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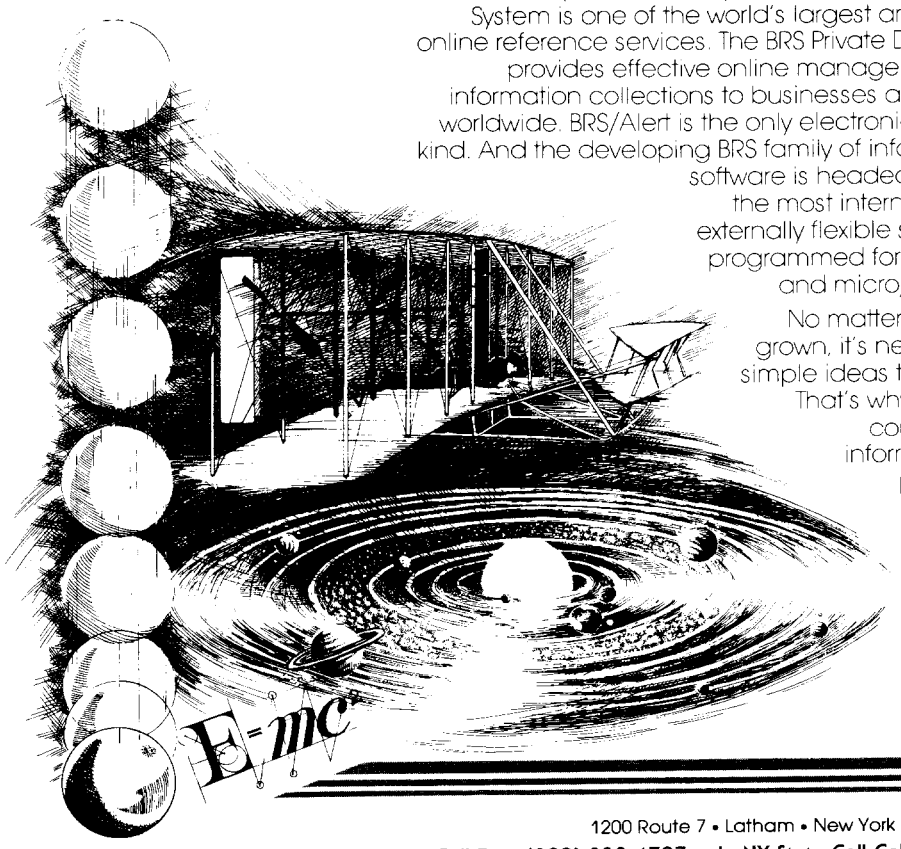

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The Information Industry of the Future

Anne Mintz
Issue Editor

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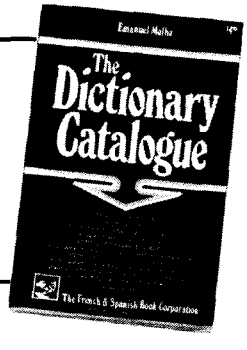

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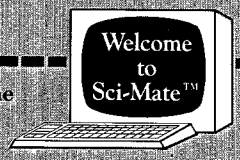

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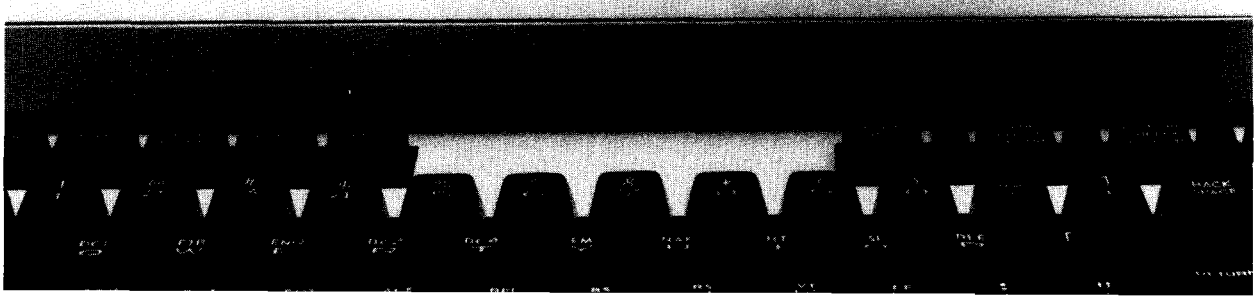

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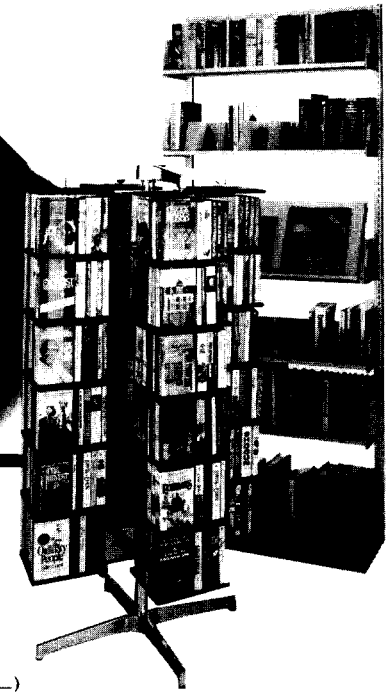

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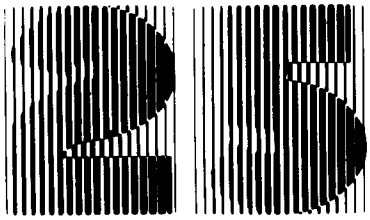

BUSINESS AND FINANCE DIVISION

1958 - 1983

The Information Industry of the Future

Anne Mintz Issue Editor

Head Librarian, Lazard Freres Co., New York, N.Y.

FOR VARIOUS REASONS the important issues addressed in special librarianship for the past few years have been in the management and technology-oriented areas. We have honed our skills in online searching, creation of databases, budget techniques, supervisory skills, and more in an impressive effort to upgrade ourselves professionally within the context of the parent organizations we serve.

It is now time, however, to step back from our domains in the library to reassess the professional and ethical issues which we as special librarians face. The availability of computer technology and its affordability in the business environment have revolutionized information storage, retrieval, and access irrevocably, and while the library world has faced these technological advances well, there are other related issues to be dealt with. For no matter how well-managed, well-funded or technologically advanced our information centers may be, we face a turning point in our profession and must focus on the information industry beyond the library.

The outside information world, including such groups as publishers, telecommunications companies, the mass media, and office equipment manufacturers, has been spending vast amounts on research and experimentation in such ventures as satellite communications, cable transmission of data, and computer technology. The speed with which information can be gathered and disseminated has increased dramatically. These companies have enormous benefits to gain from their investments, yet they have equally enormous sums to lose. In addition, special interest groups with offices in Washington, D.C. have been lobbying for legislation regarding information policy, copyright, electronic mail delivery, and satellite transmission of information. These economic and political realities are intensifying the risks as the stakes grow, and, therefore, all outside forces are working extremely hard to ensure their own survival and profitability in the future.

We must ask ourselves where we fit into this picture, since we are the direct or indirect employees of some of these organizations, as well as professional information specialists. As librarians, our concerns should be directed toward ensuring the freedom of all citizens to access of information and toward mak-

ing our own imprint as information professionals in this brave new information world. Some of these issues have yet to be dealt with publicly and concretely by the membership of our Association. A brief list of these concerns includes:

- Where are our voices as a group when the U.S. government eliminates series of statistics and contracts out its information needs to the for-profit sector?
- Who owns the information produced by government funding, and should someone be making money from the dissemination of this information?
- How do we, as a group, respond to sophisticated technology masking massive infringements on copyrighted nonprint materials?
- How do we respond to computer legerdemain (read "theft") when entire copyrighted databases are downloaded?
- Should we pressure online systems vendors to standardize their software, training, and search aids?
- What is our concern for the genre of the special collection in the public library, and should we be actively involved in guaranteeing its future?
- How should we prepare librarians for the new realities of the information industry?
- Will the producers of information bypass the librarian as the information contact within the organization in order to market their products to the perceived power centers?
- Most important, how far are we, as an association, willing to extend ourselves on these kinds of issues? Will we simply be overlooked as a force because of our current silence?

These concerns and others are addressed in the pages that follow. The articles have all been written especially for this issue of *Special Libraries* which is sponsored by the Business and Finance Division in commemoration of the Division's twenty-fifth anniversary year. It is fitting that an issue honoring the past is devoted entirely to the future. All the articles touch on various aspects of the theme "The Information Industry of the Future" from the vantage point of information producers and intermediaries.

Although each article has a specific focus, it is noteworthy that the issues raised in discussion intersect frequently. Ideas regarding databases, ownership of information, appropriate education, and the effects of new technologies on information publication and retrieval appear throughout the issue. They are important ideas to be raised and dealt with. Although certain of the suggestions put forth in these pages may be controversial, it is hoped that they will stimulate readers and create a framework for further thinking, writing, and agenda for action.

The advisory board for this publication has been Ellen Bates, reference librarian, Bank of America, New York, and Ruth A. Pagell, business reference librarian, Lippincott Library, University of Pennsylvania. Their ideas and contributions were of high quality and working with them has been an enriching experience. The artwork was provided by Ed Taber, a freelance commercial artist in Fairfax, California; Gary Handman, head, Acquisitions, University of California at Berkeley; Tim LaBorie, librarian, Drexel University Libraries; and Alanna Siegfried, head, Service Program Development, Columbia University Libraries, who also designed the cover.

Having said all this, however, I cannot imagine having undertaken and successfully completed this project without the skill, insights, diplomacy, and general *savoir faire* of Nancy Viggiano. Our Association has a fine professional to manage our publications, and I wish to thank her publicly for all the advice and guidance she has provided over the past year to enable me and the Publications Committee to complete our task.

Anne Mintz, Chairperson
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Who Should Be In-Charge?

Elizabeth Bole Eddison

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■ **Corporations are waking up to the fact that information is of great value. Librarians who want to be part of corporate management as vice presidents for information services should receive appropriate training. Both corporations that have formal information services, and those that do not, need the leadership of vice presidents for information services.**

INFORMATION CZAR, corporate information manager, information resource manager, information architect, information control officer—these are titles some people have who lead integrated information management systems in business organizations. Over the last few years, such grand titles appeared in articles published in widely different periodicals, including *Small Systems World, Information & Records Management,* and *Harvard Business Review,* discussing the need for effective management of all the information resources within the corporation. Not one of those articles gave more than passing reference to libraries and none mentioned librarians.

Evelyn Daniel has written that special librarians are information managers who can bring information together into one information organization.* The three information worlds Daniel identifies are: 1) the literature world of libraries and archives; 2) the document world of information centers, clearinghouses, and records centers; and 3) the data world of computers, telecommunications, and automated information systems. She also states that librarians are the logical managers who qualify for the chief information position in a company because they are trained in the concepts of organization and delivery of information. The article proposes that this idea be extended even further and that the information specialist in this expanded role be given the title "Vice President for Information Services."

Information services are those which select and acquire, process and store, filter and analyze, record, evaluate and deliver information. It is the vice president for information services who helps to develop corporate information policies and who oversees the organization which implements those policies; the director of the library or information center, the records manager, and the head of the data processing department

* Daniel, Evelyn/"Special Librarian to Information Manager." *Special Libraries* 73(2):93-99 (Apr 1982).

all report to the information vice president. Librarians have not traditionally been trained to be vice presidents for information services, nor are all librarians suited for the role, but some are and those who choose that career path should have the appropriate training and guidance available.

Education

Library schools need to establish a track for those who plan to serve a corporate role beyond that of a special library manager. Traditionally, library schools have equipped some of their graduates to run large public libraries or to be the head of university library systems. Public and university librarians are exposed to management principles for their particular kinds of organizations and are frequently offered internships and other entry points on the career path toward being University Librarian or director of the Big City Library. Special library courses, however, rarely include an introduction to the structure of the corporation, with emphasis on marketing, research and development, and the behind-the-scenes workings of the corporate office environment. The special librarian is not tutored in the role of data processing in the corporation or its connection with the finance or accounting offices. A few library schools have recently introduced courses on records management, but how many are offering training in the integration of concepts of records management, data management, information access, and library management into a corporate information policy?

The chief information practitioner in a corporation should be a professional who has had training in or experience working with special libraries, records management, information analysis, data processing management, systems analysis, business administration, marketing principles, and corporate finance. University librarians need to add a subject master's or a doctorate to their library degree. Directors of major public libraries add doctorates or a second master's degree in public administration. Vice presidents for information services should have an advanced degree in computer science or in business administration in addition to the library science degree.

Armed with the appropriate educational background and on-the-job training in several departments of a corporation, the vice president for information services will know how the corporation works, what the information needs are of the different groups and people within the corporation, and what the information resources are that can be drawn on, both internally and externally. The job also requires skill at knowing how to provide different levels of service to those with different levels of need and how to measure and promote the value of the services delivered. As facilitator and coordinator, the person in this job will be equipped to help a great many people to put a vast variety of information resources to work.

Corporate Structures

But what about corporations that do not have neatly organized information worlds of the kind Daniel describes? There are companies that have a number of information worlds, most of which are not managed or organized as such, and few of which are part of a larger information services management program. Figure 1 shows a list of information resources found in the various departments of such a hypothetical company. The High Technology Company (HTC) is a small firm that does not have a library/information center or a librarian/information manager. The list in Figure 1 is a composite of the resources found in many companies. Such resources also exist in the large number of companies which have a library but not an information policy. If the company does not have a corporate information policy, the librarian will not have a mandate to provide access to all of the information resources located within the corporation.

Figure 1. HTC Information Resources in Need of Management.

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Competitors' annual reports

Corporate Offices
Annual reports
Planning magazines
AMA publications
HTC manuals
Competitors' manuals
Newsletters
Textbooks
AICPA reports
ADAPSO materials
Business periodicals
HTC archives
Looseleaf services (BNA & CCH)
10K reports
Trade association publications
Consultant reports
Audit reports

Computer Department
Data tapes
Program tapes
Equipment manuals
Software manuals
User manuals
Supply catalogs
Newsletters
Data processing trade magazines

Production Department
Vendor catalogs
Equipment manuals
Safety standards
OSHA standards
Handbooks
Engineering trade magazines

Legal Department
Export regulations
Case files
Law books
Legal directories
Looseleaf services (BNA & CCH)
Legal periodicals
LEXIS
Newsletters

Corporations have begun to realize that they have underutilized information assets. They are receiving only limited benefits because they are not fully aware of internal information capabilities as well as information resources available outside of their companies. This growing realization creates a momentum that calls for action. Special librarians who think and act as business managers, as well as information managers, will respond to this call for action. Who should be in charge?—special librarians prepared to be vice presidents for information services.

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Database Proliferation
Implications for Librarians

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■ **Database proliferation presents many problems to librarians, including the choice of system for searching a duplicated database. This paper discusses some of the problems and suggests that a changed concept of reference service will see the librarian's role as purveyor of "soft" bibliographic information change to the role of supplier of "hard" decision making data.**

THE ONLINE WORLD is becoming more and more complex. According to a recent edition of the *Directory of Online Databases*, there are now over 1,100 reference and source databases online (*1*). In the past, librarians were primarily concerned with obtaining bibliographic information from abstracting and indexing services, and more recently from online databases, but they may not have been particularly concerned with the actual facts contained within the cited documents.

At the beginning of online searching, business librarians treated it as a nice, but not absolutely essential, adjunct to their information services. They still required the hard copies of indexes, abstracts, directories, telephone books, manuals, and encyclopediae, not to mention the clipping files. The online "revolution" is now making so much information available in database format that librarians may be able to have smaller reference collections as adjuncts to online searching. With more "textual-numeric," "properties," and "full text" databases available, librarians can retrieve specific facts, rather than just citations. Instead of simplifying the job of the business librarian, however, this increase in the number and variety of databases causes many problems.

Major Problems

The problems resulting from the sheer quantity of databases were summarized succintly by Martha Williams as "user confusion" (2). This confusion is caused not only by the proliferation of new databases but also by the availability of more systems, some with unique databases and some with duplicate databases. The problems that will be addressed are standardization, vendor contracts, training, restrictions, and duplicate citations, as well as a number of implications arising from database

proliferation including education, users' groups, search aids, and possibilities of information malpractice. The databases discussed are primarily, but not exclusively, those used in business and social science organizations.

Standardization

Librarians who choose to search all possible systems containing information useful to prospective clients may find that the lack of system standardization causes searches to be more time-consuming and less successful than expected. Systems vary in protocol, such as sign-on procedures, command language and form, system responses, and search capabilities. System features also vary: search statements may be retrievable term by term; command stacking may speed up input; a search strategy may be input on an inexpensive database, then executed on the required but more expensive database; and some systems allow temporary or long-term saving of a search strategy.

Output, or the *raison d'etre* of a search also varies: some formats are wonderful for librarians but confusing to end-users; some systems provide cost information online, others only the time accrued; one system can merge duplicate citations from different databases while another cannot, thus leaving editing entirely to the intermediary, or worse, to the end-user who then may be unimpressed by online searches.

Vendor Contracts

Vendor contracts may appear to be cost-free, but sometimes there are hidden costs associated with their maintenance. Some vendors require an "up-front" or deposit fee which may or may not be a credit for subsequent searches. Other vendors appear to offer "pay-as-you-go" systems but, in fact, have a flat monthly fee whether the system is utilized or not. Thus, the administrative cost of regularly paying small, monthly invoices may exceed the benefits if the system is seldom used.

An additional problem for Canadians is the cost of foreign exchange, which has recently totalled 30% of the stated search fees of American systems. Vendor representatives located in Canada do not totally alleviate this problem and can even bring increased service charges. Finally, vendors' charges vary for manuals, database documentation, and training courses. Some provide manuals and a limited amount of database documentation with the contract, while others charge for almost all of their search aids.

Training

Training is another area where problems exist. Systemwide training is offered not only by the vendors, such as DIALOG, SDC, CAN/OLE, or BRS, but also by specific database producers, such as Predicasts or Disclosure. This causes overlap in courses, forcing the librarian to weigh the costs of all available training courses and manuals against the possible use of specific databases. Trainers who fail to pre-screen the students' abilities may group beginning and advanced searchers together. This means that experienced searchers training on a new system sometimes waste valuable time listening to yet another lecture on Boolean logic.

Formal training may be augmented by an online users group which serves to link inexperienced and experienced intermediaries by way of informal search sessions, workshops, or a directory of members' expertise.

Restrictions

A problem to some searchers is restricted access. This may mean that online access is reserved for subscribers to the printed version, or that there is an annual time limit on total search time, or that access is restricted by virtue of national borders. For example, Canadian users may not access databases such as DOE, Trade Opportunities, or Foreign Traders Index. In fact, a

precondition of foreign use of the DOE database is the exchange of a "national" database. The Canadian Energy Database project may eventually facilitate Canadian access to the American counterpart. Of course, this sort of restriction is ineffective if one considers the number of Canadian companies doing business in the United States. Presumably the branches located in the United States would receive American "IDs" from most systems and, thus, be able to access "Americans only" databases. Or, ethics notwithstanding, an American information broker may perform a search of such databases for out-of-country clients, knowingly or unknowingly. Some intermediaries may not even be aware of some of the restrictions—the small print is sometimes very small.

