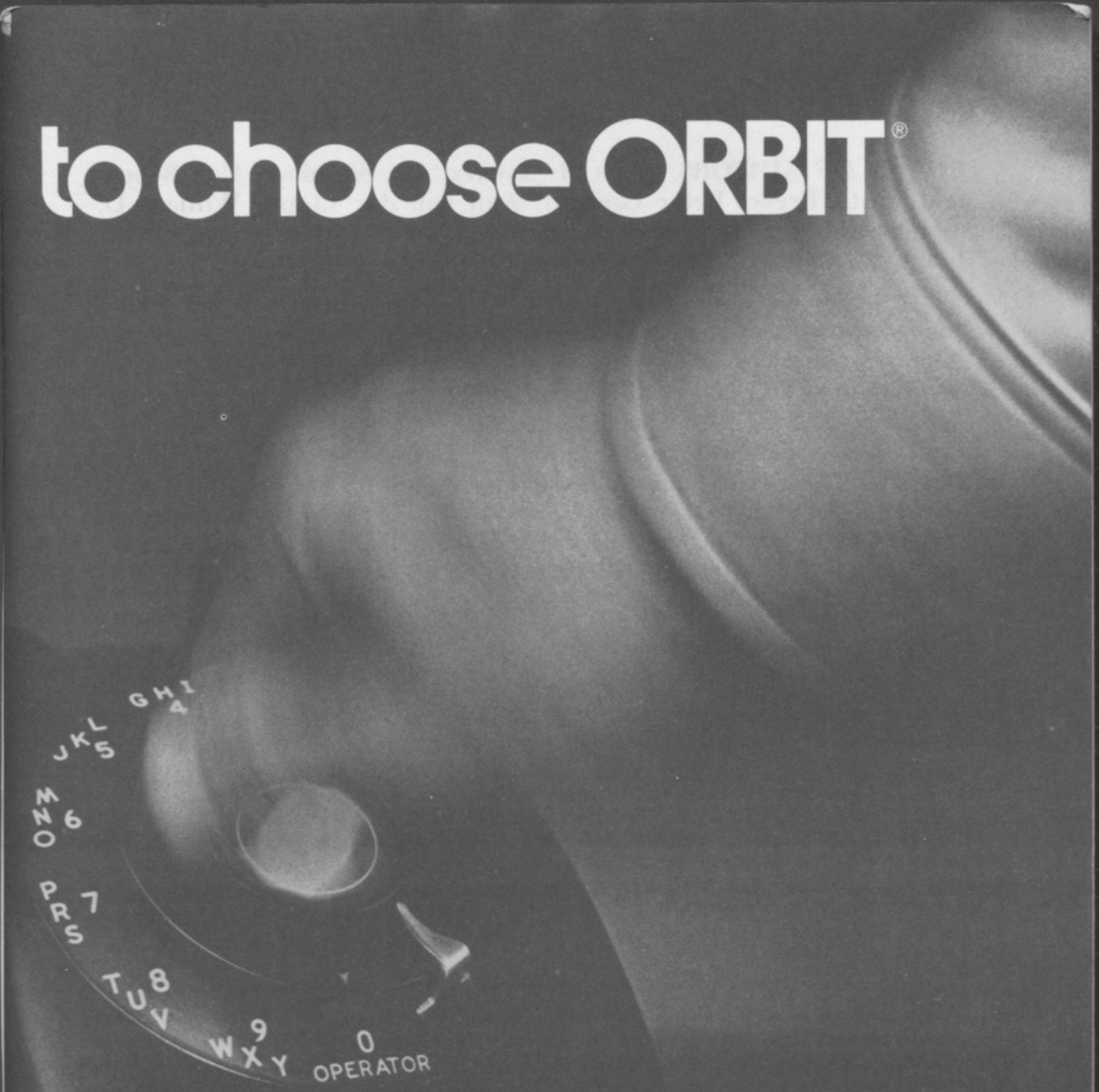

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A Communication on Communication

Too often we take a myopic, gnat's-eye view of the library's role in an information world. Preoccupied with everyday complexities, we can barely contain the information flood. Yet it doesn't much matter what information our libraries hold if we cannot share that information effectively. The crucial challenge facing us is to transform our libraries from information stores into vital centers for communication.

Communication, of course, is an eminently human activity, involving as it does an exchange of feelings, thoughts, values, and ideas. And a socially responsive technology can play an important part. A few years ago, one could barely imagine that communications technology would thoroughly change our ways of doing things. But today, interactive video, community cable, teleconferencing, electronic mail, and on-line computer networks are all converging at our door.

Two items in this issue of *JOLA* touch on communications technology from political and organizational points of view. Bob Crowder's article on "Libraries and the Consumer Communications Reform Act" gives a brief overview and history of communications regulation in the United States, with reference to the importance this has for libraries. The other contribution is a piece of testimony by the ALA Washington Office before the Carnegie Commission on the Future of Public Broadcasting. A similar but broader piece of testimony, containing significant input from LITA members, appeared in the June issue of the *Journal*. Eileen Cooke, director of the Washington Office, deserves substantial credit for organizing and presenting LITA's views.

LITA is also taking direct initiatives. The newly formed LITA Legislation Committee, under Ruth Tighe, will consider communications legislation as one of its central concerns. And the LITA Telecommunications Committee, chaired by Steve Silberstein, will look at the impact of new laws as well. LITA's growing interest in the interplay between politics and technology is a very positive trend. We hope this trend will help give libraries the important voice in public policy they so urgently need.

WILLIAM D. MATHEWS

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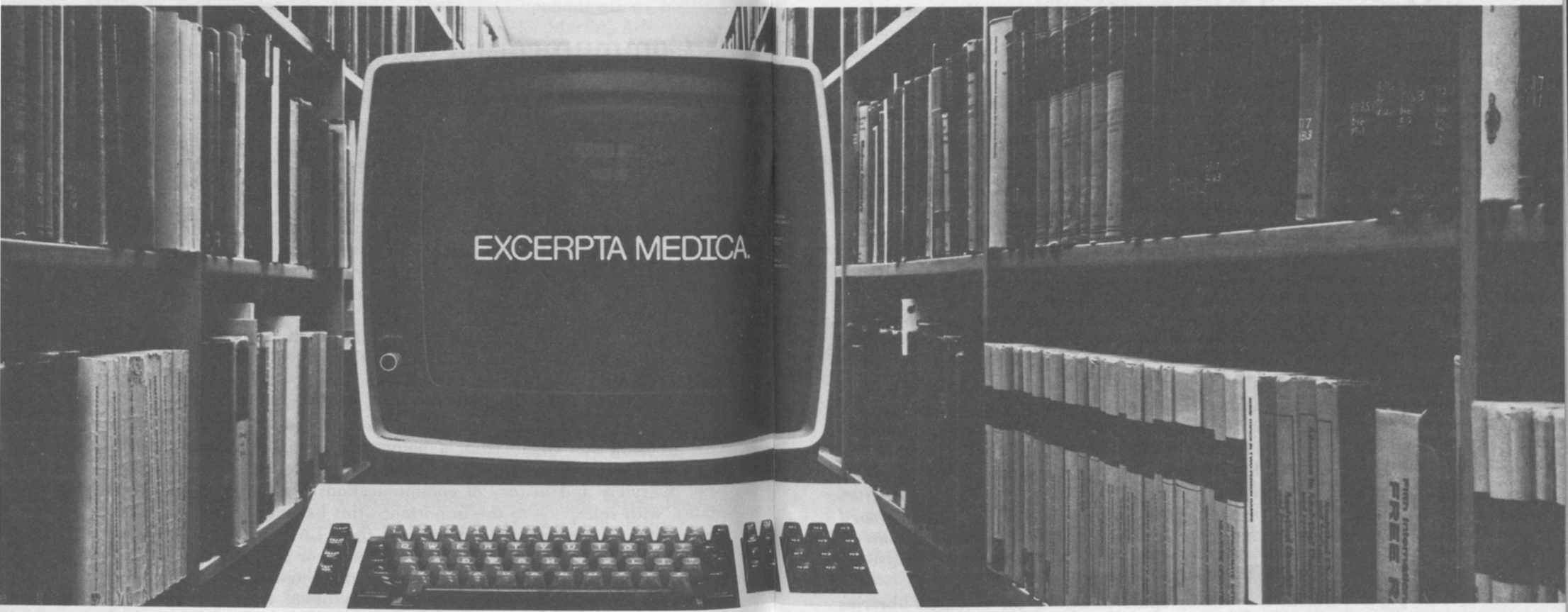

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Planning for the Catalogs: A Managerial Perspective

Joseph A. Rosenthal: University of California at Berkeley

Problems inherent in planning for a transition from traditional card catalogs to other catalog forms are discussed. Some attention is given to the implications of AACR II, the lack of an automated authority control system, and difficulties in obtaining machine-readable retrospective files. A planning approach is outlined in some detail, giving specific questions that might be addressed. Focus is on the decision-making process and identifying information that must be known by management before new designs for a catalog can be implemented effectively.

INTRODUCTION

Unexpectedly, the federal government will soon be a major source of assistance in helping us face a future dotted with frozen card catalogs. I refer not to Title II-C or to the Library of Congress, but to a hitherto little-known agency within HEW that is contemplating a new series of pamphlets and other aids for nonprofit organizations. The initial group of items includes the following titles: *How to reduce your library fuel bills through the use of pulverized catalog cards; Remodeling card catalog cabinets into cathode-ray terminals, microfiche reader-printers, and planters;* and what will probably be a best-selling videocassette, *Retraining filers for library management positions.*

This paper looks at the bibliographic prospects for research libraries during the next few years and touches on some of the data that either are available or needed for planning and decision making. Using some work done at Berkeley as a point of departure, the paper also makes some recommendations with regard to both the means for arriving at decisions and, to some limited extent, the content of the questions that must be asked and of the decisions that must be made. An underlying assumption is that most North American research libraries are either participating in or about to join a machine-based bibliographic processing system.

IMPLICATIONS OF AACR 2

Let's face it: chronologically divided catalogs constitute a fact of life staring us directly in the face. With the issuance of the second edition of

Manuscript received May 1978; accepted July 1978.

the *Anglo-American Cataloguing Rules* and its subsequent implementation by the Library of Congress, the rest of us cannot afford to maintain cataloging practice according to AACR 1. There is, of course, the option of perpetuating a single card catalog while adopting AACR 2, but as John Rather and others have pointed out, this is simply a masking device for maintaining two sets of files within one physical entity.[1] That is, as time goes on, an increasing number of name headings will be represented in the file under two different forms. The tasks relating to linkage of the different forms of headings are similar, though not identical, whether a library chooses to split the catalogs at the time of implementation of AACR 2 or decides to maintain a single catalog indefinitely.

Apart from the issuance of AACR 2 and its implementation by LC, card catalogs are increasingly coming to be recognized as a costly and relatively ineffective means—in light of present and future technology—of bibliographic display for large collections.

Considering the available forms of display, cards require large accompanying expenditures of manual effort as well as indefinitely expanding spatial requirements, and the expenditure curve for maintaining card catalogs rises as the size of the files increase. Book catalogs for large collections are relatively expensive to produce, and present difficult choices between large financial outlays necessary to provide frequent updating and recumulation or user frustration in using multiple alphabets or segments to perform comprehensive searches. On-line access—*for certain types of queries*—has a great deal to offer but is very expensive, limited at present for search capability, and generally will not be feasible for most libraries by January 2, 1981.

This brings us to computer-output-microform, a medium that is operationally viable, cheap, and highly acceptable for many users and types of use. Regardless of the development and implementation of on-line access, COM should be considered as an effective display mechanism answering a considerable portion of bibliographic queries for some time to come, and I believe it will be obligatory as a backup to most on-line installations.

With COM as a practical display mechanism, two other factors, if available, would make the closing of any library card catalog a breeze. Unfortunately, few libraries will have either of these features on hand by 1981. They are: 1. An authority control system providing automated linkage back and forth between bibliographic records and the established forms together with their associated cross references of names and subject headings embedded in those bibliographic records; 2. a completely machine-readable file, i.e., a catalog that is already converted to machine-readable form.

I will spend some time on each of these concepts.

Authority Control System

The authority control system, first brilliantly executed in a computer milieu at The New York Public Library, holds the greatest promise of allowing us to overcome the problems posed by the second edition of AACR and, perhaps more importantly, to deal with future changes in cataloging policy and practice over the long haul. Devoutly as we might hope, it now seems very clear that the Library of Congress will *not* have a well-functioning on-line authority control system linked to its machine-readable bibliographic records by the beginning of 1981, and unless a miracle occurs in the next two years, the name headings in the MARC files at LC will in large measure not be compatible with forms called for by AACR 2, notwithstanding a valiant attempt at LC to build in the changed form of names manually between now and Day One.

Of equal consequence is the present inability of two of the major data processing utilities, OCLC and BALLOTS, to cope in machine-based or automatic fashion with the problems of linking changed forms of name headings and associated pre- and post-1980 bibliographic records. To my knowledge, neither system has announced a strategy for dealing with this set of problems as it affects the files at Columbus and Palo Alto, much less the use consequences that will become all too quickly apparent at libraries throughout the United States.

UTLAS, the University of Toronto Library Automation System, seems to be well on the way to developing an authority control system, and WLN, the Washington Library Network, is the first major processing utility to offer this capability on an on-line basis. Utilization of an effective authority control system should go far toward reducing the unpleasant bibliographic and financial effects we can anticipate with implementation of AACR 2.

Machine Readable File

As has become evident at the University of Toronto, an integrated file of machine-readable bibliographic records representing nearly the complete library collection has been for Toronto—and would be for other libraries—a significant factor in mitigating the difficulties otherwise faced by users in accessing two separate files. It is of some interest, then, to take a look at the individual and collective prospects for conversion to machine-readable form of retrospective bibliographic data. To begin with, John Knapp has put into a handy little algorithm some guidelines for individual libraries considering retrospective conversion.[2] For libraries holding fewer than 250,000 titles, the chances are that quite a high proportion of those titles will already by available in machine-readable form, and a conversion project utilizing access to an existing large machine-readable bibliographic file should probably prove to be cost beneficial within a matter of a few years. The choice is not so clear for libraries holding between one-quarter and one-half million

titles, Knapp believes, and for libraries holding more than one-half million titles, the decision to convert retrospective files on an individual institutional basis is probably not economically justifiable at the present time.

Two important provisos should be attached to these guidelines. First, the economic feasibility of retrospective conversion is changing on an almost monthly basis becaise of the de facto growth of files, changes in methodologies for inputting and verifying bibliographic records, and changes in the machine/manual labor cost ratio. Second, the economic constraints and costs applicable to retrospective conversion undergo significant change when contemplated on a multiinstitutional basis. The major libraries of the province of British Columbia are embarking on massive and comprehensive retrospective conversion. The disposition to act in concert coupled with a history of favorable relations between libraries and the provincial government has led to substantial backing for this program. Imaginative library leadership and a history of successful applications of machine techniques bode well for the enterprise, which is utilizing the UTLAS system and its bibliographic files as the basis for conversion.

The UTLAS file along with those of Blackwell/North America and OCLC are some of the major data stores that might be given consideration for retrospective conversion programs. Each of the files has its own quantitative and qualitative characteristics, and these along with the charges for utilizing any particular file should be very carefully evaluated before any library or group of libraries begins retrospective conversion. After the RECON studies and reports in the early 1970s, the Library of Congress decided that conversion of LC's main retrospective files would not be afforded a high priority. Breakthroughs in the technology of optical character recognition might drastically change the economic parameters of this situation, and ultimately the policy of LC. In any event, I suggest that the early 1980s, with a decade of development since the RECON work, might be an appropriate time for reexamination by LC of the possibility of converting its manual bibliographic files.

Planning at Berkeley

Returning to the more common situation of no automated authority control system and massive retrospective files in manual form, a planning approach for changing the catalog structure was adopted at Berkeley and a detailed planning document was developed. A close inspection of the questions and decision points contained in that document make it apparent that a great many problems disappear with the operational availability of the two features just mentioned above: *authority control* and *retrospective conversion*. The planning document sets forth basic working assumptions, a methodology, and an outline of specific questions to be answered by teams assigned to carry out the planning itself. While some of the details are specific to Berkeley's institutional envi-

ronment, this outline of the contents of that planning paper should give some idea of the number and variety of decisions, mostly technical, that research libraries can generally expect to encounter.

Assumptions

Twelve underlying assumptions established the constraints within which the detailed plan would evolve. These assumptions were:

1. The General Library will freeze its present card catalogs at approximately the same time the Library of Congress closes its card catalogs, now scheduled to occur January 1, 1981.
2. All, or substantially all, of the General Library's cataloging data will be either received or input in machine-readable form by 1981.
3. The General Library will be participating in an on-line cataloging/technical processing system for the forseeable future.
4. The bibliographic system for the General Library will be developed so as to be consistent and compatible with university-wide planning and implementation in this area of library operation.
5. National bibliographic standards will be followed, in order to facilitate the potential for cooperative and networking activities and to minimize costs. These standards include:
   a *Anglo-American Cataloguing Rules* as interpreted by the Library of Congress, including Library of Congress established forms of entry for both print and nonprint materials.
   b Library of Congress subject headings and classification.
   c MARC formats as developed by the Library of Congress.
   d Filing rules at such time as a national standard for arrangement of computer-based bibliographic records is developed.
   e Romanization system.
6. Various formats will be used for display of data both centrally and locally. No one form—card, book, microform, on-line display, or listing—will be used exclusively. The choice of display format will depend on the use intended and the cost of the product in light of rapidly changing technology. Criteria will be developed to enable the General Library to choose among various modes of display and arrangement of bibliographic data.
7. For the immediate future, a primary display mode for bibliographic data will be microform. The specific microform format(s) will be related to and developed on the basis of experience with the present *Catalog Supplement* and *Berkeley Serials Union List.* In order to lessen the number of separate displays of bibliographic records, plans should be developed to integrate the display of records for on-order, in-process, and fully-processed library materials.
8. Records in the machine-based bibliographic file will be displayed under at least the same access points found in the present card

catalog system: main entry, name and title added entries, and series and subject added entries. (It should be noted that not all of these access points are provided currently for all types of material.) The microform display will be based on the premise that full bibliographic data for any record will be found in only one place: this might be either in the register listing of a register/index display or under a basic access point, as in the microfiche display now used at the University of Toronto. Choices here will depend on evaluation of public service utility coupled with cost considerations.

9. For a number of reasons, including anticipated adoption by the Library of Congress and the General Library of the second edition of the *Anglo-American Cataloguing Rules* and an increased pace of revision of subject headings by the Library of Congress after 1980, many access points in the new bibliographic display will differ from corresponding headings in the existing card catalogs. The General Library's policy will be based on liberal provision of references in the new catalog system; however, alteration of headings and provision of additional references in the existing card catalogs will be on an exceptional basis only.
10. Planning for the modes of bibliographic display will be on the basis of anticipating a modest extension of on-line access to General Library bibliographic data during the period from the present through 1985. By 1980, on-line access should be available at the presently covered units in the acquisition and catalog departments, in the undergraduate library, in the general reference service, in the loan hall, and in at least one branch library location.
11. Materials received and processed after the beginning of 1981 will be integrated into the new bibliographic system, regardless of date of imprint. This principle is in accord with the decision of the Library of Congress on the same point, and is intended to lessen the difficulties and costs of processing library materials in the context of two major systems for bibliographic display.
12. The General Library will expand and improve its program of orientation and assistance to users of bibliographic data that represent the Berkeley collections.

PLANNING METHODOLOGY

For each phase of planning for the General Library's Bibliographic system, a number of staff members worked either individually or in small groups on particular aspects and problems related to freezing the present card catalog system and changing to new forms of display. For most assignments, a written report was prepared; these reports should serve as road maps for the implementation period covering the next several years.[3] All those engaged in these assignments met approxi-

mately once each month as a group, along with the coordinating group for this phase of the planning—the university librarian, the associate and assistant university librarians, the head of the catalog department, and the head of the systems office.

As written reports covering the various assignments are finished, they will be circulated widely in the General Library for comment, discussion, and suggestions for revision. After an appropriate period for evaluating reaction and making requisite changes in the content of the reports, the actual work necessary to build and implement the new bibliographic system will begin.

ASSIGNMENTS

Once we had a good idea of the assumptions and the methodology, it remained for us to package areas of concern into specific assignments. What follows is a fairly detailed description of issues and especially the questions to be answered by teams working in each of the areas we finally agreed upon. Brief papers drawn up in each of these areas should serve as a point of departure for more intensive planning efforts. It was expected, of course, that there would be some overlap in the various areas, but monthly meetings of everyone involved in planning and the existence of the coordinating group helped to lessen the amount of duplicative effort.

TEAM 1: BRANCH CONSIDERATIONS A

Scope extends to catalogs and files other than author/title, subject, official, loan stack shelflist, depository, and CSR (Central Serial Record) catalogs.

What should the configuration for bibliographic display consist of in branch libraries and other specialized public service units of the General Library for the period from the present through 1985? When should card catalogs in these units cease to be maintained?

What provision should be made for continued access by call number (shelflist)? Should a catalog card continue to be provided for all branch shelflists? What requirements should be set in order to cease maintenance of branch shelflists in card form?

What opportunities should be provided, if any, for local deviation from basic General Library cataloging policies (i.e., conformity to and compatibility with *Anglo-American Cataloguing Rules*, Library of Congress practice, LC Subject Headings and classification)? What policies and practices should govern the possibility of branch library additions to a bibliographic record such as 1. additional added entries—including variant titles, additional name headings, variant or additional series, 2. additional subject entries, 3. other information in the form of notes? If any such additions are to be permitted by policy, what specific mechanisms should be developed for submission and review of such data?

To what extent should "temporary" or "special" locations be reflected in the bibliographic data base? That is, should the bibliographic data base include and display 1. reserve status, 2. reference status, 3. other special locations? If so,

what procedures should be adopted for including these data?

What "authority" or cross-reference information should be provided for branch bibliographic display? (To be coordinated with work of links and authorities team.)

TEAM 2: BRANCH CONSIDERATIONS B

This team should work within the context of general recommendations regarding branch bibliographic display developed by branch considerations A team.

What specific policies should be followed for units that now deviate significantly from our basic cataloging policies? To what extent should differing practices regarding name and subject headings and classification policy be continued? For each of these units, how should data be submitted to the basic bibliographic file?

For the above units and for the undergraduate library, in what form should bibliographic data regarding holdings of these units be distributed? Should there be any distribution of bibliographic data other than that contemplated for other units of the General Library? If so, what should be provided? (Any recommendations for additional bibliographic products should be accompanied by specifications as to format, content, access points, frequency, and cost estimates.)

TEAM 3: RECORD FORMATS AND DISPLAY SPECIFICATIONS

Develop in specific detail the configuration of bibliographic display for the General Library system through 1985.

Assume that the "new" catalog data will be displayed principally in microforms for public use but that a transition over the period from 1980–85 will occur, with on-line access to bibliographic data increasing substantially.

What specific configurations should be adopted for the microform display? Register/index? If so, what data elements should be provided in the various indexes? What pattern of indexes should be adopted?

Main and added entries and titles		Main and added entries
Subjects		Titles
Call number		Subjects
		Call number
	Name headings (personal and corporate)	
	Topical subjects	
	Call number	
	Series	

OR, should the microform configuration be based on brief entries under all but one of the various indexes, with one index providing a full bibliographic record?

Provide a recommendation for a specific frequency pattern for the microform display configuration.

Assume the desirability of combining the microform display configuration for fully cataloged materials with records for on-order and in-process items (the categories of records now represented in the *Catalog Supplement*). Will this be possible? If so, formulate specific proposals for clear user identification of items in various stages of processing. Will the recommended pattern of issuance for

this microform display configuration for public use necessitate an additional microform product or set of products for internal (technical service) access? Or should internal access be based on on-line access to records maintained in one or more processing utilities?

What provisions should be made for shelflist access *a* in the immediate future, i.e., during the period when retrospective bibliographic records are for the most part in manual form only, and *b* on a long-term basis, looking toward the time when most or all bibliographic records for general library collections are in machine-readable form?

Indicate, with regard to specific recommendations in this area, the degree to which specific aspects of the display formats can be changed with comparatively minor cost burdens and disruption of public and technical service functions, and which aspects (once adopted) should be regarded as relatively fixed in view of these considerations.

TEAM 4: SERIALS

Develop the configuration of bibliographic and holdings display for serials in the General Library system through 1985, with particular attention to the following points.

To what extent should information regarding serials be reflected in the bibliographic display for the General Library?

Should serials be represented at all?

If so, under what access points should they be represented? Main entry? Title? Added entries? Subjects?

To the extent that serials are represented, should the representation follow the same pattern as for monographs if a register/index format is adopted?

Should any holdings information be provided in such representation, and if so, under which access points? Beginning date? Complete holdings for inactive titles?

If a separate display is to be provided for serial information (whether or not some information regarding serials is to be included in the display(s) for monograph items), describe the nature of this display with regard to:

access points

completeness of bibliographic and holdings information under all categories of access points

frequency

microform and/or hardcopy.