Duplicate Citations

Database proliferation and the interdisciplinary aspect of many databases is increasing the duplication of citations. The "cut and paste" method of editing is costly and, perhaps, unnecessary since the abstracts from different databases may provide different information, all of potential value to the end-user. Some of the difficulties here may be resolved with the use of microcomputers for editing, but this is not yet a widespread practice among librarians.

Choosing the Best System

These problems, coupled with the continuing availability of new databases, have caused anomalies in database searching (4). It is increasingly difficult for end-users to choose the right source for a search. They now, more than ever, require the assistance of a librarian who knows which databases are most appropriate and whether these databases should supplement or replace manual sources. In addition, the librarian's knowledge of the "missing databases" helps those clients who demand an online search, because it is also possible that the data or information does not yet exist in any database.

If database proliferation makes it difficult for an end-user to choose the best source, database duplication makes it difficult for the intermediary to choose the best system. To some extent, features such as the CROS file on BRS, or DIALINDEX on DIALOG help one choose a database, but how does one choose the most suitable system when the required database is available on two or more systems? There are many points to keep in mind. Deliberation on some or all of the following will help an intermediary to select the most appropriate system:

1. Are vendor contracts in place? Would maintenance of more contracts and the payment of more invoices be a problem?
2. Is the system "pay-as-you-go"? Does the vendor require a down payment? If so, is it a credit toward future searches, or is it an initiation fee? Is there a monthly minimum, regardless of the amount of searching?
3. In what currency are the invoices payable?
4. What is the cost to search (in terms of hourly charges, cost per display, or printing of specific fields) and cost per "hit"?
5. Does the system display costs online? If not, can they be easily calculated for charge-back purposes?
6. Is the vendor service good? Does the system staff have expertise in the specific database, or do they mainly market the system as a whole?
7. If searches are going to be infrequent, would it be more cost-effective to have the database producer or an information broker perform the searches?
8. Is the searcher aware of all the systems which offer a particular database?
9. Is the system easy to search, ie., is the command language logical to the intermediary?

10. Is the database in a searchable or a menu format? Librarian intermediaries may prefer the former, while end-users (such as stock brokers) usually prefer the latter. An example would be DISCLOSURE II on DIALOG compared to that on Dow Jones.
11. Does the system offer features such as storing search strategies and SDI's? Compare the cost of these features to frequency of need.
12. Are the necessary fields searchable? Sortable?
13. Does the system offer the capacity to calculate, manipulate, and print reports? For example, compare DISCLOSURE II on Control Data or Business International Historical Data on I.P. Sharp with the same two databases on DIALOG.
14. Are offline prints available? How much do they cost? How quickly do they arrive? Can they be mailed directly to the end-user?

If it is any comfort to librarians who fear they might lose searching to end-users, this checklist will surely assuage that fear!

15. Are the data accurate and reliable? For example, one search by the author on a DISCLOSURE II database resulted in an offline print containing seven errors in fewer than 20 lines. Such errors would have a definite impact on the value of free-text searching. Would the same errors occur on all systems?
16. How current are the updates? Are they loaded at regular intervals which are guaranteed?
17. What is the appearance of the online displays or offline prints, given that no editing possibilities via word-processor or microcomputer exist? What format is preferable to the end-user?

Implications for Change

To avoid getting lost in the database maze, it is important for librarians to see that implicit in the problems of database proliferation are changes for the better, both for libraries and librarians. A Swedish M.P. once wrote that if Karl Marx were living now he would have written *Die Information* instead of *Das Kapital* (5).

Information as a commodity that can be collected, transferred, and exchanged is a concept central to the "New World" of electronic literature searches, full-text online transmission of newspapers, journals, and newsletters, and trans-Atlantic packet switching. Change will occur with the help of education, users groups, and search aids. The future will find librarians changing their concept of reference service and collection evaluation within the framework of cost/benefit analyses. Online systems will be seen as a way to raise the level of service or to quickly add to a small collection. Information brokers will also serve as agents of change as librarians may need to contract out to online specialists for searches on unfamiliar systems.

Education

Education is a prime area for change. It is the foundation of the information specialist's profession and must continually be updated. If the best searches involve a combination of subject and system knowledge with that of the database structure (6), then the best searchers must have not only a subject specialty but also an ongoing interest in keeping up with changes in particular systems and files.

Where once one learned the vagaries of indexing and abstracting sources, now one must also learn the searching protocols for the online versions, and for those with no print equivalent. For librarians to know all sources of hard facts, their education needs to encompass searching source databases, including those with quantitative data.

Users Groups

Users groups often serve an educational function, but they are also an excellent way for intermediary searchers to provide feedback to database producers and vendors. In the realm of "consumer advocacy," users groups have the capacity to lobby for changes that will be of value to searchers and end-users.

In the past, users groups have been primarily oriented to librarian-intermediaries and may have overlooked other prospective members. How many groups include persons searching only nonbibliographic databases such as economists searching national or regional economic data, brokers searching for stock information, or real estate agents searching for property sales data? If such persons were included, users groups would not only be larger but would be potentially more valuable.

Search Aids

Search aids both assist and confound the database searcher. Many types already exist: search manuals, thesauri, database documentation, system descriptions, sample search strategies, self-instructional modules (manual or computer-assisted), system and producer newsletters, cross/system protocol and format charts, and recently, print samples of online abstracts and indexes. With respect to the latter, knowledge of the structure of the output helps intermediaries formulate more logical searches. These print samples are especially useful to an intermediary called upon to search in a subject other than his/her specialty. For example, they provide some of the terminology relative to the subject and make online dictionary time more productive.

Search aids might benefit from consumer advocacy by users groups. Standardization is not a feature of online systems, nor is it prevalent in search aids. In the author's experience, only one of 14 system manuals used was actually handy to have at a terminal. However, any number of systems have quick reference cards with commands and formats.

A related question arises: Has any bibliographic control been exercised over the plethora of search aids and their constant revisions? Is this important for special librarians? With search aids taking up as much shelf space as some indexing or abstracting services, it is ironic that many librarians fear an erosion of the value of their searching expertise.

Information Brokers

In the business world, executives may eventually become proficient in the use of online terminals, but only for in-house or factual data, not for bibliographic information. More likely is the evolution of a new concept of reference service. Instead of showing a client the best indexing and abstracting services, a librarian may advise an end-user with a terminal on the most appropriate database(s).

Lancaster and Smith (*7*) view the information specialist of 2001 as a consultant, guiding users through electronic resources and performing online searches in areas unfamiliar to the users. They also foresee more searches that provide precise answers instead of references, and SDI's based on primary databases instead of bibliographic databases. Librarians who are also busy with administration and management may find it difficult to keep up with searching skills on all the basic systems in addition to coping with the many new ones. If they recognize that their database searching capacity is saturated, they have the options of hiring an in-house online specialist or contracting out.

The number of systems a person can master varies, depending on the frequency of use and the individual's ability to mentally segregate them. Probably less than 5 systems are learned and remembered easily by intermediaries, but there are now more than 190 online services (*1*). As Dowlin (*8*)

points out, at the present time it is almost a full-time job to keep current with databases. If the trend continues, the job will become an overtime position.

Collection Evaluation

With the use of information brokers and in-house searching capabilities, an ongoing effect on library or information center collections will be a reappraisal of purchasing habits and services offered. Information of only peripheral or occasional interest to an organization could remain in the collection simply by being available online.

Perhaps collection evaluation will take on a new dimension. In addition to lists of core reference books and journals for a subject collection, there will also be a list of the core databases. Users who want all the information—numeric, bibliographic, person or full-text—and who have no concerns for format, representation, or location will not be disappointed (*9*).

Reference and Source Databases

From the point of view of the user who wants all the information available, no matter what the form, it is important to note that this does not imply that "information overload" is a good thing. Rather, it means that the required answer should come from the most appropriate source. Specific types of databases have specific functions (*1*). Reference databases point to another source for the complete document or information, while source databases represent the primary information.

Reference databases are either bibliographic or referral. The bibliographic databases can be used to advantage by the librarian/analyst, and, instead of providing abstracts or citations, the librarian can synthesize the information for the client. If searches cause a demand for cited documents, traditional interlibrary loan methods may be augmented by the document delivery services with electronic ordering capabilities. In providing names of researchers and their projects, referral databases serve as a source of personal contact rather than a source of citations. These databases are useful to businesses interested in new technology, licensing, or patents, since they link interested parties.

Source databases provide hard data: numeric, textual-numeric (eg., DISCLOSURE II), properties (eg., directory-type information), or full text (eg., *Globe and Mail*). Access to these databases is complicated by the number of systems involved. It is estimated that a user can access 80-90% of available online reference data by subscribing to about 5 services; to access 80-90% of the available information in the source area could involve as many as 15 subscriptions (*10*). The user of such files is more often a designated searcher outside the library than a librarian (*11*). However, librarians who are already familiar with online searching should also access these databases because they contain hard data required for decision making. Often they contain information whose timeliness is measurable in terms of hours or minutes.

These sources should be actively used by librarians now, in order to keep up with future demands (*12*). Where librarians do not feel capable of searching

Librarians must develop the expertise to perform complicated searches on difficult systems. End-users may use home computers . . . but it is not certain that they will ever access the sophisticated systems familiar to special librarians.

such systems themselves, they should notify potential users of their existence (*13*) and, where possible, arrange contracts. The now underutilized data that are accessible online will be marketed by the information professionals—librarians. In addition, online users groups could appeal to vendors whose marketing thrust seems to bypass librarians.

Information Malpractice

When librarians use online sources to provide manipulated figures or raw data, they must verify the accuracy of the data by knowing its source (*14*). Citing a database shows the end-user the source of the data and may also relieve librarians of their concerns about malpractice. Having traditionally served as advisors in locating information rather than information providers, librarians may hesitate to deliver interpretations of data or even the raw data itself without the necessary subject expertise and responsibilities for decision making in their organizations (*15*).

A database should be considered as one more reference source. Answers provided should include a disclaimer as is found in stock brokers' newsletters. This relieves the searcher of ultimate responsibility and alleviates fears of lawsuits.

"Information malpractice" by a librarian intermediary is certainly a matter of concern to those using the source databases, but it need not be a fear. Librarians often do provide precise answers to questions obtained from directories, handbooks, encyclopaediae, and so on. A database should be considered as one more reference source. Answers provided should include a disclaimer as is found in stock brokers' newsletters. This relieves the searcher of ultimate responsibility and alleviates fears of lawsuits. How often do clients sue stock brokers when stocks predicted to rise in value fail to do so? The librarian intermediary who is adept at retrieving data will provide a more complete information service—one that is better for the organization and more challenging for the librarian.

Conclusion

The proliferation of databases in both the reference and source categories requires librarians to be expert information specialists with a good knowledge of sources of both "soft" and "hard" information, whether online or manual. It will be up to the professional librarian to develop the expertise to perform complicated searches on difficult systems. End-users may use home computers to search for consumer-type information, but it is not certain that they will ever access the sophisticated systems familiar to special librarians.

The literature often mentions end-users performing their own searches, but what seems to be forgotten in this concept are the mundane everyday facts of obtaining vendor contracts, the complexity of invoicing procedures, the use of thesauri and other search aids, the question of whether users really even want to do the online searches, and the user's familiarity with the subject.

Librarians could look upon database proliferation as a way to increase their role in providing end-users with real decision-making data. Instead of being purveyors of "soft" bibliographic information, librarians will more often be the source of "hard" data. Database proliferation will also broaden the scope of a special librarian's career—opening up possibilities for analysis or synthesis and report writing, information brokering, consulting, and educating.

Implicit in database proliferation are innovative applications of new sources of information. The professional librarian who meets the challenge will be assured a place in the growing information society.

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Searchers' Perceptions of Online Database Vendors

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■ **Online searchers were asked to rank their perceptions of seven database vendors over a set of thirteen service-related characteristics. DIALOG was perceived as ranking first on all attributes. A marketing graphics technique called MD-PREF was used to display the interrelationships between vendors and attributes and between attributes and respondent's place and type of work.**

THE ONLINE information business is booming. Revenues for 1981 were estimated to be between 800 million and 1 billion dollars; projections for 1985 revenues are between 2.9 and 3.4 billion (*1*). Currently there are over 1,500 databases and distinctly named files within database families.

Several types of databases are available online. A widely used typology is that developed by Cuadra Associates (*2*). It characterizes online databases as follows:

Reference Databases. Refer or "point" users to another source (e.g., a document, an organization, or an individual) for additional details or for the complete text. There are two types of reference databases: bibliographic and referral.

Bibliographic. Contain citations and often abstracts of the printed literature, e.g., journal articles, reports, patents, dissertations, conference proceedings, books, or newspaper items.

Referral. Contain references and, sometimes, abstracts or summaries of non-published information. They often refer users to organizations, individuals, audiovisual materials, and other non-print media for further information.

Source. Complete data or the full text of the original source information.

Numeric. Contain original survey data and/or statistically manipulated representations of data. They are generally in the form of time series.

Textual-Numeric. Contain a number of data elements or fields with a combination of textual information and numeric data.

Properties. Contain dictionary or handbook type data.

Full Text. Contain the complete text of an item, e.g., a newspaper story, a specification, or a court decision.

Most producers of online databases make them available through organizations referred to as "online services" or "online vendors." These vendors provide the hardware, software, and support that allow the bases to be searched. Typically, the librarian or information specialist accesses the information for an end user. This study focuses on the vendor level of this online chain and on the subjective perceptions of the searcher toward the vendor organization.

Perception is an important concept in consumer behavior theory. It is defined as the "process by which people select, organize, and interpret sensory stimuli into a meaningful and coherent picture" (3). It is the consumer's mental picture of the brand or the characteristics he attributes to the brand. Knowledge of user perceptions and demographics can be critical to vendors in developing effective marketing strategy.

The Current Market

Included in this study are seven vendors who direct their sales in large part to libraries or information centers. A 1980 *Fortune* article estimated that 70% of the market was dominated by only two vendors, Dialog and SDC (4). Also included in this study are BRS, Dow Jones, New York Times, NLM, and Mead. A brief description of each is given below.

Dialog is a proprietary system developed around 1966 by the Lockheed Missile and Space Company's Palo Alto, California research lab. The program was originally produced for and is still being used by NASA and the DOE under the acronym RECON (remote console). It offers more than 100 different databases.

ORBIT (Online Retrieval of Bibliographic Information Time-shared) is a proprietary system of the System Development Corporation, Santa Monica, California. Developed for the Air Force in the mid 60's, the ORBIT program is used by the National Library of Medicine.

The National Library of Medicine (NLM) MEDLARS (Medical Literature Analysis and Retrieval) System was an in-house word processing system developed in 1964 to produce *Index Medicus* and to conduct batch-mode literature searches of that index. In 1972 the MEDLARS tapes were loaded on the SDC system. SDC modified the capabilities of the program to suit NLM's specification and it was offered directly by NLM.

BRS (Bibliographic Retrieval Service) began in 1977. It offers a smaller number of databases than either ORBIT or Dialog, but those that are offered are cheaper. The power and flexibility of BRS software has had a great impact on the industry. Dialog and SDC have substantially upgraded their software as the result of competition with BRS. Two other vendors, New York Times and Dow Jones, have adopted BRS software for their own systems.

Dow Jones offers complete and abridged articles from the *Wall Street Journal*, *Barrons* and the Dow Jones News Service. In addition, it gives current price quotations (within 15 minutes) on stocks, bonds, options and mutual funds, and has a weather and a sports service.

New York Times Information Bank provides full text of the *New York Times* and abstracts of 13 other newspapers and 40 magazines.

Mead Data Central provides the full text of state and federal court decisions, statutes, and regulations through the LEXIS database. Full text of several

popular magazines (e.g., *Time*) are provided through the NEXIS database.

Dialog, ORBIT, and BRS are database "supermarkets." They supply between 40 and 140 databases. All three systems add new databases regularly. Both reference and source databases are available on the three systems, but reference databases, and in particular bibliographic databases, are predominant. In contrast, the New York Times, Dow Jones, Mead, and the National Library of Medicine systems are more specialized in their offerings. Mead and the NLM direct their products to particular user groups (law libraries and medical libraries, respectively).

Previous Research

Literature on online searching has proliferated along with the growth in databases. There have been several articles comparing online vendors. One type simply discusses the factors by which vendors may be assessed. A recent article by George Plosker and Roger Summit is typical (*5*). It lists several vendor attributes (e.g., reliability, hours of service, software refinements) and discusses how the factors might affect online service. Vendors are not compared directly according to the attributes being described. It should be noted that Plosker is Dialog's marketing manager and Summit is president of Dialog.

An earlier article by Doris Marshall (*6*) includes a "quick checklist for criteria for selection, use, and evaluation of commercial on-line computer-based bibliographic services" (*6,p. 505*). System and vendor considerations are just two of several categories that include user needs, hardware, transmission, databases, and user/system interface.

Ryan Hoover's article (*7*) exemplifies another type of study in which vendors are compared for their online performance across several predetermined searches in selected databases.

A different approach is to look at the characteristics of the searcher. For example, Carol Fenichel's study examines a searcher's behavior in relation to the searcher's background and focuses on the search process itself (*8*). The "1980 Online Users Survey" reports that "the average online searcher in the U.S.A. in 1980 is fulltime, spends 8.86 hours per week online, makes $19,900 per year, is female and has degrees in chemistry and library science" (*9*).

However, the library literature does not include a study applying the marketing concept of user perceptions to online vendors' services. Through such a survey, it is possible to determine vendor characteristics in order of importance to users and to see how users rank existing vendors according to these characteristics.

Another issue is the awareness of marketing techniques as applied to information services. Wind, *et al.*, used conjoint analysis to measure user preferences for factors of scientific and technical information retrieval (*10*). In that study, whether the information was retrieved through an online system or not was only one of the factors (out of twelve) that were considered. The study was directed toward the ultimate users of the information rather than intermediaries. No mention was made of online vendors.

Green and Tull report a study of customers' perceptions of seven computer firms over a series of fifteen attributes (*12*). This approach is referred to as "brand" or "service" positioning. It often employs a perceptual map to show consumers' grouping of brands according to their perceived similarities. The computer industry example was used as the model for the present study.

Research Design

Librarians and information specialists were asked to rank their perceptions of seven database vendors based on twelve attributes of service plus a thirteenth characteristic—overall preference. The attributes were: 1) innovation (introduction of new

features), 2) flexibility of command language, 3) variety of bases offered, 4) quality of training and documentation, 5) reliability (downtime), 6) hours of service, 7) print formats, 8) pricing (vendor charging structure), 9) numeric data availability, 10) availability of toll-free hot line, 11) document delivery availability, 12) SDI availability, 13) overall preference. In addition they were asked to rank the attributes themselves, from most to least important.

The study was designed to discover searchers' perceptions of online database vendors and to display the results using the MD-PREF technique. Only those vendors who are used heavily by librarians were included.

Three hundred questionnaires were distributed to librarians/information specialists at two meetings of Philadelphia area online users organizations and at the SLA Annual Conference in Detroit. Of these, 80 questionnaires were returned with useable responses.