Describe the relationships these displays bear to files containing serial data now existing in the General Library:

Berkeley serials union list

author/title catalog

official shelflist

central serial record

entering files:

serials department

documents department

branch and other locations

branch card catalogs.

In view of what is known regarding the choice of a bibliographic utility for the UC library system, recommend steps to be taken regarding the integration

or linkage of the Berkeley serials system with the bibliographic utility (BALLOTS or OCLC).

Identify in chronological order, and with estimates of personnel needs and other requirements, the steps to be taken to accomplish the recommendations made above through 1985. Operations should be characterized as "essential" or "desirable," and goals (such as completion date or number of records to be processed on an annual basis) should be stated.

TEAM 5: AUTHORITY STRUCTURE AND LINKS

What general and specific policies should be adopted regarding references from variant forms of names and subject headings in and between the old and new systems of bibliographic display? In addressing this point, consider the adoption of AACR 2 by the Library of Congress and the UCB General Library in 1981 and an expected substantial increase in the number of headings to be changed beginning at that time.

Will the policies recommended be applicable to any form of display for the new catalog, i.e., card, microform, on-line?

What policies should be followed by catalogers regarding the establishment of names and subject headings for the new catalog? In what instances should the old catalog be searched for identical, variant, and conflicting headings? What practices can be adopted to minimize the human effort and cost, while assuring adequate bibliographic access to the collections?

For such links as are recommended between the old and new catalogs, what legends should be provided in the bibliographic display? Should the legends explicitly refer users to the other display? Should the legends reflect a time distinction (i.e., "For works cataloged before 1980 . . .")?

What policies should be adopted when records in the old catalog system are modified? Consider modifications based on transfer, change of format (i.e., hardcopy to microform), additions to multiple-volume sets, closing of serial titles, and added copies in different locations.

TEAM 6: NON-ROMAN ALPHABET RECORDS

Present specific recommendations regarding the inclusion, exclusion, and romanization of bibliographic data representing items in non-roman alphabets acquired and added to the General Library collections in 1980 and after. With reference to particular existing card catalogs, indicate how these policies should affect the maintenance or closing of the card catalogs.

In view of anticipated technological and cost developments with regard to representation of various character sets in machine-readable form, set forth guidelines for the General Library's long-range policies in this area. What long-range goals should be adopted regarding separate or integrated files for bibliographic records representing roman-alphabet and non-roman alphabet materials?

TEAM 7: PUBLIC AND STAFF RELATIONS

List all groups likely to be affected by the changes in bibliographic display to an extent that warrants special attention directed toward informing these groups regarding likely changes, securing feedback and participation in planning, and preparing for effective use of the changed bibliographic system.

Develop a program, with accompanying chronology, of specific informational and "public relations" efforts that should be directed to these various groups.

Make recommendations regarding people and units to be assigned to this program; estimate costs.

Participate in all public and staff relations activities connected with the bibliographic system planning from January through April 1978.

TEAM 8: PHYSICAL FACILITIES AND EQUIPMENT

Develop equipment, space, building modification (e.g., wiring) needs for the future system of bibliographic display. Include a phase transition to on-line access for a major portion of public and staff access to bibliographic data. Restudy, refine, and verify previous projections of use under the future system; relate these findings to the needed number of access devices of various types.

What organizational assignments should be made for continuing review of equipment and physical facilities: microform readers, microform reader-printers, on-line terminals, file and display arrangements for microforms (e.g., fiche holders); use justification for additional equipment?

Recommend specific policies for purchase, lease, and maintenance contracts with regard to specific types of equipment.

Develop cost estimates through 1985 for equipment, maintenance of equipment, and building modification.

TEAM 9: LIAISON WITH UNIVERSITYWIDE

Maintain liaison and work towards compatibility with university-wide planning for a UC union catalog system. Communicate budgetary, technological, and networking developments to universitywide staff members and to appropriate general library personnel.

TEAM 10: LIAISON WITH BIBLIOGRAPHIC UTILITY (BALLOTS or OCLC)

Serve as coordinator(s) between the bibliographic utility and persons and groups involved in planning future bibliographic operations and display in the General Library. Based on the evolving assumptions regarding record format and bibliographic display, develop cost parameters and specific methods for delivery of various bibliographic products—encompassing the bibliographic utility, any other non-UC agencies (such as microform service bureau), UC Data Processing Center, and specific library units and personnel.

TEAM 11: TECHNICAL/COST CONSULTANTS

Advise on feasibility and prepare cost estimates as requested by individuals or teams working on various assignments.

TEAM 12: CATALOG USE CONSULTANTS

Advise on issues relating to public use of catalogs as requested by individuals or teams working on various assignments. Review working papers for public use implications.

Using this team approach it seemed possible to assign personnel already working in the library to the tasks of filling in much of the necessary detailed data for decision making.

AREAS FOR MANAGERIAL DECISIONS

I would now like to go over some of the more global data that I feel may be useful, individually and collectively, in making managerial decisions regarding future systems of bibliographic display and access. To begin with, present costs of personnel, equipment, space, and maintenance are essential, and projections of these cost categories, as applied to maintenance of the current system of processing *without* significant change, should be valuable in developing justifications for future action.

A listing, description, and quantitative analysis of all present catalogs and other files of bibliographic records with accompanying growth rates should be developed, if these data are not already available. If it seems likely that planning will include the possibility of on-line and/or microform displays of bibliographic data, an analysis of spatial requirements and capacities at appropriate public and technical service points and a determination of power and telecommunication needs and capacities will probably be necessary; and, as an adjunct, cost estimates should be made to bring present capabilities up to anticipated requirements under a changed system.

Though it may be difficult to obtain, it would be very useful to have some indication of peak load in terms of queries by staff and other users of the present bibliographic files; and if at all possible, some estimated breakdown by type of query and length of examination or perusal of the file. In other words, how many people are apt to be using the present bibliographic files at any one time? How are these users likely to be divided in terms of known item search versus subject search? Approximately how long do they spend at the catalogs for any single search?

The Library of Congress estimated in 1977 that approximately 49 percent of the records in the existing MARC file will need to have headings updated to bring them into line with AACR 2. We do not know how to apply this projection to the records of any particular library other than LC, and we have very little idea of the rate at which name headings established after 1979 will constitute changes to previously established forms. For example, how many name headings can the catalog department of a university research library with a collection of two million volumes and an annual cataloging rate of fifty thousand titles expect to encounter during 1981, which will need to be reconciled with different forms of names established prior to the implementation of AACR 2? Three thousand? Ten thousand? Twenty thousand? What will happen to the rate of changed headings during the first five years of implementation of AACR 2? Will there be a decreasing rate of change; and if so, what kind of declining curve will that decrease take?

We have few guidelines to tell us whether these changes are likely to have more, less, or about equal impact on monographs as opposed to serials. Such information might be valuable in terms of the allocation of staff and the organization for the processing of serial and monograph material in a library, relative to the serial holdings and intake in a particular collection. For example, Berkeley, which has long prided itself on the massive strength of its serial holdings, 65 percent of which are entered under corporate body, is particularly concerned with the AACR 2 rules changes as they affect serial publications.

For longer range planning, as well as the immediate prospect of closing card catalogs, data enabling us to project the amount and cost of on-line usage of bibliographic files would be enormously helpful. There would seem to be a large number of variables associated with the quantity of on-line queries: size of file; ease of access; nature of the instructional and research programs; training and assistance provided for users; declining costs of computer storage; and other factors. Manipulating estimates of all of these in order to provide a projection that would assist a given library in allocating funds for on-line terminals at its public service stations is probably about as difficult as fashioning a Leontief matrix for the gross national product. Nevertheless, even a much cruder handle on these costs might at least give us some rough basis for budgetary projections of what will certainly be an important aspect of library service.

In company with any other major change in library operations, the closing of library card catalogs places library administrators at the center of various categories of constituents, and thus poses delicate questions in political and public relations strategies. The cast of characters is familiar: user groups from the academic community—faculty, students, and staff. Certain other users should be considered as well: borrowers of library materials through interlibrary loan, particularly borrowers from institutions with which a given library has formal network connections. Previously established rapport, or the lack of it, with these various constituencies will contribute a good deal to the kind of reception given to plans and proposals affecting our present systems of bibliographic display.

The planning work underway at Berkeley also exemplifies an attempt to involve library staff members in the decision-making process. Despite what may seem to some administrators a troublesome inefficiency engendered by dispersed responsibility for decision making in this area, the widespread participation of staff—professional, nonprofessional, public service as well as technical service and systems—can and should offer a series of payoffs. Staff involvement should enhance the intrinsic quality of the planning; in a complementary fashion, the process of planning should lead to increased awareness and knowledge among a large segment of the library staff. Moreover, it should strengthen the quality of library service during a period of dramatic bibliographic change because of greater staff commitment to the implementation of plans resulting from group effort.

CONCLUDING REMARKS

I've tried to outline some major concerns most of us face in contemplating the closing of library card catalogs. Some of these concerns are institutional-specific, but others are general and could well be addressed by the library community acting in concert. The investments we have made individually and as a group in our bibliographic files are sizeable—in almost any league except perhaps A T & T, General Motors, and the U.S. defense budget.

There may be a few library operations that will not be affected by the closing of existing card catalogs, but I would find it difficult to name more than half a dozen. Most technical service functions will feel the impact immediately and seriously, and even more significant will be the reverberations in public service and the costs of those operations.

It is disquieting to realize that while most of us are aware that the closing of card catalogs will be a major event—in terms of costs, quality of service, organization and deployment of library personnel, and reactions from users—we have a very imprecise idea of the nature or extent of the consequences. Lucia Rather of the Library of Congress remarked at LC's excellent presentation at ALA Midwinter 1978 that one of the recurrent fears within the group of staff members planning for LC's freezing of its catalogs was that a completely new and unanticipated result—one for which there would be no obvious solution—would occur in the period immediately after the official freeze and the beginning of a new era. This could certainly happen; all of us will probably experience a few rude shocks as we pass through the coming retooling of our bibliographical systems.

In retrospect, careful managerial attention to these issues should have begun with the decision in the early 1970s to proceed with work on a second edition of the *Anglo-American Cataloguing Rules*, or even earlier in the previous decade when Bill Welsh and others at LC began to examine the possibilities of changing the structure of LC's catalogs.

Despite what we might have done, I am inclined to regard the bibliographic horizon, on balance, as very promising. There is work cut out for all of us; with some diligence and imagination we need not lament—with sackcloth and ashes—the closing of card catalogs. Quite the opposite—the future holds for us the exciting promise of truly *opened* catalogs.

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2. "How to Close," presentation at "Closing the Catalog: Automated Alternatives to the Card Catalog," seminar sponsored by METRO (New York Metropolitan Reference and Research Library Agency), 4 Nov. 1977.
3. These reports are available as a group from Room 245, General Library, University of California, Berkeley, CA 94720. The cost of the reports is $7; checks should be made to Regents of the University of California.

Libraries and the Consumer Communications Reform Act

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The communications industry is heavily shaped by decisions of the Federal Communications Commission (FCC) and its counterpart commissions in the various states. Responding to liberalized regulations that allowed increased competition, A T & T and other independent carriers supported a bill in the last session of Congress called the Consumer Communications Reform Act (CCRA), familiarly known as the "Bell Bill." Although the bill was never acted on, and the focus of congressional attention is now on the Communications Act of 1978, it is important to understand the issues that the bill addressed. This article reviews the history of federal regulation in the communications industry, places the "Bell Bill" in some historical perspective, and relates the significance of activities in the regulatory sphere to the concerns of libraries.

INTRODUCTION

In a recent paper, Aronofsky and Korfhage outlined the current state of telecommunications in library networks and offered a five-year projection.[1] They note that the stage is set for dramatic increases in both the size and scope of electronic networks, many of which will be developed for, and used by, libraries. These networks will represent ". . . a prime aspect of the information industry."[2] As the networks are currently evolving, they require access to centralized data bases through remote terminals utilizing long-distance telephone lines. Although a greater emphasis on distributed networking is expected, access will continue to be through telecommunications channels.

The technology represents a combination of products from both the computer and communications industries. However, the communica-

Manuscript received April 1978; accepted July 1978. A contribution of the National Bureau of Standards, not subject to copyright. Certain commercial organizations and products are identified in this paper as having been important in the development of the communications industry. In no case does such identification imply endorsement by the National Bureau of Standards.

tions industry, unlike the computer industry, is heavily regulated by the Federal Communications Commission (FCC) and the counterpart commissions in the various states. Therefore, the actions of these agencies will have an immediate impact on the development of library networks.

In recent years, there have been significant changes in the way the FCC has viewed the communications industry. There has been a gradual, but consistent, liberalization of regulations resulting in increased competition. In response, the American Telephone and Telegraph Co. (AT&T) and the independent telephone companies (together with AT&T known as the established carriers) have drafted legislation which has come to be known as the "Bell Bill."

Officially, the bill in its various forms is entitled the Consumer Communications Reform Act (CCRA). Bills were first introduced in the Ninety-fourth Congress (1975–76), but final action was never taken. The measure has been reintroduced in the Ninety-fifth Congress in the House as H.R. 8 and in the Senate in a slightly different form as S. 530.

In an environment of library resource sharing through networks interconnected by telecommunications links, this bill could have a significant impact. To date, surprisingly little notice has been taken of the measure by the library community. Certainly far less notice has been taken than by other interested professional groups.

In the following pages the implications of the CCRA will be explored. In order to fully understand the significance of the CCRA, the history of the communications industry will be traced and the events leading up to the drafting of the legislation will be described, followed by a description of the proposed bill. The arguments for and against will be presented, and finally its implications for libraries will be discussed.

BACKGROUND OF THE BILL

History of the Industry

In its earliest years, the Bell System concentrated on developing the lucrative urban markets, leaving the rural areas largely unserved. In order to interconnect the urban areas, lines were strung between them forming the basis of today's long-lines operation. At the expiration of the Bell patents in 1893, there was an explosive growth of the telephone industry due to the entry of independent suppliers who brought service to the rural areas. The competition for the various service areas that resulted benefited consumers by lowering rates and thereby bringing the service within their financial means. Major innovations took place, many coming from companies not in the Bell System.[3] During this era of growth, Bell consistently refused to interconnect with competitors. Between 1904 and 1919, thirty-four states passed laws requiring physical connection of phone companies to prevent the isolation of communities.

Bell then attempted to monopolize the equipment market but was re-

strained by the courts. As a result, the independent companies were able to introduce new technologies themselves.

In 1907 the Baker-Morgan financial group acquired Bell and installed Theodore Vail as chairman. Emphasis was shifted from competition to acquisition. In addition, as patent advantages waned, Bell began selling its equipment to the independents. Besides deriving revenue, the strategy paved the way for acquisition. That is, if the target company was using Bell equipment, it was much easier to integrate it into the system upon acquisition.

In 1910, the Interstate Commerce Commission (ICC) was given authority over the communications industry by virtue of the Mann-Elkins Act. However, the ICC was more concerned with transportation than with communications, and the field was largely ignored. At this time AT&T supported regulation as preferable to competition or the prospect of government ownership.

After AT&T's purchase of Western Union, the remaining opposition brought suit and in 1913 the attorney general became involved. The "Kingsbury Commitment" resulted, in which AT&T agreed to divest itself of Western Union and also to allow interconnection of independents for toll-service purposes. Out of the agreement, understandings were reached which left either a Bell operating company or an independent with a monopoly on phone service in each locality.

One of the provisions of the Kingsbury Commitment prevented Bell from buying out financially troubled companies. The effect was the risk of loss of service to entire communities if the local monopoly failed and AT&T, most financially able to be of assistance, was prevented from intervening. To correct this, Congress passed the Willis-Graham Act in 1921. The act allowed AT&T to merge with financially troubled companies after ICC approval. Subsequent to approval, any previous acts of Congress were not to apply. A renewed era of acquisition ensued.

Under pressure from the surviving independents, AT&T and the U.S. Independent Telephone Association (USITA) reached agreement in the "Hall Memorandum." It provided that AT&T ". . . would make no purchases of, or consolidations with, independents unless demanded for the convenience of the public or unless special reasons existed making the transaction desirable for the protection of the general public or Bell System property." Through consolidation of one sort or another, the approximately 9,000 independents in existence in 1922[4] have been reduced to 1,600 today. And as late as 1973 the Bell System had 83.3 percent of the telephones although serving only 41.4 percent of the land area of the forty-eight contiguous states.[5]

Through the Communications Act of 1934 Congress created the FCC under Title II by consolidating the authority previously vested in the ICC and the Radio Commission. The FCC was to regulate: ". . . interstate and foreign commerce in communication by wire and radio so

as to make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire and radio communication service with adequate facilities at reasonable charges" [Section 1, Communications Act of 1934; 47 U.S.C. § 151]. Follow-on legislation came in 1936 when Congress enacted the Rural Electrification Act, which extended phone service to the most remote areas of the United States.

Through a series of actions by Congress and recommendations by the FCC, Western Union became the sole public telegraph carrier and supplier of teletypewriter exchange service by the late 1960s.

> The only service in which carriers directly competed for business was private line service where AT&T and Western Union offered competing interstate lines for high volume communications users. Private line services were, and are, pursuant to AT&T and Western Union tariffs, point-to-point dedicated communications lines reserved for specific customers on a 24 hour a day, seven days a week basis. Other than in this market, which comprises only a very small part of the revenues realized by the Bell System and Western Union, the domestic communications industry was properly characterized in the mid-1960's as one where monopolists provided a limited number of homogeneous communications services.[6]

Innovations in communications were developed as the result of the Second World War. Two of them in particular produced areas of competition for AT&T: terminal interconnect devices and specialized common carriers. These developments will be analyzed later.

New Communications Demands

Until the mid-1960s, the structure of the communications industry was appropriate for satisfying the needs of users and would-be users. However, the explosive development of the digital computer radically changed that situation.

In a period of about twenty-five years, the costs of computer hardware have dropped dramatically. Additionally, there has been a steady evolution from the era of the single-purpose stand-alone computer to the era of batch processing, remote job entry, and today's on-line interactive systems, which, through communications channels, allow access from distant locations.

The need for remote access to centralized computer facilities presented an opportunity for the communications industry to extend its services. The response has been to utilize the existing voice grade network rather than to develop channels specifically suited to the peculiar needs of computer communications. The following problems have occurred as a result:

1. The phone system, designed for voice transmission, utilizes analog signals (a range of values) whereas a digital device requires only an "on" or "off" signal. In order to adapt one to the other,

modulators/demodulators (MODEMS) are required to translate back and forth between the two.

2. In analog transmission over the phone lines, "noise" develops in the signal and an exact duplicate of the signal cannot be received. In voice communications this is relatively unimportant since the human ear has a wide tolerance for distortion. Computers, on the other hand, do not have such tolerance.
3. The existing switched network routes calls on a call-by-call basis through the network. This can mean that the quality of the signal will vary greatly depending upon the route followed.
4. The switched network takes about ten to fifteen seconds to set up a call. In voice communication the speaker easily tolerates the delay since it is usually a small fraction of the time spent on the call. Computers often communicate only for brief periods of time. This, coupled with the fact that they operate in nanoseconds, means that a ten-second delay is intolerably large and inefficient.
5. Error rates in the signal are critical to computers. In the switched network, these can be prohibitively high without expensive "conditioning."

As the computer technology developed, the problems inherent in the switched network became evident. Because of the need to adapt to the limitations, those developing the computer technology who were concerned with communication between computers became expert at overcoming the difficulties as they arose. Not only did new needs develop, but a commercial pool of technological expertise developed as well.[7]

Growing demands for the interface of computer and communications technologies raised serious questions of public policy. The diversity of the data and communications markets, as well as the limitations of existing networks, caused the FCC to question whether a noncompetitive market was in the public interest.

Specific policy questions were addressed in the areas of terminal equipment, transmission possibilities, and data processing. The three areas will be treated separately.

Terminal Equipment

During World War II the armed forces had developed telephone recorder devices which required interconnection with the Bell System. These devices became popular in the civilian sector after the war. The FCC declared phone company tariffs disallowing their use to be discriminatory in that certain federal agencies were allowed to interconnect but private citizens were not. The FCC did allow Bell to require that a Bell-supplied interface device be used with them. In addition, the FCC required that the devices have an on-off switch so that they could be turned off for intrastate communication if the various state commissions

so required [*Use of Recording Devices*, 11 FCC 1033 (1947), 12 FCC 1005 (1948)].

In 1949, the FCC ruled against the interconnection of the Hush-A-Phone. This was a cuplike device attached to the hand set of a telephone terminal intended to allow the speaker privacy [*Hush-A-Phone Corp.*, 14 FCC 282 (1949)]. In 1956 this decision was overruled by the Court of Appeals of the District of Columbia which stated the now famous dictum that interconnection restrictions in phone company tariffs ". . . are unwarranted interference with the telephone subscriber's right to use his telephone in ways which are *privately beneficial without being publicly detrimental*" (emphasis added) [*Hush-A-Phone Corp.* v *U.S.*, 99 US App. D.C. 190, 193 F.2d 266, 269 D.C. Cir. (1956)].

The next interconnection issue arose in the *Carterfone* case [13 FCC 2d 420; 14 FCC 2d 571 (1968)]. The FCC stated:

> A customer desiring to use an interconnecting device to improve the utility to him of both a telephone system and a radio system should be able to do so, so long as the interconnection does not adversely affect the telephone company's operations or the telephone system's utility for others. A tariff which prevents this is unreasonable; it is also unduly discriminatory when, as here, the telephone company's own interconnecting equipment is approved for use. The vice . . . is that it prohibits the use of harmless, as well as harmful devices.[8]

In 1972 the FCC instituted Docket 19528 which resulted in the adoption, on November 7, 1975, of the recommendation by a joint federal-state board of regulatory commissioners providing for a registration program of technical equipment other than private branch exchanges (PBX), key telephone systems (KTS), main station telephones, and coin telephones [*Interstate and Foreign Message Toll Telephone, etc.*, 56 FCC 2d 593]. On March 18, 1976, the FCC included other types of customer supplied equipment, if used together with FCC-registered protective circuitry [FCC 76-242].

Transmission

Microwave communications also developed as a result of the war, and in 1959 the FCC made some of the frequencies available for private, point-to-point communications [*Allocation of Microwave Frequencies above 890 MHz*, 27 FCC 359 (1959)]. Bell subsequently offered a service in 1961 called Telpak. The FCC asked Bell for a seven-way cost study dealing with this service. "What the FCC wanted was proof that AT&T was not subsidizing its competitive offerings with monopoly revenues—i.e., pricing predatorily."[9] In 1964, the FCC determined that all of the service categories included in the Telpak tariff were discriminatory against small users of private lines, but did allow that the two larger categories were necessary.

In 1969, the FCC authorized private-line microwave services by car-

riers other than AT&T [*Microwave Communications, Inc.*, 18 FCC 2d 953 (1969)]. Data Transmission Company (DATRAN) began offering a digital microwave network to which AT&T responded by offering Dataphone Digital Service (DDS), and Data under Voice (DUV). The FCC initiated an inquiry as to whether these services were being offered in a discriminatory and anticompetitive manner. To make this determination the FCC allowed an experimental offering of the service [*AT&T, et. al.* 41 FCC 2d 586 (1973)]. Subsequently it was found that adequate records had not been kept by AT&T to make the determination even though this was the purpose of the experiment. DATRAN went out of business, incurring losses of $100 million. Its parent company, Wyly, brought suit in August 1976 against AT&T, charging that unfair and noncompensatory tariffs were the cause.

In 1973 AT&T initiated its Hi-Lo tariff in response to competition from intercity carriers. The FCC, after initially allowing the tariff to stand, reversed itself. There is a consistency in all FCC decisions in response to AT&T initiatives in the transmission arena that was articulated in the *Specialized Common Carrier* (SCC) decision [29 FCC 2d 870 (1971)]. This stated that existing and new carriers should be allowed to compete fairly and that a "protective umbrella" should not be provided for new entrants.

The domestic satellite industry also emerged as a viable transmission service. The FCC, in its *DOMSAT* decision [35 FCC 2d 844 (1972)], stated an "open skies" policy which allowed anyone to enter the market after they had demonstrated both that they were qualified to operate a satellite system and that the service offered would be of public benefit.

Data Processing

Recent technological advances have brought about the convergence of data processing and communications. The term "value added" in this context refers to the ability to add computer switching instructions to traditional communications signals. The "packet-switched" networks are referred to as value-added carriers whose signals are assembled in packets containing switching instructions and transmitted over phone lines or other types of circuits. They are widely used for access to bibliographic data bases. The routes over which the packets are sent are computer selected and utilize the lines of the Specialized Common Carriers (SCCs) or AT&T.

In an effort to maintain a distinction between the regulated communications industry and the unregulated computer industry the FCC ruled that common carriers could not offer data processing services or equipment through the parent company. In order to make such an offering they would have to do so through an independent subsidiary [*Computer Inquiry*, 28 FCC 2d 267 (1971)].