Statistical Analysis: Perceptions and Attributes

Dialog was consistently the vendor of preference and was perceived as performing best on all attributes (see Table 1). BRS was ranked second in most of the other categories, and SDC third. Dow Jones was distinguishable because it is a numeric/source base. Mead was ranked last on the most attributes. *Reliability, variety,* and *flexibility* were rated the three most important attributes and were closely grouped in median scores. The next grouping included *training, pricing, innovation, hours, formats* and *hot line*. The least important database characteristics for respondents were *numeric, document delivery* and *SDI*.

Table 2 shows overall vendor preference ranked from Dialog as first to NLM as seventh. It also shows the database rankings according to their frequency of use; 77% use Dialog frequently and

Table 1. Vendor Ranking by Attribute.

Rank	Attribute	BRS	DJ	DIAL	MEAD	NLM	NYT	SDC
1	Reliability	2	4	1	6	7	5	3
2	Variety	2	7	1	4	7	5	3
3	Flexibility	2	7	1	5	6	4	3
4	Pricing	2	5	1	7	4	6	3
5	Training	2	7	1	4	6	5	3
6	Innovation	2	4	1	6	7	5	3
7	Hours	2	5	1	7	5	4	3
8	Hot Line	2	5	1	7	6	4	3
9	Formats	2	6	1	7	5	4	3
10	Numeric	4	2	1	7	6	5	3
11	Doc. Delivery	3	7	1	6	5	4	2
12	SDI	2	6	1	7	5	6	3

Table 2. Vendor Overall Preference.

Vendor	Overall Preference Rank	Frequency of Use (%)	Rank	Correlation*
Dialog	1	77.2%	1	.36
BRS	2	32.9%	2	.60
SDC	3	13.9%	5	.32
NLM	7	11.4%	6	.45
DJ	5	14.1%	4	.48
NYT	4	19.2%	3	.30
MEAD	6	6.5%	7	.49

* Spearman Rank Order correlations significant $p<.05$

only 6.5% use Mead frequently. Spearman Rank Order correlations of vendor use with overall vendor evaluation were significant at $p < .05$ for all vendors. This indicates that the more intensively a vendor is used, the more highly that vendor will be rated.

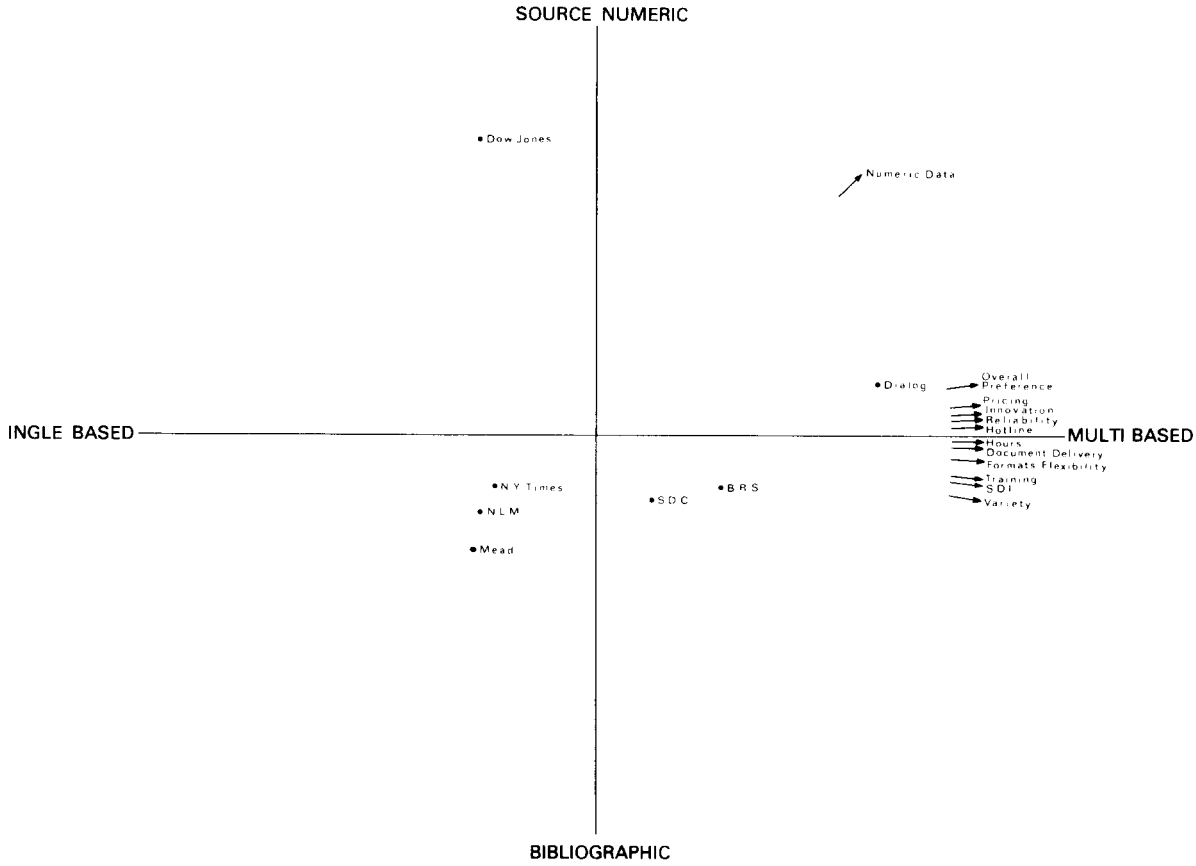
Summary Data

A series of demographic questions included on the questionnaire resulted in a profile of the average respondent as a female reference librarian in an academic or for-profit institution, primarily searching business databases. The mean number of searchers per place of work was 2.5, and the number of personal searches was 21 per month. Among the respondents, 96% reported having a Dialog password while 98% had access to more than one password; 27% did not charge the end user, 21% provided a partial subsidy, 35% passed along the full cost; and the remaining 18% added a surcharge.

Fifty percent of the respondents regularly read *Special Libraries*, while over 40% read *Online*. However, almost a third of those who completed the survey never read any of the six professional journals listed, which also included *Database, Online Review, College & Research Libraries* and *ASIS Journal*.

In responding to a series of Likert-scale attitudinal questions about searching in which they were asked to check whether they agreed, strongly agreed, neither agreed nor disagreed, disagreed, or strongly disagreed with each statement, 82% of the respondents strongly agreed with the statement, "I enjoy conducting online searches" and 82% also agreed that they liked to try new databases. Important to a vendor was the fact that 78% of the respondents stated that their organization was willing to pay training fees.

Figure 1. Online Searchers' Perceptions of Online Vendors.



Multidimensional Scaling

The main technique used for representing user perceptions of database vendors was multidimensional scaling. Multidimensional (MD) scaling allows the geometric representation of the locations and interrelationships within a set of points. Two major applications for MD scaling are in the analysis of similarities (or dissimilarities) of data and in the analysis of preference data. An MD scale of stimulus space is used in marketing to map the locations of products.

For the present study, a form of multidimensional scaling called MD-PREF was used, MD-PREF allows the construction of a joint space which shows both stimuli (attributes) and subject (vendor) data (*12*). Unlike other MD procedures, the MD-PREF procedure does not require paired comparisons of products or services and needs only ordinal level (ranked) data. The program generates a geometric configuration of stimulus points and attribute vectors in a specified number of dimensions. Figure 1 is the two- dimensional map of online searchers' perceptions of online vendors and the 13 attributes. With an arbitrary zero point, the horizontal axis shows a transition from vendors distributing few individual databases (New York Times) to vendors who distribute many bases (Dialog). The vertical axis shows the balance of textual to numeric information supplied by the vendors.

MD-PREF has no measure of statistical significance as such. An indication of "stress" or goodness of fit between the data and the map that is created is indicated by the proportion of the variance explained by each factor (dimension) of the map. In the present study, the two dimensional configuration accounts for about 93% of the variance.

With the exception of "numeric data availability," the attributes were clustered on the map. Dialog appeared alone in the "multi-based including

Figure 2. Searchers' Overall Preference for Vendors.

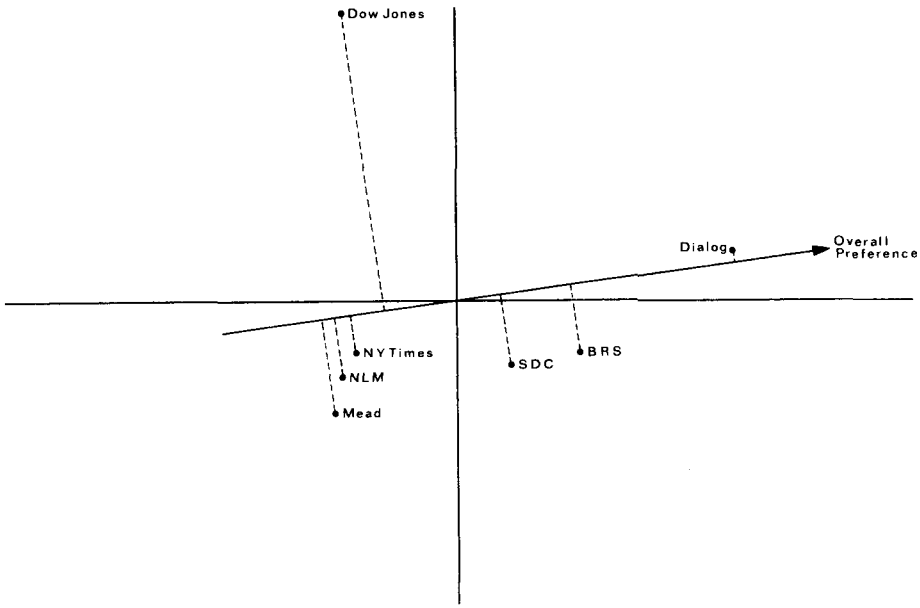
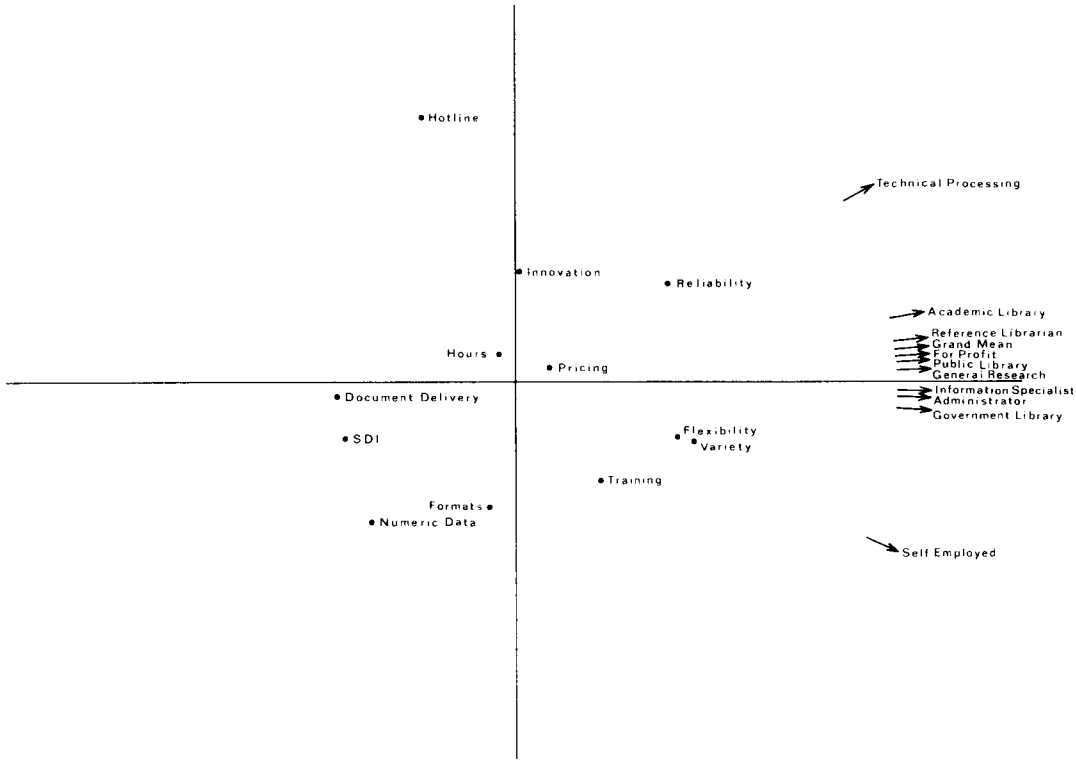


Figure 3. Importance of Online Vendor Attributes by Respondent's Place and Type of Work.



numeric" quadrant and dominated the ranking. BRS and SDC fell into the "multi-based bibliographic" quadrant and were 2 and 3 in overall preference. Dow Jones had its own quadrant defined by its numeric/source nature. The remaining vendors—New York Times, NLM, and Mead—were bunched together in the fourth quadrant with little perceptually separating them.

The map also shows the ranking of the vendors for each of the characteristics. If one draws a line from the attribute through the origin and drops perpendiculars to the line from the points representing the vendors, the points of intersection will represent the rank order of the vendors for a given characteristic. This is demonstrated in Figure 2 for the characteristic *overall preference*. Here, the vendors "line up" in the order they were preferred by respondents (Dialog, BRS, SDC, and so on).

Only Dialog appears to be providing the full range of attributes. The single subject databases are perceived not only as lacking *variety*, as would be expected, but also as not performing well on other important attributes like *reliability, innovation, flexibility*, and *training*. In the MD-PREF study reported by Green and Tull, a similar pattern was found in the ranking of computer manufacturers (*11*). In that study, IBM ranked first on all attributes except price flexibility. Green attributes the clustering of attributes to the "halo" effect: If a respondent has high regard for a firm, he will tend to rank the firm high on all attributes. The map visually indicates any gap between desirability of attributes and user perceptions of vendor ability to deliver these attributes.

Figure 3 plots the importance of online vendor attributes by the respondent's place and type of work. Attributes most important to the self-employed searcher, i.e., *flexibility*,

variety, and *training*, are different from those most important to the reference librarian, which are *reliability* and *pricing*. The greatest difference in attribute preferences was between the self-employed and individuals who defined their role as technical processing.

Conclusion

A survey of online searchers' perceptions of online database vendors resulted in Dialog being ranked first for all attributes. The other large, multisubject vendors, BRS and SDC, generally received higher ranking than the services with fewer databases. There was a statistically significant relationship between overall preference and frequency of use. *Reliability*, *variety*, and *flexibility* were the three most highly ranked attributes.

Dialog, BRS, and SDC provide users with some of the same databases. What is not clear is whether 1) more frequent use of the vendors leads to more positive perceptions of characteristics or 2) positive perceptions of characteristics lead to more frequent use of vendors. Since the other four vendors are more specialized in their coverage, low level of usage can be attributed to unfavorable perceptions, to a low awareness, or to low need for the subject area.

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Access and Dissemination Issues Concerning Federal Government Information

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■ **For the first time in U.S. history a national information policy is beginning to surface—unplanned, with little democratic participation, and less unanimity. This paper examines the federal access and dissemination policies that favor and encourage the availability of public information; the structures and mechanisms for producing and disseminating government information; recent legislation and legal implications of policy decisions; the effect of new technologies on public access and dissemination issues; current executive-branch policy directions; and a call for action to reverse some trends that threaten our basic values and rights.**

EVER SINCE the first successful Soviet venture into space in 1957, a national debate has ensued concerning federal policies to improve national information services. Initially, discussion revolved chiefly around scientific and technical information, expanding more recently to encompass the entire spectrum of national information needs and priorities. Evidence of this growing national concern can be seen in the recent plethora of information-related legislation introduced before the U.S. Congress. The result has been increasing interest throughout the federal government concerning the development of policies to guide federal agencies in the dissemination of information to the public.

The traditional presumption underlying U.S. information policy has been the "open availability of and ease of access to information . . . of interest to or concern[ing] the welfare of American citizens," based on broad principles enunciated in the First Amendment to the U.S. Constitution (*1*). Historically, however, there has been no comprehensive national information policy and no consensus about instituting one, either in Congress or the executive branch. This lack of centralization has led to a mosaic of public and administrative laws and varying policy interpretations within the government, with departments and agencies pursuing their own missions and often developing their own information policies.

The issues surrounding federal information demand close and immediate scrutiny, especially in light of recent trends which may significantly alter the traditional free flow of information. While it is true that there has been no comprehensive national information policy, one is now developing which poses some dangerous precedents. First, it runs counter to our tradition of open availability of information, and second, it is being developed "through the back door." This developing information policy is being devised by aggressive private-sector interests, without proper oversight from Congress or input from the library community, and promises easy concurrence by the Reagan administration. Furthermore, many people now argue that new technologies and philosophies are making the current patchwork dissemination system obsolete. These combined reasons illustrate why access and dissemination issues are now particularly relevant and demand urgent attention by the library and information community.

The Federal Information Milieu

Economist Marc Porat's classic study revealed that by the mid-1970s, approximately one half of the U.S. Gross National Product was devoted to information activities, and that this proportion of the economy had doubled during the last 30 years (2). These findings motivate the argument that the United States is now an information-based economy. Indeed, if an information-based society is one in which planning and bureaucracy have become widespread, according to Porat's definition, then nowhere is this more evident than in the federal government, where information-related activities consume the majority of expended resources and energy. Our massive, modern federal bureaucracy has evolved into an information producing, distributing, and consuming organism concerned with planning, coordinating, communicating, and processing information.

In a recent policy statement, the Office of Management and Budget defined "public information" as that

> which is collected, produced or created by or for the Federal Government, with federal funds, primarily for the purpose of communicating with, educating or informing one or more segments of the public. The distinguishing characteristic of public information is that the agency actively seeks, in some fashion, to disseminate such information or otherwise make it available to the public (3).

Thus, the federal government encourages public dissemination of the information it generates or maintains by providing press releases, reports, publications, exhibits, audiovisual materials, advertising, and facilities for answering public inquiries. The mechanisms used to meet this responsibility include, but are not limited to, the Government Printing Office's sales and depository library programs; the National Technical Information Service; individual agency clearinghouses, information centers, and sales programs; and private dissemination services. In fact, some statutory provisions compel agencies to disseminate information upon petition or request in order to insure the public's right to learn about the workings of the federal government.

The heart of federal information dissemination is the Government Printing Office (GPO), created by the Congressional Joint Committee on Printing (JCP) more than 120 years ago to be the single and central source of printing for the U.S. government and the solution to problems plaguing federal printing since the country's founding (4). Among these were the need to curb opportunistic printers and to arrest a system based on political patronage and unscrupulous business practices. Since then, the character of government publishing and printing has altered drastically.

During the nineteenth century, Congress was the predominant branch of government. The executive branch was still small and did a limited amount of publishing. With the advent of two

world wars, and the New Deal in the 1930s, the executive branch expanded enormously; its publishing activities now overshadow those of the legislative branch. Yet, the central agency responsible for government printing still remains under legislative control.

While it is true that there has been no comprehensive national information policy, one is now developing which poses some dangerous precedents.