In March of 1976, the FCC disallowed AT&T's latest version of its

Dataspeed 40 on the grounds that it performed data processing functions. Due to the increasing blur between communications and data processing, particularly in the capabilities of terminal equipment able to perform both functions due to advances in microprocessor technology, the FCC has reopened its 1971 *Computer Inquiry*.

The technological advances discussed above, and the resulting liberalization of FCC regulations, have had controversial results. The new competitors hail these regulations, AT&T deplores them, and both the FCC and the Office of Telecommunications Policy (OTP) claim that they have been of significant economic benefit for the country.[10, 11]

PROPOSED LEGISLATION

In response to the FCC decisions outlined in the preceding pages, AT&T and the independent telephone companies drafted the Consumer Communications Reform Act of 1976.[12, 13] The legislation was introduced in the Ninety-fourth Congress, Second Session, on March 4, 1976, by Congressman Roncalio (H.R. 12323) in the House, and in the Senate on March 23, 1976, by Senator Robert Byrd for Senator Hartke (S. 3192). It was subsequently introduced in several other forms, some containing the same provisions as the industry-sponsored bill, others deleting sections. By the close of the Ninety-fourth Congress, 175 representatives and 16 senators had added their names as sponsors of the legislation.[14]

The act was reintroduced in the Ninety-fifth Congress by Mr. Roncalio in the House on January 4, 1977 (H.R. 8), and in the Senate by Senator Hansen on January 31, 1977 (S. 530). The Senate bill differs slightly (but significantly) in its deletion of the provision authorizing the FCC to approve mergers and acquisitions of specialized common carriers. Countermeasures have been introduced in the House by Congressman Wirth (H.J. Res. 285) on February 24, 1977, and in the Senate by Senator Hart on February 24, 1977 (S.J. Res. 30). The latter measures seek to "reaffirm" *competition* as the best means of serving the public's communications needs.

The Consumer Communications Reform Act seeks: "To reaffirm the intent of Congress with respect to the common carrier telecommunications industry rendering services in interstate and foreign commerce. . . ."

The provisions of the bill have been interpreted to mean that:

1. A presumption of regulated monopoly would be established for those markets in which common carriers now operate.
2. Anyone wishing to enter the market would have to show that they would not duplicate existing services or potential services of existing carriers.
3. So-called "incremental cost" would be the rate floor for competition.

4. AT&T would be able to acquire any competitor who failed without risking antitrust action (not provided for in S. 530).
5. Regulation of terminal equipment interconnection would be granted to the states rather than to the FCC.

Hearings on the bill were held in the Ninety-fourth Congress with numerous industry representatives presenting testimony on both sides of the measure. Again in the Ninety-fifth Congress, hearings were held in the House. Notable for their absence were ALA, ASIS, and other members of the library community. Apparently it was felt that the bill had no chance of passage and that time and effort should instead be directed toward the general revision of the Communications Act of 1934, which the House Subcommittee on Communications has undertaken under the chairing of Representative Van Deerlin.[15,16] Likewise, the Library of Congress' Network Advisory Group took note of the act as important legislation to monitor[17] but has not taken any formal position. It is hard to judge whether this inaction on the bill was due to foresight or negligence. In fact, the bill died and the focus of congressional attention is now on the proposed Communications Act of 1978. Yet the lukewarm response by the library community is in marked contrast to that of other interested parties who wasted no time in issuing position statements regardless of the prospects for the CCRA.[18-20] In any case, the library community can ill afford to sit idly by when matters of such grave concern are up for debate, and one surely hopes that our voices will be heard before this new bill is hammered into shape.

While progress on the CCRA has been temporarily blunted, the issues raised and the points of view on both sides of these issues will undoubtedly persist. We now move to a fuller analysis of the issues involved and positions of the opposing parties.

Advocates

AT&T, USITA, and the Communications Workers of America (CWA), AFL-CIO, represent the principal effort behind the CCRA. Their position is as follows:

1. Competition will necessitate an across-the-board restructuring of rates to the disadvantage of residential, particularly rural, subscribers.

> The telephone industry, and other opponents of competition claim that residential telephone service rates have been kept low in the past through subsidies derived from the telecommunications services presently facing competition. As a result of the FCC's policies, rates for such cross-subsidized residential services in competitive markets will have to be raised and set closer to costs in order to compete, by transferring many of the common costs of operation from business to residential users.[21]

2. Competition reduces savings possible from a unified system.

FCC . . . actions have resulted in the costly and unnecessary duplication of existing lines and facilities, rather than the innovations in services which the FCC envisioned.[22]

3. Interconnection of non-Bell-supplied equipment threatens the technical integrity of the network.

Opposition

Opposition to the legislation came initially from those companies in competition, or seeking to be in competition in private line services with the established carriers. A coalition was formed under the leadership of Herbert N. Jasper called the Ad Hoc Committee for Competitive Communications (ACCT). Increasingly, terminal equipment manufacturers and professional organizations have joined in opposition.

Additionally, studies by the FCC and OTP (cited at footnotes 6, 11, and 3 respectively) have indicated that the CCRA is not in the public interest. For an analysis of the arguments put forward by the industry, see *Competition in Telecommunications—The Telephone Industry* (footnote 3, supra).

In answer to the main arguments of the industry, opponents state that:

1. There is no proof that the small segment of the industry now open to competition ($1 billion of a total of $38 billion in revenues in 1975[23]) provides revenues that support or cross-subsidize residential rates. In fact there is contrary evidence to the effect that returns on the private line services are substantially below those of the monopoly services.[24,25]
2. It is in the public interest to allow "duplication" of services since this has resulted in both newer and better services as well as cost economies. At the heart of a market system is the idea of duplication which allows for the survival of the best, most cost-effective service. Without alternatives, it is argued, AT&T has little incentive to make use of the most efficient technology available.

   It is pointed out that AT&T is capitalized in such a way as to extend the useful life of its technology to match the economic life of the equipment; that is, since the rates charged are in part a function of the assignable costs, the larger the capital investment of the company, the larger the cost base on which to determine rates. Depreciating equipment over extended periods of time allows the value of the equipment in the field to remain as high as possible for as long as possible. This is the economic life of the equipment and has no direct relation to the useful life. If, for example, a newer technology is available that would replace equipment in the field not yet fully depreciated, the incentive is to leave the old equipment in place, not to take advantage of the newer technology.[26]

3. The argument over technical harm to the network has been discounted in numerous studies and is no longer being strongly advanced by the telephone industry. It is cited that non-AT&T companies have interconnected their equipment for years without harming the network, as have many government agencies under exceptions granted by AT&T. This was the basis for the FCC decision correcting discriminatory interconnection policies.[27] The FCC has established that regulation through a registration program will ensure against harm to the network.

LIBRARY TELECOMMUNICATIONS

The foregoing are the principal arguments for and against the CCRA. In order to address the specific provisions of the act that will have an effect on the library community, it is important to review the significance of telecommunications to that community.

The use of shared cataloging networks has been a part of library processing for a number of years. They have developed in the environment of the existing telecommunications infrastructure represented largely by AT&T. One of the largest, OCLC, currently supplies shared cataloging and catalog card production services to more than 1,000 libraries operating from distant locations and linked to the central facility in Ohio.

System Development Corporation (SDC), Lockheed Information Systems (LIS), and, most recently, Bibliographic Retrieval Services (BRS) offer on-line searching and retrieval of bibliographic citations contained in machine-readable data bases produced by various abstracting and indexing services. These on-line systems utilize the packet-switched networks for communication between the library searcher using a local terminal and the central computer facility. It is noteworthy that both the equipment used in the library and the network technology are developments which have been the direct result of FCC decisions that have allowed competition in the telecommunications industry.

Use of on-line systems for literature searching is growing at a rapid pace as both the services and the users become more sophisticated.

> . . . The use of computerized literature searches, particularly via on-line systems is expanding rapidly. These, then, should play an important role in identification in the future . . . . The increase between 1971 and 1974 . . . is nearly 160% and even more rapid growth is anticipated in the future. Other sources suggest the growth in the use of commercial services may be as much as 50 to 100 percent each year.[28]

The 1974 Westat study[29] on the development of a nationwide library network called specifically for a communications system that would allow for rapid, on-line, interactive services.

Recent work at the Library of Congress Network Advisory Group

focuses, among other things, on the central role telecommunications will play in any development of a National Library and Information Network. The vital linkages in this network will be achieved through telecommunications. It is stressed that without standardized communications a coherent national program is not possible. As mentioned previously, a stated function of the Network Advisory Group is to "monitor and report on legislation and regulations originating in the Federal and state sectors that might have an impact on networking activities."[30] Appropriately, the document in which the foregoing is found contains an Appendix on the CCRA by Sara Hines of the Congressional Research Service.[31]

Telecommunications, then, has been recognized as of central importance to the emerging directions of the National Network. Since the telecommunications industry is heavily regulated by the federal government, it is vital that members of the library community be aware of the directions of that regulation and legislation. It should not be left to those in the commercial and regulatory sectors to devise either the regulations or the legislation without at least the advice of the library community, if not its consent. To do so would amount to second-guessing the needs of a large segment of those for whose benefit the legislation and regulations are intended—namely, the proprietors and users of a nationwide library network.

Implications of the CCRA

What would the effects of the Consumer Communications Reform Act be on the development of library networks? Two of the five points of the legislation are noteworthy in this regard.

The first is the provision requiring that any new entrant in the field would have to carry the burden of proof that their service would not duplicate an existing service or potential service of an established carrier. The OTP report cited earlier states: ". . . this would most likely be a *complete* deterrent to any would-be competitors"[32] [emphasis in the original]. Existing carriers would simply have to maintain the capability to draw on an existing pool of generally available technology to show their potential to provide the service.

Effectively, passage of this provision would stifle innovation. No company could attempt to enter the market with such an insurmountable burden of proof. They would never be able to get a product to market. New, and perhaps as yet only dimly perceived, means of providing network interchange would be left to the discretion of AT&T with their interest in living out the economic life of their in-place equipment playing a dominant role.

Microwave transmission, packet switching, and the domestic satellite market are examples of technologies that developed outside the established carrier domain as the direct result of liberalized regulation. It was

not until after these technologies were viably marketed that AT&T began offering competitive services.

The early FCC decisions were geared to allow for "privately beneficial" use of the existing networks which would not be "publicly detrimental." The key phrase here is "existing networks," for in place was a voice grade communications network (already largely unsuited to the needs of the times) owned by one of the world's largest corporations that was not being exploited to its full potential. Fuller exploitation occurred only through liberalized regulation that allowed non-AT&T companies to utilize the network. In other words, there is no guarantee that AT&T, even if it did maintain the technological pool, would apply it in the marketplace. What has stimulated AT&T to do so has been the competition. It has resulted in ". . . a heightened consumer responsiveness on the part of the telephone industry itself in providing new and improved service and equipment." (Letter to the FCC by Chairman Wiley, May 25, 1976, p. 5 Ref. No. 9100.)

The pending entry of Satellite Business Systems (SBS), a consortium of IBM, COMSAT, and Aetna Insurance Co., would certainly be threatened by this provision. The technology planned for the SBS system would allow for a network completely independent of the telephone company. Interconnection would be through antennas at the user site to communicate via an earth-stationary satellite. The design of the network would provide an extremely flexible, all digital network. Although it seems that this consortium now contemplates dealing in data processing applications, the line between data processing and telecommunication is a thin one and is threatening to disappear. As that occurs, SBS would be expected to move into the market. AT&T itself may want to take advantage of the fading distinction to provide services currently prohibited. It has been suggested that ". . . what AT&T is really worried about is that somewhere down the road a company like IBM with billions of dollars at its disposal will take advantage of the blurred interface between data processing and data communications to provide services that the Bell System thinks belongs to it." (Honorable John N. Murphy, D., N.Y., before the House Subcommittee on Communications, September 1976.) AT&T currently cannot offer any product other than common carrier services under *U.S. v. Western Electric Co., Inc., and AT&T*, 1956 Trade Cases 71, 134, filed January 24, 1956, DCNJ (consent agreement).

Mr. Phillip Whittaker, testifying before the House Subcommittee on Communications, stated that, if one compares the development of the competitive data processing industry with that of the monopolistic communications industry, one sees that the former has so outpaced the latter that computers must "throttle down" in order to use AT&T's communications services.[33] This, he contends, is evidence that without

the incentive of competition, development effort has not been maximized.

Depending as they do on the vigor of communications innovations, library network developments would quickly achieve a steady state at best under this provision of the act, just at the time when all else seems ripe for major advances. At worst there would be a chaotic fragmenting of authority and a resultant impenetrable maze of conflicting regulation. In this event national interconnection would be technically impossible just at a time when the former barriers of intellectual and political disagreement are being dismantled.

The second provision of the CCRA that is of particular importance to the library community is that which would transfer the regulatory powers over terminal equipment interconnection from the FCC to the various state commissions. (H.R.8 § 2,d.) It is stipulated that only intrastate equipment would be affected. However, it is difficult if not impossible to distinguish between equipment used for intra- and interstate communication; indeed, in most cases the same equipment would be used for both.

This provision would fragment the FCC's regulatory authority and raise the dismal specter of differing standards for interconnection across the nation. In an environment of networking that has as its very cornerstone compatibility on a national scale, this prospect is "appalling," as Alfred Kahn, then chairman of the New York State Public Service Commission, put it.[34]

On-line services, shared cataloging, and the proposed National Library and Information Services Network are enterprises which have been designed to serve national needs and a national market. In fact, it has been argued that without the assurance of such a national market, the commercial services simply could not have demonstrated the financial viability necessary to attract capital investment. Yet, fragmentation of this market into subnational units is precisely what this provision of the CCRA would allow. Peter McCloskey, president of the Computer Business Equipment Manufacturers Association (CBEMA), testified before the House Subcommittee on Communications that, from a manufacturer's point of view, a national interconnection standard is essential to serve the public interest properly. Individual state standards would undermine the development of the market and potentially prohibit the use of equipment supplied by competitors in multistate networks.[35] State regulation would ". . . discourage any nationwide terminal equipment marketing efforts."[36] One wonders if we would have the diversity of terminals to satisfy specialized needs that we now enjoy had this provision been in effect in the recent past.

According to former FCC chairman Wiley, the fact that this bill is pending in the Congress has had a depressing effect on both potential entrants into the market and their financial backers who fear that re-

gional uses of their equipment may soon become illegal.[37]

Recent court action by the Fourth District Court of Appeals has upheld the FCC's jurisdiction over interconnection, stating federal primacy in the area. (*North Carolina Utilities Commission* v. *U.S.*, Case No. 74-1270, F.2d.) This decision is consistent with previous court actions upholding the FCC. Proponents of the CCRA claim that recent FCC decisions run counter to the intent of Congress in passing the Communications Act of 1934. Apparently the courts do not agree, as witnessed by their interpretation of the 1934 act in supporting the FCC rulings.

In light of the above, it is difficult to see what advantages would result from granting the states regulatory authority. Peter McCloskey believes there are no advantages but speaks to what he believes are the motivations of AT&T:

> The plain fact is that carriers supporting the Bell Bills are not satisfied with a large percentage of the projected terminal equipment growth. They want more, even if it means crippling existing, working competitive markets—and they think they come closer to this objective through transferring regulatory authority over terminal equipment to the states.[39]

CONCLUSION

In summary, library networks are developing rapidly and constitute a major component of the national information network. Divisive regulation of the interconnect aspect so central to orderly network development can only retard or stunt the growth of this most important national resource.

It is vital that members of the library community become familiar with developments in the communications industry, for these developments will shape the communications policies of the future. The developments are not only technological but political as well, since we are dealing with an industry that is highly regulated by the federal government. As a result, much more is involved than the simple monitoring of the technological development of the industry. As in the past, we can expect major developments and problems to arise in the future as the result of the continuing interaction of the regulatory process with the industries regulated.

We have seen that, as a matter of routine, attempts may be made to bypass the regulatory process. AT&T's support of the CCRA may be viewed as an attempt to change the rules of the game, earlier efforts to prevail over the FCC through the courts having failed.

For the library community, the increased interest in telecommunications and the regulatory policies surrounding it present a rare opportunity since, of necessity, fundamental questions will be raised about the character of the industry as well as the industry-government interaction. The library community should become a part of this dialogue, for, as

libraries become more involved in technologies utilizing telecommunications, the resolutions to these and related questions will become increasingly important and could well determine the shape of the nation's information networks.

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Index Access to On-line Records: An Operational View

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On-line field index access is a powerful improvement upon search key access to on-line records and a viable alternative to full key word access. Developed at Northwestern University Library for its NOTIS-3 on-line total integrated system, which utilizes a data base of some 300,000 records for acquisitions, cataloging, and serial control, index access is easy to use and has an effective browsing capability. Operational use of index access is described.

On-line data bases for computer assisted searching and processing of library materials are a fact of life for hundreds of libraries. Sitting down at a cathode ray tube terminal, or a typewriter terminal, and typing characters which instruct a computer to locate and display a desired bibliographic record has become a routine practice for thousands of library staffers. This technique for summoning desired information will also become standard practice for tens of thousands of library patrons in the next few years if current plans for on-line catalogs at the Library of Congress and many other institutions are realized. How will these patrons access the computer catalog for the items for which they are searching? What kind of file browsing capability will they have? Are the constructed search keys now commonly used for on-line searches adequate for staff needs? Will they be satisfactory for patron queries? Is it necessary or desirable or possible for every on-line system to develop or install a key word access system employing Boolean logic, a system such as is used by BALLOTS?[1] These were some of the questions considered at Northwestern University Library when a redesign of the technical services modules of the Northwestern On-Line Total Integrated System (NOTIS) was undertaken.

Northwestern University Library has had, since October 1971, a fully operational on-line computer system which encompasses such technical

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services activities as acquisitions, serial control, and cataloging, as well as full circulation functions.[2] This system, NOTIS, has had three "versions," the second of which was the first operational version and was in use until the redesigned version, NOTIS-3, was implemented.

The redesign of NOTIS was prompted by the desire to exploit fully the capabilities of cathode ray tube terminals and also by extensive operational experience which suggested many desirable changes. After several years of planning, designing, program revision, and testing, the redesigned version, NOTIS-3, was implemented in the spring of 1977 with simplified and expanded access to records as perhaps the most notable among the many improvements.

During the five and one-half years that the NOTIS-2 version was in use, access to records in the Northwestern data base was by a 4-3-3-3 search key which was remarkably effective if sometimes troublesome. This was an author/title key with a special application for corporate body entries and, extended by a sequential two-digit number, was unique to each bibliographic record. The key functioned both as a control "number" and as the user's sole means of access to a record. The major defect of the search key was that it was totally dependent upon main entry and short title as established at the time of cataloging and thus was not always easy to determine from the item in hand or from incomplete information. Years of experience using the search key had convinced us of its limitations in identifying records in a large data base and, primarily because of a lack of browsing capability, its dubious value as a tool for patrons.

When the redesign of NOTIS-2 was undertaken, better access to bibliographic records was considered to be a primary component of the new version. While financial limitations eliminated a fully permuted key word access system, it was found to be feasible to set, as a minimum goal, on-line access in direct natural language to all entries which would normally be available in a conventional author/title card catalog. This approach, it was felt, would immediately benefit staff using the system and would be relatively easy for students and faculty to grasp when public usage of the on-line data base becomes a reality. As a result, NOTIS-2 was converted to NOTIS-3 in March 1977 with full index access as an exciting and successful feature which has proven its value in constant hard usage in a large data base in the months since implementation.

In NOTIS-3, direct access to a record is through a program assigned record control number which appears on all printed product including purchase orders, catalog cards, claim forms, and worksheets, and is thus readily at hand for many technical services operations. When this record control number is unknown, however, access to a record in the file is by a "search term" which is in fact the entry wanted, so that there is no need to devise a search key. The search term can be a full or partial

title or personal or corporate name for which there is a main or added entry field (excluding subject entries) in an on-line bibliographic record. In addition, the on-line file can also be searched by the International Standard Serial Number (ISSN) so that any of the 40,000 retrospective and current serials held by Northwestern, for which ISSNs have been entered, are readily found, a feature especially appreciated by the checkers who record on-line the receipt of each incoming current and claimed periodical issue.[3]

The abandonment of the devised search key for the direct entry approach has eliminated the hundreds of hours formerly spent on key formulation, on training in the techniques of deriving keys, and in fulminations about keys when the main entry could not be readily determined. In the Search Department, for example, it is found that about 200 hours per year directly attributable to abandonment of search keys have been redirected to other activities. This calculation is based on a study indicating that search keys were derived and assigned at an average rate of 200 per hour, and on statistics which indicate that about 40,000 of the pre-order and book-in-hand searches handled annually would have required search key assignments. In the Serials Acquisitions Department, checkers and other staff were obliged to spend a minimum of twelve hours per week searching in the card catalog for exact entries in order to derive search keys for the seemingly inescapable corporate entry problem items among incoming periodical issues. Use of the index has cut this time to about one hour per week, a significant reduction of about 570 hours per year for this department. Index access has been a great boon for all staff users of the on-line file. Public Services and Collection Development staff, many of whom now routinely use the on-line data base in their work, are especially enthusiastic about the ease with which records can be found, and usually prefer to use a terminal rather than the card catalog for a bibliographic search for serial titles or for monographic titles added to the collection since 1971.

The technical and programming aspects of developing and building the indexes are the subject of another paper.[4] In brief, however, the indexes are constructed by extracting fields from bibliographic records, manipulating and combining the bibliographic entries into segmented index entries which are then sorted in alphabetic order. The resulting index entries are stored on disks using a compression, or ditto, technique which removes characters duplicating those at the front of preceding entries, thus reducing redundancy, processing costs, and storage requirements. It has been found that an average of about 2.5 index entries are generated for each bibliographic record in the data base of over 300,000 records. After compression, index entries average about 52 characters each, including non-displayed control characters. About 50 million characters of storage are required for the index but this includes free space required to accommodate real-time additions to the index

file. The full index term is reconstructed for display in response to a user's request which can be truncated at any point beyond the first character of the search argument. It is with the use of the index and its various features that this discussion is concerned.

The user of the index really needs to know only the title or the name of an author or editor of a work in order to find it in the data base. Simply typing the requisite command and the search term *silmarillion*, or even *sil* or *silmar*, will lead the searcher to the record for this recently published work by J. R. R. Tolkien; so also will the search terms *tolkien* or *tolk*. However, more complex searching is generally most efficient if the scope of the data base, the rules of entry, the components of machine readable records, and the characteristics of index terms and characters are understood.

The NUL on-line data base, in June 1978, contained about 300,000 records representing all retrospective and current serials held by Northwestern University Libraries, all monographs ordered since October 1971, and all Roman alphabet titles cataloged since October 1970 plus thousands of titles cataloged prior to that time and entered into the data base for the purpose of adding copies or volumes. Because the system operates in a multi-institution mode, the file also includes over 10,000 titles input for ordering and/or cataloging by Garrett Evangelical Theological Seminary Library. All cataloged, and hundreds of on order/in process titles are in full MARC format except that those records cataloged prior to March 1977 lack some of the fixed fields. An attempt is made, prior to ordering, to locate and transfer LC MARC data, or to locate and input LC cataloging data from other sources for non-MARC scope titles. When this is not possible, fields which are required for ordering and for receipt recording are input as "provisional" fields with full content designation but using tags which fall numerically in the MARC 900 "local use" fields. These provisional fields serve as a partial record until a MARC record has been found and transferred into the NOTIS-3 data base by means of an automatic triggering procedure, or until other LC source data have been input, or original cataloging has been completed. All of these records can be accessed through the index.

Index entries are generated and updated on-line for the main entry and for the title of each record created. At the end of each quarter, an off-line batch processing program examines each on-line record and produces a fully updated "regenerated" index which contains an on-line entry for all title fields, and main, series, and added entry fields with a few exceptions. Subject fields are not indexed nor are untraced series fields. All full titles (the MARC 245 field) are indexed including those which are not traced. Thus for any record which has full cataloging data, all entries which could be found in an author/title card catalog can be used to find the item in the on-line file via the on-line index. In addi-

tion, some entries which are not generally found in a card catalog can be accessed by the index; these include non-traced generic and common titles and variant forms of serial titles.

In order to work efficiently, the user of the index should also know the characteristics of the entry field after its translation into an index term. For instance, only alphabetic and numeric characters are represented in the index. All punctuation, diacritics, and other special characters that may be present in an indexed entry field are ignored, deleted, or converted by the indexing program. All diacritics are ignored, so that the word *étude* becomes simply *etude*. Apostrophes are deleted, so that the entry word *Moody's* becomes *Moodys*. Special characters which are variants of alphabetic characters are converted to their logical representation, so that Œ, for example, becomes *OE*. Such special characters as ampersands, percent signs, and plus signs are ignored, while an opening bracket followed by *i.e.* signals the indexing program to delete all following characters up to and including a closing bracket. Thus the problem of the unknown presence of a bracketed alphabetic representation of a numeral is overcome.