The GPO, described as the world's largest printer, is to provide printing, binding, and distribution services for all three branches (legislative, executive and judicial) of the federal government. To fulfill its mission, the GPO performs four major functions: procurement, production, distribution (including cataloging and indexing), and administration. Distribution is managed by the Superintendent of Documents, which administers the 26 GPO bookstores nationwide, mail order sales service, depository library, and free distribution programs. The major distinction between these services is that the sales program is required to recover all costs through sales revenue, whereas the depository and free distribution programs are funded through congressional appropriations and subsidies.

Another federal agency assigned a significant role in the dissemination process is the National Technical Information Service (NTIS), operated by the Department of Commerce under a 1950 congressional mandate. The NTIS acts as a central clearinghouse for technical information considered useful to American business and industry, and as such is the cornerstone of the technological publishing structure in the United States. It is also one of the world's leading processors of specialty information. As stated in the 1981/82 *Government Manual*, NTIS is the "central source for the public sale of U.S. Government-sponsored research, development, and engineering reports as well as foreign technical reports and other analyses prepared by national and local government agencies, their contractors, or grantees."

Since its publications are paid for by customers, the NTIS is entirely self-sustaining and not tax-supported. As a general rule, its publications are more expensive than they would be if distributed by the GPO. Thus, the NTIS and the GPO are competitors in the acquisition and dissemination of publications that have borderline jurisdiction. One congressional study of the publications practices of selected executive agencies found that many nontechnical and nonscientific publications were made available only through the NTIS (5). This kind of competition not only diminishes the overall effectiveness of government information dissemination; it also results in public confusion.

Problems and Proposed Changes

In 1978, the Joint Committee on Printing appointed an Ad Hoc Advisory Committee on Revision of Title 44 to identify contemporary policy issues confronting government information dissemination. Since the present system was codified in 1895, technological advances have changed the way government information is generated, produced, and disseminated, and there has been growing public demand for improved access to this information. Two central themes emerged with unanimity: the need to overhaul the outmoded 1895 Printing Act and the need to develop a policy to assure public access to federal information (6).

The Committee recommended the establishment of a central coordinating office to administer public information policy for the government. This central information office, combining the functions of GPO, NTIS, and OMB, would facilitate improved public access, eliminate duplication of effort, and serve as an information "ombudsman" on behalf of the public. In its review of the federal depository library program, the

Advisory Committee learned that numerous publications are never sent to the GPO, and that agency noncompliance with the depository requirements are rampant, if not often intentional. Moreover, many government agencies specifically permit private contractors to copyright the results of federally funded research and consultant studies, thereby disregarding the public's right to this information. The Committee concluded that the present distribution system was too cumbersome, diverse, and complex and served to inhibit rather than encourage public access.

As a result of the Committee's recommendations, a National Publications Act of 1980 (H.R. 5424) was introduced in Congress to "provide for the introduction of modern printing and distribution management techniques, a greater degree of public participation in the decision-making process," along with needed improvements to the depository program (7). A major provision involved drastic restructuring of the archaic GPO to modernize its operations. The new entity would be renamed the National Publications Office (NPO), and a six-member commission would act as a "board of directors." This would replace the Joint Committee on Printing, with members chosen from the printing and publishing industries, organized labor, and the library/information community.

A major goal of the bill was to ensure that government information is available to taxpayers as inexpensively as possible. Despite strong, united support from professional library groups and organized labor, this legislation was ultimately defeated in Congress. Opposition from well-financed pressure groups representing the private printing establishment, as well as anti-union interests, assured its defeat.

Despite the bill's downfall, the GPO today is undergoing major, substantive changes, due to policy leadership under the Reagan Administration. Under the stewardship of Danford L. Sawyer, the current Public Printer, GPO faces great change and redirection. Sawyer's attitude regarding the future of GPO can be best summarized in the following remarks made before the American Library Association.

> As with many government organizations these days, it is essential that GPO prove its need to exist. President Reagan has made it quite clear that unnecessary programs and overhead have no home in his Administration. . . . Therefore, it is one of my first responsibilities to prove the worth of such GPO efforts as the Documents' Sales and Distribution Programs, or if their value can not be substantiated, to eliminate them (8).

A massive realignment of GPO's priorities has resulted due to policy shifts in conjunction with agency budget cuts, which threaten the future of access and dissemination to government information. Sawyer has proposed closing 23 of GPO's nationwide bookstores, reducing wherever possible the number of GPO employees, and increasing the lease of printing contracts to private firms.

Perhaps the most disconcerting action implemented was the policy not to offer for public sale government publications that were not expected to yield annual revenues of at least $1,000, thus scrapping thousands of slow-moving titles. The irony of this situation is that the GPO was not created to be a profitable organization but to serve the government's printing needs. Suddenly, its

aim is to conduct business on a cost-recovery basis, disregarding the public's right to have easy access to federally financed information.

Today the future of NTIS also remains uncertain, even though it pays for itself. The Reagan Administration is currently studying various proposals regarding its future, including one submitted by the Information Industry Association which advocates abolishing NTIS in favor of contracting this function to the private sector (*9*).

It is imperative that Congress establish a workable and enforceable information policy that encompasses the entire realm of government information, especially in light of increasing private-sector initiatives which may restrict the flow of federal information. To be successful, such a national policy must accommodate technological, political, and social realities and be able to clarify the appropriate role of the private sector in dissemination of government-generated information.

The Federal Statistical Milieu

Unlike most industrialized nations, the United States produces statistical data in a highly decentralized fashion. The initial core of the system was the constitutionally mandated decennial census. Now 38 core agencies operate major programs to collect or analyze statistics. These agencies have expanded tenfold over the past 30 years, developing model statistical programs to serve the needs of policy-makers and other users. They represent a collective budget of $945 million in FY 1979 and employ more than 30,000 civil servants (*10*).

While this decentralized system worked well for many years, a landmark 1978 federal statistics planning document noted that users of federal statistics often feel confused and exasperated when trying to locate existing statistics, and are demanding a more centralized, coordinated facility for determining what data are available (*11*). Consequently, one priority reflected in the 300 recommendations was to improve public access to data in the process of achieving a more integrated and effective statistical network.

Because computers are so widely available today, and many users of federal statistics can afford to process statistical data themselves, there has been a growing demand for the federal government to provide statistical information in the form of machine-readable data files (MRDFs). MRDFs offer the advantage of permitting agencies to prepare data much more cheaply and quickly than for conventional publication. For the user, MRDFs facilitate the ease of data manipulation and analysis. However, providing MRDFs to users would pose serious drawbacks, among them lack of system compatibility and unequal access to public data. Many users would not necessarily have the resources to handle data provided in the form of MRDFs. Moreover, users without computer facilities or expertise would be deprived of equal access to public data relative to users with computers.

Since American society presently is better equipped to handle information disseminated in a print rather than a machine-readable format, it is essential that the federal government improve the more traditional methods of data transmission in order to assure equal access to information while continuing its efforts to meet the demands of new technology in the area of data transmission.

Most statistical agencies report an increasing demand for data access and improved user services, yet their budget allocations are insufficient to meet it. Some agencies have begun to use NTIS and the National Archives and Record Service (NARS) to distribute statistical data files deposited with them. The recent NTIS publication of a *Directory of Federal Statistical Data Files* represents a pioneering effort to consolidate a comprehensive listing of all major federal statistical data files that have been designated for public use. Unfortunately, such cooperative efforts

are vulnerable to agency budget reductions. The Reagan administration's determination to trim the budgets of non-defense agencies threatens to dismantle many crucial statistical programs. This has prompted grave concern among users of federal data, leading the *Wall Street Journal* to proclaim in a front-page article, "there is increasing evidence that Washington's number mills are beginning to break down (*12*)."

Statisticians and analysts lament the demise of numerous statistical programs due to budget cutbacks at the Bureaus of the Census and Labor Statistics and also fear elimination of smaller, less visible statistical activities. For example, the Bureau of the Census reportedly has reevaluated its anticipated release of data from the 1980 census, and plans to release selected data only in computer tape or microfiche formats as an economy measure. This decision gives credence to the growing contention that federal data dissemination is rapidly slipping from paper to microfiche to computer tape-only formats. Finally, users fear the potentially devastating long-term consequences of program eliminations, since future resurrection of eliminated programs would most likely be prohibitively costly.

Recent Legislation and Legal Implications

As stated earlier, the First Amendment to the Constitution provides the foundation for U.S. information policy. While the First Amendment is not itself a national information policy and does not guarantee widespread dissemination of information, it is part of a value system that gives high priority to a well-informed citizenry. It thus represents one of a number of constitutional traditions, statutes, and customs that define the general treatment of information in the United States.

Many federal statutes, either directly or indirectly, require the government to disseminate certain information to the public. Years of debate in Congress regarding the public's right to know culminated in the 1966 enactment of the Freedom of Information Act (FOIA), which serves as a check on the entire process of government decision-making by allowing the public to understand how decisions are made (*13*). By requiring disclosure of agency documents upon citizen request, except those containing specified information of a personal or damaging nature, the FOIA promotes access to government information. It may also be considered a dissemination law since it requires federal agencies to publish specified information concerning their mission, organization, procedures, and policies.

Principles such as those expressed in the First Amendment and the FOIA engender conflicts concerning the government's need to balance civil liberties and personal privacy against its need for information availability. The Privacy Act of 1974 was designed to guarantee individuals' protection from disclosure of sensitive, government-held information, made increasingly necessary by the continuing development of sophisticated computers, telecommunications, and surveillance technologies which exacerbate the problems concerning privacy. Nonetheless, tension will always exist between the interests served by full public access to government-held information and the interests served by restricted access since these invariably are difficult to balance and maintain in equilibrium. The Reagan administration has attempted to weaken the FOIA on grounds that increased government secrecy is vital for national security. Thus far, an adamant Congress has resisted his initiatives in this area.

In 1977 Congress, under the Carter administration, established the Commission on Federal Paperwork to make recommendations concerning elimination of needless paperwork within government operations. The Commission estimated that the Federal government was spending more than $100 billion annually on data collection, paperwork, and information-handling activities

(*14*). As a result of the Commission's numerous recommendations, Congress passed the Paperwork Reduction Act of 1980 which introduced for the first time the concept of information resources management. This could have a great impact on all federal information acquisition and distribution activities.

The major criticism of the Act concerns its consolidation within the Office of Management and Budget (OMB)—both information management and policy oversight. Besides developing statistical policy, OMB's newly created Office of Information and Regulatory Affairs, with a staff of 12 full-time employees, is responsible for managing the paperwork budget, administrative records, and records management; regulating federal automatic data processing and telecommunication facilities; setting regulatory policies; and providing the cost-benefit analysis of regulations associated with these duties for the entire federal government (*15*). This attempt to improve information policies has been less than successful due to OMB's inadequate staffing, and concentration on regulatory reform and budget cuts. It is clear that information management and policy are not considered high-priority issues in the current administration.

Impact of Emerging Technologies

During the past decades, computers have become a major technological tool of American society. Recent advances in computer and telecommunication technology promise an even more drastic revolution in the way information is collected, stored, used, and disseminated. It is now practical to provide public access to massive amounts of information held in government databases all around the country through computerized data communication networks.

With each new technological advance, economic or social tensions may surface. As noted, computer and telecommunication technologies raise important policy issues related to guarantees of personal privacy and equal access to government databases (*16*). Although the government has compiled personal information about individuals for quite some time, the current potential for abuse, with the prospect of extensive government-controlled data banks, is raising widespread attention and concern.

A major concern involves the potential secondary use of personal information contained in federal databases; increasingly sophisticated technology will enable public access to this information via "intelligent" (modified) telephones and televisions located in offices and homes. Privacy rights could be impaired substantially if confidentiality is diminished because of widespread distribution of information.

As the federal government continues to use cost-effective technologies, such as micrographics and video display terminals, as alternatives to printing information, it should also strive to provide equal access to the information at reasonable cost. On the other hand, the government needs to recover costs and also wishes to encourage the private sector. Thus, the debate continues concerning the issues of "fee" or "free" government information and the appropriate levels of subsidy and pricing to improve access to the government's resources.

An information "gap" would result if federal databases were only available to people via the private sector, at a price that discouraged equal access on economic grounds. These are the conflicting issues federal policymakers must address in setting a uniform information policy.

Current Executive Policy Directions

The election of Ronald Reagan to the Presidency in 1980 ushered in a new era for the American federal system, characterized by drastic budget cutbacks, further private industry encroachments into the public sector, and new executive and legislative initiatives which together will deeply affect both library and citizen access to information.

In April 1981, the President imposed a moratorium on the production and procurement of new federal periodicals, pamphlets, and audiovisual products. Subsequently, OMB issued *Bulletin 81-16*, providing "procedures and guidelines for eliminating unnecessary Federal spending for the development and printing" of information products. Besides establishing a moratorium on all new government publications, this directive mandated federal agencies to review all existing publications, develop plans consistent with policy guidelines to control their production, and minimize federal spending by charging user fees to recover costs. Ensuing dollar savings were to be used to offset supplemental appropriations and/or applied towards agency salary increases. According to American Library Association estimates, by November 1981 more than 900 government publications had been eliminated and a myriad of other titles were being reviewed for transfer to the private sector for future publication (*17*). (Of course, not all of these publications may have warranted federal expenditure.)

Current federal information restrictions are based on specific policy decisions centering on the administration's interpretation of the 1980 Paperwork Reduction Act and austerity budgeting. Not surprisingly, in a climate in which some government information activities are considered unnecessary frills, information-dissemination programs are the first to be eliminated when agencies are faced with severe budget cuts. But the Reagan retrenchments go much further than simple agency budget cuts, reaching deep into the government's information-dissemination programs in ways that could fundamentally damage public access to information for decades.

Another significant administration proposal involves the institution of more user fees as an economy measure. This decision represents a sharp policy shift since the government traditionally has not charged for information-dissemination services, viewing them as serving the important societal function of informing citizens. Furthermore, the recipients of this information are taxpayers who have already paid once for its preparation. Heavy reliance on user fees could severely limit wide dissemination of information believed to be in the public interest. It could also create an information elite of affluent citizens who alone can afford access to expensive government information.

Heavy reliance on user fees could ... create an information elite of affluent citizens who alone can afford access to expensive government information.

Although the federal government has always encouraged the private sector to serve the public interest by collecting, cataloging, indexing, reproducing, and disseminating government information, the extent to which private commercial activities are now being promulgated raises serious concerns. The philosophy and presumption of OMB policy directives, first issued in 1955 in *Circular A-76*, are that "in a democratic free enterprise economic system" the government should "rely on competitive private enterprise to supply the products and services it needs," and "should not compete with its citizens." While previous administrations have shared these presumptions and followed OMB directives more or less loosely, President Reagan has made implementation an integral part of his economic recovery program.

The strict application of this policy raises serious conflicting views concerning the appropriate role of government in providing information resources, products, and services—especially where the objective of relying on the private sector appears to conflict with the need to provide important services to the public. How such issues will be resolved when they arise is open to question.

Some recommendations concerning access to federal information consistent with OMB directives were made in 1981 by the Public/Private Sector Task Force of the National Commission on Libraries and Information Science (NCLIS), following a two-year study of the interactions between government and private-sector information activities. Generally, the Task Force urged the government to provide policy leadership in facilitating the development and use of information products and services, while at the same time encouraging private-sector investment to promote wide dissemination. More specifically, the Task Force favored open access to federal information, made widely available to the public; greater reliance on libraries and private-sector organizations to make federal information available; and limited direct government intervention in the marketplace unless there are clearly defined reasons for doing so, such decisions subject to periodic review (*18*).

Conflicts between public and private information-dissemination services will inevitably surface as government information increasingly becomes a market commodity. The Reagan administration has a strong, ideological bias in favor of the private sector and advocates rigid interpretation of federal procurement policies. This philosophy, combined with pressure exerted by groups such as the Information Industry Association (IIA), is leading to sharp curtailment of government information available to the public.

One example was the recent attempt by Excerpta Medica, a private medical database producer, to limit the role of the National Library of Medicine (NLM) in promoting its subsidized database service (MEDLINE). Excerpta Medica sees NLM as a damaging competitor in the medical information business because of its low-cost subsidized services which overlap and duplicate their own commercial product.

IIA, a trade organization representing influential corporate information interests, has argued since its inception that the public sector should not be operating any enterprise that the private sector can run. This doctrine has been incorporated explicitly into official government policy, raising legitimate fears that "our national stock of information is being removed from government custodianship and transferred to private ownership and control (*19*)."

Agenda for Action

The preceding discussion of federal policies and initiatives concerning information dissemination and access depicts a scenario rife with special interests and/or executive benign neglect. Neither the executive nor legislative branches have ever established a comprehensive national information policy that would address the multitude of issues involving public access to federal information. Now, however, under the Reagan administration, a national information policy is beginning to emerge. Unfortunately it is designed to cater to the private information sector, with little regard for ensuring citizen or library access.

The irony of this situation, especially given the philosophy behind it, is that the change involves a violation of American tradition. This tradition has always viewed information as having a public value and asserted the public interest inherent in a free flow of information. Thus, the government's historic failure to formulate a comprehensive national information policy has presented corporate special interests with an excellent opportunity to develop their own policy, with full executive-branch cooperation.

Many professionals in the library and information communities are perturbed by the encroaching information gap that threatens to deny citizen access to information due to a combination of factors, such as technological illiteracy, lack of economic resources, and assorted federal policy directions. It can be argued that the lack of access to government information deprives American taxpayers of the "fruits" of their taxes. The question remains, should government information be treated as an economic good to be dealt with in purely economic terms, or as a social good to be dealt with in social terms, or as a combination of both? Perhaps we should consider the suggestion to establish a "National Information Constitution" designed to address the needs of individuals, industry, labor, libraries, and the government (*20*). Indeed, the current confusing array of laws and regulations, with their overlapping strengths, contradictions, and deficiencies, is greatly in need of an overall structural framework.

Should government information be treated as an economic good to be dealt with in economic terms or as a social good to be dealt with in social terms?

The time for action is now, involving a dual approach by concerned information professionals. The first set of actions may be taken individually and involves traditional modes of political influence—lobbying elected officials, letter-writing, phone calls, personal visits to elected representatives, and most important, voting—all represent effective methods to inform and influence members of Congress.

The second set of actions involves organizational activities and programs. Professional groups, such as Special Libraries Association, should provide more leadership and direction to focus members' attention on issues likely to profoundly affect the future of information services. It is imperative that information professionals assume a proactive rather than a reactive role and fully participate in influencing legislation and policies that affect the profession. Since nonprofit organizations such as SLA are restricted from direct political involvement, it is recommended that a political action committee be established under the auspices of information organizations, dedicated to ensure a hearing and a presence in Washington. The majority of other professional associations and groups (i.e., realtors, bankers, publishers, organized labor) have already established political action committees to channel money and influence into the political arena with the goal of obtaining favorable commitments from elected leaders. As an initial step, SLA should establish a Washington office, comparable to American Library Association's Washington office, to coordinate its legislative and political activities.

The modern information professional is fast assuming the role of ombudsman between the information seeker and the available resources. Access to information is now the key issue. To influence developments in the national information scene we must enter the political arena, in which we have not formerly participated, or face the prospect of disenfranchisement. Federal shedding of information services and products in favor of the private sector threatens to drain library financial resources. More importantly, it may eventually diminish the nation's capacity for self-government. An informed and enlightened public remains a central foundation of democracy. The information community must vigilantly monitor federal information policy developments to ensure continued and improved access to the nation's vast federal information resources, so vital to our professional and personal lives.

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Public Library Business Collections and New Reference Technologies

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■ **Interviews were conducted with the heads of eleven business branches of major public libraries to examine how these experts view the future of the public library in the electronically dominated information environment of the future.**

MUCH has been said recently about the impact of new technologies on libraries. At the 1982 Special Libraries Association Annual Conference in Detroit, which focused on the theme "New Technologies—New Frontiers," attendees were exhorted in many sessions to assess the possibilities of new technologies and to utilize them whenever possible. Even a cursory review of recent library literature reveals an increasing number of articles and seminars concerning databases, automated procedures, and computers of all types—micro, mini, and mainframe. One implication inherent in this is that if librarians do not take advantage of new technologies, someone else will, presumably at the expense of traditional libraries.

Two of the more spirited defenses of libraries have come from Richard DeGennaro and Miriam Braverman. DeGennaro, representing an academic library viewpoint, proclaims that, "The information industry is not making libraries obsolete. Rather it is revitalizing them with new technology and services" (*1*). He disputes the views of Vincent E. Giuliano, who claims that the traditional library is irrelevant as an information age institution (*2*), and of F. Wilfrid Lancaster, who says that the paperless society is coming inevitably, making libraries obsolete (*3*). Miriam Braverman is more concerned with the plight of public libraries under Reaganomics. In decrying the declining tax support for the public library systems of the United States, she defines them as a

public good, outside the reach of the marketplace, rather than as commodities that can be bought and sold according to the law of supply and demand. "Public libraries are still the 'people's university.' The mission has grown as the society has changed, and its cost is still part of the 'social overhead'" (4).

Though not willing to declare victory over those who would transform the public library into a private sector business, Braverman nonetheless presents an excellent rationale for the continuation of public libraries and the absorption of new technologies into their existing structure.

Methodology

This paper examines just one segment of public libraries—business branches and business collections—to see how practitioners rather than theoreticians view the future of public libraries in the electronically dominated information environment of the future. Will public libraries be considered a public good? Will they be revitalized by new technology, or will they be made obsolete?

Business branches and collections in the public library serve the clientele most experienced in viewing institutions in terms of marketplace concepts and in placing a high value on the private sector. Additionally, there are a growing number of business-oriented databases available and marketed to businesspeople who have access to a terminal or personal computer.

Seen from the perspective of a corporate librarian who often answers questions referred via account officers at a major bank, it is becoming apparent that many businesses without inhouse libraries are in desperate need of the kind of information that a good business collection can provide. Since the majority of banks don't have libraries, most business people can't get that information through their banks. Some turn to public libraries, some call their colleagues, and many do without. With the arrival of computer-based services in local public libraries, on the one hand, and an economy with fewer dollars for the public sector on the other, it will be interesting to see whether or not the use of new technologies by the library-less business community will grow.

Primary research concerning the future of business branches and collections was done by interviewing the heads of some major institutions in the field (see Appendix). In choosing this methodology, it was judged that these librarians, because of their thorough understanding of fiscal and technological realities, were knowledgeable and that their opinions were projectable. Interviews were done in person when possible and by telephone when not possible. Time and budgetary constraints precluded arranging personal interviews with all interviewees and also resulted in the exclusion of some librarians who would doubtless have contributed significant insights.

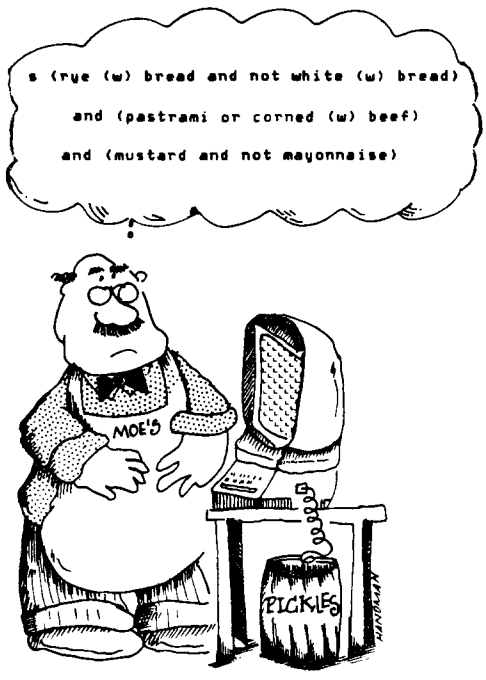
The interview questions differed somewhat depending upon the situation in the respondent's library. All were asked to describe their libraries and where they fit, administratively, into the larger public library system's structure. They were also asked to describe funding sources, to enumerate the in-house online reference services, to discuss other new technologies used in their libraries and, system-wide, to characterize library users and library supporters, to expand on their relationships with special and university libraries, to comment on charging policies and practices, and to interpret user response to online searches done for them. In addition, respondents were asked to identify present and future competitors, to explain how their operations fit into the new technological environment toward which libraries are moving, and to speculate on the future of their libraries and of public business libraries in general.

The public libraries selected tended to be located in the downtown areas of major cities. Some, such as Pittsburgh's Business Division, San Fran-

cisco's Business Branch, and Alameda County's Business and Government Library, have geographically distinct facilities. Most others are separate departments within the cities' main libraries. All the public libraries in the sample are city systems, with the exception of the Alameda County Business and Government Library and Ventura County system.

Automated Functions

The core of this study focuses on new technologies in the reference area since that is where technology has had the greatest impact on special collections. Even narrower, the focus is on online searching. Although automated systems for circulation and cataloging affect the collections, decisions regarding them are made for the public library system as a whole and are implemented system-wide, irrespective of any specialized branch or collection. Other new technologies, such as videodisc, teletext, electronic mail and cable television, have not yet touched the libraries featured here.



GREAT MOMENTS IN LIBRARY & INFO. SCIENCE #710: MOE DEMSKY, A PART TIME CONSULTANT WITH THE FLATBUSH (NY) P.L. INVENTS DELI-LOG...

The degree to which business branches and collections have adopted online searching varies considerably from city to city. Some, such as Pittsburgh and Brooklyn, are well established. Others, such as San Francisco, are just starting out. A few refer users elsewhere in the library, generally to the science department, or take the search request and send it elsewhere, either within the larger public library system or to a local consortium. Minneapolis, with its INFORM program (6), and Cleveland, with its "Facts For a Fee" program, have essentially established in-house information brokerage services to carry the bulk of the online searching load.

Some libraries which do not yet have online searching capabilities in their business branches or collections have automated other functions. The Detroit Public Library, for example, has computerized circulation. The Alameda County Business and Government Library has a microfiche catalog for the entire county system which is augmented by a card system for its own collection.

Funding

Funding for public libraries comes primarily from state and local taxes. Some business branches and collections, either through special fundraising efforts or through their Friends groups, raise additional revenue from local businesses. Others have no need to do this or are expressly prohibited from doing so.

It is important to note that although these libraries serve a special clientele, they are all tax-supported institutions. This is due to the nature of the collections rather than to a philosophical bias on the part of the librarians. As public libraries, they are open to anyone who is interested in their collections. More so than do general public library collec-

tions, business collections tend to serve a socio-economic elite. People come to these libraries for specific pieces of information rather than for general reading. Thomas H. Bullard of the Plainfield Public Library writes that public libraries do not exist as substitutes for social welfare programs (5). This is a sentiment with which librarians in business branches and collections would agree.

Patrons and End-users

According to those interviewed, the users of their business collections and branches primarily fall into the following categories: investors of all ages; unemployed individuals looking for job, company and resumé information; business people from small- and medium-sized firms; government employees from the local municipality, county, and state; and students. Having differing levels of information needs and sophistication, not all users in these categories needed to avail themselves of the new technologies. The librarians interviewed were concious of this fact, and, therefore, retained a mix of traditional materials in addition to any online services provided. They preferred incorporating new reference technologies as value-added services rather than as substitutes for traditional information sources.

Joan Canning of the Brooklyn Business Library articulated a possible future scenario: "Someday the print sources now used simply won't be published. Then the only alternative will be online searching." As yet, this is only a speculative concern to the librarians interviewed. They are not quite willing to face up to this problem—an unwillingness which is hardly unique in the profession since no one is sure how libraries will afford this alternative.

Most of the librarians had strong opinions that printed indexes should not be cancelled in favor of online indexing services. An interesting exception exists at the Alameda County Business and Government Library where the purchase of Information Access Corporation's ROM *Business Index* has replaced subscriptions to the *Wall Street Journal Index* and *Business Periodicals Index*. While not online, *Business Index* has a timeliness more generally associated with online sources, without incurring separate costs per use. The only other library which reported the cancellation of a printed index was West Hartford, but lack of use in *any* form rather than online availability was the reason.

In cities hit heavily by the recession . . . corporations are closing their libraries and turning increasingly to the public library's business division for their information needs.

Surprisingly few users ask to use the online terminals. Speculation as to why people don't want to do their own searching ranged from "fear of computers," "lack of time," and "belief that the librarians are better trained," to "cost as an inhibiting factor."

All of these reasons are probably valid in individual cases. When taken in conjunction with some other statements, however, it seems that public library users are not yet fully aware of the power of this reference tool. This may be due to the general public's relative unfamiliarity with automated reference. It may be that those who are knowledgeable have access to online systems through their corporate libraries or through their own personal computers and, therefore, are less likely to use the online services provided by the public library.

Many librarians interviewed expressed disappointment with the volume of searching they were doing. Sylvia Mechanic of the Brooklyn Business Library, for example, says that public response "has not been as intense as we'd like," attributing this, in

part, to the many facilities available in the New York metropolitan area. Joan Canning adds that being located in Brooklyn, (rather than in a more central business district) may have an inhibiting effect. Still, the situation of having much more to offer than the public utilizes is in evidence elsewhere.

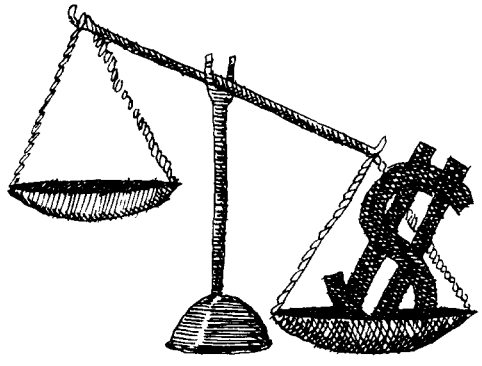
Cost

Cost is certainly a factor. According to Miriam Lerch of the Business Division, Carnegie Library of Pittsburgh, users are very interested in having searches run "until they find out they must pay for it."

The Seattle Public Library's Business and Science Department solves this problem by providing free searches. Its librarian, Jim Taylor, stresses that the only way this can be done is to provide the service on a limited basis. Users are asked to do a manual search first, and online searches generally are confined to current, narrow topics.

The number of searches performed for an individual are also limited. "Searching is considered an extension of regular reference," explains Taylor. Thus, funds are allocated to cover it. The Minneapolis Business and Science collection has a similar policy; its staff will perform up to 8-minute searches for free.

The insistence on having users exhaust manual sources first is typical of public libraries. All the librarians interviewed indicated that they would prefer this sequence of events, with two exceptions. An online search would be proposed initially if the information existed only in an online form or if an online search would take only a minute or two versus the time needed to perform an arduous search through many print tools.



Fee for Service

For those users who expect to have the research done for them, some city libraries have created a separate information broker-type service. INFORM in Minneapolis is probably the best known of these, but Cleveland has a similar program, "Facts for a Fee." What distinguished INFORM is that "the information sought demands more exhaustive, diligent and protracted investigation requiring the examination, evaluation, and summation of information obtained not only from written sources but also from nonprint media, individuals, and organization. . . . Convenience, confidentiality, and flexibility are other characteristics which distinguish the INFORM research service" (*6, p. 12-16*).

Susan Tertell, librarian at Minneapolis Public Library, describes INFORM as a nonprofit, fee-based service which is housed in the public library but which is totally self-supporting. The librarians use the public library collection, as well as the resources of local special libraries and the University of Minnesota's collection.

The clientele who make the most use of INFORM is primarily local businesses and the self-employed. Business people use the service either because they have no library in-house or because they need to supplement their own libraries' resources, particularly if they do not have access to the databases which INFORM librarians use regularly. The self-employed regard the public library as their corporate library.

Librarians at business branches and collections also mention that one of their user groups for online searching is special librarians. Many corporate li-

brarians use business branch collections to supplement their own. It is convenient backup for periodicals outside the corporation's main area of interest or for the latest issue of a periodical which is routing within the corporate librarian's organization and cannot be immediately located.

Publicity

As a group, corporate librarians do not need to be introduced to the new technologies which public libraries have added to their business branches and collections. However, the rest of the library's users generally do need to have these services explained. Once understood, a constant program of reinforcement is necessary to remind users that the library can do advanced research.

Most librarians publicize their ability to retrieve information online through posters in the library, articles in local newspapers and magazines, news releases, squibs in local business journals, or interviews on radio talk shows. Each time there is a publicity effort, there tends to be a flurry of activity, which subsequently dies down. Several librarians commented that the best advertising was word of mouth.

Competitors

One of the watchwords of private industry is competition. While librarians in business branches and collections are quite competent when called upon to research competitive information for a user, they are uncomfortable when asked to consider the competition for their own services. As public librarians, they do not see themselves in a competitive environment. Yet, it is just this competition that some observers, notably Giuliano and Lancaster, predict will destroy the public library's reason for existence. DeGenarro's article refuting this view also points out to practicing librarians the incipient danger of competitors (3). Still, the librarians interviewed see no threat. If anything, they encourage the use of their collections and services by everyone, including potential competitors. Nor do they see any diminution in the quantity of reference service they provide. Looking toward the future, they are confident that their libraries will not only survive any competitive challenge but will thrive.

From what direction might future competition for business reference come? The possibilities are numerous. There is evidence that information vendors such as Dialog and BRS believe that individuals who have access to a home computer or a terminal will be searching databases on their own in the future. Such new products as Dialog's Knowledge Index and BRS Afterdark are aimed at this market.

Some users may desert the public library for the convenience of home searching. The experience of business branches, however, suggests that users are not interested in performing their own searches. This may mean that personal computer enthusiasts are not the same people who regularly require online business searches, or merely that they have not been given the opportunity to experiment on their own. As Susan Tertell points out, many people are still learning about microcomputers. "Once they learn how to balance their checkbooks," she notes, "they will want to do online searching."

Several librarians interviewed suggested that even if users began using their home computers for online searching on a massive scale, they would still need the public library for the books and periodical articles indexed in the databases. Unless the majority of online databases change from indexing and abstracting to full text retrieval, the public library will not lack for "customers."

Brokers

Other possible competitors might be information brokers, although this could depend upon the metropolitan area in which the library is located. Libraries based in cities which have no

information brokerage firms have not yet experienced competition. In cities which do have flourishing information brokerage firms, such as those in the San Francisco Bay area, there appears to be a spirit of cooperation.

Although none of the librarians interviewed expressed antagonism toward information brokers, it cannot be assumed that this holds true in all cases. Difficulties are most likely to arise if information brokers are perceived as making windfall profits while public library finances decline. Gil McNamee of the San Francisco Library's Business Branch commonly refers users to local information brokers if their requests are too specialized or too time-consuming for his staff to undertake. Until recently, he was forced to refer questions which required online searching.

because the Greenwich (Conn.) public library is located just across the street and is linked to Lockheed, OCLC, and several other data banks" (*7*). Such reports encourage corporate cost cutters to think in the same direction. The West Hartford Public Library in Connecticut is mentioned in the same *Business Week* article and also in a recent *Library Journal* article, in which the long-range goal of that library is given as "to build a productive interface with the business community, which in the past has been unaware of what public libraries can do for them" (*8*).

Is there competition between the business collections of public and university libraries? Again, it does not seem so. The trend among university libraries is to cut back on the services they will render, while among public

It is conceivable that some users may desert the public library for the convenience of home searching. The experience of business branches, however, suggests that users are not interested in performing their own searches. This may mean that personal computer enthusiasts are not the same people who regularly require online business searches, or merely that they have not been given the opportunity to experiment on their own.

Might corporate libraries also come to be seen as competitors? Would steady use of business collections by employees at a corporation lead to that company's decision to establish its own library, thereby decreasing public library use? There is no evidence to support this. In fact, some respondents indicate that the opposite is happening.

In cities hit heavily by the recession, such as Pittsburgh, corporations are closing their libraries and turning increasingly to the public library's business division for their information needs. As reported in *Business Week*, "Chesebrough-Pond's, Inc., for example, disbanded its headquarters library

libraries it is to pick up the slack in the business reference area. However, this is not a strong trend, nor is the increased workload for the public library overwhelming.

Many librarians indicated that they send users to nearby university libraries for specialized books and that the universities reciprocate by sending students to the public libraries. The issue of cost again has some part to play in this interchange. Depending upon the amount libraries charge for online reference services and the restrictions they impose in terms of whom they will do searches for, the degree of complexity they will accept, and their charg-

ing policies, a student could shop around for the best "deal" before deciding where to submit a search request.

Would the business branch of a public library be seen by the business community or the information industry as a source of competition? Although this is certainly possible, it was mentioned only peripherally in the interviews. Daniel Weinstein at West Hartford Public Library drew an analogy to the time when his library was criticized for beginning to show movies. There was some local criticism that this activity was inappropriate for a public library because it might put the local theaters out of business. This did not happen, and the library is still showing films. Likewise, it is probable that business database searching by public libraries will put no one in the information industry out of business.

Budgetary Constraints

It was obvious, in the course of the interviews that librarians in business branches and collections in public libraries are, as a group, very excited about the possibilities becoming available to them to offer computer-based reference services. It was also evident that budgetary constraints temper this enthusiasm.

Writing in *Public Library Quarterly*, Bettina Wolff identifies three factors affecting government support of libraries. These are the widespread unwillingness on the part of the taxpaying public to support the present level of public services (although this attitude is not directed toward libraries, specifically); the shift in societal values following the change from an industrial to a post-industrial economy; and the many meanings inherent in the word "information" (*9*).

Taxpayers tend to think of libraries as static rather than active—as storehouses for books rather than as dynamic sources of current information. The heads of business branches and collections work hard to dispel this image, but it is not an easy task. Those interviewed state that they must simply cope with current realities.

Insufficient funding is hardly a novel problem. A report prepared in 1967 for the Office of Education, U.S. Department of Health, Education, and Welfare (HEW) on the relationship between libraries and industry was pessimistic regarding financial support (*10*). Public libraries give special service to business and industry, the report notes, but the corporations do not necessarily pay for this extra service. Businesses pay property taxes, which in turn contribute to the support of public library business branches and collections. However, those taxes also support other public library programs which do not directly benefit the business community.