Having also been instructed that the index term typed as a search request must follow the above proscription against special characters, and that the index file will match the request character by character, the user can proceed. A request/command of three segments is used; the first two are transaction and function codes which control the display mode and screen format of a successful match. The third segment is the search term selected by the user. The first two characters of this segment identify the index file to be searched: "A=" identifies an author or name search, "T=" specifies a title search, and "I=" an ISSN search. Directly following the equal sign, the terminal operator keys in as many words or characters (in either upper or lower case or a combination of both) as are deemed necessary for a successful match. From one to seventy characters can be entered but it is rare that fewer than four characters are actually used. Characters must be entered in direct order as they appear in an entry without skipping over any characters or words (except as enumerated above); the full term may be truncated at any point but words within a term may not be truncated. There is no direct access to significant words or "keywords" embodied in an entry. It is not words per se which are indexed; it is the bibliographic entry as a whole that is indexed under the first word or words, exactly as it would be found in a card catalog. Many operators prefer to start their search, whenever possible, with a fairly specific term since this technique tends to produce fewer matches, indeed often only a single match.

If only a single match is found for a search term, the matching record displays immediately in the requested format, that is, either as a display of the full bibliographic record or as a brief bibliographic record with

associated copy holdings data. *(See Figure 1.)*

If the original search term results in two or more matches from the index, these are listed in alphabetic order on numbered lines with the display starting from the first index term matching the search argument. *(See Figure 2.)* Each index display screen contains a maximum of sixteen numbered matches or lines with the bottom of the screen reserved for a possible requested display of brief bibliographic data for any of the listed items.

If sixteen or fewer matches are found, a message line on the screen displays the instruction:

ENTER LINE NUMBER (nn OR Bnn)

The user then has the option of immediately selecting a numbered line item for full display, or of examining brief bibliographic data for one or more listed items by successively typing a line number preceded by the character "B." *(See Figure 3.)* If none of the items listed is the title actually wanted, the user presses the CLEAR key to cancel the search.

```
LCAT DONE AAR0397                                    L1812--NUL CATALOGING

REC AAR0397 DT 20 OCT 1977 R/DT 02 DEC 1977 STAT m LGND am E/LEV    DCF i SRC
PLACE ncu LANG eng GOVT    CONF 0 CONT b     REPRO    MOD    DT/1 1977 DT/2
D/CODE s I/LEV    ILLUS       FICT 0 BIOG    FEST 0 INDX 1 ME/B 1

LCN:   : #a     74078833
SBN:   : #a 0822303396 : #c $16.75
CAL1:   : #a PR6066.I53 #b Z6465
DDC:   : #a 822/.9/14
MEP:S  : #a Gale, Steven H.
TIL:A0: #a Butter's going up : #b a critical analysis of Harold Pinter's work
/ #c by Steven H. Gale.
IMP:N  : #a Durham, N.C. : #b Duke University Press, #c 1977.
COL:   : #a vi, 358 p. ; #c 25 cm.
NOB1:   : #a Bibliography: p. [294]-339.
NOG2:   : #a Includes index.
SUP1:SL: #a Pinter, Harold, #d 1930-  #x Criticism and interpretation.
```

1. A title search request has been entered as: LCAT DISP T=butters.
2. The search term was distinctive enough to match only a single record, so the response is a display of the full bibliographic record with fixed and variable fields. Local holdings data are in another segment of the record.

Fig. 1. A Search Request for Which Only a Single Match Is Found Defaults Directly to the Requested Record.

```
LCAT _                                               L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn)
01 NU *GALE STEPHEN +MANIPULATED CITY PERSPECTIVES ON SPATIAL STRUCTURE AN <1975
02 NU *GALE STEVEN H +BUTTERS GOING UP A CRITICAL ANALYSIS OF HAROLD PINTE <1977
```

1. An author search request has been entered as: LCAT DISP A=gale ste.
2. The response is an index screen display listing the two matches found.

Fig. 2. An Index Screen Displays the Results If Two or More Matches Are Found.

```
LCAT _                                        L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn)
Ø1 NU *GALE STEPHEN +MANIPULATED CITY PERSPECTIVES ON SPATIAL STRUCTURE AN <1975
Ø2 NU *GALE STEVEN H +BUTTERS GOING UP A CRITICAL ANALYSIS OF HAROLD PINTE <1977
```

1. After the initial index listings the request is changed to: LCAT B2.
2. The response then retains the same index listings as in Figure 2 but adds a brief bibliographic display at the bottom of the screen.

Fig. 3. Brief Bibliographic Data Displays on the Index Screen at the Request of the User.

If there are more matches than can be displayed on a single screen, the message line will read:

ENTER LINE NUMBER (nn OR Bnn)
OR PRESS PA1 KEY FOR MORE

Additional screens, each listing up to sixteen matching items, can thus be displayed quickly by using a "paging" technique which is controlled by a terminal function key labeled "PA1".[5] If a very general search term has been used, one such as "t=proc", for example, the index will continue to display all the matching index entries beginning with these characters, page by page at the searcher's option until either matches or patience have been exhausted. Although most operators prefer to modify or change completely their search strategy when confronted by three or more screens of matches, for the item which has no distinctive alternative entries to use, scanning of many screens is possible and can often unearth the title wanted.

Occasionally an index screen which is displayed as a result of paging has the instruction:

INDEX HAS BEEN UPDATED—PLEASE START OVER

This condition is caused by an on-line update of a main entry or title which falls within the displayed alphabetic array, and which occurred during the interval following the original request.

If a requested search term cannot be matched in the index, the computer responds with a message:

NO ENTRIES FOUND

In this case the original request remains on the screen so that it may be checked for accuracy in spelling and formulation.[6] After a negative response the operator has several options before a search for an item is abandoned. The search strategy may be revised by truncating the original term to expand the range of possible matches and to overcome possible spelling errors or variations. Alternatively, another entry for the item wanted may be chosen. Customary procedure is to search first by title and then by main entry, if there is one. Any other likely entry can also be tried if the operator considers it desirable.

When, in response to a search, the index screen display lists two or more matches, these are displayed, as mentioned earlier, in alphabetic order, with each listing composed of one, two, or three segments or "terms." There are two principal types of terms, primary and secondary. An additional qualifying term may also be present. The primary term, appearing in first position, is determined by the section of the index file being searched. If a name search has been specified, the name is the primary term and a title is the secondary term. If a title search has been requested, the title is the primary term and a name is the secondary term. A qualifying term may be present as the last element and this is either the date of publication (for monographs) or the first four alphabetic characters of the place of publication (for serials). These qualifiers immediately distinguish monographs from serials, identify variant editions, and differentiate among identical titles. *(See Figure 4.)* A qualifying date is derived from the 008 Fixed Field Date 1 in the bibliographic record; the place of publication characters are from the imprint field. Each listing in an index display is preceded by an institution code designating the owner of the record. At the present time, NOTIS is being used also by the library of Garrett Evangelical Theological Seminary, so one of the two institution codes, NU or GE, prefaces each index listing.

Although the above formulation of title plus author or author plus title is the basic pattern of displayed index listings, there are some important variations. In the author index, if a name has been derived from an author/title added entry field, as is often the case with series added entries, the title subfield of the added entry displays in addition to the main title of the work. *(See Figure 5.)* In the title index listing, there is

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LCAT _                                          L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn) OR PRESS PA1 KEY FOR MORE
Ø1 NU +AFRICA <JOHA
Ø2 NU +AFRICA <LOND
Ø3 NU +AFRICA <LOND
Ø4 NU +AFRICA <MADR
Ø5 NU +AFRICA <NAPO
Ø6 NU +AFRICA <PARI
Ø7 NU +AFRICA <TUNI
Ø8 NU +AFRICA <WASH
Ø9 NU +AFRICA <1889
10 NU +AFRICA <1975
11 NU +AFRICA *ADDISON JOHN <1972
12 NU +AFRICA *ALLEN WILLIAM DANGAIX <1972
13 NU +AFRICA *BEN JOCHANNAN YOSEF <1969
14 NU +AFRICA *BLUM DIETER <1976
15 NU +AFRICA *BURKE FRED G <1974
16 NU +AFRICA *CADERNOS BRASILEIROS <1963
```

1. A title search request has been entered as: LCAT DISP T=africa.
2. The response is an index screen display. Note that items 1 through 8 are serials.

Fig. 4. Qualifiers Distinguish Monographs from Serials and Differentiate among Identical Titles.

```
LCAT _                                          L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn) OR PRESS PA1 KEY FOR MORE
Ø1 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +AGRICULTURAL IMPL <1972
Ø2 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +ALFRED THE FIRST <1973
Ø3 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +AMERICAN SINGLE L <1973
Ø4 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +ART CRUSADE AN AN <1976
Ø5 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +BRIDGEPORTS GOTHI <1972
Ø6 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +CONSUL GENERALS S <1972
Ø7 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +COPP FAMILY TEXTI <1971
Ø8 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +EARLY AUDITORY ST <1975
Ø9 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +FEEDBACK MECHANIS <1971
10 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +GIRARD ESTATE COA <1972
11 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +HISTORY OF THE CO <1972
12 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +HOLD THE FORT THE <1971
13 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +INCOMPLETE CHYMIS <1975
14 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +JOSEPH SAXTON AND <1975
15 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +KEYED BUGLES IN T <1972
16 NU *SMITHSONIAN INSTITUTION +SMITHSONIAN STUDIES IN +LIVING HISTORICAL <1972
```

1. An author search request has been entered as: LCAT DISP A=Smithsonian.
2. One of the response screens lists titles in the series "Smithsonian Studies in History and Technology."

Fig. 5. The Title of a Work Analyzed Displays in Addition to a Series Title and Author If the Search Has Been for a Name Derived from a Series Author/Title Field.

no secondary term if the title of the work is the "main entry"; the display will be just a title followed, probably, by a qualifying term. However, if the listed term is from a title added entry field such as the traced title series statement, the primary term is the series title and this is followed by the title of the work as a secondary term. *(See Figure 6.)* Thus, it is possible to browse through series as well as authors. When examining the listed array of requested series entries, staff often encounter a serial record, identified as such by the qualifying term; this is simply a control record for current series being received on a continuation order or it is also a fully cataloged record for series classed together but analyzed. Control records for series classed separately will probably be suppressed in the NOTIS-3 public user version which is now being developed.

Another feature of the index has proven to be even more helpful than anticipated. If a corporate name field has one or more subdivisions of the corporate body, two name index entries are developed for the field. One is derived from the name of the body and its subdivisions in direct order; a second index entry is derived from the last subdivision of the corporate body, *i.e.*, the lowest unit in the hierarchy. This permuted or "rotated" name is followed by the principal name of the corporate body, *i.e.*, the highest unit in the hierarchy. Thus searchers, periodical checkers, and others have direct access to publications known to be issued by a division or committee of a corporate entity. *(See Figure 7.)*

A listing on the index display screen may consist of up to eighty characters, of which a minimum of seventeen characters may be the

```
LCAT _                                                    L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn) OR PRESS PA1 KEY FOR MORE
Ø1 NU +ADELPHI PAPERS <LOND
Ø2 NU +ADELPHI PAPERS +ADVANCED STRATEGIC MISSILES A SHORT GUIDE <1969
Ø3 NU +ADELPHI PAPERS +ALLIANCE AND EUROPE <1973
Ø4 NU +ADELPHI PAPERS +AMERICAN FOREIGN POLICY IN THE NIXON ERA <1975
Ø5 NU +ADELPHI PAPERS +ARAB ISREL WAR OCTOBER 1973 BACKGROUND AND EVENTS <1975
Ø6 NU +ADELPHI PAPERS +ARAB ISRAELI DISPUTE GREAT POWER BEHAVIOUR <1977
Ø7 NU +ADELPHI PAPERS +ARMED FORCES OF AFRICAN STATES 1970 <1970
Ø8 NU +ADELPHI PAPERS +ARMS SECURITY THE EGYPT ISRAEL CASE <1969
Ø9 NU +ADELPHI PAPERS +CIVIL VIOLENCE AND THE INTERNATIONAL SYSTEM <1971
10 NU +ADELPHI PAPERS +CONFLICTS IN AFRICA <1972
11 NU +ADELPHI PAPERS +DEFENDING THE CENTRAL FRONT THE BALANCE OF FORCES <1976
12 NU +ADELPHI PAPERS +EAST ASIA AND THE WORLD SYSTEM PAPERS GIVEN AT THE <1972
13 NU +ADELPHI PAPERS +ETHICS AND DETERRENCE A NUCLEAR BALANCE WITHOUT HOS <1970
14 NU +ADELPHI PAPERS +EUROPE AND AMERICA IN THE 1970S <1970
15 NU +ADELPHI PAPERS +FORCE IN MODERN SOCIETIES <1973
16 NU +ADELPHI PAPERS +FUTURE CONDITIONAL THE PROSPECT FOR ANGLO FRENCH NU <1971
```

1. A title search has been entered as: LCAT DISP T=adelphi papers.
2. A response screen lists titles in the series. Item 1 is a series record established for ordering the series and recording payments and volume receipts.

Fig. 6. The Title of a Work Analyzed Displays in Addition to a Series Title If the Search Has Been for a Traced Title Series.

```
LCAT _                                                    L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn) OR PRESS PA1 KEY FOR MORE
Ø1 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +AFRICA AND THE CH <1968
Ø2 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +COMPLEX OF UNITED <1974
Ø3 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +CRISIS OF DEVELOP <1974
Ø4 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +CRISIS OF THE AFR <1975
Ø5 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +CRITICAL DEVELOPM <1974
Ø6 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +DROUGHT CRISIS IN <1973
Ø7 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +FOREIGN POLICY IM <1970
Ø8 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +FUTURE DIRECTION <1973
Ø9 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +IMPLEMENTATION OF <1973
10 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +IMPLICATIONS FOR <1973
11 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +MINORITY RULE AND <1973
12 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +POSTWAR NIGERIAN <1970
13 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +REPEAL OF THE RHO <1974
14 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +REPORT OF THE SPE <1969
15 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +REVIEW OF STATE D <1974
16 NU *SUBCOMMITTEE ON AFRICA =UNITED STATES CONGRESS H +RHODESIA AND UNIT <1969
```

1. An author search has been entered as: LCAT DISP A=subcommittee on africa.
2. A response screen lists items for which the full main entry is: United States. Congress. House. Committee on Foreign Affairs. Subcommittee on Africa.

Fig. 7. The Result of a Search for the Lowest Body in the Hierarchy of a Corporate Body Entry.

secondary term. Because not all names or titles used as primary terms require the maximum number of allotted characters, any excess space is used to expand the secondary term. *(See Figure 8.)* Index listings for works by personal authors display, in the majority of cases, full author and full title. Often, however, the items issued by corporate bodies display only the minimum of seventeen characters from the secondary

term, but this is frequently sufficient identification. *(See Figure 9.)*

Since all index entries are derived from fields in the bibliographic record, decisions had to be made as to which subfields were to be included. In personal name fields, only the name proper is indexed. For corporate name fields, the major name is used plus all subdivisions which will fit on the index line. In conference name fields, only the conference name is indexed, but all subfields of main entry uniform titles

```
LCAT _                                          L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn) OR PRESS PA1 KEY FOR MORE
Ø1 NU *SHAKESHAFT JOHN R +FORMATION AND DYNAMICS OF GALAXIES PAPERS FROM A <1974
Ø2 NU *SHAKESPEARE ASSOCIATION LONDON +SOME RECENT RESEARCH IN SHAKESPEARE <1937
Ø3 NU *SHAKESPEARE ASSOCIATION OF AMERICA INC +SHAKESPEARE ASSOCIATION BUL <NEW
Ø4 NU *SHAKESPEARE ASSOCIATION OF AMERICA INC +SHAKESPEARE QUARTERLY <NEW
Ø5 NU *SHAKESPEARE OXFORD SOCIETY +WASNT SHAKESPEARE SOMEONE ELSE NEW EVID <1971
Ø6 NU *SHAKESPEARE SEMINAR STRATFORD ONT +STRATFORD PAPERS <HAMI
Ø7 NU *SHAKESPEARE SEMINAR STRATFORD ONT +STRATFORD PAPERS ON SHAKESPEARE <TORO
Ø8 NU *SHAKESPEARE SOCIETY OF NEW YORK +PUBLICATIONS +FURTHER STUDY OF THE <1971
Ø9 NU *SHAKESPEARE TERCENTENARY COMMITTEE STRATFORD ON +SHAKESPEARE AND ST <1864
10 NU *SHAKESPEARE WILLIAM +ALLS WELL THAT ENDS WELL <1959
11 NU *SHAKESPEARE WILLIAM +ANTONY AND CLEOPATRA <1935
12 NU *SHAKESPEARE WILLIAM +ANTONY AND CLEOPATRA <1967
13 NU *SHAKESPEARE WILLIAM +AS YOU LIKE IT <1963
14 NU *SHAKESPEARE WILLIAM +AS YOU LIKE IT <1975
15 NU *SHAKESPEARE WILLIAM +AS YOU LIKE IT AN OLD SPELLING AND OLD MEANING <1972
16 NU *SHAKESPEARE WILLIAM +CHOICE OF SHAKESPEARES VERSE <1971
```

1. An author search has been entered as: LCAT DISP A=shakes.
2. The varying lengths of the author entries displayed in the response affect the fullness of the title displays.

Fig. 8. Excess Space in an Index Line Is Used to Expand the Secondary Term.

```
LCAT _                                          L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn) OR PRESS PA1 KEY FOR MORE
Ø1 NU +PROCEEDINGS OF THE CONFERENCE *ADVERTISING RESEARCH FOUNDATION <NEW
Ø2 NU +PROCEEDINGS OF THE CONFERENCE *AMERICAN SOCIETY OF MECHANICAL ENGIN <NEW
Ø3 NU +PROCEEDINGS OF THE CONFERENCE *INTERNATIONAL PEACE RESEARCH ASSOCIA <ASSE
Ø4 NU +PROCEEDINGS OF THE CONFERENCE *NATIONAL ASSOCIATION OF TAX ADMINIST <CHIC
Ø5 NU +PROCEEDINGS OF THE CONFERENCE *TEXAS PERSONNEL AND MANAGEMENT ASSOC <AUST
Ø6 NU +PROCEEDINGS OF THE CONFERENCE FOR GOOD CITY GOVE *NATIONAL MUNICIPA <PHIL
Ø7 NU +PROCEEDINGS OF THE CONFERENCE OF COMPANIONSHIP O *CONFERENCE OF COM <KNOX
Ø8 NU +PROCEEDINGS OF THE CONFERENCE OF DELEGATES APPOI *CONFERENCE OF DEL <CINC
Ø9 NU +PROCEEDINGS OF THE CONFERENCE OF TEACHERS OF INT *CONFERENCE OF TEA <WASH
10 NU +PROCEEDINGS OF THE CONFERENCE ON ADVANCES IN WEL *CONFERENCE ON ADV <1971
11 NU +PROCEEDINGS OF THE CONFERENCE ON AFRICAN GEOLOGY *CONFERENCE ON AFR <1972
12 NU +PROCEEDINGS OF THE CONFERENCE ON ALGEBRAIC ASPEC *CONFERENCE ON ALG <1975
13 NU +PROCEEDINGS OF THE CONFERENCE ON COMPUTER GRAPHI *CONFERENCE ON COM <1975
14 NU +PROCEEDINGS OF THE CONFERENCE ON CONSTRUCTIVE TH *CONFERENCE ON CON <1972
15 NU +PROCEEDINGS OF THE CONFERENCE ON CRIME LAW AND T *INTERNATIONAL CON <1976
16 NU +PROCEEDINGS OF THE CONFERENCE ON DIRECTIONS FOR *CONFERENCE ON DIR <1975
```

1. A title search has been entered as: LCAT DISP T=proceedings of the conf.
2. The titles in Items 6 through 16 have been truncated in order to accommodate the minimum 17 characters from the author main entry.

Fig. 9. A Minimum of 17 Characters from the Secondary Term Are Displayed.

are indexed. *(See Figure 10.)* In indexing title fields, the short title and the subtitle, when present, are included. Only the main title and title added entry fields (and most of the variant title fields in serial records) are indexed; title subfields of author/title added entries are not directly accessible.

The various terms in displayed index entries are identified by symbols which precede each term. Names are preceded by an asterisk, titles by a plus sign, and qualifying terms by a "less than" (<) sign. In a rotated corporate name, the highest body in the hierarchy is preceded by an equal sign.

Index searches on ISSN are basically simple, since the known number is keyed as a search term. An exception to the "no punctuation characters" rule is made here, since the hyphen is used in the search request to separate the two segments of the ISSN. A match of a unique ISSN will result in an immediate display of the record sought. While it is possible to use fewer than the eight numeric digits of the ISSN, it would not appear to be useful to do so except in cases in which errors in the last few digits are suspected. If ISSNs are listed on an index screen display, they are preceded by a pound sign. *(See Figure 11.)*

There is one other situation in which special characters are used in the search and that is when a search identifier consisting of two or more terms is used. This kind of search request can be composed of an author's full name plus the title, or a portion of it; or the reverse can be used, the full title plus a portion of the author's name; or full author, full title, and qualifying term can be specified. If this type of very explicit search is requested, the terms must be constructed exactly as

```
LCAT _                                          L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn) OR PRESS PA1 KEY FOR MORE
Ø1 NU *BIBLE +LA SAINTE BIBLE CONTENANT LANCIEN ET LE NOUVEAU TESTAMENT <1789
Ø2 GE *BIBLE AND MEDICAL MISSIONARY FELLOWSHIP +GOAL <UPPE
Ø3 NU *BIBLE DUTCH 1900 +JULIANA BIJBEL <1900
Ø4 NU *BIBLE ENGLISH AUTHORIZED SELECTIONS 1969 +TIME FOR PEACE VERSES FRO <1969
Ø5 GE *BIBLE ENGLISH AUTHORIZED 1611 1911 +HOLY BIBLE A FACSIMILE IN A RED <1911
Ø6 GE *BIBLE ENGLISH AUTHORIZED 1612 +HOLY BIBLE CONTEINING THE OLDE TESTA <1612
Ø7 GE *BIBLE ENGLISH AUTHORIZED 1612 +HOLY BIBLE CONTEYNING THE OLD TESTAM <1612
Ø8 GE *BIBLE ENGLISH AUTHORIZED 1613 +HOLY BIBLE CONTAINING THE OLD TESTAM <1613
Ø9 GE *BIBLE ENGLISH AUTHORIZED 1615 +HOLY BIBLE CONTEYNING THE OLD TESTAM <1615
10 GE *BIBLE ENGLISH AUTHORIZED 1623 +HOLY BIBLE CONTAINING THE OLD TESTAM <1623
11 NU *BIBLE ENGLISH AUTHORIZED 1900 +HOLY BIBLE CONTAINING THE OLD AND NE <1900
12 GE *BIBLE ENGLISH AUTHORIZED 1911 +HOLY BIBLE A FACSIMILE IN A REDUCED <1911
13 GE *BIBLE ENGLISH AUTHORIZED 1975 +HOLY BIBLE CONTAINING THE OLD AND NE <1975
14 GE *BIBLE ENGLISH BECK 1976 +HOLY BIBLE IN THE LANGUAGE OF TODAY AN AME <1976
15 GE *BIBLE ENGLISH JERUSALEM 1975 +BIBLE IN ORDER ALL THE WRITINGS WHICH <1975
16 GE *BIBLE ENGLISH MIDDLE ENGLISH WYCLIFFE SELECTIONS +JOHN WYCLIF AND T <1938
```

1. An author search has been entered as: LCAT DISP A=Bible.
2. Browsability is an obvious by-product of the resulting screen display. Note that the institution codes NU and GE denote ownership of the various items.

Fig. 10. All Subfields of Main Entry Uniform Titles Are Indexed.