Given the demands by business on public libraries, particularly the need for specialized and expensive reference tools, newsletters, and looseleaf services—not to mention the burgeoning new technological services—it would be advantageous for the public libraries to find ways to encourage their business clientele to contribute extra funds. Direct fees charged for online searching do not recoup expenditures. Most business branches and collections charge only the actual online time and telecommunications charges. A few charge a set amount per minute but this approximates merely the online time and generally does not cover staff salaries and overhead costs.

The 1967 recommendations by HEW regarding funding proposed that the "complacent attitude of many librarians toward industrial giving must be replaced by a greater awareness of the importance of placing the library's needs before every potential source of support and by devising better ways or raising funds. . . . In the final analysis the cost to industry of such support can be regarded as a cost of doing business" (*10, p. 99*).

These precepts are most often followed when business branches and collections attempt to initiate new technological reference services rather than when they have to face the expense of

maintaining them. At the Brooklyn Business Library, there was a fund-raising program to start online services, and in San Francisco, Standard Oil Company of California donated the funds necessary to acquire a terminal for the library's Business Branch. These successful business-public library interfaces are encouraging, but they need to be institutionalized so that the libraries are assured a constant source of funding.

The trend among university libraries is to cut back on services... while among public libraries it is to pick up the slack in the business reference area.

The struggle for adequate funding can be enervating. It can take so much time and energy just to maintain subsistence-level financing that a vision of a future electronic library may seem to be a fantasy. It is disheartening to hear one librarian describe as a "success story" the decision not to cut the branch's budget because the number of reference requests had increased. There are some who feel this very keenly, and who believe it eventually affects the quality of life in the community, though this is difficult to document. The lines from Blake's "Auguries of Innocence" seem to apply: "A dog starv'd at his master's gate/Predicts the ruin of the state." One librarian went so far as to predict that even if other public libraries were closed, the business branches would remain because they are vital to the economic stability of the community. One hopes this prediction is correct.

Prophesy

Predictions are always difficult, even more so during times of rapid technological advancement. A mere extrapolation from the past to the future is generally not sufficient and often leads to error. In spite of this, the heads of business branches and collections were willing to attempt prophesy, both for their individual situations and for business branches and collections in general.

There is a myriad of things these librarians would like to see in their own operations, some of which seem rather mundane and not at all technologically advanced. More microfiche reader/printers, particularly ones that make readable copies, was on one wishlist, while another hoped for additional directional signs to help users find things in the collection more quickly. Also mentioned frequently was the desire for more staff and expanded hours. In some cases this was phrased as a return to previous levels of staffing and hours, not as an addition.

More generally, the librarians' hopes for the future involve innovative uses of new technology. David Lewallen of Alameda County Business and Government Library envisions internal online files for reference staff use and an expanded catalog for his library's collection alone, which will include information on individual branches. James Taylor of the Seattle Public Library is looking forward to automated catalog and circulation functions to complement the automated acquisition system, while Gil McNamee is eagerly anticipating the inauguration of an online searching capability at the San Francisco Public Library.

The heads of the business branches and collections are uniformly enthusiastic about the future of their kinds of libraries. They view online searching as a strong growth area. They also see an upturn in the learning curve of the user. As library users of online search services realize the potential of this tool, their requests are becoming more sophisticated. They begin asking questions that can only be answered online—questions that, perhaps, they would not have considered bringing to the public library before it had online searching.

As users' level of awareness increases, the volume of searching done

by the staff of business branches and collections is expected to increase, as well. Joan Canning, when looking into what she terms "a cloudy crystal ball," sees the Brooklyn Business Library as being part of a "tidal wave." David Lewallen at the Alameda County Library agrees with this, adding that the need for information creates the demand for his library's services, and that this need continues to exist regardless of other changes. In fact, his statistics show that in recessionary times, the need for the public library is vastly greater. Perhaps the usage of business collections in public libraries is an unmeasured economic indicator.

Not only is there a tidal wave of demand for information but there is a corresponding proliferation of databases and search systems. This was often cited as a problem for librarians, who find it increasingly difficult to keep up with new developments. To cope with the almost daily changes occuring in the online environment, some read as much as they can (but never feel it's enough), while others simply don't use some databases or some search systems because they don't feel adequately trained to use them effectively.

and librarians, being conscientious professionals, are sharply aware of the cost of their online time.

The problems librarians experience in staying abreast of new databases and changes in search systems leads to increasing frustration. Like many other searchers, they fall back on the databases with which they are most familiar. New databases are used only if they are easy to use or if a printed equivalent is already available and the librarian is experienced in its use.

Despite the increasing complexity of the new technologies, there are many developments which the interviewed librarians predict. They expect to see more business-oriented databases and more databases dedicated to one industry. They believe that natural language access to the databases will come soon and will lead to direct access of the systems by the general public.

In libraries which already give users access to an online catalog, this does not seem far fetched. However, many librarians commented that they expect users will be disappointed at retrieving only bibliographic citations, since they will want full-text databases. Until this transpires, the librarians expect to see a

The chance to seize opportunities when they present themselves is only possible if an enlightened management is willing to lend financial and philosophical support to the technological expansion of business branches and collections of public libraries.

There is a significant difference between the use of printed reference tools and online databases. With the printed tool, the money has already been spent, and the time involved in becoming acquainted with the peculiarities of the book is not measured in dollars. With online indexes, the opposite is true. Not only that, but in many cases the dollars expended are not the library's but the user's. The pressure put upon the searcher in this situation is enormous,

continuing role for their collections as a back-up to the databases. Without the library, searchers would not be able to read the entire article or find the relevant book. Although Bettina Wolff believes that the new technology "implies a decreased emphasis on the collection and storage of information and an increase on analysis and interpretation" (9), practicing librarians still have a strong bias toward their collections. Furthermore, they are aware of how

much information in their chosen subject fields is not accessible online.

What do librarians worry about as they look to the future? Besides money, which is a constant headache, they fear they will be too successful at selling their users the online services. Already they have encountered users with unrealistically high expectations of what these services can do. Susan Tertell has noticed that patrons are regarding online service as a "panacea," and Miriam Lerch observes that her users see it as a "magic box."

Unless the majority of online databases change from indexing and abstracting to full text retrieval, the public library will not lack for customers.

There are times when users assume they can use computers to find all answers. Margaret Hammond at the Detroit library notes that users who telephone requests for stock quotes or directory assistance often make this assumption. This situation exists even at the Pittsburgh library, which has extensive online capabilities. Miriam Lerch still laughs when telling about the user who wanted voting information from the 1860s and told her to "just punch it into the computer—it'll know the answer." It appears that once business libraries have initiated online services and advertised how wonderful it is, they must backtrack later and explain how it isn't quite that wonderful. This unavoidably creates awkwardness.

Another worry regarding the steamroller effect of new technology, according to Elaine Clough of the Ventura County Library Services Agency, is that "we're not going to be ready." Any library, be it public or corporate, business or general, is only as good as the librarians staffing it.

A librarian in a business branch who cannot maintain subject expertise in business while remaining current on reference tools is not going to give the users good service regardless of the amount of new technology resident within that library. James Taylor, at the Seattle library, also notes that even with online searching, a business collection generally does not fulfill the potential needs of its users. Much more could be asked by library users, and some of it is unanswerable at present.

In his article on the future of the librarian, Robert Theobald predicts that soon "the most up-to-date information will be available through computers and people, rather than journals and books" (*11*). The heads of business branches and collections would, in general, agree with this statement, adding that newspapers add to the supply of current business information. They also feel confident that they could use the computers and the people, as well as the journals and books, to elicit any needed information.

Theobald also points out that the librarian of the future will need the "courage and sheer guts to cut loose from the comfortable 19th century library images" (*11*, p. 76).

Conclusion

Librarians interviewed for this paper have definitely left the 19th century far behind, if indeed they were ever part of it. Their challenge is to convince their administrations and their public that they have done so. As heads of libraries that are part of the information future, they are going steadily forward, learning more about the applications of new technologies in libraries as they go. Gil McNamee of the San Francisco Business Branch succinctly summed up how he and fellow librarians are looking toward the future: "with optimism based on money."

Where will business branches and business collections of public libraries fit into the technologically dominated information environment of the future? As a group, they will be "dead center,"

neither leading the pack nor lagging far behind it. Innovative programs, such as West Hartford's introduction of the SITE II database, Pittsburgh's acquisition of a Westlaw terminal, and the introduction of fee-for-service departments within public libraries, come about not only because of the vision of those heading up the libraries but also because of initial funding commitments.

The chance to seize opportunities when they present themselves is only possible if an enlightened management is willing to lend financial and philosophical support to the technological expansion of business branches and collections of public libraries.

Appendix. Librarians Interviewed

Michael Arnold, Business Branch, San Francisco Public Library
Joan Canning, Brooklyn Business Library
Elaine Clough, Business Research, Ventura County Library Service Agency (Roundtable Coordinator for Public & Government Business Libraries, B&F, 1981-2)
Margaret Hammond, Business & Finance Department, Detroit Public Library
Miriam Lerch, Business Division, Carnegie Library of Pittsburgh
David Lewallen, Alameda County Business and Government Library
Gil McNamee, Business Branch, San Francisco Public Library
Sylvia Mechanic, Brooklyn Business Library
James Taylor, Business & Science Department, Seattle Public Library
Susan Tertell, INFORM, Minneapolis Public Library
Daniel Weinstein, West Hartford Public Library

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Electronic Information Distribution

The Role of the Traditional Publisher and the Librarian

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■ **The role of the traditional publisher is changing as a result of new electronic technologies. The effect this has on special librarians is discussed, focusing on the process of information distribution and the relationship between publishers and librarians.**

EXPLORING how electronic distribution affects traditional publishers—the concepts, strategies, problems, and opportunities created by today's changing environment—unavoidably touches on the challenges faced by special librarians, for, in a broad sense, the two groups are in the same boat. Commenting on the future of libraries within the electronic environment, Tom Surprenant predicts "the chief competitor to the library in an enhanced electronic information environment will probably be the growing computer online database industry."*

The word "library" could be replaced by "traditional publisher" and the statement would be equally valid. Additionally, in both versions, "chief competitor" could just as easily be replaced with "primary opportunity."

The Traditional Publisher

The role of the publisher is to make useful information available to end users in the most effective manner possible. Prior to the involvement of publishers in the relatively new phenomenon of electronic distribution, output media took the form of print on paper, or hard copy, e.g., periodicals, books, newspapers, and newsletters. That is still largely the case today and most likely will continue to be so for the foreseeable future, but the balance between hard copy and electronic distri-

This article is based on a speech delivered Jun 7, 1983, during the SLA Annual Conference in Detroit.

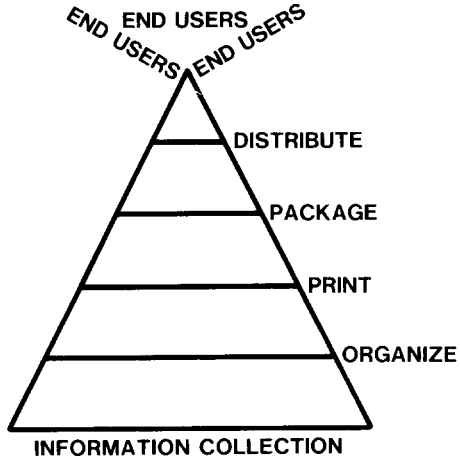
*Surprenant, Tom/"Future Libraries: The Electronic Environment." *Wilson Library Bulletin* 56(5):340 (Jan 1982).

bution is shifting. The key factor is timing.

A conceptual model of the role of the publisher within the confines of his traditional business is presented in Figure 1. The base of the triangle represents the foundation of the publishing industry: the information collection process. In the case of *Business Week* or similar major publications, the process involves a worldwide information and news gathering network; for multiple listing services such as *Multi-List*, a McGraw-Hill real estate information service, it is the relationship with real estate boards and individual brokers; and in the case of *The Blue List*, Standard & Poor's (S & P) municipal bond offerings service, it is the relationships with the bond dealers, both as information providers and users. In each of these cases, the strength of the publication lies in the value of its information and the information collection process.

The apex of the triangle represents the publisher's reason for being: the information needs of end users. Arranged between the information gathering phase and the end users are the functions performed by the publisher in transforming basic data into a viable information product that can be distributed at a profit. Information is collected, organized, analyzed, interpreted, formatted, printed, packaged, and ultimately distributed to the end users. The number of functions a publisher decides to own or control will vary from publication to publication and will be part of an overall strategy. The important factors used in determining this strategy are, among others, the nature of the markets served, the timeliness of the information, the frequency of the publication, and the locations of the end users.

Figure 1. Information Distribution within the Confines of Traditional Publishing Practices.



Benefits of Electronic Distribution

The *Blue List*, a daily compilation of municipal bonds offered for sale, is a representative example of how publishers and their subscribers can benefit from electronic distribution. Aside from the information collection process, the key to the success of this printed publication is the ability to deliver thousands of copies daily to subscribers in over a hundred cities, usually before 9 a.m., even though the publication comes off the press late the previous evening. Since the *Blue List* is an integral part of the bond market, it must be delivered on time. The strategy for meeting the needs of the market is to control the entire gamut of print publishing functions, including distribution. To accomplish this, the publication developed an intricate nationwide network of individuals who personally deliver the *Blue List* to subscribers in time to be used for their trading activities the next day.

A more sophisticated way of getting this information to subscribers is the Blue List Bond Ticker. The Bond Ticker is a hard-wired, real-time system utilizing a dedicated terminal. The terminal on the end user's desk communicates continuously through telephone lines with a computer housing the information. This information is updated and transmitted to the end user immediately as it becomes available.

Once it was decided to develop an electronic version of the *Blue List*, the first question faced was, what technology would best fit the product concept? Since information concerning bonds offered for sale is continually updated throughout the day, the decision was made to use dedicated hard-wired terminals as opposed to the more common dial-up type network.

User Resistance

Early in the project, market research was conducted among potential users, and the most important issue encountered was a problem familiar to librarians, as well: user resistance to an electronic service. Opposition to the concept of electronic distribution of the Blue List Bond Ticker took many forms:

- Fear that dynamically updated information would disrupt trading in the existing markets.
- Lack of psychological preparation to deal with information that is updated and delivered over a screen forced potential users to change their reading habits and to make decisions more quickly than they were used to.
- Some subscribers who had been in the business for 20–30 years claimed that they could select needed information faster by reading the printed product than it could be retrieved by watching a screen.
- The expense of the electronic product in comparison to the subscription price of the print product.
- A potential competitive disadvantage for customers who thought that they could not afford the electronic product.

In the case of the *Blue List*, whose information is dynamically updated and leads to a specific direct action (the purchase of a bond), the approach adopted was to develop an electronic delivery system dedicated exclusively to bond traders. This "information pipeline" approach is not uncommon within the financial community which requires specific, dynamically updated and actionable information for day-to-day operations. The approaches used by S&P and others to distribute other kinds of information electronically varies almost as widely as the different kinds of information services that are offered today on the marketplace. It is likely that this diversity of distribution will only increase in the future.

Can Printed Media Compete with Electronic Services?

Another stumbling block in developing electronic versions of printed services is pricing. The concern among publishers is whether subscribers will stop using the product in its printed form once they have access to it electronically.

If the experience with the *Blue List* can be considered typical of what is in store for other publishers who venture into the electronic field, there is little for publishers to fear at this time. After three years, the print subscription base is up. In the cases of other publishers who have chosen to introduce an electronic form of a printed product, no noticeable drop in the printed subscription level has been experienced. Rather, electronic distribution has allowed some publishers to reach markets where the printed services have little penetration.

At first glance, librarians may not take any comfort from this. However, it is important to recognize that new delivery technologies create an increased need among end user organizations to carefully orchestrate the inflows of information available from multiple sources and in multiple media to insure the most cost-effective use of outside information resource budgets. The information specialist or librarian is in a unique position to fill this need.

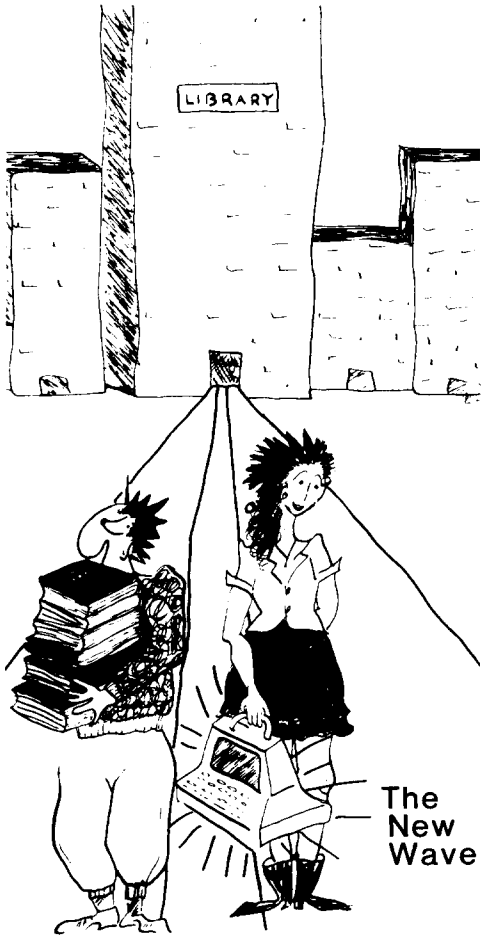
Assessing the Needs of the User

Deciding how to distribute, price, and market various information services electronically depends on the nature of the end use of the information

and the inclination or ability of the end user to deal with electronic services. In their capacities as information advisors and facilitators, librarians have an opportunity to play a critical part in users' acceptance of the new electronic services publishers are developing. How this role is fulfilled will go a long way in determining the control librarians have over the flow of outside information to the various constituencies they serve.

Most publishers do not aim to develop electronic information services designed for bond traders or librarians per se but rather to fill existing information needs in the most effective way possible.

In deciding how best to meet this objective, publishers must carefully discern the real needs of the markets they serve, or want to serve. This involves not only constant interaction with the market and traditional market research but also the use of prototype and pilot efforts to test potential products.



Most forms of electronic distribution lend themselves more readily to this type of experimentation than do traditional print media. Publishers must be increasingly sensitive to the emergence of new buying influences which are developing in response to the proliferation of information technologies and services. In the last analysis, those individuals who make the decision whether or not to purchase a new information service, whether they are the actual end-users or not, are the ones on whom the publisher must focus. As more and more information services utilize the new technology, it is here that the librarian's role—at least from the information provider's viewpoint—will be enhanced, or diminished.

As a result of continuing advances in technology, today's arena for database publishing and electronic distribution is becoming increasingly more complex and difficult, not only for the publisher but for the end user. This puts a premium on the talents and knowledge of information professionals who know all the ins and outs—and costs—of the new information delivery and storage technologies.

The Future

Several lessons for publishers and librarians are contained in the cross-current of ideas that are being offered on the future of the information industry. The most obvious is that there is a lack of certainty as to precisely what the impact of the new technologies will be and how they can be successfully applied to publishing. On the other hand, the potential of electronic publishing to dramatically change how information publishers function is not only foreseeable but is already happening. Therefore, it is imperative that this reality be dealt with. The action words "do something," "start getting involved,"

and "must participate," which are the new buzz words in the industry, evoke a clear message that publishers can't afford to ignore. They must participate along a broad spectrum of live, new technology projects.