```
LCAT _                                          L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn)
01 NU #0015-1912
02 NU #0015-198X
03 NU #0015-1998

SERL AAM7424 LC    49015079 //r ISSN 0015-198X STAT c FRQ b TYP p MED
CFR 6/1/1
The Financial analysts journal. v. 1-  Jan. 1945-  New York, Financial Analysts
  Federation. 219 E. 42nd St.;New York, N.Y. 10017
```

1. A search request has been entered as: LCAT DISP I=0015-19.
2. This technique is rarely used, but if only a partial ISSN is entered, an index screen of matches can result. A requested display of brief bibliographic data identifies the item sought.

Fig. 11. The Result of a Search Using a Partial ISSN.

they would appear in an index listing, including the term identifying signs. *(See Figure 12.)* While this degree of specificity is possible, it is rarely used because of the amount of keying required.

Surprisingly few problems have been encountered in using the index. The most annoying is that of an initial article appearing as an indexed word for MARC fields, such as the main entry and the title traced differently added entry, which do not allow a nonfiling character indicator code. The indexing program uses these indicators to govern the alphabetic array. While a stop list could be used to cull out undesired articles, it would cause problems where the indefinite article is identical to a non-article word. *(See Figure 13.)* This is, at present, an unresolved problem which we hope will eventually be solved by a change in the MARC format.

Such problems as do exist are offset by the ease of using the index and the alternatives which it offers and by its other important and successful features.[7] Of these, browsability has been perhaps the most significant in convincing some skeptical staff members that an on-line catalog is truly feasible. The browsing capability is apparent when some of the illustrations accompanying this paper are examined. A list of the works of a particular author, or of titles in a series, or of a category of uniform titles such as the Bible is almost instantaneously presented and is certainly more easily scanned than the comparable entries in a card

```
LCAT DONE AAC9Ø61                                    L1812--NUL CATALOGING

REC AAC9Ø61 DT 22 APR 1976 E/DT 3Ø OCT 1976 STAT z LGND am E/LEV    DCF    SRC d
PLACE nyu LANG eng GOVT    CONF Ø CONT b     REPRO    MOD    DT/1 1976 DT/2
D/CODE s I/LEV    ILLUS a     FICT Ø BIOG    FEST Ø INDX 1 ME/B 1

LCN:  : #a     75042942
MEP:S : #a Samuelson, Paul Anthony, #d 1915-
TIL:AØ: #a Economics #c [by] Paul A. Samuelson, with the assistance in
statistical updating of Peter Temin.
EDN:  : #a 10th ed.
IMP:N : #a New York, #b McGraw-Hill #c [1976]
COL:  : #a xxvii, 917 p. #b col. illus. #c 25 cm.
NOBl:  : #a Includes bibliographical references and index.
SUTl: L: #a Economics.
```

1. A search composed of three terms has been entered as:
   LCAT DISP A=samuelson paul anthony +economics <1976.
2. The immediate response is a full display of the requested 1976 edition. See also Figure 14 for other editions of this work in the data base.

Fig. 12. A Very Explicit Search Request Can Be Composed of Two or More Terms.

```
LCAT _                                          L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn) OR PRESS PA1 KEY FOR MORE
Ø1 NU +A B C GUIDE TO LONDON  1916
Ø2 NU +A B C JAPANESE ENGLISH DICTIONARY AN ENTIRELY NEW M *VACCARI ORESTE <1970
Ø3 NU +A B C MURDERS *CHRISTIE AGATHA MILLER <1977
Ø4 NU +A B C OF DEVELOPMENT ASSISTANCE A GLOSSARY OF SO *GREAT BRITAIN OVE <1971
Ø5 NU +A B C OF GARDENING AND PLANTING FOR KADUNA *HILL J H C <1957
Ø6 NU +A B C OF INDIAN POLITICS <1946
Ø7 NU +A B C SYNDICALISTE *YVETOT CHARLES <1931
Ø8 NU +A B DURAND 1796 1886 EXHIBITION MONTCLAIR ART MU *DURAND ASHER BROW <1971
Ø9 NU +A B N ECONOMIC REVIEW *ALGEMENE BANK NEDERLAND N V AMSTERDAM <AMST
10 NU +A BAS LES CHEFS +LA QUESTION REVOLUTIONNAIRE LHUMANISPHERE A BAS LE <1971
11 NU +A BASIC REFERENCE SHELF ON SIMULATION AND GAMING +GUIDE TO SIMULATI <1973
12 NU +A BEHAVIORAL APPROACH TO STUDENT CENTERED LEARNI +INSTRUMENTAL TEAM <1975
13 NU +A BIBLIOGRAPHIC GUIDE TO MATERIALS ON GREEKS IN +BIBLIOGRAPHIC GUID <1971
14 NU +A BIBLIOGRAPHY OF CANADIANA +LAWRENCE LANE COLLECTION OF CANADIANA <1965
15 NU +A BIBLIOGRAPHY OF CURRENT WORKS BY AND ABOUT THE +PROFESSIONAL GUID <NORM
16 NU +A BIBLIOGRAPHY OF LITERATURE ON PLANNED OR IMPLE +WORLD SURVEY SERI <1973
```

1. A title search has been entered as: LCAT DISP T=a.
2. Items 11 through 16 on the index screen display titles filed under the initial article. These titles are all derived from the MARC 740 field (an alternative, secondary, or analytical title), which does not provide an indicator for non-filing characters.

Fig. 13. Initial Articles in Fields Which Do Not Allow a Non-filing Indicator Code Are a Problem.

catalog. (*See Figure 14.*) The impact of this browsing capability on faculty and students using an on-line catalog could mean the difference between passive acceptance and enthusiastic support of an otherwise potentially disturbing innovation. Attaching a printer to a terminal so that a printout can be obtained quickly is another feature which will increase the usefulness of the index and should have enormous appeal to patrons.

```
LCAT _                                          L1830--INDEX SEARCH
ENTER LINE NUMBER (nn OR Bnn)
01 NU *SAMUELSON PAUL ANTHONY +COLLECTED SCIENTIFIC PAPERS OF PAUL A SAMUE <1966
02 NU *SAMUELSON PAUL ANTHONY +DIE IDEOLOGISCHEN ELEMENTE IN DER NEOKLASSI <1971
03 NU *SAMUELSON PAUL ANTHONY +ECONOMICS <1970
04 NU *SAMUELSON PAUL ANTHONY +ECONOMICS <1973
05 NU *SAMUELSON PAUL ANTHONY +ECONOMICS <1976
06 NU *SAMUELSON PAUL ANTHONY +ECONOMICS +ANTI SAMMY ZUR KRITIK DER BURGER <1974
07 NU *SAMUELSON PAUL ANTHONY +ECONOMICS +STUDY GUIDE TO ACCOMPANY SAMUELS <1970
08 NU *SAMUELSON PAUL ANTHONY +ECONOMICS +STUDY GUIDE TO ACCOMPANY SAMUELS <1973
09 NU *SAMUELSON PAUL ANTHONY +ECONOMICS +STUDY GUIDE TO ACCOMPANY SAMUELS <1976
10 NU *SAMUELSON PAUL ANTHONY +FULL EMPLOYMENT GUIDEPOSTS AND ECONOMIC STA <1971
11 NU *SAMUELSON PAUL ANTHONY +INVESTMENT PORTFOLIO DECISION MAKING <1974
12 NU *SAMUELSON PAUL ANTHONY +READINGS IN ECONOMICS <1973
13 NU *SAMUELSON PAUL ANTHONY +SAMUELSON SAMPLER <1973
14 NU *SAMUELSON PAUL ANTHONY +TRADE STABILITY AND MACROECONOMICS ESSAYS I <1974
```

1. An author search has been entered as: LCAT DISP A=samuelson p.
2. The response is a browsable display of all Paul A. Samuelson's works present in the machine readable data base.

Fig. 14. The Browsing Capability of the Index Is Apparent Here.

Planning for improvements and enhancements has been constant and continuous. Expansion of the index to include other entries such as the LC card number, the ISBN, the call number, and, of course, subject entries has been a goal since its inception. Consideration has also been given to tying the index to authority control when this MARC format is implemented. The capability of truncating the primary term while still appending the secondary term is being explored, as is the possibility of letting the display program automatically remove punctuation and special characters from a search request. That there are many other desirable developments is apparent since one of the intriguing characteristics of the index is that it seems to be intrinsically stimulative of the imaginative interest of users. The many enthusiastic comments and creative suggestions from staff in Technical Services and in Public Services are an indication of this and of the present success and almost unlimited potential of the index as a bibliographic access tool.

The NOTIS-3 index has proven to be overwhelmingly successful in use and dynamic and open-ended in its potential. It is, at the same time, practical, efficient, and economical. We are convinced at Northwestern that this is a viable access technique and that patrons will react to it as positively and as enthusiastically as have staff.

REFERENCES

1. Jamie L. Levine and Timothy Logan, *Online Resource Sharing, A Comparison of BALLOTS and OCLC: A Guide for Library Administrators* (CLASS: California Library Authority for Systems and Services, 1977) p.26, 28, 30, 34.

2. James S. Aagaard, "An Interactive Computer Based Circulation System: Design and Development," *Journal of Library Automation*, 5:3–11 (March 1972); Velma Veneziano, "An Integrated Computer Based Circulation System for Northwestern University: The Library Puts It to Work," *Journal of Library Automation*, 5:101–117 (June 1972).
3. William J. Willmering, "Northwestern University Library's NOTIS-3 Automated Serial Control System," *Proceedings of the 1977 Annual Meeting*, American Society for Information Science (1977).
4. In preparation is a paper by James S. Aagaard on the technical aspects of the NOTIS-3 Online Index Access System.
5. "Program attention" keys are labeled PA on the IBM 3270 CRTs used at Northwestern. The CRTs are linked by a 4,800-baud high-speed telephone line to an IBM 370/138 computer (512K) at the university's administrative data processing installation.
6. The search argument does not remain on the screen if there is a match; this causes no real problems, although there are occasionally displays that disconcert the user who has inadvertently entered a search for the wrong record.
7. A Northwestern University Library Committee on Alternatives to the Card Catalog is currently scrutinizing the index in an effort to identify other problems that may need to be resolved for the public user access mode.

A Computer Network Protocol at the Application Level for Libraries and Other Information Science Services

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This paper outlines the essential details of a computer network protocol at the application level for interchanging information between host computers in the community of libraries, book publishers, and bibliographic service centers. The protocol was developed by a task force appointed by the National Commission on Libraries and Information Science, with technical assistance from the National Bureau of Standards and from selected consultants. The protocol defines the header portion of control and data messages at the application level and is independent of the topology of the communications subnetwork supporting the network. Control header structure is detailed, and a skeleton outline is given for twenty header field types and fifteen control message types.

INTRODUCTION

In a geographically dispersed telecommunications network linking several dissimilar computer-based information processing systems, protocols are usually developed at several different levels of functionality, as shown in figure 1. Actual physical communication occurs via the solid lines, and the dashed lines represent virtual protocols. The categorization of levels is arbitrary, and more or fewer levels can be specified in particular networks. National and international standards have been developed or are in the process of being developed for various interfaces (vertical) and various protocols (horizontal) except for the application level.[1]

Messages formulated at the application level and destined for a remote computer may be passed down through several interfaces to the lower levels, where additional information may be appended at one or

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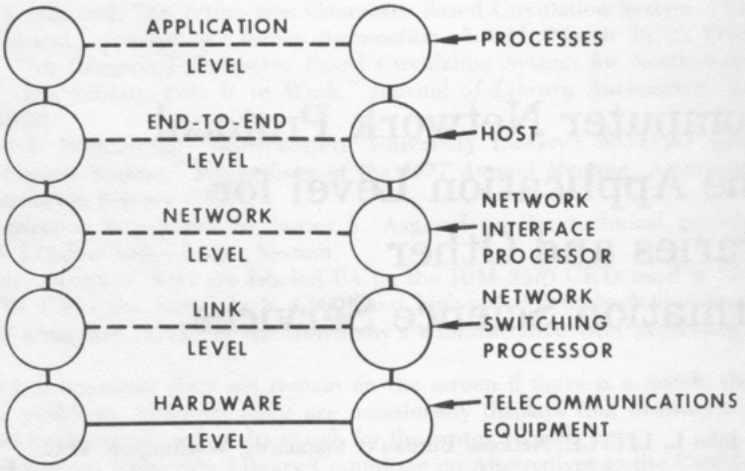


Fig. 1. Diagram Illustrating Levels for Protocols.

more levels for error control, block control, and retransmission control. After transmission, as the information passes up through successive levels, the appended information may be removed, so that at the application level the complete message arrives as an exact replica of the original message.

This paper describes the results of a recent effort to define an application (highest) level protocol for computer-to-computer communication and in particular the header (control) portion of that protocol. The protocol was developed for the community of interest represented by libraries, book publishers, bibliographic service centers, and other activities closely related to them. This work was performed by a group of experts assembled as the Task Force on Computer Network Protocol, which was sponsored by the National Commission on Libraries and Information Science (NCLIS) with technical and administrative assistance from the Institute for Computer Sciences and Technology of the National Bureau of Standards (NBS). The task force has described the protocol in more detail in its final report.[2]

PROTOCOL OBJECTIVES

The application level protocol provides a procedure that permits two similar or dissimilar authorized computers among a network of many to establish communication with one another, request and perform services, exchange data and accounting information, and terminate the communication, all without human intervention. The header portion of each message provides for all of the control actions necessary to accomplish the exchange of data and billing information. The header identifies (1) the two host computers involved in an exchange, (2) the session number, (3) originating user's reference number, (4) a reference number

assigned by the target host, (5) the type of each message, and (6) many other indications of codes, limits, formats, and session control functions, as listed later under the twenty header field names and fifteen control type messages that have been defined in the initial version of this protocol.

PROTOCOL DETAILS

According to the protocol, all network messages have the format shown in figure 2. The header length and data length fields are sixteen-bit (two-octet) binary integers, which specify the number of octets in the header and data fields, respectively. If there is no data in a particular control message, then the data length field contains all zeroes and the data field is omitted.

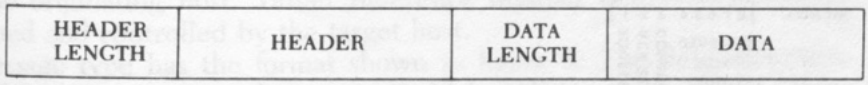


Fig. 2. Network Message Format.

Since the two length fields are specified to be binary integers, any bit pattern can occur in them, and, hence, this protocol requires a transparent, character-code insensitive, means of data transmission. This permits any arbitrary, standard or nonstandard, character coding to be used in the header and data fields.

Certain of the messages transmitted relate to billing for the services provided. Money and services generally flow in the opposite direction in this protocol. Hence, this protocol is bidirectional. However, "broadcasting" or "forwarding" of messages is not permitted. Regardless of the actual topology of the communications subnetwork, communication between any two host computers at the application level is on a point-to-point basis. The network thus gives the appearance of being totally connected.

MESSAGE HEADERS

The remainder of this paper discusses the header portion of messages in more detail. Whether the messages are control messages or data messages, all headers are comprised of two or more component parts, each of which has the structure shown in figure 3. Field length is a binary

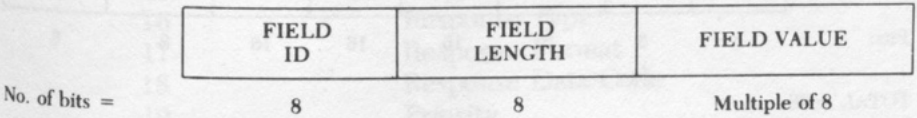


Fig. 3. Structure of a Component Part of a Header.

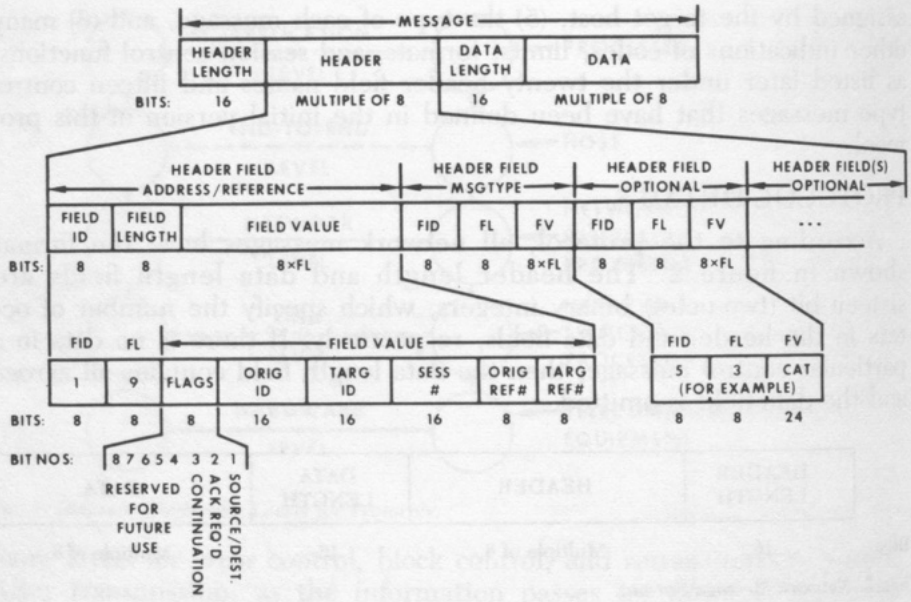
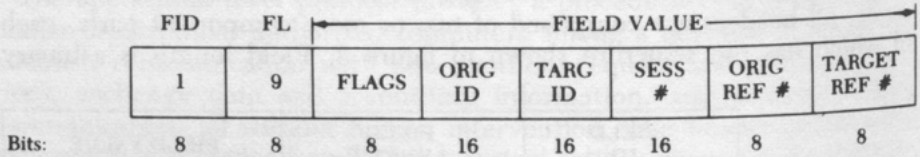


Fig. 4. Diagram Illustrating Message and Header Structure.

integer that gives the length of the value field in octets. In some cases, the field value is omitted, and in these cases the length field contains zeroes.

There may be several component parts having this structure in a complete header, but all application headers must contain at least the two required parts: (*a*) address/reference and (*b*) message type. A header may also contain one or more optional components. Figure 4 shows the relationship between a message and its header parts, with an expansion of the address/reference portion.

An address/reference is required for all message types. Address/reference has the format shown in figure 5. The field identification of 1 specifies address/reference. The field length of 9 specifies nine remaining octets, as shown. Flags are indicator bits, as follows: bit one, the low-order bit, is a source/destination indicator and designates the direction of message flow; bit two is an "acknowledgement required" indi-



TOTAL = 88

Fig. 5. Address/Reference Format.

FID	FL	FV
2	n	MSGTYPE
Bits: 8	8	8n

Fig. 6. Message Type Format.

cator; and bit three is a continuation indicator, to show that additional associated data messages are to follow. Bits four to eight are reserved for future use. The originating host identification, target host identification, and session number are each two octets long, and the associated reference numbers are each one octet. Identification numbers are obtained from the network registry, which is yet to be developed. Session number and originating reference number are binary numbers assigned by the originating host. Target Reference number is a binary number assigned and controlled by the target host.

Message type has the format shown in figure 6. The field identification for message type is binary 2. Field length is an octet with binary value *n*, which specifies the number of octets in the MSGTYPE field, and the value of MSGTYPE determines whether other header fields are also required.

The protocol is designed to be open-ended so that other header component parts and other message types can be added later. Initially, there are twenty header components and fifteen message types defined in this application level protocol:

Header FID	*Header Field Name*
1	Address/Reference
2	Message Type
3	Account Number
4	Password
5	Process Identification
6	Session Resource Limit
7	Message Resource Limit
8	Status
9	Last Reference
10	Session Resources Used
11	Message Resources Used
12	Accounting Method Choice
13	Date and Time Stamp
14	Data Format
15	Data Code
16	Response Type
17	Response Format
18	Response Data Code
19	Priority
20	Time Deadline

Items one and two are required in all messages, while items three through twenty are required in certain control and data messages.

The fifteen control type messages are:

FV of MSGTYPE	*Control Message Name*
1	Begin Session
2	Begin Session Response
3	End Session
4	End Session Response
5	Status Query
6	Status Query Response
7	Purge Message
8	Purge Message Response
9	Purge Session
10	Acknowledgement
11	Exception
12	Suspend
13	Resume
14	Wait
15	Continue

There are also "data type" messages that carry the actual data relating to the work to be done by one computer for another computer. The headers of data type messages may typically include optional fields, such as data format, data code, response format, response code, message resource limit, priority, time deadline, date and time stamp, and resources used. The actual data is contained in the data field portion of the message. Examples of data type messages might include search request, response count, interlibrary loan request, and bibliographic record reply. Data type messages have a default data format and a list of allowable message formats. Message types are registered in the registry whenever two or more hosts on the network agree to use a message type. Complete details of the protocol are too involved to include here but are defined and described in the final report of the Task Force on Computer Network Protocol.[3]

IMPLEMENTATION STATUS

A plan for implementation of this protocol is presently being developed by several libraries and bibliographic service centers, including the Library of Congress, the New York Public Library, and OCLC. It is expected that growth to large-scale implementation of the protocol will be a gradual evolution, with refinements and additions to the protocol being made as appropriate. Before the protocol can be implemented extensively, the network registry must be established and documented with identification and address codes, names and values for data type messages, and several data message formats. It is now a matter of con-

jecture whether this proposed protocol will enjoy extensive use in the library and information science community, in its present form or in some modified form, and whether its use may also extend into other communities employing computer-to-computer network communication.

REFERENCES

1. Cotton, Ira W., "Computer Network Interconnection: Problems and Prospects," NBS Special Publication 500-6 (April 1977), 83p.
2. "A Computer Network Protocol for Library and Information Science Applications," National Commission on Libraries and Information Science (Nov. 1977).
3. *Ibid.*

Recommendations to the Carnegie Commission

RECOMMENDATIONS OF THE AMERICAN LIBRARY ASSOCIATION TO THE CARNEGIE COMMISSION ON THE FUTURE OF PUBLIC BROADCASTING MARCH 6, 1978

In December 1977 the Carnegie Commission on the Future of Public Broadcasting asked a number of organizations, including ALA, to submit their views on public broadcasting. The commission, an independent, nongovernmental panel funded by the Carnegie Corporation of New York, was created to investigate and make recommendations on the future course of public broadcasting in the United States. The ALA statement, submitted in March 1978, was prepared by Harold Wigren, telecommunications consultant and ALA member. It is partially based on an earlier ALA statement on telecommunications submitted to the House Communications Subcommittee. That statement, prepared with the assistance of several LITA members, was published in the June 1978 issue of JOLA. *The Carnegie Commission plans to issue its report on public broadcasting early in 1979, in time to be considered by the House Communications Subcommittee in its deliberations on revision of the Communications Act.*

Prepared by Harold Wigren

INTRODUCTION

The American Library Association, a nonprofit educational association of some 35,000 libraries, librarians and information specialists, library trustees, educators and communicators, appreciates the opportunity to present to the Carnegie Commission the views of our members on the present and future of public broadcasting. Our Association commends the Carnegie Corporation for initiating a "second look" at public broadcasting on the tenth anniversary of its original study.

The ALA wishes to set forth its recommendations and suggestions in three categories: funding, public participation, and dissemination, including the impact of new technologies. As a prologue to these recommendations, we would like to submit to the commission our perception of the role of libraries in communications.

PROLOGUE: THE ROLE OF LIBRARIES IN COMMUNICATIONS

Librarians approach the subject of communications from the perspective of public access to information. We believe that all Americans, regardless of their geo-

graphical location, their work, or their financial resources, should be able to find quickly and easily the information they need in order to lead productive lives. Because the strength of the nation depends upon just such an informed citizenry, we believe equal access to information is a matter of public policy. In this connection, we call to your attention the Statement of Policy set forth by Section 2 of Public Law 91-345, the National Commission on Libraries and Information Science Act, which provides:

> Section 2. The Congress hereby affirms that library and information services adequate to meet the needs of the people of the United States are essential to achieve national goals and to utilize most effectively the Nation's education resources and that the Federal Government will cooperate with State and local governments and public and private agencies in assuring optimum provision of such services.

Increasingly today access to information requires utilization of communications and computer technologies. No longer is information synonymous with the book. While the old words remain—*library* derived from the Latin word for *book*, *bibliography* from the Greek word for *book*—the information services provided by libraries today are likely to involve machine-readable files or data bases in an interactive on-line format, as well as other nonbroadcast technologies. Such on-line bibliographic search services are generally tailored to the serious researcher, the government official, or persons in business and industry, but increasingly, as budgets permit, libraries are making machine-readable data bases part of their regular reference and information services. Interlibrary cooperation enables users of some of the smaller libraries to avail themselves of such services as well. In addition, many public libraries are now using cable television channels to provide instantaneous access to information as part of the library's reference service to the public. The user telephones the library's reference department for a given piece of information. In turn, the librarian puts the desired piece of information (chart, graph, or hard copy) under a camera and instructs the viewer to turn to a given channel on his television set at home or in the office to view the information on the screen.

New technology has spurred the development of a new form of interlibrary cooperation—the computerized library network. Distance between libraries becomes insignificant by virtue of such a network, which allows a library to join with many others in programs of shared access to cataloging data or shared collection development. Economies of scale are thus effected, and duplication of effort is greatly reduced. As a result of such networking projects, local access is extended to the collections of other libraries. Networking thus has the potential of greatly expanding public access to information by making the library resources of the entire nation available to whatever individual may need them.

The library resources of the nation include the collections and services of: 8,500 public libraries and nearly 5,500 branch libraries; some 2,800 college and university libraries; 6,500 special libraries; some 2,000 medical libraries; nearly 1,000 law libraries; and more. Although libraries exist in communities throughout the country, their resources are not evenly distributed geographically. Cities like New York, Philadelphia or Boston have prodigious library resources, while some of the rural states have relatively few. Library networking carries with it the potential to move information rapidly to individuals and groups rather than requiring people in need of information to travel across the state or to a neighboring state to find it.

In America, libraries have a long tradition of service to the public. For example, one need pay no tuition and no admission fee to visit a public library and use its varied collections. Local and state governments, as well as private philanthropy, have all contributed to the support of libraries. In 1956, the U.S. Congress added federal support to libraries by enacting legislation (the Library Services Act) to assist the states in extending public library service to rural areas. All Americans should have access to the knowledge stored in libraries, Congress concluded,

not just those who live in the cities. This move on the part of the federal government in the 1950s to ensure the development of library service in rural areas parallels its actions in the two preceding decades to extend communications service through enactment of the Communications Act of 1934 and later the Rural Telephone Act. A policy of nationwide postal service with certain rates uniform also helped to equalize the communications and information services available to all Americans.

It should be clear by now that from our perspective any national communications policy is inextricably interrelated to national information policy. Access to the information resources of the nation is as important as access to communication services. New technological innovations have now made it possible for Americans to communicate in new ways. In 1934, the emphasis was on voice communication, but today digital data transmission is increasingly important. Libraries serve the vital function of bringing people together with the information they need. To accomplish this task libraries must be able to communicate not only person-to-person, but also computer-to-computer, terminal-to-computer, computer-to-terminal, by teletype, television, facsimile, and so forth. Nonprofit information agencies such as libraries perform a service that is clearly in the public interest. Whether or not they will be able to reach their full potential of assuring equal access to information for all Americans depends in large measure on whether and to what extent they are able to utilize the new information technology. To date, costs have raised the greatest barrier.

THE FUNDING OF PUBLIC BROADCASTING

Public broadcasting constantly faces the dilemma of adequate financing. A viable system mandates funding on a par with commercial broadcast networks and comparable to public broadcasting's counterparts in Great Britain and Japan—BBC and NHK. Despite a variety of fund-raising efforts from several sources, public broadcasting remains undernourished and will remain so until such time as the White House and the Congress recognize the importance of the public service which noncommercial television and radio provide to our citizens. ALA feels that President Carter's proposed bill is certainly a step in the right direction. However, we feel that a much greater awareness of the need for long-range funding and a much more significant increase in federal funds are essential.

Recommendations

Accordingly, ALA recommends the following:

1. That an unrestricted direct federal authorization on a one-to-one matching basis should be authorized by Congress annually.
2. That the federal authorization for fiscal 1982 be set at $500 million annually for a five-year period, with state, local, and private funds raised by public broadcasting to match this amount, for an overall total of $1 billion annually.
3. That $67 million of the above amount be reserved for public telecommunications facilities annually for a five-year period, to be earmarked as follows:
   a. $30 million for public *broadcasting* (television and radio) facilities.
   b. $5 million for *nonbroadcast public* telecommunications facilities for use by public broadcasting stations to extend their television and radio services to areas unreached by public broadcasting transmitters.
   c. $30 million for *nonbroadcast educational* telecommunications facilities for use by schools, colleges and libraries to disseminate health, education, and other public or social service information to our citizens. This latter allocation would include Instructional Television Fixed Service (ITFS), interactive cable television, optical fibers, FM radio multiplexing, video and audio cartridge and cassette systems, videodiscs, nonbroadcast satellite terminals.

These distribution techniques offer advantages for libraries in the transmission of data, in the increased access to information resources in data banks, and in facsimile transmission. They would enable public, school and academic libraries to augment their resources and services to reach people from all walks of life, including special groups such as the handicapped, the blind, the elderly, and the homebound.

d. $2 million for the Telecommunications Demonstration Grant Program to develop new applications of nonbroadcast technology as model systems for the future.

Rationale for the Above Recommendations

Recommendation #1: The Carter administration's proposal would appropriate $180 million for fiscal 1981 and $200 million for each of the following four years. According to broadcasting authorities, this amount falls far short of the total amount needed to achieve a viable system. Significantly more programs must be produced using creative American talent to supplement British and other foreign productions. It would also lower the matching provision from $2.50 to $2.25 for every federal dollar appropriated. Lowering the matching formula from "$1.00 from the federal government for every $2.50 of non-federal funds raised by the station" to a new formula of "one-to-one" not only would put less pressure on the local station staff in fund-raising activities but also could mean less reliance on underwriting with its inherent tendency not to offend those entities providing funds! Under the ALA formula, public broadcasting should become more responsive to its viewers or potential viewers, including minority audiences who frequently are shortchanged, instead of to those who underwrite the funds for a given series. This latter tendency has given rise to the labeling of PBS by some consumer groups as the "Petroleum Broadcasting System." Whether this labeling is valid is questionable, but the fact remains that the public broadcasting industry must rely on outside funds in order to exist. Hence, stations are inclined to tailor their programming to that segment of the community which can most easily afford to contribute.

Recommendation #2: ALA feels that the $500-million amount it recommends is modest in relation to commercial broadcast revenues and would enable the public broadcasting industry to make long-range program plans and award multi-year bloc grants to production centers and independent producers. The $500 million would cost approximately $2.31 per person in the U.S. compared to Canada's $14.61 per person, Japan's $6.26, and England's $5.95.

Recommendation #3:

3a. The FY 1978 appropriation for Educational Broadcasting Facilities is only $18 million and the Carter FY 1979 budget proposed the same amount. This amount is totally inadequate because a large part of public broadcasting's equipment is now a decade or more old and is in need of replacing. The U.S. Office of Education this year has a backlog of requests for urgently needed equipment that have been approved by evaluation committees as eligible for funding but must wait their turn. This situation needs to be corrected.

3b. The Office of Telecommunications Policy at the White House has released figures which show that only 80 percent of the American public can get an acceptable public television signal. The present system of public television stations must be augmented by translators, cable, and other technologies in order to reach people in remote areas of the U.S. where public broadcasting is not accessible. Fewer than two-thirds can receive public radio. Because all taxpayers pay for public broadcasting, all taxpayers should be able to receive it. Hence, monies must be set aside for supplementary technologies that will extend the coverage of public television and radio to heretofore un-

covered areas of the U.S.

3c. The convergence of the new technologies referred to in this category would hold the promise of moving beyond the one-channel-per-city capabilities of public broadcasting to broader aspects of public communication for citizen information, education, and minority interests, among others. These technologies make possible a public telecommunications system to meet the information needs of our citizens.

In addition, the proposed $30 million for this category would prove to be a significant boon to the development of instructional and educational television. The audiences and appetites for "educational" fare of this type are growing. A recent CPB-NCES study on school use of TV instruction revealed that television was a tool in the instruction of about 15 million elementary and secondary school students—a third of the total enrollment—during the 1976–77 school year. Television programs were available for classroom use by 1.6 million teachers during the year. This service which began originally as the bedrock of educational television has been woefully underfunded in recent years. There has been no effective action to support instructional television programming initiated by either CPB or PBS since their inception. The only effective national efforts to provide instructional programming have been initiated by educators and have matured under their leadership. We are, therefore, recommending that instructional television be included in the public broadcasting act on a full parity basis with public broadcasting. Many states and localities rely on nonbroadcast technologies, rather than public broadcasting, to bring instructional television programs to school classrooms. In many ways these nonbroadcast technologies provide more efficient delivery systems for school programs because they make possible a greater choice of programs at the time teachers and students most need them in the classroom.

3d. The Telecommunications Demonstration Grant program, although highly desirable in its concept to develop new broad-base applications of nonbroadcast technology, has met with limited success due to competing demands by public broadcasters for funding of the Educational Broadcasting Facilities program. With the expanded scope of the facilities program to include both needed broadcast and nonbroadcast facilities as recommended in this report, the Telecommunications Demonstration Grant program should be closely coordinated, or integrated with, the nonbroadcast facilities program outlined in 3c above.

ALA recommends that *all* of the appropriations listed above be earmarked, with specific line items in the budget, for the Department of Health, Education, and Welfare or for the proposed new Department of Education, whichever is most appropriate. We feel the monies recommended above should *NOT* be allocated to the Corporation for Public Broadcasting, as recommended by the Carter administration.

The rationale for this recommendation is clear:

1. A system of checks and balances is needed.

2. If the monies were to be channeled to CPB (instead of HEW), too much power would be invested in one agency (CPB) to disperse large sums of money.

3. It is important to maintain a separation of powers between CPB and HEW for purposes of protection and balance in the system.

4. There is need to maintain a balanced program of telecommunications between broadcast and nonbroadcast technologies. If the program were centered entirely in CPB, broadcasting would be predominant and all other technologies would become

secondary and subsumed under broadcasting. It can hardly be otherwise when controlled and directed by an agency whose basic orientation is not telecommunications but *broadcasting*.

5. We also feel strongly that the nonbroadcast facilities money should not be available only to public broadcasting stations. As a case in point, school districts, colleges and universities, or libraries wishing to develop an ITFS system independent of the public broadcast station in their community should be allowed to do so.

6. Instructional television will increasingly be making more and more use of nonbroadcast technologies. If ITV is to be fully integrated into the instructional programs of our schools, it should be a part of HEW, like other instructional programs, rather than treated as a separate entity outside of the educational system. We would like to see ITV become *a part of* the educational systems of our schools and colleges rather than be *apart from* those systems. In this instance we are talking about televised *education*—not just educational *television!*

PUBLIC PARTICIPATION

The American Library Association urges the fullest possible participation of the public in all aspects of public broadcasting. With the dissolution of the Advisory Council on National Organizations (ACNO), CPB has had no regular input from any citizens' advisory group other than from local public broadcast station boards. Local boards, however, are composed largely of business and financial leaders in the community and often lack representation from groups such as teachers, librarians, clergy, and civic and labor groups. In his memorandum on public broadcasting to members of the House Subcommittee on Communications, Chip Shooshan of the subcommittee's staff comments as follows:

> Congress should consider whether a national advisory group such as ACNO should be institutionalized and given specific responsibilities and powers. And, if CPB and PBS are preserved, perhaps such an advisory group should have a formal role in decisions made by PBS as well as by CPB.

In referring to local station boards, Shooshan raises these pertinent questions:

> Do existing boards accurately reflect the entire community or are they drawn primarily from the local banking and legal "communities," for example? Should such boards be elected by station membership?

The ALA submits that the Shooshan statement and questions need very careful consideration both at the national and local levels. Our association feels that local boards should be elected by local members/subscribers.

It is our perception that CPB's track record in the area of public involvement leaves a great deal to be desired. The Yankelovich study on public participation, commissioned by CPB last year, made this point very clear. At the time of its dissolution last September, ACNO urged the CPB Board to devise new methods and new structures to answer the many challenges now facing not only CPB, but public broadcasting as a whole, and also urged the board to appoint a task force to develop proposals for insuring future public participation. The Board waited until January 1978 before appointing a committee to make suggestions as to ways the public could be involved more effectively in public broadcasting.

We now eagerly await the recommendations of this committee and hope that the Carnegie Commission will persuade CPB to set aside a percentage of its budget for the creation of a public participation mechanism that would be independent of the Corporation and insulated from internal industry pressures. This participation mechanism should require CPB to seek input from educational organizations as well as from public broadcast station personnel.

Accordingly, ALA recommends the following:

1. That the Carnegie Commission underline the need for *guaranteed* public involvement at all levels of public broadcasting activity. This would include such important activities as the following: input

in program selection at the local level through the Station Program Cooperative, participation on local station boards, community needs assessments, regional and national public hearings (some conducted nationwide on the public broadcasting network), and on task forces devoted to the solution of various issues affecting the public broadcasting industry and the public (e.g., program underwriting, satellite interconnection network of public broadcasting stations, fund raising, impact of newer technologies on public broadcasting). In short, the Carnegie Commission is urged to help put the *public* back into public broadcasting.

2. That the Carnegie Commission study carefully the recommendations to be made by the interim task force currently studying possible new mechanisms for ensuring participation in public broadcasting and to add its weight to any such proposals it feels it can support and to suggest others which it feels would be more suitable. A continuing dialogue on public participation is important to sensitize the industry to the need to write in public participation at every stage of the process. The National Education Association, in its recent statement to your Commission, stressed this point strongly when it stated:

> The developing technical knowledge of the public and its increasing response to excellent programming, indicate that it is high time that the public became a partner with the (public) broadcasting management and the federal government in determining the future of public broadcasting.

DISSEMINATION, INCLUDING THE IMPACT OF NEW TECHNOLOGIES

The current system of terrestrial distribution of public broadcasting provides only a basic single channel service that reaches only 80 percent of the American public. When completed later this year, the new CPB/PBS satellite interconnection system (which will replace the terrestrial system but not add materially to its coverage) will enable public broadcasting stations to have greater program flexibility and a wider choice of programs for viewers. In order to reach the remaining 20 percent of the American public, however, the satellite interconnection system will need to be augmented and expanded by other distribution techniques which are available or being developed. These techniques would include translators, ITFS, cable television, FM radio multiplexing, video and audio cartridges and videodiscs. These other technologies will open up multiple outlets to meet more adequately the needs of many diverse or different audience groups.