Another lesson to be learned is that information providers may no longer have control over or easy access to all the expertise and capabilities necessary to compete in the electronic information marketplace. Of course, simply because a project involves the use of new technologies or involvement with high technology companies does not mean it will succeed. To the contrary, such projects are all the more risky because the learning that is required of users and the changing nature of the technologies affect their acceptance in the market. Hard experience has shown that decisions concerning products that involve the new technologies require as careful, if not more careful, consideration than do more traditional endeavors.

Although there is a good deal of activity going on, librarians will not be inundated tomorrow with a multitude of new electronic products from traditional publishers; rather, it is likely to be a slower, more evolutionary process. In addressing projects involving electronic distribution, both publishers and librarians are attempting to deal with a rapidly changing field that is replete with new concepts, new terminologies, and new competitors. The penalty for publishers who do not make a move for fear of adversely affecting short-term financial performance may be as great as the penalty for making a wrong move—and at least in the latter case, they have a chance of being right.

New or Electronic Publishing

The companies that constitute the information industry will be severely tested during the coming decade in their ability to recognize technological trends and to apply them to their own businesses. This not only involves adapting to new technologies, including innovations in hardware, software, and communications equipment, but judging the extent and timing of the end user's appetite for technology driven data and information services.

The role of the publisher today—and tomorrow—is no different than it has always been, although some of the functions on the triangle now have different names (see Figure 2). However, information still constitutes the base of the triangle and the end user its apex.

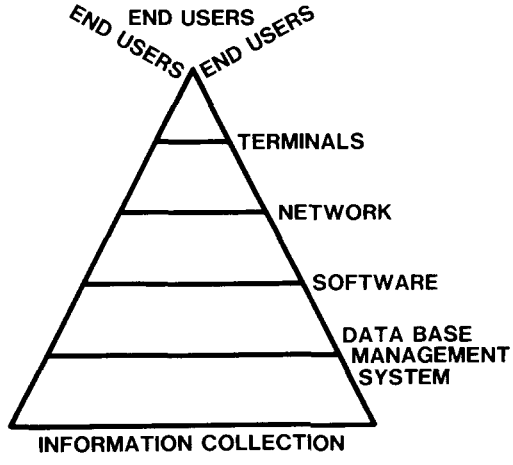
Latent Participants

In today's environment, publishers are faced with technologies that are familiar to them, as well as those that are not as familiar, such as intelligent terminals, videodisk, satellite transmission, downloading, teletext, cable TV and telefiche.

A phenomenon which is a direct result of the new and changing technologies is referred to as the "latent participants." "Latent participants" are those companies whose primary business is not perceived to be the provision of information, but who, nonetheless, have the power and qualities to compete with traditional publishers.

Some librarians are already familiar with these participants: paper compa-

Figure 2. Information Distribution in the Age of Electronic Publishing.



nies such as Mead; oil companies such as Exxon; equipment manufacturers such as Xerox and TRW; chemical companies such as Allied; utilities such as Bell Telephone Company; and even universities and the federal government, which are now or soon will be competing with or entering into joint ventures with traditional publishers.

In many cases it makes sense for traditional publishers to enter into joint ventures with partners who have electronic distribution and computer technology servicing specific markets that can enhance the value of the information service to the end user. In fact, most information providers are besieged with opportunities for joint ventures. In the future, the electronic products of traditional publishers will, in all likelihood, be offered in conjunction with companies which, until recently, had little presence in the information industry.

Specifically, how technological change is going to affect publisher's businesses and markets in the future is not certain. What is certain is that the rate of this change will be even more rapid and far-reaching than it has been in the past. The questions publishers must ask themselves are difficult and, in many cases, cannot be answered with any degree of confidence. Nevertheless, the answers will be the basis from which new strategies are developed which will determine the degree of an individual publisher's success or failure. How publishers deal with these questions will also help to determine the future role of librarians as specialists in and providers of the information necessary for the day-to-day working of their organizations.

The movement of traditional publishers into the evolving electronic environment is an attempt to solve a new and complex puzzle with numerous interrelated parts: evaluating the changing information demands within traditional markets and emerging new markets; determining the appropriate distribution vehicle; deciding whether to build the necessary distribution capability or enter into a joint venture; making complex pricing judgments; and changing editorial focuses, among others.

These decisions involve a rethinking of the traditional ways of doing business and the traditional roles of information providers. What may work for one new electronic service serving a particular market very likely won't work for another. Publishers will need to establish relationships with new players in the game and at the same time get even closer to the end users and key purchasing influences of their information. Publishers will be closely watching how professional information specialists adapt and react to the changing environment for clues as to how they should be proceeding—as closely as librarians undoubtedly will be watching them.

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Nonprint Works and Copyright in Special Libraries

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■ **This is the first of two articles on copyright issues and nonprint and audiovisual materials in special libraries and information centers. Focusing on nonprint materials, the first article includes a general overview of copyright, as well as detailed analyses of particular problems of copyright, computer programs, databases, and electronic publishing. The unique copyright aspects for each of these formats is analyzed and explained. The second article will be published in the July issue of *Special Libraries* and will cover audiovisual, pictorial, and graphic works.**

THE Copyright Revision Act of 1976(*1*) recognizes the special relationship that exists between libraries and copyright owners. Libraries are major purchasers of copyrighted materials and make them available to their users. Libraries thus act as intermediaries in gathering, storing, and indexing copyrighted books and materials for the ultimate consumer, the library user. Library organizations were instrumental in the passage of the 1976 Copyright Revision Act. Special Libraries Association, as well as other library and information societies, testified in congressional hearings and recommended amendments to pending copyright legislation and later guidelines under various sections of the Act. These activities were directed at striking a balance between the needs of library users and the rights of copyright holders.

During this period, librarians and publishers were myopically concerned with the issue of library photocopying of printed copyrighted materials. Despite the obvious importance of this issue to libraries and information centers, other vital areas of interest failed to receive the same degree of concern. Nonprint materials comprise large portions of many library collections, and issues relative to their use and copyright protection have become increasingly problematic as technological developments have made materials in various formats more readily available. The same concerns persist for the use of copyrighted nonprint works as exist for printed materials. Many of the questions concerning the photocopying of

printed works have been answered, and librarians now are directing their attention to nonprint media in an attempt to find answers to questions about the use and duplication of this material by libraries.

Special library collections increasingly are comprised of nonprint materials such as computer programs and machine-readable databases. Electronically published material, i.e., those published and stored in electronic format rather than in hard copy, will be significant in most special libraries. Special librarians, generally, are asked to supply information, and the format or storage medium for that information is immaterial to the user. This article focuses on how the Copyright Act protects nonprint works along with the issues of use and duplication of such material in special libraries and information centers.

Nonprint works are not defined in the Act, but for purposes of this article the term will be used to describe computer programs, machine-readable databases, and electronically published materials. Microforms will be discussed only briefly since they are simple reductions of traditional print, pictorial, or graphic materials. Under most circumstances, the reproduction of a microform constitutes copyright infringement if copying the underlying work is an infringement.

Library Practices

Special libraries and information centers play a unique role among libraries. While making copyrighted materials available to users is standard practice for all types of libraries, special librarians often are asked to provide the information required and not just a citation to where the information may be located. Other types of libraries are far more likely to locate resource materials for users rather than analyze the information and provide exact answers to specific questions.

Library education long has stressed the desirability of selective dissemination of information to users. Librarians are taught that any good librarian should ascertain the research interests of users and be vigilant in calling the attention of users to newly published articles, books, and nonprint works pertinent to the users' subject interests. This is touted not only as good librarianship but aggressive librarianship sure to make the librarian a vital part of any research effort conducted by the institution or organization.

Prior to the availability of low-cost copy machines, fiche duplicators, and so forth, selective dissemination of information meant either routing the original to an interested researcher or citing the reference along with some notation that the material dealt with a specific research interest. Since the advent of photocopying, however, it has become standard practice for librarians in their mission as disseminators of information to copy the material and route the photocopy to the researcher without any specific request for the individual item from the researcher (2).

With the development of fiche-to-fiche duplicators, some libraries have the technology to duplicate fiche for users. Reproduced fiche can be used to satisfy interlibrary loan requests and to produce copies for users in the same way as photocopies are used. Libraries also participate in extensive interlibrary loan systems. Before the advent of low-cost photocopying, libraries hesitated to loan bound journal volumes and other difficult to replace material. The ability to meet user needs through the exchange of photocopies dramatically increased the scale of interlibrary loan, actually making it "interlibrary exchange." Original copies of nonprint works sometimes were loaned, but, in all likelihood, some duplicated copies also were furnished to satisfy interlibrary loan requests.

Commercial databases now are available which offer outstanding collections of information through computer technology. Libraries subscribe to these services and perform searches for users; some libraries have created their own

in-house databases, also. A few libraries have had permission from database proprietors to download selected information from a commercial database into their in-house computers to provide for quicker and cheaper access to selected information from the database.

The new Act specifically addresses some of these library practices relating to nonprint works, while others are mentioned not at all. Library photocopying and interlibrary loan practices are treated in the Act and have received a great deal of attention in the literature. On the other hand, the duplication of nonprint materials largely has been ignored. In order to apply basic copyright principles to library copying of nonprint media it is necessary to review some general sections of the Act.

Overview of General Copyright Protection

In order to obtain copyright protection for a work, the author, producer, or creator of the work must meet two statutory requirements. The work must be original with the creator (3), i.e., not copied from the work of someone else, and the work must be "fixed" (4). There are seven categories of works susceptible to copyright protection: 1) literary works, 2) musical works including lyrics, 3) dramatic works including musical scores, 4) pantomimes and choreographic works, 5) pictorial, graphic, and sculptural works, 6) motion pictures and other audiovisual works, and 7) sound recordings (5).

Upon "fixing" the copyrighted work, the owner obtains a bundle of exclusive rights to do or authorize any of the following: 1) reproduce the work in copies or phonorecords, 2) distribute to the public the copies or phonorecords so reproduced through sale, rental, lending, or lease, 3) prepare adaptations or derivative works based on the original, 4) perform the work publicly, and 5) display the works publicly (6). On the other hand, the purchaser of a legitimate copy of a copyrighted work is the outright owner of that copy and may use it and dispose of it in any way desired (7). It is important to note, however, that the right to use a copyrighted work does not necessarily include the right to reproduce the work. Sections 107-118 of the Act detail specific exceptions to the exclusive rights of copyright holders. The two sections most important to librarians are sections 107 and 108.

Section 107

Through the years, as copyrights were infringed and litigation ensued to determine liability for infringement, the judiciary developed a so-called safety valve on the owner's exclusive rights known as the fair use doctrine. Under the fair use doctrine, conduct that normally would constitute an infringement of a copyrighted work may be excused as such if use of the work constitutes fair use (8). The Act defines fair use as . . . "including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research . . ." (9). Guidelines for § 107 on multiple copying for classroom use in nonprofit educational institutions were published in the House Report which accompanied the Act. The Act then lists the factors a court should consider in determining whether a use constitutes fair use: 1) the purpose and character of the use, 2) the nature of the copyrighted work, 3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole, and 4) the effect of the use upon the potential market for or value of the work (10).

Section 108

In addition to § 107, libraries and archives are governed by § 108 entitled, "Limitation on Exclusive Rights: Reproduction by Libraries and Archives." Libraries and their employees

acting within the scope of their employment may make one copy or phonorecord of a work and distribute the same if: 1) the copy is made and distributed without any direct or indirect commercial advantage, 2) the library's collection is either open to the public or available not only to researchers associated with the institution but also to persons doing research in specialized fields, and 3) copies made include a copyright notice (*11*).

The Act then identifies several situations in which works may be copied, such as to preserve an unpublished work or for deposit in another library or archives (*12*) and for replacing lost, stolen, damaged, or deteriorating material when a replacement cannot be obtained at a fair price (*13*). The rights of reproduction and distribution provided in § 108 apply when certain conditions are met, such as the user (or the library in an interlibrary loan transaction) requests no more than one article or other contribution in a periodical issue or collected work (*14*). The copy must become the property of the user, and the library should have no notice that the copy will be used for non-fair use purposes (*15*). Additionally, the library must prominently display a warning of copyright on its order form for copies and at the location where orders are placed for copies (*16*). To relieve the library from liability for copies made on unsupervised copy machines, the library must display a warning of copyright (*17*).

If a copy is made of a complete work or a substantial portion thereof, the library first must have determined on the basis of a reasonable investigation that a copy is not available at a fair price. Also, the copy must become the property of the user, and the library must have no notice that the copies being made do not qualify for the § 108 exemption (*18*).

Interlibrary loan arrangements are recognized throughout § 108, and the Act specifically says that nothing in this section shall prevent a library from participating in interlibrary arrangements which do not have as their purpose or effect the providing of copies in such aggregate quantities as to substitute for the purchase or subscription to such a work (*19*). Separately negotiated guidelines, referred to as the CONTU guidelines, were promulgated to clarify what constitutes "such aggregate quantities as to substitute for subscription to or purchase of such a work" for periodicals less than five years old (*20*).

The "direct or indirect commercial advantage" statement contained in § 108(a)(1) caused much confusion during the legislative process. The House Report settled the issue by making it clear that libraries in for-profit organizations did not lose all rights under § 108. Rather, if such libraries comply with the criteria and requirements of § 108, then an isolated, spontaneous making of a single copy without any commercial motivation would be permitted under the Act. Likewise, such libraries may participate in interlibrary arrangements (*21*).

Audiovisual and Nonprint Materials under §§ 107–108

Section 108 appears to eliminate the possibility of copying most audiovisual and some nonprint works. "The rights of reproduction and distribution under this section do not apply to a musical work, a pictorial, graphic or sculptural work, or a motion picture or other audiovisual work other than an audiovisual work dealing with news " (*22*) There are three specific exceptions: 1) pictorial and graphic works published as illustrations, diagrams, and so on, to accompany other works (*23*), 2) copying an unpublished audiovisual work for purposes of preservation, security or deposit in another library (*24*), and 3) copying to replace damaged or lost copies or phonorecords (*25*).

The most common practices involving the copying of nonprint materials are not detailed in these three exceptions, however. Certainly, the rights conferred under § 107 apply to the copy-

ing of nonprint media, but there are no clear guidelines such as those dealing with interlibrary loan (26). Perhaps the rule of reason should apply. If librarians recognize the rights afforded copyright holders and apply the fair use test to the best of their abilities, then the individual librarian should be able to determine whether the copying of a nonprint work qualifies as a fair use. Clearly, just having a good or beneficial purpose for copying is not enough to relieve a librarian from liability for copyright infringement.

Perhaps the starting point should be this; fair use seldom envisions copying an entire work. Specific examples of fair use are found in the legislative history, such as reproduction of a small portion of a work to illustrate a lesson (27), but most of the examples relate to copying for classroom use in a nonprofit educational institution. In fact, each of the four fair use considerations are explained in the Senate Report with reference to classroom situations (28). The four fair use criteria, however, do have applicability to the duplication of nonprint works outside of the educational setting.

In a recent case, *Universal Studios Inc., v. Sony Corporation of America* (29), the Ninth Circuit examined home off-the-air videotaping and applied the four-pronged fair use test (30). Although currently on appeal to the U.S. Supreme Court (31), the Ninth Circuit's application of the fair use factors to audiovisual copying indicates to applicability of § 107 to copying outside of education and academia. The Court applied each of the criteria in reaching its decision that home videotaping from copyrighted television programs is an infringement of copyright (32).

General Library Practices and Copyright

There are numerous books and articles devoted to interlibrary loan, photocopying, and copyright. The exchange of photocopies to satisfy interlibrary loan requests for printed matter is outside the scope of this article, but the interlibrary loan of copyrighted nonprint materials is within its purview.

If librarians recognize the rights afforded copyright holders and apply the fair use test to the best of their abilities, then the individual librarian should be able to determine whether the copying of a nonprint work qualifies as a fair use. Clearly, just having a good or beneficial purpose for copying is not enough to relieve a librarian from liability for copyright infringement.

Few libraries actually participate in interlibrary loan arrangements for nonprint material. Because of the potential damage nonprint works could suffer from mailing and handling, libraries seldom actually loan them to other libraries. While the § 108(g)(2) CONTU guidelines provide suggestions for photocopying periodical articles, there is no provision directly relating to the copying of nonprint media for interlibrary loan (33). In fact, the interlibrary loan guidelines do not apply to audiovisual and some nonprint works (34); it also is difficult to formulate what sort of copying for interlibrary loan would be permissible under under § 107 fair use. It would seem logical, however, that a library which purchases copyrighted computer software and finds that the

program has been damaged could replace it through an interlibrary loan transaction under § 108(c).

In-house copying, including the selective dissemination of information, is covered by the Act. Clearly, some intra-library copying is within fair use. The Act, however, neither specifies any numerical criteria nor defines systematic copying. The House Report outlines three practices that would constitute copyright infringement; two of these relate to in-house copying in libraries in for-profit organizations.

> Under § 108, a library in a profit-making organization would not be authorized to: (a) use a single subscription or copy to supply its employees with multiple copies of material relevant to their work; or (b) use a single subscription or copy to supply its employees, on request, with single copies of material relevant to their work, where the arrangement is "systematic" in the sense of deliberately substituting photocopying for subscription or purchase; or (c) use "interlibrary loan arrangements for obtaining photocopies in such aggregate quantities as to substitute for subscription or purchase of materials needed by employees in their work (*35*).

Isolated, spontaneous photocopying of single copies is covered by § 108 even though the copy is made for employees within the course of their work (*36*). A library may not avoid its liability by installing unsupervised photocopy equipment on company premises outside the library (*37*). The Association of American Publishers (AAP) early expressed its desire to quantify the number of in-house copies that could be made before reaching a level of copying that is systematic. AAP later changed its position, apparently believing that its earlier numerical guidelines were overly generous (*38*). Electronic publishing of journals may interface with all of this since the ability to make a printed copy may accompany a subscription.

The duplication of microforms by libraries has become a possibility with the development of fiche-to-fiche duplication equipment. Although the equipment is still relatively expensive, many libraries do own fiche duplicators. Whether copying a fiche for a user or for the library's own collection is permissible depends on the nature of the underlying work. If the fiche is a Senate report, for example, then duplicating the fiche is not an infringement of copyright. Government publications are public domain material and may be freely copied by anyone (*39*). On the other hand, if the work is a commercially published monograph, copying the work via fiche is equivalent to copying any other literary work by means of a photocopier.

If photocopying the underlying printed work is permissible under § 108, then duplicating the fiche copy also is permissible. The Act refers to "reproduction in copies or phonorecords" (*40*) and does not specify the form in which a copy may be made.

It appears, therefore, that copying in any form is treated as if the work were photocopied. Moreover, fiche generally represent an entire work, and the statute does not envision copying an entire work.