Even though the CPB/PBS interconnection system has been developed primarily for improving the quality of public broadcasting nationwide, there are many other purposes for which the excess capacity of the system can and should be used on a shared basis with educational institutions, libraries or other public service organizations. Some of these uses would include: regional or national teleconferences, continuing educational courses for viewers at home, data transmission, delivery of instructional films to schools during nighttime hours. Such shared uses would give public broadcast stations an unexcelled opportunity to have greater contact and relationship with the communities they serve.

Most of these uses are nonbroadcast in nature and the use of the interconnection system is restricted for use by broadcasters for broadcast purposes. As a case in point, data could not be transmitted on the CPB/PBS network because they are not broadcastable. Permission, therefore, would need be obtained from FCC by schools and libraries for such nonbroadcast uses on a case by case basis. It would be enormously helpful if blanket permission could be obtained in advance for such nonbroadcast uses of the system.

This discussion suggests an even higher level of consideration for the Carnegie Commission—namely, the need for the development of a national plan for a balanced public telecommunications service to meet the information needs of our citizens. ALA is heavily involved in the White House Conference on Library and Information Services which is to be held late in the fall of 1979. The time is therefore ripe for some group on the national

scene to begin the development of such a plan. A national information policy is sorely needed. We have already referred to the need for public broadcasting to expand its coverage through the use of nonbroadcast technologies mentioned early under this heading. Equally important is an overall look at the convergence, interaction and impact of a great number of other emerging technologies as well. Among these one can enumerate the following: the rapidly growing satellite networks for cable television systems nationwide; the cable/fiber optic systems with head-end origination; the constantly growing instructional uses of television on Instructional Television Fixed Service systems; nonprofit data networks; and entirely new range of library services beyond books and a public access computer communications network, such as MEDLARS and ERIC; lasers, and low-cost satellite ground terminals.

Most of these technologies are not tied to the distribution of public broadcasting station services but have a most important impact on the dissemination of information as a whole. We feel that the focus has too long been on *broadcasting* to the neglect of valuable nonbroadcast educational resources which remain untapped. A comprehensive system of resources and media would seek to integrate resources of all types—broadcast, nonbroadcast, film, and print—into a cohesive whole, with each having a specific role and function to play in the overall system. Each should be used to do the things it can do best and to reach the widest possible audience and serve the greatest number of people. In short, a pluralistic society demands a pluralistic communications system.

In summary, ALA wishes to make the following recommendations:

1. That the Carnegie Commission give serious consideration to broadening its report beyond public broadcasting to include the full range of public telecommunications encompassing the various communications technologies mentioned in this report. Clearly, public broadcasting would be a significant part of the overall study, but the report should not be limited to public broadcasting alone lest the Commission lose sight of the context of the information environment into which our nation is moving.

2. That nonbroadcast educational telecommunications facilities money (3c in this report under "Funding") be made available to other than public broadcast stations (i.e., school districts, colleges and universities, and libraries).

Highlights of LITA Board Meetings

1978 Annual Conference
Chicago, Illinois

The highlights of LITA board meetings are published here to inform division members of the activities of their board. The highlights are a condensed and edited version of the official minutes of the meeting and do not themselves constitute an official record of any kind.

First Meeting
Monday, June 26, 1978

The meeting was called to order by President Maurice Freedman at 2:00 p.m. The following were present: BOARD—Kenneth Bierman, Lynne Bradley, Judith Hopkins, Susan Martin, William Mathews, Jerome Miller, and Joseph Rosenthal. GUESTS—Wilton E. Burwell, Jay Clark, F. Ellsworth, Ruth Hartman, and Emery Koltay. STAFF—Donald Hammer, executive secretary, and Dorothy Butler, administrative secretary.

The agenda was read and an item relating to implementation of AACR II was added to the agenda. Sue Martin requested that the Networks Committee item be withdrawn from the agenda.

APPROVAL OF 1978 MIDWINTER MINUTES. It was moved by Joe Rosenthal and seconded by Sue Martin and

VOTED, that the 1978 Midwinter Minutes be approved as submitted.

RESULTS OF LITA ELECTION. The results of the LITA election are as follows:

Vice-President/President-Elect (1978–79) (1979–80)
Barbara Markuson

Audio-Visual Section
Vice-Chairperson/Chairperson-Elect (1978–79) (1979–80) is Ronald F. Sigler.
Member-at-Large (1978–80) is James L. Thomas.

Information Science and Automation Section
Chairperson (1978–79) is Lois Kershner.
Vice-Chairperson/Chairperson-Elect (1978–79) (1979–80) is Mary A. Madden.
Secretary (1978–80) is Gwen Miles.
Member-at-Large (1978–81) is John Kountz.
Member-at-Large (1978–80) is Brian Aveny.
Member-at-Large (1978–79) is A. John Linford.

Video and Cable Communications Section
Vice-Chairperson/Chairperson-Elect (1978–79) (1979–80) is Robert Miller.
Member-at-Large (1978–80) is Arlene F. Sirkin.

GODORT REQUEST, Ruth Hartman. Ruth Hartman, coordinator for the State Documents Task Force reported on guidelines for the creation of state bibliographic records compatible with the development of national bibliographic networks, as well as guidelines for creating state documents checklists. In the guideline for bibliographic records, the task force has suggested that there be a single institution within each state responsible for input. GODORT would like the LITA Board's approval before presenting the guidelines to ALA Council. It was moved by Joe Rosenthal and seconded by Judith Hopkins and

VOTED, That the LITA Board approve in principle the idea that each state have one agency responsible for issuing a checklist of state publications; that all such publications be represented by bibliographical data in machine-readable form, and that these data be formulated according to prevailing national bibliographical standards.

Hartman thanked the LITA Board for its support.

GOVERNORS' CONFERENCES ADVISORY COMMITTEE ON INFORMATION TECHNOLOGY (ad hoc). Freedman reported that he had appointed Arlene Schwartz as chairperson to the above committee, but that she had resigned shortly before this conference due to the weight of other commitments. He welcomed suggestions from the board. The present members of the committee are Velma Veneziano, Rob McGee, George Abbott, Kandy Brandt, and Gerald Brong. No further action was taken.

BUDGET REPORT, Don Hammer. The JOLA and LITA budgets as of May 31, 1978, were distributed to the board. Personal membership dues were $7,000 over the expected income, and organizational dues were $6,000 over the expected income. The budget was thoroughly reviewed. In regard to divisional program expansion, Freedman suggested that LITA sponsor more programs and activities for its members and that section chairpersons should discuss expanded activities with their

members from the standpoint of what LITA can do for its members.

Jerry Miller suggested that LITA subsidize a monographic publication if it could pay for itself in a couple of years. It was further discussed that if LITA had a newsletter, it might be completely subsidized by the division and distributed to division members free of charge. Freedman directed the sections to present detailed proposals for Midwinter. It was moved by Joe Rosenthal and seconded by Lynne Bradley

THAT The President appoint a committee to prepare a resolution on a Newsletter for Midwinter

During the ensuing discussion, Bill Mathews commented that the Editorial Board is charged under the present charter to look into this very issue, and the board expects to come up with a recommendation along this line. Rosenthal's motion was then amended, and it was moved by Joe Rosenthal and Lynne Bradley and

VOTED, That the Editorial Board, in concert with all sections of the Division, is charged with the preparation of a plan for a divisional newsletter and a resolution on this matter is to be presented to the LITA Board on or before the Midwinter Conference, 1979.

In regard to the *JOLA* budget, Hammer reported that *JOLA* allocations from the division will be down to $600 in next year's budget compared to $4,737 this year. Subscriptions have been rising and advertising has risen as well.

REPORT ON CASSETTE SALES, Don Hammer. Hammer reported that sales of the cassettes are doing very well. There have been 136 orders from the Dallas Institute and roughly 60 from the Los Angeles and New York institutes. The board directed Hammer to discuss with Mitch Freedman or Sue Martin plans to relieve him of the task of duplicating the cassettes himself.

CREATION OF HALF-TIME POSITION AS PROGRAM OFFICER, Don Hammer. After discussion of a memorandum from Hammer requesting that LITA create a half-time position as Program Officer I, it was moved by Joseph Rosenthal and seconded by Sue Martin and

VOTED, That the LITA Board endorses the proposal of and authorizes Donald Hammer to add a half-time position of Program Officer I for the purpose of facilitating the Division's continuing education activities; and that the results of this addition to the LITA staff be reviewed annually by the LITA Board particularly with a view to the proportion of time spent by LITA staff on the work of other units within ALA Headquarters, and that a committee of the LITA Board be appointed to make recommendations regarding the longer term staffing complement of the LITA staff at ALA Headquarters.

In the discussion of this matter, Hammer reported that at least 65 to 75 percent of his time is spent on LAD, and LITA is receiving about 25 percent of his time. The board directed that the new per-

son should work solely for LITA. Limits must be drawn and mechanisms established to assure that the program officer does not work for LAD. Further discussion centered around divorcing LITA from LAD in regard to the shared executive secretary, and the possibility of having a full-time executive secretary for LITA. President Freedman appointed Sue Martin (chairperson), Barbara Markuson, and himself to an ad hoc Committee on LITA Staffing for the purpose of making recommendations.

LITA AWARD, Sue Martin and Mitch Freedman. Freedman directed the administrative secretary, Dorothy Butler, to locate the tapes of earlier board meetings that Walter Winshall from CLSI attended, and to transcribe the conversation and forward it to him, in order that a number of matters regarding the lengthy history of the proposed award may be clarified. Additionally he suggested that LITA withdraw any mention of CLSI but continue with the citation. The cash award would be eliminated if need be. After board discussion, it was moved by Sue Martin and Seconded by Joe Rosenthal and

VOTED, That LITA establish an award for achievement in Library and Information Technology to follow the guidelines approved at Midwinter 1978, to consist of a citation of merit, and that a standing awards committee be established to elicit nominations and select recipients.

The guidelines will be changed to reflect the new title and sponsorship of the award. Freedman charged the committee to review its function statement and forward changes to the board and the Bylaws and Organization Committee as it deems appropriate. Additionally, he asked the section chairs to think about forms of recognition in their own sections and to inform their executive committees of the existence of this award.

MEMBERSHIP REPORT, Don Hammer. Hammer distributed the new LITA brochure, sun visor, and button. Sue Martin reported that the Membership Committee will be appointed this summer.

U.S. CIVIL SERVICE COMMITTEE'S PROPOSED NEW CLASSIFICATION, "INFORMATION MANAGER," Don Hammer. The Civil Service Commission is considering the creation of a new job classification called "Information Manager." The way this job classification is written will undoubtedly have some effect on job opportunities for LITA members in the federal government. With regard to this issue, the board directed Freedman to write a letter to the Civil Service Commission showing LITA's concern.

PUBLICATION STATUS OF NEW YORK/LOS ANGELES INSTITUTE PROCEEDINGS, Maurice Freedman. Freedman reported that the proceedings of the cataloging institutes are being edited, although all the papers are not yet finished. He commented that because of

Seymour Lubetzky's illness, his paper has not been received. Lubetzky will not allow anyone else to edit his paper. Also, Joe Howard's paper will be taken directly from the transcripts. The board showed some concern that the proceedings be published in a timely way.

LITA ISAS INDUSTRY/LIBRARY RELATIONS COMMITTEE INACTIVITY, Don Hammer. Hammer commented that the above committee has been inactive. Kenneth Bierman reported that he appointed Mary Kaye Donahue as chairperson, and he has also appointed new committee members who have definite ideas as to what its role should be. Hammer suggested that the committee could help get exhibits organized at future institutes. Freedman suggested that the committee might look into advising libraries on specifications and relations with vendors.

NEW EDITION OF LITA AUTOMATION BIBLIOGRAPHY COMPILED BY MARTHA WEST, Don Hammer. Hammer reported that a new edition of LITA Automation Bibliography updates the 1973 bibliography. It was agreed that the bibliography could be published as part of the proceedings of the State of the Art III.

BYLAWS AND ORGANIZATION COMMITTEE REPORT, Lois Kershner. Kershner reported that the committee has revised the activity statement that is in the *ALA Handbook* to broaden the scope of the division and to fully reflect the activities of each section where earlier only library automation concerns were implied. The committee would like to have the function statement of ISAS listed in the *Handbook of Organization* as has been done with the other two sections. The Bylaws and Organization Committee suggested that ISAS also list in the *Handbook* a Nominating Committee and a Program Planning Committee. Additionally, Kershner reported that the function statements have been approved as amended by the Board of Directors at the last vote. On behalf of the LITA Board, Freedman recognized and gave appreciation to the Bylaws and Organization Committee for their great service on the function statement project. On the issue of vacancies, Kershner reported that the committee decided the bylaws should stand as they are. Their interpretation is that if a vacancy should occur in either the position of president or chairperson, that the vice-president or vice-chairperson will immediately succeed to that position. Depending on the time of the vacancy, one of two actions will then be taken. If the vacancy occurs prior to the close of nominations, the new president/chairperson should complete the term. The Nominating Committee will then post candidates for two positions. The consequence of this procedure is that the vice-president/vice-chairperson who moves into the presidency or chair goes out of office at the end of that term. Two new people would then be elected. If, however, the vacancy occurs between the close of nomina-

tions and the general meeting in June, the vice-president/vice-chairperson shall move up into the president/chairperson position and will complete the term and continue to serve for the following year. In the following year two persons shall be slated. The committee also recommended that no special provision be made for removing elected officials during their terms. Finally, the committee recommended that the division encourage chairpersons of sections to monitor the activity of the sections and the committees of the sections in order to determine, on a continuing basis, whether the committees or the section should continue to exist.

AACR II, Joe Rosenthal and Sue Martin. It was moved by Sue Martin that LITA adopt a resolution to defer AACR II. She read the resolution to the board. Freedman commented that there were two issues: the composition of the resolution and a determination as to whom it should be sent. Discussion centered around the desired degree of specificity in the resolution regarding mechanisms to determine the advisability and timetable for implementation. Freedman and Rosenthal had also drafted resolutions that differed somewhat from Martin's. All three drafts were discussed, and the board decided to postpone action on this item until the next board meeting.

The meeting was adjourned at 6:00 p.m.

Second Meeting
Wednesday, June 28, 1978

The meeting was called to order by President Freedman at 2 p.m. The following were present: BOARD—Kenneth Bierman, Lynne Bradley, Judith Hopkins, Susan Martin, William Mathews, Jerome Miller, and Joseph Rosenthal. GUESTS—George Abbott, Judith Corin, Walter Crawford, Barbara Gates, Charles Husbands, Brigitte Kenney, Elizabeth Laney, Steve Silberstein, Ruth Tighe, and Peter G. Watson. STAFF—Donald Hammer, executive secretary, and Dorothy Butler, administrative secretary.

The board discussed the implementation of AACR II and the drafted resolutions. Sue Martin commented that she had taken the various drafts and eliminated redundancies. After much detailed discussion by the LITA Board and visitors, it was moved by Sue Martin and seconded by Jerome Miller

THAT,

WHEREAS LITA (formerly ISAD) recommended in 1977 the delay of implementation of AACR II; and

WHEREAS the increasing economic pressures in libraries are causing administrative concerns about the balance between costs and benefits in all aspects of library operation; and

WHEREAS adoption of AACR II may impose a heavy burden of cost, because in order to continue using catalog copy generated nationally, libraries would have to either freeze existing catalogs and begin new ones or meet the considerable and ongoing expense of integrating old and new headings in one catalog; and

WHEREAS authority control mechanisms which would facilitate transition from one cataloging code to another have not been implemented in most machine-based systems, and are expensive and difficult to implement; and

WHEREAS the AACR II draft has not been available to American libraries; therefore be it

RESOLVED that adoption and implementation of AACR II by the Library of Congress, the National Library of Canada, the British Library, and the National Library of Australia be deferred at least until January, 1982, and be it

RESOLVED further that an appropriate mechanism be established to determine the advisability and timetable for implementation of AACR II by the American library community, especially with respect to (1) the costs of code revision for different types and sizes of libraries, (2) the economic impact on existing automated systems, and (3) the impact on user access of code revision, the results of this study to be reported widely to the library community by January, 1980.

During discussion of the motion, Joe Rosenthal moved to amend the motion by deleting the third "whereas" paragraph, the second "resolved" paragraph and by removing the words "at least" from the first "resolved" paragraph. After further deliberation, this amendment was defeated and the original motion was passed. The following voted YES: Lynne Bradley, Sue Martin, Jerome Miller. The following voted NO: Judith Hopkins, Joe Rosenthal. The president, Mitch Freedman, announced that he would have approved the motion if called upon to break a tie. Sue Martin suggested sending the resolution to the ALA Executive Board. Freedman felt that it would be useful to confer with Eric Moon as to what approach would be best. The board agreed with this and Freedman was so directed.

PROGRAM PLANNING COMMITTEE REPORT, George Abbott. George Abbott reported that one institute and one preconference were held this year. The institute on automated circulation systems held in Philadelphia in May 1978 was successful. The preconference, State of the Art III, had an attendance of approximately 300 registrants and was very successful. The LITA program jointly sponsored with JMRT was likewise very well received.

The committee is planning two institutes for this fall. The first will be "Management of Information in the 1980s." This institute will be held

September 28–29 in the Washington, D.C., area and will be tied together by satellite between Arlington, Virginia, and Wayne State University, Detroit, Michigan. Teleconferencing, video disc, and holography will be demonstrated. Most of the technology will be demonstrated by users or researchers who are developing it rather than by vendors.

"Closing the Card Catalog" will be held at the Monteleone Hotel in New Orleans November 29–30. Next year VCCS is planning a preconference in Dallas for managers and administrators that will focus on video and on the issue of incorporating video into libraries. There are tentatively four other programs in the works: In the spring of 1979 the committee plans to hold an institute on funding. The committee is additionally planning to sponsor two repeats of the "Closing the Card Catalog" institute—one in Boston and another in Denver—sometime in spring 1979. Finally, the committee would like to hold an institute in late fall 1979 that ties into the White House Conference. The institute would be designed to review the resolutions and activities that were part of the state conferences and to look also at the resolutions passed by the White House Conference itself, in order to explore possible implementation of those resolutions that apply to the information technology area.

There was some concern among board members in regard to the two repeats of the "Closing the Card Catalog" institute. It was the sense of the board that only one repeat was necessary and that both institutes should be announced simultaneously. Boston, Toronto, and California were suggested as possible locations for the repeat of the New Orleans institute. Mitch Freedman invited Bonnie Juergens to communicate with Sue Martin before a final decision is made.

The board was in favor of the institute dealing with funding. The board directed the Program Planning Committee to explore further the possibility of having an institute reviewing resolutions and activities relating to technology that come out of the state conferences and the White House Conference. The board will consider this idea further at Midwinter. In relation to the activities of the Program Planning Committee and the relationship with vendors at LITA institutes/preconferences, Mitch Freedman strongly cautioned the Program Planning Committee to be sensitive to the fact that vendors must always be accorded equal treatment.

EDUCATION COMMITTEE, Brigitte Kenney. Brigitte Kenney reported that the committee has rewritten its function statement and that the new statement will be forwarded to the Bylaws and Organization Committee for action. The committee has decided to shorten its name to LITA Education Committee. The Education Committee would like to sponsor a small two-day conference, limited to 100 persons, on how to

structure a training program on integrating the various technologies. Additionally, the committee requested that LITA pay for five students to attend and prepare background papers for the conference. After board discussion, the Education Committee was directed to submit a proposal for this request to the Program Planning Committee. Another point of discussion was whether the Education Committee should oversee the quality of the continuing education programs that the Program Planning Committee recommends. It was moved by Joe Rosenthal and seconded by Judith Hopkins and

VOTED, That the subject matter of the LITA Education Committee and its relationship to that of the LITA Program Planning Committee be referred to the LITA Bylaws and Organization Committee for consideration and possible advice or recommendation concerning the relationship between the two groups.

CATALOG CODE REVISION COMMITTEE, Barbara Gates. Barbara Gates reported on the final meeting of the Catalog Code Revision Committee. Don Stewart, of ALA Publishing, has stated that the publication of AACR II still will be in November. The responsibility of catalog code revision has been returned to the Cataloging and Classification Section. The AACR II Introductory Program Committee is empowered to implement its proposed program for presentation in January 1979 prior to ALA Midwinter. Approximately 250 people will be invited to attend, with nominations made by as many bodies as possible including regional groups, networks, state library associations, etc. A selection from the nominees will be made from criteria that have already been established. The criteria include knowledge and practice of cataloging rules, day-to-day working awareness and/or teaching of cataloging, type and size of library in which nominee has had experience, and willingness to share information in regional groups. Gates also reported that Library of Congress will be giving a workshop in rules at the Library of Congress, probably before the 1979 ALA Annual Conference. On behalf of the LITA Board, Mitch Freedman thanked Barbara Gates for her long and hard service as LITA representative to the RTSD Catalog Code Revision Committee. Her work has been genuinely appreciated.

LEGISLATION AND REGULATION COMMITTEE, Ruth Tighe. Ruth Tighe reported that the committee would like to conduct a hearing at Midwinter 1979 on the Communications Act, for which some funds would be necessary. George Abbott commented that he had forwarded this information to Bonnie Juergens, chair of the LITA Program Planning Committee, and that she saw no conflict. The committee would also like to reserve a program slot for the Dallas Conference.

ALA MEMBERSHIP TASK FORCE, Judith Corin. It was the decision of the board that until the LITA membership committee is officially ap-

proved, it will act as an ad hoc committee. It was additionally decided that Judith Corin will form the function statement, and that Sue Martin will appoint the committee's members. Corin reported that there was some response to the LITA hospitality suite, and, with more effort, it could have been a still greater success. Sue suggested that if LITA sponsors a hospitality suite for the 1979 Annual Conference, a vendor might cohost. Discussion included the possibility of acquiring a larger suite with participation from all three sections. Because of additional charges incurred by VCCS with regard to the section's suite during this conference, it was moved by Joe Rosenthal and seconded by Sue Martin and

VOTED, That LITA pay additional charges for the VCCS suite incurred at the Chicago 1978 Annual Conference, over and above the amount previously allocated.

EDITORIAL BOARD, Bill Mathews. Mathews distributed copies of a synopsis of the Editorial Board's meeting. The board has adopted goals and objectives and a revised function statement. Further, the Editorial Board recommends that the LITA Board earmark $2,800 for the purpose of creating a divisional newsletter. After board discussion, it was moved by Bill Mathews and seconded by Joe Rosenthal and

VOTED, That $2,800 be allocated for the purpose of developing and publishing a division-wide newsletter.

Mathews reported that proceedings of the State of the Art III Pre-Conference and the bibliography edited by Martha West will be published in *JOLA*. Sue Martin reported that advertising for *JOLA* is doing very well. There will be about 8½ pages in the June issue. Mitch Freedman commended Sue Martin for her work as advertising editor.

AVS REPORT. No one was present to report.

VCCS REPORT, Lynne Bradley. Lynne Bradley reported that the Executive Committee has discussed the section's goals for the coming year. There was nothing that required action by the board.

ISAS REPORT, Ken Bierman. Ken Bierman reported that the section is organized, the officers have met, and future goals are being discussed.

RTSD FILING COMMITTEE, Joe Rosenthal. The committee sent out copies of the draft rules to approximately 250 people early in June. The committee encourages additional written comments, which can be sent directly to him no later than October 1, 1979.

JCET. Larry Molumby was not in attendance. The board asked Lynne Bradley to convey the board's interest to Molumby and the desire that they be kept informed of his work.

MARS, Sue Martin. Sue Martin reported that she has approached Peter Watson to be the LITA representative to the Machine Aided Reference Section (MARS). She also reported that the MARS section of RASD would like to designate a liaison with LITA, and that MARS specifically requested that Peter Watson be the MARS liaison to LITA. After discussion, the LITA Board welcomed a person from MARS to attend the LITA meetings. It was moved by Sue Martin and seconded by Judith Hopkins and

VOTED, That LITA appoint a representative to MARS.

CONCLUDING ACTIONS. The board thanked Judith Hopkins and Joseph Rosenthal for their participation as members of the LITA Board. It was moved by Sue Martin and seconded by Joe Rosenthal and

VOTED, That on behalf of the Association, the LITA Board wishes to thank Maurice Freedman for his services as President-Elect and President during the past two years, and to acknowledge his untiring work in furthering the goals and objectives of LITA.

It was then moved by Sue Martin and seconded by Mitch Freedman and

VOTED, That on behalf of the Association, the LITA Board wishes to thank Joseph Rosenthal and Judith Hopkins for their services as members of the LITA Board.

Finally, it was moved by Sue Martin and seconded by Joe Rosenthal and

VOTED, That the composition of the LITA Nominating Committee be approved as consisting of Charles Husbands, chairperson, with Patricia Earnest and Leslie Burk as members.

For the record, Kenneth Bierman, who had been absent earlier when the board discussed delaying the implementation of AACR II, stated that had he been present, he would have voted against the motion.

The meeting was adjourned at 6:00 p.m.—*The official minutes were recorded by Dorothy A. Butler; these highlights were edited by William D. Mathews.*

Technical Communications

Use of On-Line Services by the OVAKO Group

In the Library and Technical Information Service of the OVAKO Group, on-line searches have been carried out since October 1975. In the searches both the data banks of Lockheed and the European Space Agency have been used. The data banks most used were METADEX (Metal Abstracts), Chemical Abstracts Condensates, and COMPENDEX (Computerized Engineering Index).

The OVAKO Group is a Finnish steel concern consisting of four iron and steel plants. It includes the OVAKO Company, to which belong the Imatra Steel Works, the Turku Iron Works, and the Aminnefors Steel Works, and the Koverhar Company. The number of employees amounts to about 3,600. The group produces about 700,000 tons of crude steel annually, mainly semifinished special and commercial steels. More than half of the production is exported to Europe and to the U.S., to the automotive industry among others.

The main customers of the Technical Information Service and Library are the engineers participating in the research and development work. The work is directed to the development of the product to be fabricated, process in use or new processes, and new steel types.

The Technical Information Service mostly carries out bibliographical surveys, and commonly known abstracting and indexing journals are used in the information searches. The searches are carried out either by our own system of information storage and retrieval or using outside systems.

On-line searches have turned out to be a very popular way of getting references. The data bases most used are those that include information about the metallurgy of iron and steel and methods of production. Some interest has also been shown, among other things, in data bases including information about economic problems and management.

After having carried out on-line searches for one and one-half years, it seemed an attractive idea to analyze the search results, paying special attention to the costs. As two different systems, including similar data bases, were used, a clarification was required on the kind of differences there actually was in their use.

A summary of the costs of searching is shown in Table 1. It shows that the average price of a search is about equal for data base COMPENDEX of both Lockheed and the European Space Agency (ESA). The search times also are equal.

A notable difference was found in the use of Chemical Abstracts. A search using the Chemical Abstracts of ESA was, on the average, $43 more expensive than using the corresponding data base of Lockheed. The difference of search times is over two and a half times.

Since the beginning of 1977 the price for the use of the Chemical Abstracts of Lockheed data base has been reduced $10 per hour, which has increased the difference in cost from about $36 per hour to about $46 per hour.

In the period when the searches were carried out the Chemical Abstracts of Lockheed data base was still two separate files: the years 1970–71 and 1972–76 as separate files. The 1977 references are now in a third file. One has to search each file separately ($38 per hour). This reduces the difference of search costs in the two systems compared.

Table 1. Comparison of costs of on-line searches carried out using the data bases of Lockheed and the European Space Agency.

Data base	No. Searches[1]		Avg. Cost[2] ($/search)		Avg. Time (min/search)		Cost per Hour[3] ($)	
	LRS	ESA	LRS	ESA	LRS	ESA	LRS	ESA
METADEX	34	6	33	34	23	23	87	88
CAC	39	10	12	55	15	40	48	83
COMPENDEX	20	3	21	22	19	18	67	73
Others	59	6	29	27	13	21	137	76
All Data Bases	79	16	47	61	31	45	90	82

1. In the same searches different data bases may have been used. The number refers to how many times a certain data base has been used.
2. Average total cost, calculated by dividing the cost of using the data base by the number of searches.
3. According to LRS's and ESA's invoicing.

The comparison of use of all data bases indicated that use of ESA was, on average, over $14 more expensive per search.

Recent literature seems to indicate that on-line computer searches in the USA cost about $20–$30, which is significantly less than the traditional manual searches. According to Dammers[1] and Tomberg[2] the costs of on-line searches in Europe are much higher, as much as three times higher. The reasons for this are a smaller scale of operation and high data transmission costs, which are nearly ten times higher than those in the U.S.

It must also be emphasized that in the data bases of Lockheed more varied search elements may be used than in the data bases of ESA.

- METADEX: In the ESA's METADEX one may search only by keywords; in Lockheed's METADEX also by title words, author names, classification codes, etc. Furthermore, Lockheed's METADEX includes Alloys Index since 1974.
- Chemical Abstracts Condensates: The most notable difference between ESA's and Lockheed's CAC data bases is that in ESA one cannot limit the searches to patents. Otherwise similar search elements are available in both systems.
- COMPENDEX: Same search elements (title words, keywords, author and corporation names) may be used both in ESA's and Lockheed's COMPENDEX, but in Lockheed's COMPENDEX the search may also be applied to the abstracts.

Differences between the data bases of Lockheed and ESA seem to remain in the search techniques. Flexibility affects the choice of *system*, which at least for the present is emphasized on the side of Lockheed. One has to say "for the present," because ESA to our knowledge will change its files to a "free text indexed" type.

On the basis of these experiences from on-line searches it is to be pointed out that there is no difference worth mentioning in the average cost per search in the most often used data bases METADEX, COMPENDEX, and Chemical Abstracts of the two systems, Lockheed and ESA. However, the system of Lockheed, as it is now, is more versatile than the one of ESA and thus for technical searches tends to be the most often used.—*Pekka Pohjola, head of Technical Information Service, OVAKO Research Centre, Imatra, Finland.*

REFERENCES

1. H. F. Dammers, "The Economics of Computer-based Information Systems: A Review," *J. Doc.* 31, p.38–45 (Mar. 1975).
2. A Tomberg, "EUSIDIC—A Survey of Performance and Opportunities, May 1974," *Seminar Wholesalers of Documatory Information: Proceedings;* ed. Bureau Marcel van Dijk (Brussels; Bureau van Dijk, 1974), p.59–80.

MEETINGS AND CONFERENCES

Conference on Retrieval and Use of Education Resources

A Conference on Retrieval and Use of Educational Resources will be held November 30 and December 1, 1978, at the University of Arizona, Tucson.

The purpose of the conference is to provide an opportunity for teachers, administrators, researchers, librarians, and others to obtain current information on retrieval of information and the analysis of data bases that will be helpful in curriculum development, planning, management, policy formulation, research, and related areas. Speakers will include: David C. Berliner, chairman, Department of Educational Psychology, University of Arizona; Robert F. Boruch, professor, methodology and evaluation research, Northwestern University; Arthur M. Cohen, director, ERIC Clearinghouse for Junior Colleges, professor, higher education, University of California; Sylvia Faibisoff, associate professor, Graduate School of Library Science, University of Arizona; Gene V. Glass, professor, Laboratory for Educational Research, University of Colorado; Arthur T. Grant, professor, Program of Higher Education, University of Arizona; Lotus M. Knief, professor, Department of Educational Psychology, University of Arizona; Richard E. Schutz, executive director, SWRL Educational Research and Development, Los Alamitos; and Beverly Wheeler, information dissemination, Arizona Department of Education, Phoenix.

The conference is sponsored by the Office of Information and Instructional Studies and the Program of Higher Education, College of Education, University of Arizona. For more information and an early registration form contact: Lotus M. Kneif, OIIS, College of Education, University of Arizona, Tucson, AZ 85721.

News and Announcements

Midwest Video vs. *FCC*

On February 21, 1978, the Eighth Circuit Court of Appeals rendered a major decision which might have a profound effect upon the future of CATV public access. The court, ruling in the case of *Midwest Video* vs. *FCC*, determined that the FCC exceeded its authority in requiring CATV systems to designate channels for access users.

The FCC, meeting on March 23, 1978, voted 4–3 to appeal this decision to the Supreme Court. Pending action by the Supreme Court, the decision by the Court of Appeals is stayed, and FCC regulations pertaining to public access are still in effect.

The Court of Appeals found that the FCC exceeded its jurisdiction in five respects: (1) The Communications Act provides no jurisdiction over CATV; (2) the regulations established by the FCC to govern CATV are not "reasonably ancillary" to the FCC's responsibilities for the regulation of broadcast television, over which it has clear authority; (3) the commission's objectives in promulgating these requirements do not confer jurisdiction; (4) the commission's ends do not justify its means; and (5) the means are forbidden within the commission's statutory jurisdiction.

The Communications Act itself does not contain any specific authority for the FCC to extend its jurisdiction over CATV, a fact which has been long evident. At the time the act was written, CATV was not in existence. However, the Supreme Court has interpreted that the act is to be read broadly and has allowed the FCC to extend its jurisdiction over communications media which were "reasonably ancillary" to broadcast television.

The Court of Appeals did not find that the FCC had proved that the regulations developed for public access in CATV were "reasonably ancillary" to broadcast television. Furthermore, the court ruled that the FCC has no authority, even in the broadest interpretation of the act, to force such mandatory access rules upon broadcasters, let alone CATV.

The court noted that, while the FCC's objectives of increasing the number of outlets for community self-expression and augmenting the public's choice of programs and services were laudatory and desirable, it did not believe the law granted the FCC authority to compel cablecasters to achieve this.

In reaching its decision the court stated: "True, the commission acted here with a view toward expanding what it considers the goals of the First Amendment. Every regulatory agency should have all constitutional goals and restrictions on government in mind in carrying out its duties, but we deal here with the Federal Communications Commission, not the Federal First Amendment Commission. We are aware of nothing in the Act, and have been cited to no other proper source, which places with the commission an affirmative duty or power to advance First Amendment goals by its own tour de force, through getting everyone on CATV or otherwise. Rhetoric in praise of objectives cannot confer jurisdiction. If the commission desires to operate in an area beyond its statutory borderline of jurisdiction, and to direct an industry, at that industry's expense, to provide and police new opportunities to speak, prior congressional direction appears a minimum requirement."

This is not the first time that the Eighth Circuit Court of Appeals has issued an opinion of major impact upon the CATV industry. In 1972 (*U.S.* vs. *Midwest Video* 406 U.S. 649), the court ruled hat the FCC's mandatory requirements for local origination exceeded the commission's authority.

That opinion was subsequently reversed in a split decision by the U.S. Supreme Court (441 F. 2d at 1328), but the FCC never enforced its mandatory origination rule. Instead, the FCC subsequently adopted mandatory access rules affecting only the 100 largest markets.

The impact of this most recent decision by the Eighth Circuit Court of Appeals could clearly eliminate public access in CATV. It will be up to the Supreme Court to resolve this question.—by *Donald J. Sager, Director, The Public Library of Columbus & Franklin County, Columbus, Ohio.*

COMARC Project to End

The Network Development Office and the Processing Department of the Library of Congress have announced that the COMARC (cooperative machine-readable cataloging) Pilot Project, which began in 1974 with a grant from the Council on Library Resources, will be terminated effective May 30 when present funding runs out.

The goal of COMARC has been to test the feasibility of augmenting the library's own MARC cataloging with machine-readable records created by other libraries from the Library of Congress cataloging copy. These records have been accepted by the Library of Congress in the MARC communications format and processed to remove duplicate records. The COMARC records are then compared with those in the library's official catalog, updated for consistency, and finally distributed through the MARC Distribution Service.

The institutions and firms that are presently on the roster of COMARC participants have been advised of the termination of the project and have been asked to stop sending COMARC records to the Library of Congress. The final two months of the project will be spent on clearing out records in process, assembling documentation, and attending to other details of the phase-out. A final report will be compiled at a later date.

LITA Institutes

The Library and Information Technology Association (formerly the Information Science and Automation Division) announces two institutes to be held during the remainder of 1978. The two are as follows:

September 28–29, Washington, D.C., "Managing Information Technologies." Part of this institute will be transmitted by satellite from Ann Arbor, Michigan, to Washington, D.C., and vice versa. (Until NASA confirmation is received, the dates are tentative.) The program explores the human/machine interface and will address some of the key issues in evolving technology. The second day will include hands-on experience with as many technologies (videodisc, holography, online terminals, etc.) as possible. Demonstrations of as many mass memory devices as can be arranged (holography, bubble memory, videodisc, etc.) will be included.

November 28–30, New Orleans, Monteleone Hotel. "Closing the Catalog." A three-day LITA institute reexamining the discussions of the three earlier LITA institutes on "the catalog" and exploring the impact of abandoning the card catalog in favor of new technological forms of bibliographic display. It will also address the problems to be faced by libraries not planning to close their catalogs.

For more information and for registration forms as available, contact Donald P. Hammer, ALA, Library and Information Technology Association, 50 E. Huron St., Chicago, IL 60611 (312) 944-6780.

On-Line Information Meeting—78

The 2d International On-Line Information Meeting will be held at the Commonwealth Institute, London, England, December 5–8, 1978. The meeting is organized by *Online Review*, the international journal of on-line and teletext information systems. The meeting reflects the meteoric rise in the use of on-line information retrieval and follows the highly successful first meeting, which more than 400 delegates attended from some 23 countries.

The conference will offer a varied program of presentations addressing current problems and opportunities facing all those involved with providing information in business, industry, government, and

the academic world. Papers reviewing present networks, systems, and data bases will be welcomed. Contributions on education and research in information, costs of on-line and teletext systems, numeric databases, information brokerage, pricing information, user education, copyright and information technology, and other related topics have been invited. One of the conference sessions will be a description of the latest developments in systems and data bases with short presentations arranged by subject groupings. An exhibition by leading organizations who create and market information products, services, systems, and publications will be presented during the meeting. This will augment the program with displays of current technology in the information field. Further details are available from the Organizing Secretary, 2d International On-Line Information Meeting, *Online Review*, Woodside, Hinksey Hill, Oxford, OX1 5BP, England; telephone Oxford 730275.

"Telebook" Aids Blind

What the blind in the area of Columbus, Ohio, can't see, they'll hear.

"Telebook," a system whereby blind persons can call a telephone number and hear the title and first few pages of new or unfamiliar books, is a new project started in the area by the Columbus Library and the Library of Congress.

In other words, Telebook readers will have an equivalent to browsing the local library's paperback-book rack, said Ken Stetten, the project supervisor.

The system, which uses special cable television and FM radio hookups, will operate on a 24-hour-a-day basis. Participants will have a choice of about 600 novels from the "talking book" list.

Call for Papers—Annual Meeting of the Medical Library Association, Honolulu, June 2–7, 1979

JOLA readers are invited to submit papers for presentation at the 1979 annual meeting of the Medical Library Association. The theme—LEARN, EVALUATE, INFORM o'HAWAII—is a general one, intended to encompass the diversity of interests of health science librarians. Maximum time allotted for each paper will be 20 minutes. The contributed sessions committee will review these and forward a conditional acceptance to the author, who will then be asked to submit a final manuscript by February 1, 1979. Authors of papers accepted for presentation will be notified by March 1, 1979. Papers will be judged for quality, originality, clarity of presentation, and general interest.

If you are interested in presenting a paper in Honolulu, send a one-page abstract by November 15, 1978, to Dorothy Gregor, Serials Dept., General Library, University of California, Berkeley, CA 94720.

American National Standards Committee Z 39 Elects Officers

Members of the American National Standards Committee Z 39 have elected James L. Wood chairman and Sally H. McCallum vice chairman for 1978–1981. James L. Wood is director of the Bibliographic Support Division of Chemical Abstracts Service in Columbus, Ohio. Sally H. McCallum is network research analyst in the Network Development Office of the Library of Congress.

Also elected are six members of the Z 39 Executive Council, representing the three major interest areas of the ANSC Z 39: (Library Area) Glyn Evans, director of Library Services, State University of New York at Albany; and James E. Rush, director of the Research and Development Division of the Ohio College Library Center in Columbus, Ohio; (Information Services Area) Ben-Ami Lipetz, Information Science Abstracts at Yale University in New Haven, Connecticut; and Robert S. Tannehill, Jr., library manager, Chemical Abstracts Service, Columbus, Ohio; (Publishing Area) Robert F. Asleson, president of R. R. Bowker Company in New York; and Sandra K. Paul, director of inventory management at Random House, Inc. The first named in each of the above areas holds office for three years; the second named holds office for two years.

For more than 25 years, The American National Standards Committee Z 39 of the American National Standards Institute has played a central role in the effort to codify

the vast amounts of information that are filling miles of library shelves and magnetic tape. Representing a broad range of distinguished individuals and groups, the standards-writing programs organized by Z 39 have attempted to facilitate the exchange and use of this knowledge among researchers from every country and discipline. Dr. Jerrold Orne, professor emeritus of the Department of Library Science at the University of North Carolina in Chapel Hill, has competently and successfully chaired this committee since 1965. Dr. Orne will retire on July 1, 1978.

The American National Standards Committee Z 39, Standardization in the Field of Library Work, Documentation, and Related Publishing Practices, for which the Council of National Library Associations has served as secretariat since 1951, is composed of competent and experienced representatives of the following national organizations: Acoustical Society of America; American Association of Law Libraries; American Business Press; American Chemical Society; American Concrete Institute; American Institute of Physics; American Library Association; American Nuclear Society; American Petroleum Institute; American Society for Information Science; American Society for Testing and Materials; American Society of Indexers; American Society of Mechanical Engineers; American Translators Association; Association for Computing Machinery; Association of American Library Schools; Association of American Publishers; Association of American University Presses; Association of Jewish Libraries; Association of Research Libraries; Association of Scientific Information Dissemination Centers; BioSciences Information Service (BIOSIS); Book Manufacturers' Institute, Inc.; R. R. Bowker Company, Inc.; Catholic Library Association; Church and Synagogue Library Association; Council of Biology Editors; Council of National Library Associations; Council on Library Resources, Inc.; Drug Information Association; Engineering Index, Inc.; Engineering Societies Library; Engineers Joint Council; Information Industry Association; Institute of Electrical and Electronics Engineers, Inc.; International Business Machines Corporation; Library Binding Institute; Library of Congress; Medical Library Association; Music Library Association; National Academy of Sciences; National Agricultural Library; National Association of Home Builders; National Bureau of Standards, Institute for Computer Sciences and Technology; National Federation of Abstracting and Indexing Services (NFAIS); National Library of Medicine; National Security Industrial Association, Technical Information Advisory Committee; Printing Industries of America; Shoe String Press; Society for Technical Communication; Special Libraries Association; U.S. Department of Commerce, National Technical Information Service; U.S. Department of Defense; U.S. Department of Health, Education, and Welfare, Office of Education, Division of Library Programs; U.S. Department of the Interior, Office of Water Resources Research.

New Chemical Abstracts Publications

Chemical Abstracts Service is offering two new computer-readable information files. One, *CA Search*, brings together in a single computer file the full identifying information and index entries for papers, patents and other documents abstracted and indexed in *Chemical Abstracts*. The other, REG/CAN, links the unique Registry Numbers that identify chemical substances in CAS's computer-based Chemical Registry System with the CA abstract numbers for documents that contain information about the substances.

CA Search combines the content of CAS's widely used *CA Condensates* computer-readable file, which contains complete bibliographic citations and keyword index terms for all documents abstracted in CA, with that of the newer *CA Subject Index Alert* file, which contains the more comprehensive and precise CA general subject and chemical substance index entries for the same documents. The merger of these two complementary files makes it possible to search both terminology used by authors, as reflected in the titles of documents and the keyword index entries that appear in

the weekly issue indexes of CA, and the controlled indexing terminology used in the semiannual CA volume indexes.

The *CA Search* file offers particular flexibility in the searching for information on chemical substances. Substance searches can be carried out using common or trade names that may appear in document titles or keyword index entries, molecular formulas, or the highly precise CA index names and CAS Registry Numbers of the substances. The CA index names, which are constructed systematically from nomenclature terms that correspond to fragments of chemical structures, can be searched to identify substances that contain particular ring systems, functional groups, or other structural features of interest.

The REG/CAN file is intended mainly to complement *CA Condensates*. It enables a searcher to retrieve the CA abstract numbers of documents that contain information on chemical substances identified by specific CAS Registry Numbers. The abstract numbers can be used to retrieve the titles, authors' names, and full bibliographic citations of the documents from the *CA Condensates* file or to locate the abstracts of the documents in CA.

Both of the new files are issued weekly. REG/CAN files for prior years back to 1965, when the CAS Chemical Registry System began operating, also are available.

Both files are offered for use under licensing agreements. For additional information, contact the Marketing Department, Chemical Abstracts Service, P.O. Box 3012, Columbus, OH 43210.

National Effort to Create Standard Bibliographic Control Procedures for Machine-Readable Data Files

The Conference on Cataloging and Information Services for Machine-Readable Data Files, held March 29–31, 1978 at Airlie House, Warrenton, Virginia, concluded with a call for action. Standard bibliographic control procedures and related information services are urgently needed to improve user access to machine-readable data resources. A secretariat is being formed to facilitate work of voluntary groups who will be testing standard procedures for cataloging. An advisory committee will be formed to coordinate and direct subsequent developments. A list is being created of all organizations interested in this subject. Persons on this list will be sent a copy of the conference proceedings and information about subsequent developments. They will be invited to participate in the developmental activities which will precede creation of standardized national procedures for bibliographic control of machine-readable data files.

Persons who wish to be placed on the list should write to: MRDF Cataloging Conference Secretariat, DUALabs, Suite 900, 1601 North Kent Street, Arlington, VA 22209.

LITA Proceedings on Cassettes

In lieu of published proceedings, ALA's Library and Information Technology Association (LITA), formerly the ALA's Information Science and Automation Division, is providing—at cost—audio cassettes of the papers given at the December 1–2, 1977, institute held in Dallas, Texas, on the subject of "Automated Circulation Systems."

Recorded directly off the microphones without editing, the price of the cassettes to LITA and LAD members (LAD was the co-sponsoring unit), and to all registrants present at the institute is $3.10 for 90-minute cassettes and $2.45 for 60-minute cassettes. For all others, the price is $3.50 for 90-minute and $2.70 for 60-minute cassettes.

A full set of the Dallas talks (seven cassettes) is priced at $16.30 for registrants, LITA, and LAD members. For all others, the price is $18.00.

The speakers and their topics were:

Hugh C. Atkinson, Director, University of Illinois Libraries (90-minute cassette), "The Circulation Function, a Results-Oriented View"; Michael Bruer, Associate University Librarian, New York University (90-minute cassette), "The Investigatory Phase: Methodology for Selecting and Evaluating an Automated Circulation System"; Judith Corin, Associate University

Librarian for Planning, UCLA (90-minute cassette), "To Buy or to Build: Generic Features of Turnkey Systems"; Patricia Barkalow, Director of Technical Services, Public Library, Brunswick, New Jersey (90-minute cassette), "Generic Features of Internally Developed Systems"; Phillip L. Long, Phillip Long Associates, Inc. (90-minute cassette), "Networking: Intercommunication Aspects of Automated Circulation Systems"; Roger L. Funk, Assistant Director, ALA Office of Intellectual Freedom (60-minute cassette), "The Privacy Issue, Computerized Information Access and the Citizen's Rights"; Michael O' Brien, Director, Oak Lawn (Ill.) Public Library (90-minute cassette), "Implementation, Site Preparation, Training, Record Conversion, and Operation."

Order from: The Library and Information Technology Association, American Library Association, 50 East Huron, Chicago IL 60611.

New Audiovisual Publications from Information Futures

The Selection, Acquisition, and Utilization of Audiovisual Materials (2d ed.), by William J. Quinly; suggested use—a reference manual to be loaned to patrons of a media services program. Provides guidelines for equipment operation and use, basic audio and visual materials production, and the utilization of media resources.

Used as a course syllabus, the publication provides an overview of all aspects of the processes necessary to manage audiovisual resources. Students in education or librarianship will find the publication a reference source for process, technical, and how-to information. The contents include: motion picture film, filmstrips and projectors, projection lamps, opaque and overhead projectors, tape recorders and players, study carrels, television, facility design, photography, high fidelity systems, 8mm and 16mm projectors, slides and projectors, projection lenses, screens, sound systems, dry mounting, equipment acquisitions, copyright, and microforms. The second edition price is $5.90 per single copy, or $5.10 (each) for ten or more copies.

Media Programs and Their Management Related to the Information Cycle, by Gerald R. Brong; examined are audiovisual and educational technology programs. Developed in this examination is the concept of the information cycle. It is proposed that all information flows through a cycle from invention and creativity, through distribution that may involve publishing, to a point of utilization that will result in learning, with the new learning resulting in behavior that may foster creativity and new invention.

Presented is a set of concepts that supports a philosophy of planning, development, teaching, and administration. The philosophy relates to programs that are goal-oriented and to programs requiring human direction and interaction. The price is $3.25.

Order from Department 478, Information Futures, 2217 College Station, Pullman, WA 99163, Phone: (509) 332-5726.

New Computer Services, Directory Available

Telenet Communications Corporation has published an updated version of its popular *Directory of Computer Based Services*, first distributed in 1976.

The number of organizations listed that offer interactive computing and information retrieval services has doubled since the first edition. More than 80 data banks, commercial service bureaus, educational institutions, and other companies are categorized by application specialty, programming language, and data base offerings. These publicly available computer-based services are accessible from throughout the U.S. and Canada and a number of overseas points, since all organizations listed are connected to the Telenet packet network.

Besides a large variety of bibliographic data bases, the directory contains listings of data bases in many other areas, including: financial and economic data bases, FCC tariffs for communication common carriers, school guidance information, advertising media and market research, energy and pollution, engineering.

Specialized computing services available

to the public through these Telenet subscribers are listed in five categories: general business, engineering, special industry, scientific, and education,

Copies of the 1978 directory are available at $2 each (prepaid) from the Publications Department, Telenet Communications Corporation, 1050 17th St., N.W., Washington, DC 20036.

SOLINET Annual Report Available

Charting the growth of the largest library network using OCLC, Inc., shared cataloging services, the Southeastern Library Network's fourth annual report is now available. Readers may obtain the SOLINET 1976–1977 Annual Report by sending a self-addressed mailing label to: SOLINET Editor, SOLINET, Suite 410, 615 Peachtree Street, N.E., Atlanta, GA 30308.

Cumulative Indexes to the MARC Data Base 1968–1978

Now librarians, whether or not they have access to an on-line data base, can acquire these cumulative indexes to one million MARC records and put them to use in cataloging, reference, and collection development. The *Cumulative Subject Index to the MARC Data Base, 1968–1978*, is the only single alphabet cumulation of all the subject headings assigned by LC during the first decade of MARC input. This index is available in fourteen bound volumes.

The *Library of Congress Classification Number Index to the MARC Data Base, 1968–1978*, is a cumulative listing of all the LC Class Numbers assigned to one million MARC records during the ten-year coverage. This index is available in eight bound volumes.

As a cataloging tool, it shows exactly what LC Classification Number has been assigned to every MARC primary subject heading during the most recent ten years of LC cataloging practice. The index is current through April 1978 and will be kept up to date with its quarterly supplements.

As a reference tool, it is the only in-depth cumulative subject index to the complete MARC portions of OCLC and other on-line data bases and every library collection arranged according to the LC Classification Schedules—up to and including the Library of Congress (whose Shelflist card catalog is now available for purchase in microform).

As an acquisition and collection evaluation tool, it can be used for determining quickly the relative strengths and weaknesses of holdings in specific subject areas.

Format—entries are listed first alphabetically by subject headings. The group of entries for which a subject heading was given "primary" status appears first (with the heading followed by an asterisk). This group is followed by a second group containing those entries to which LC assigned the same subject heading but with secondary or "non-primary" status. Under each primary subject heading is a listing of the one or more LC Class Numbers which were assigned to these entries by the Library of Congress. The class numbers are sorted through MARC Tag 050, Subfield "A," which means that they are complete except for author Cutter designations.

Then, under each class number, are listed all the LC Card Numbers of the MARC records which fall under that class number within the primary subject heading.

The entries for the secondary and other non-primary subject headings (no asterisks) are grouped together immediately following the non-primary subject headings. These second groups of entries contain only lists of LC Card Numbers arranged by year and item number.

Order from Carrollton Press, Inc., 1911 Fort Myer Drive, Arlington, VA 22209. The Cumulative Subject Index is available for $1,132, and the LC Classification Index is $632. Ordered together, they cost $1,632. The supplements are priced as follows: Subject Index only is $535, LC Class Index only is $232, and both ordered together $697.

Informatics Inc. Introduces Mini Marc, New Library Resource System for Machine-Readable Cataloging

Informatics Inc. has begun marketing a new information processing system for li-

braries called MINI MARC. The system, which can be purchased or leased from Informatics Inc., assists libraries in cataloging books by eliminating data conversion tasks and vastly simplifying such routine tasks as data update and data retrieval.

MINI MARC consists of hardware (a central processing unit, a floppy disk unit with three drives, and a CRT display with keyboard), software, and the Library of Congress MARC (machine-readable cataloging) data base. The system occupies the space of a standard desk, and operators can learn the basics of the system in two to three hours of instruction.

MINI MARC gives libraries access to the MARC data base and the ability to retrieve entries by Library of Congress card number in less than one second, with indexes by author and title. In addition, the system enables users to revise and/or add local information to records; to build a working file of selected MARC records; and to enter original records into this working file.

MINI MARC is capable of handling all MARC formats, including monographs, serials, films, maps, manuscripts, and music. With optional components, the system also permits the libraries to generate their own catalog cardsets and other printed materials.

MINI MARC was designed by library information specialists at Informatics Inc. Readers may obtain additional information by writing: Director of Marketing, MINI MARC, Informatics Inc., 6011 Executive Blvd., Rockville, MD 20852.

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- The ROM is a robust unit designed for heavy unattended use by library patrons, and is simple to maintain.

A full range of accessories is available to complement the ROM catalog reader, including a hard copy printer.

For further information write or call

INFORMATION DESIGN
3247 Middlefield Road, Menlo Park, CA 94025
(415) 369-2962

Book Reviews

Video in Libraries: A Status Report, 1977–78, by Seth Goldstein. White Plains, N.Y.: Knowledge Industry Publications, 1977. 104p. $24.95. LC: 77-3554. ISBN: 0-914236-07-5.

This book is a great disappointment. It contains very little new information and has a considerable number of errors. However, representatives of the publisher at the ALA Annual Conference in Chicago in 1978 agreed to refund the purchase price to disappointed buyers.

The title is misleading, as the information was actually gathered in 1976. Thus, Goldstein's statement that video equipment has outstripped the availability of material produced for the medium does not hold up in 1978. The increasing popularity of Betamax-type products has spawned a rapidly increasing supply of quality videotapes on a wide variety of topics offered at very economical prices—an important development that libraries should not overlook in the face of outrageous inflation and cut budgets.

Goldstein's stated purpose in preparing this report is to provide "an accurate up-to-date picture of how video has actually fared in specific libraries that became involved in television several years ago." Yet his actual case studies comprise less than 25 pages. Each is treated to four or five summary paragraphs that provide no real insight into the success or failure of the project nor its impact on the library's community. He divides the case studies into three categories: libraries that have purchased videotape collections, those that develop programs for in-house use, and libraries that produce programs for CATV.

Goldstein includes a brief primer on video equipment that can only confuse those unfamiliar with the subject. In the section on tape and equipment formats he describes various tape sizes, notes their differences, and describes major users of each. He points out that one format is transferable to another. However, for duplicating tapes, he suggests making a master on 2-inch tape, then copying in the desired format. He neglects to mention that the library will have to contract with a commercial firm for this expensive service. Libraries can and do readily copy and transfer programs between ½-inch and ¾-inch formats. Picture quality may suffer in some cases, but it can be done within the library, a feat impossible with 8mm and 16mm film collections. Goldstein's costs of tape and equipment are often erroneous. An hour of ¾-inch tape is quoted at $45. June 1978 list price is $38, discounted at $27. Similarly, a color portapak in ¾-inch is quoted at $8,000. Current list for a Sony VO 3800 with color camera is $6,800.

Appendixes consume 40 pages. Six of these are used to reproduce a questionnaire (including all the blanks) with which he collected data. Five pages statistically analyze the data collected. The remainder are lists of libraries using video and video publishers. The directory of libraries would be more usable if broken down into geographic regions or states rather than a straight alphabetic list by library name. It does include equipment owned and services provided by each institution. The directory of video publishers lists only name and address. It provides no information on content, quantity, or price of programs offered.

In his conclusions, Goldstein attempts to answer some of the questions troubling libraries about video such as: the role of video in libraries; bibliographic access to programs; funding; sources of programming; circulation of programs and/or equipment; involvement with CATV; and choices among technological developments. His survey has produced mixed results. Some outstanding successes are con-

fronted by some major disappointments. In-depth analysis as to why the success or failure occurred might have provided some guidelines for those contemplating video projects. Unfortunately, it has not been provided in this report.

Pat Barkalow
Main Library
University of Tennessee
Knoxville

Collection Development Analysis Using OCLC Archival Tapes: Final Report, Glyn T. Evans, Project Director, State University of New York at Albany. Washington, D.C.: U.S. Office of Education, 1977. 65p.

The project described by this report resulted from a need for better management information on collection development. Library acquisition budgets are being curtailed, thus making more significant the dilemma posed by the relationship between collection development and curricular development. Resource-sharing projects are viewed as solutions to the shrinking budgets, but there is little chance of success if they are not supported by good management data.

The State University of New York (SUNY) initiated its analysis project to make use of the data available on the OCLC/MARC tapes. The objective of the project was "to develop a series of library material collection analysis reports by discipline and form, based on the machine analysis of OCLC/MARC tapes, in order to provide accurate management data on collection development to librarians and administrators."

A series of PL/1 programs were written that first extract the needed fields from the OCLC tapes, then analyze the data, and finally generate both detail and summary reports. In the design of the programs flexibility was important, as was the decision to use existing software when possible. The final package allows for the analysis of an individual library collection and multiple library collections on one campus, and the comparison of a group or set of institutions. The programs can also handle a variety of classification systems.

Three types of analysis are performed—content analysis, component analysis, and overlap analysis. In content analysis "each title is assigned to one place and one place only according to its call number." Component analysis is "an assessment of the components of a library collection which support a particular discipline." Overlap analysis provides "some indication of the commonality or uniqueness of collections based on the use of the same OCLC unique record by a set of libraries." The three forms of analysis result in five reports as required in the original grant. A further project, "Development of a Responsive Library Acquisitions Formula," will be done as a follow-up to this project.

In summary, this report is excellent documentation of the project and should prove useful to others considering similar projects. It should be noted, however, that the SUNY Central Administration is planning to establish a tape analysis service for libraries and consortia based on the programs written for this project.

Copies of this report will be available from the ERIC Clearinghouse.

Milton MeGee
Federal Library Committee

BOOKS RECEIVED

Inter-Indexer Consistency Studies, 1954–1975: A Review of the Literature and Summary of Study Results, by Lawrence E. Leonard. Champaign, Ill.: Graduate School of Library Science, University of Illinois, Dec. 1977. 51p. (University of Illinois Graduate School of Library Science Occasional Papers, no. 131) $2.

Introduction to Minicomputers in Federal Libraries by Micki Jo Young, with Frank A. Pezzanite and J. Chris Reisinger. Washington, D.C.: Library of Congress, 1978. 155p. LC: 78-1652.

Library Acquisitions: Practice and Theory, Scott R. Bullard, ed. Elmsford, N.Y.: Pergamon Press, 1977. Quarterly. $25 per year. ISSN: 0364-6408.

Microforms and Library Catalogs: A Reader, edited by Albert J. Diaz. Westport, Conn.: Bowker/Microform Review Inc., 1978. 282p. $17.50. LC: 77-10457. ISBN: 0-913672-16-5.

Reader in Machine-Readable Social Data, Howard D. White, ed. Englewood, Colo.: Information Handling Services, 1977. 344p. LC: 77-92432. ISBN: 0-910972-70-2.

The Search for a Scientific Profession: Library Science Education in the U.S. and Canada, by L. Houser and Alvin M. Schrader. Metuchen, N.J.: Scarecrow Press, 1978. 192p. $8. LC: 77-17563. ISBN: 0-8108-1062-X.

Knowledge Industry Publications, Inc.
2 Corporate Park Drive, White Plains, New York 10604

...announcing a manuscript prize

Knowledge Industry Publications, Inc. is pleased to announce a prize of $2000 for the best original, unpublished book-length manuscript in the field of library automation and technology and to guarantee publication of the manuscript in its Professional Librarian Series.

The purpose of the prize is to stimulate practical research and writing in the field of library automation and technology, and to further the communication of information to the profession at large.

Submissions are invited by anyone in the field, including students, faculty members, library administrators and independent professionals with subject expertise. The requirements are as follows:

1. The work must be original and previously unpublished. Master's and doctoral dissertations will be considered only if they have been specially revised for the purpose at hand.

2. The general field is library automation and technology, including but not limited to library cataloging and processing, networking, management, economics, patron service.

3. Manuscripts may blend theory and applications, but the main thrust must be on practical applications, as expressed in case histories, user surveys, etc. Manuscripts should be of broad professional, not narrow scholarly interest. They should contain original research in the form of surveys or personal interviews and not be limited to secondary sources. Emphasis must be placed on including the most recent available information on the subject in question. Submitters are urged to examine one or more of the studies in the K.I.P.I. Professional Librarian Series (e.g., BOOK THEFT AND LIBRARY SECURITY SYSTEMS, LIBRARIANS AND ONLINE SERVICES, AUTOMATED LIBRARY CIRCULATION SYSTEMS, etc.)

4. Outlines may be submitted to K.I.P.I. for comment on appropriateness of subject matter. Outlines will not be otherwise evaluated.

5. Manuscripts must be a minimum of 30,000 words in length and should not exceed 45,000 words.

6. The final selection of a winner will be made by a panel of three judges, two of them independent of the publisher. Preliminary screening will be done by the K.I.P.I. editorial staff. The publisher and judges reserve the right not to award a prize if no submission merits it.

7. The winning manuscript will be guaranteed publication as a report in the Professional Librarian Series. The prize money will consist of both an outright grant, and of an advance against royalties. Final total compensation may exceed the $2000 prize, but such additional royalties cannot be guaranteed.

8. Knowledge Industry Publications, Inc. reserves the right to arrange for publication of additional submissions beyond the prize winner. In such cases authors will receive a contract and advances against royalties, but no separate prize money.

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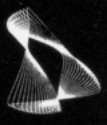

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