Some librarians have duplicated both print and nonprint copyrighted material for addition to the library's verticle files. Such duplication is not exempted from copyright infringement under § 108. Unpublished material might be so preserved for the vertical files (*41*), but published material does not receive the same exemption. Section 107 fair use may be applicable.

Copyright, Libraries and Nonprint Material

There are many reasons why a librarian might wish to reproduce copyrighted nonprint works. Some librarians may feel that in order to preserve certain nonprint works they should be duplicated for archival purposes, especially when such materials are no longer available on the open market. On the other hand, libraries may simply be re-

sponding to user demand by reproducing a copyrighted nonprint work.

Another possible reason for a library to duplicate nonprint works is in order to respond to an interlibrary loan request. Thus, the motives for such copying are as varied as are the techniques and technology used to produce the copy (*42*).

There are ways of reproducing nonprint material legally, either by asking permission and/or by paying royalties for the privilege of duplicating the materials (*43*). This applies to libraries, as well as individuals. A § 107 fair use claim also might exempt some copying.

The Act allows nonprint material to be reproduced by a library only under narrow circumstances. Unpublished works may be duplicated for preservation purposes (*44*), and when the library's copy of a published audiovisual work is damaged, deteriorating, lost or stolen, the library may reproduce the work after making a reasonable effort to find an unused replacement copy at a fair price (*45*). When illustrations accompany a printed work, they may be copied along with articles in accordance with §§ 108 (d) and (e) (*46*). This applies to all formats of material and will not be discussed for each individual type of nonprint work.

Computer Programs

Software for computers is included in the literary works category and is subject to copyright protection. Computer programs are governed under § 117 of the Act, which was amended in late 1980 (*47*). The Act now defines computer programs as "... a set of instructions to be used directly or indirectly in a computer in order to bring about a certain result (*48*). The new provision specifically describes the conditions under which the lawful owner of a copy of a copyrighted program may make additional copies of the program or adapt it.

The first condition relates to the use of the program by the owner of the copy. If making the copy is an essential step in the use of the program with the existing hardware, a copy or adaptation may be made, for example, the translation of a software package from one computer language to another. The copy made under this provision may be used for no other purposes (*49*).

The second condition relates to making a copy for archival purposes. The owner of the copy must destroy archival copies in the event the possession of the program should cease to be rightful (*50*). A common example of a change in the legality of the possession would be the termination of a licensing agreement. At the end of the license period, the licensee must destroy the copy made under § 117.

Section 107 provides a fair use exemption for multiple copying for classroom use, but it is not likely that it would . . . apply to multiple copying of software, even for classroom use.

Libraries may be involved in using commercially produced software through lease or purchase or in the development of their own software. Libraries which use programs developed and copyrighted by others are subject to the provisions of § 117. Whether libraries may copy programs for users requires a close examination of §§ 107 and 108. Programs are considered to be literary works (*51*) and are not mentioned as nonprint material deserving special consideration under the provisions of § 108 as are audiovisual, pictorial, and graphic works. The assumption, therefore, is that duplicating a portion of a purchased copyrighted program for a user would not be an infringement of copyright provided that the other requirements of § 108 are met.

Duplicating multiple copies for a library's collection would be equated with making multiple copies of novels, and normally would be an infringement

of copyright. Duplication of software in multiple copies for courses in computer programming and the like probably is an infringement. Software developers will sell programs in multiple copies, or at least sell the right to duplicate copies in excess of the exemption provided by § 117.

Section 107 provides a fair use exemption for multiple copying for classroom use, but it is not likely that it would be interpreted to apply to multiple copying of software, even for classroom use.

As with other works, determining the copyright status of computer software presents an additional problem for librarians. Although the Act specifies that notice should be placed on copies of a work in a manner to give reasonable notice of a claim of copyright (52), one cannot presume that a program is within the public domain if it lacks a copyright notice. The Act treats several reasons for notice omission as exceptions to the general notice requirements. An omitted notice will not invalidate the copyright if the notice is omitted from no more than a few copies, or if registration for the work has been made before or within five years of publication without notice and, after the omission is discovered, a reasonable effort is made to correct the lack of notice on all publicly distributed copies within the United States. Likewise, omission of the notice will not defeat the copyright if the notice was omitted in violation of an express written requirement for notice as a condition of the author's authorization of public distribution of copies (53).

The Copyright Office regulations specify the placement of the notice on machine readable copies. It may be embodied in machine readable form so it appears on any printouts, either with or near the title or at the end of the work. On the other hand, it might be continuously displayed on terminal display. The most common location for placement of the notice for programs probably is on the container, i.e., box, reel, disc, cartridge and so on (54).

Perhaps the safest course of conduct for a librarian wishing to duplicate software is to assume that it is protected by copyright. Should the copying be outside the provisions of §§ 107,108, or 117, the offer to pay royalties should be made.

Computer Databases

Computer databases may consist of several types of material. A database may be a previously copyrighted work now stored electronically. In that case, the protection given the underlying work also extends to the electronic copy. The fact that a work exists in a computer database does not change its copyright characteristics. On the other hand, a database may be an original compilation, i.e., "...a work formed by the collection and assembling of preexisting material or of data that are selected, coordinated, or arranged in such a way that the resulting work as a whole constitutes an original work of authorship" (55).

The technically correct term for both types of databases is "machine-readable database." The vast majority of existing databases are not in machine-readable form but are traditional compilations such as dictionaries, directories, citators, and so on. Compilations are noted not for their artistic and literary merit but for their commercial and practical value (56). Compilations are subject to copyright protection under the literary works category; their originality lies in the collection and organization of the data.

Section 103 provides that compilations can be protected, but the copyright in such works does not extend to any preexisting material that may be used in the compilation. The copyright, therefore, does not relate to each entry in a compilation but to the original elements of the work as a whole.

A machine-readable database derives its value from the organization of the material and the sophistication of the program which dictates the searching and retrieval of the information. The skill of the person performing

the search also contributes to the value based on his or her skill in articulating requests in the process of interacting with the database (*57*).

A particularly difficult question arose early in the history of copyright protection for databases. Should copyright liability attach at the input or the output stage? In other words, is the copy made at the time the work is input into the computer memory unit in machine-readable form or when the search is made of data existing in the computer's memory (*58*)? The input/output consideration is not an idle theoretical question but deals with user patterns and determination of the stage at which royalties should be paid. There could be instances in which royalties should be paid at input and others at the output stage. If the work is never to be printed or reproduced in its entirety, then if royalties are due, they should be paid at the input stage. On the other hand, requiring royalty payment at the input stage could serve to inhibit the development of useful databases, especially if, at the initial stage, the developer considers the material to be marginal. It also might be easier to control the payment of royalties at the input stage (*59*).

A particularly difficult question arose early in the history of copyright protection for databases. Should copyright liability attach at the input or the output stage? In other words, is the copy made at the time the work is input into the computer memory unit in machine-readable form or when the search is made of data existing in the computer's memory?

At the output stage there is frequently a problem in defining what activities constitute output. Certainly, the printing of material from a database constitutes output. It is less clear whether merely scanning the database and seeing data displayed on a viewing device constitutes output. The display certainly is ephemeral when it appears only on a screen and never is transferred to any hard copy (*60*). The answer to the question may be affirmative if one analogizes to video games. Recent court decisions have held that the audiovisual display in a video game caused by the repetition from game to game of images and sounds on the screen constitutes sufficient fixation for copyright purposes to qualify the game for copyright protection as an audiovisual work (*61*). If this repetition constitutes fixation, then repetition logically can be considered a copy for copyright purposes. The Act defines copy as:

> . . . material objects, other than phonorecords, in which a work is fixed . . . from which the work may be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device. The term 'copies' include the material object, other than a phonorecord in which the work is first fixed. (*62*).

If the repetition on the screen is sufficient to "fix" a video game display, then the ability to repeat the display may be sufficient to qualify as a copy for output purposes.

The National Commission of the New Technological Uses of Copyrighted Works answered the input/output question in its subsequently enacted proposal for a new § 117 (*63*). The copyright owner has the exclusive right to store copyrighted works in machine-readable form.

The unauthorized storage of a copyrighted work constitutes infringement

of the owner's reproduction right. The making of a copy of the entire work normally would be within the owner's exclusive rights subject to some possible fair use exceptions. The fact that only one copy is made, or that the owner of the database intends to exact no fee, would not insulate the copier from liability from infringement (*64*).

Database proprietors are likely to be concerned about two kinds of unauthorized use: 1) the misappropriation of database information for purposes of duplicating the information or for compiling a subsequent work based on the data, and 2) unauthorized searching of the database to use the information contained therein without compensation to the proprietor (*65*).

The unauthorized practice of downloading proprietary databases into a library's own internal computer's memory doubtless causes the owner to suffer economic harm. The owner is no longer compensated for searches and the entire database, or at least entire portions of interest to that user, have been appropriated. Both the general laws of unfair competition (*66*), as well as copyright laws, prohibit such unauthorized taking or copying.

Despite the fact that only a small portion of the database may be retrieved, infringement still occurs if the search is unauthorized (*67*). One seldom copies an entire database; rather the very nature of databases dictates that only data relevant to a particular search will be retrieved at any one time. Any unauthorized search deprives the proprietor of revenue no matter how small the amount of material actually retrieved may be.

Even if the data retrieved and used are public domain materials, the unauthorized search is still an infringement. The organization of the data and the ability to retrieve them in response to a request provides the element of originality in a computerized database; therefore, public domain material may not be free to all when it is retrieved from a database (*68*).

Since libraries also may create in-house databases, some attention should be given to the protection of these works. Since many of the formalities of copyright such as notice and deposit relate only to published works, whether the creation of a database constitutes publication presents an interesting question. Section 101 defines publication as ". . . the distribution of copies or phonorecords of a work to the public by sale or other transfer of ownership, or by rental, lease, or lending." Certainly, the distribution of hard copy or portions of a database would constitute publication, but what about databases where no hard copy is created? It seems logical that the sale of access to the database constitutes publication. Thus, if a library creates and "publishes" a database, the portions of the Act relating to protecting published works apply.

Determining the copyright status of computer software presents an additional problem for librarians. Although the Act specifies that notice should be placed on copies of a work in a manner to give reasonable notice of a claim of copyright, one cannot presume that a program is within the public domain if it lacks a copyright notice.

Elaborate security precautions will not stop the unscrupulous, unauthorized user but copyright notice will stop the honest person who gains access to a database by mistake. Notice of copyright should appear on the initial display for each search (*69*). Copyright notice consists of three essential elements: the name of the copyright owner, the year of first publication, and the symbol© or the word "Copyright" or the abbreviation "Copr" (*70*).

The registration and deposit of copyrighted works are not conditions precedent to the ownership of copyright. Registration is, however, essential for

initiating a copyright infringement action in federal court (71). Since the deposit requirement is triggered by publication, an unpublished database would not be required to meet the deposit requirement (72). Database registration and deposit have some inherent problems since any useful database must be continually updated. Having to deposit copies of the database after each updating would be impractical. Fortunately, the Register of Copyrights has authority under the Act to modify the deposit requirements and may exempt any category of material by regulation (73). It seems likely that databases would be a category for exemption.

There also has been some concern that, because of the fluidity of databases and the updating performed, a database potentially could receive copyright protection for longer than the statutory 75 years. This problem, according to CONTU, is not unique. Just as each new edition of a telephone directory is separately copyrighted, the same is true of databases (74). Only the new information and its arrangement would be protected in subsequent updates; therefore, copyright protection is not extended for longer than the statutory period.

The problem of unauthorized use has been addressed by a recent bill introduced in Congress (75). The bill would expand the criminal provisions of the Act (76) which prohibit piracy of and counterfeit labels for phonorecords, tapes, and audiovisual works by including computer programs and databases. The bill would amend existing § 506(a), which currently states that anyone who willfully infringes a copyright for "purposes of commercial advantage or private financial gain shall be punished as provided in section 2319 of title 18" (77). Libraries in the for-profit sector would have difficulty establishing that any internal unauthorized use was for purposes other than commercial gain. Any library that downloaded specific information from a database in order to avoid the assessment of fees for each search is engaged in unauthorized use for commercial gain.

As more and more information becomes available through databases, libraries must become increasingly aware of the nature of the rights afforded to the proprietor of such databases. Libraries that subscribe to databases should be free to use the information for the intended purpose, but the unauthorized copying of any substantial portions of these databases probably infringes the rights of the database proprietor.

The development of optical scanners capable of rapid conversion of printed material to machine readable form may rival the invention of the photocopier relative to its effect on copyright. Not only can libraries and information centers convert copies of literary works with accompanying illustrations into machine-readable form for in-house use, but data may be transferred from one library to another in this fashion (78). These devices have the capacity to be more valuable than the telecopier for interlibrary exchange. Such transmission of copyrighted materials presents a whole new area of concern.

With traditional telecopiers, the supplying entity, in response to a request, photocopies the item to be transmitted and then sends the copy via a telecopier to a requesting library. Presumably the copy made by the lending library is destroyed. The copy received by the requesting entity is treated as any photocopy received through interlibrary loan and is governed by the guidelines. A copy converted to machine readable form by an optical scanner can be transmitted over the lower cost data transmission lines thereby reducing the overall costs of the transaction and potentially increasing the number of transactions. The requesting library receives the machine readable copy which it may store in its computer and/or print out a copy for the user making the request.

If the transaction is a pure interlibrary loan, the machine readable copy received by the requesting library should

be destroyed and not stored electronically. If a copy is needed for the library's collection, it should be obtained through normal trade channels or through § 108 provisions. Sections 108(a) and 108(e) specifically state that a copy made for a user must become the property of that user whether the copy is received through interlibrary loan or made on the premises. Any retention of copyrighted material received through electronic data transfer other than as permitted under §§ 108(b) or 108(c) is an infringement of copyright.

The new technology makes it easy . . . to download copyrighted material from the publisher's system into the subscriber's own computer system. Protection for the owner consists of breach of contract and copyright infringement if the unauthorized copying is detected.

Technological capabilities frequently are developed faster than the law can accommodate them. The apparatus to convert printed works to machine readable form is a prime example of technology moving ahead of the law.

Electronic Publishing

The electronic publishing of journals in lieu of publication in hard copy or microform currently is being considered as an alternative publication form by publishers of scholarly, scientific, and technical journals. As journal publishers move into the realm of electronic publishing, libraries and information centers must deal with the material and handle copyright problems as they arise. Because such publication is still in its infancy, the problems of copyright protection for these materials is still somewhat speculative.

Some electronic publishers will be expending large amounts of capital in order to obtain rights to publish material electronically and to design electronic pages. Naturally, they will expect a reasonable return on their investments by selling the data for per-page or per-minute charges. Their business will depend on the security of the systems and protection against unauthorized copying and resale (*79*). Will the interlibrary loan of copies of journal articles printed by a subscribing library and furnished to a requesting library constitute unauthorized use? Although supporting arguments can be made for both sides, publishers of electronic journals surely will claim that such arrangements infringe their reproduction and distribution rights.

Unauthorized reproduction will constitute copyright infringement regardless of whether the reproduction is on paper or transferred to the memory of another computer (*80*). The application of traditional fair use analysis is imprecise for materials stored in traditional formats; fair use may be even less precise for electronic publications. For example, it might be fair use for a videotext subscriber to record portions of the material on a home computer where pages could be retrieved for later personal use (*81*). Would the same apply to libraries or would the personal use exemption constitute an equivalent to the home use exemption for audio recordings of music made off-the-air (*82*)? This issue is yet unanswered. Certainly, copyright infringement will be difficult to detect. The new technology makes it easy for a subscriber to videotext or teletext to download copyrighted material from the publisher's system into the subscriber's own computer system (*83*). To date, protection for the owner consists of breach of con-

tract and copyright infringement if the unauthorized copying is detected. Perhaps, in the future, criminal penalties might be added for unauthorized reproduction from electronically published journals as has been recommended for computer programs and databases (*84*).

Subscriptions to electronic journals will provide the subscriber with rights to certain kinds of uses, and should include copying for some uses. The subscription contract should specify what these uses are and under what conditions copies may be made.

Future technology should enable librarians to copy material even more conveniently and inexpensively. The very tools which have enabled libraries to create their information base could destroy the dissemination of information. If all libraries and library users wish to copy information and no one wants to pay for it, there will be no resources available to the commercial developer for the creation of new nonprint works. Eventually, free access could lead to no access.

Conclusion

Libraries have available to them not only the provisions of § 108 but those of § 107, the fair use exception. Even the application of traditional fair use principle may fail to answer questions about specific library practices and the use and reproduction of nonprint and audiovisual material. The technological era has raised serious questions on the applicability of traditional fair use principles (*85*).

Future technology should enable librarians to copy material even more conveniently and inexpensively. The very tools which have enabled libraries to create their information base could destroy the dissemination of information. If all libraries and library users wish to copy information and no one wants to pay for it, there will be no resources available to the commercial developer for the creation of new nonprint works. Eventually, free access could lead to no access (*86*). On the other hand, since libraries now pay high subscription costs, including the cost of interlibrary loan transactions, already there is no free access.

Answers to these problems should come from agreement between librarians and copyright proprietors (*87*). The recently negotiated guidelines for off-the-air videotaping for nonprofit educational institutions (*88*) are an excellent example of such consensus. Both interest groups, publishers and librarians have presented logical arguments for their respective positions. Publishers argue that library copying practices continue to have serious economic consequences for publishers of journals with small circulations (*89*). The King Report, however, fails to support this position (*90*).

During the hearings conducted by the Copyright Office on § 108, questions were posed by the Register concerning the CONTU interlibrary loan guidelines; a question concerning interlibrary loan of nonprint works was included. The Register's Report, however, did not include any recommendations to alter those guidelines (*91*).

The library community repeatedly has recommended no change in the Act at the present time. Perhaps the answer for nonprint materials lies in further guidance from library associations recommending compliance methods for specific practices and types of materials (*92*).

Literature Cited

1. 17 U.S.C. § 101, *et seq.* (1976).
2. *See* National Commission on Libraries and Information Science, *Library Photocopying in the United States* (1977) for a report on library photocopying practices before the effective date of the Act.
3. 17 U.S.C. § 102(a) (1976).
4. "A work is fixed when it is embodied in a copy or phonorecord in a permanent or stable form sufficient to permit it to be perceived, reproduced or otherwise communicated for a period of more than transitory duration." *Id.* at § 101.
5. *Id.*
6. *Id.* at § 106.
7. *Id.* at § 109.
8. See 3 M. Nimmer, *Copyright* § 13.05 (1982) for a detailed discussion of the fair use defense.
9. 17 U.S.C. § 107 (1976).
10. *Id.*
11. *Id.* at § 108(a).
12. *Id.* at § 108(b).
13. *Id.* at § 108(c).
14. *Id.* at § 108(d).
15. *Id.* at § 108(d)(1).
16. *Id.* at § 108(d)(2); the specific wording for the warning was promulgated by the Register of Copyrights on November 16, 1977, 42 *Fed. Reg.* 59,264 (1977).
17. *Id.* at § 108(f)(1) (1976); no specific wording is required on the warning sign according to the Register of Copyrights; *see* 42 *Fed. Reg.* 59,265 (1977).
18. *Id.* at § 108(e)(1).
19. *Id.* at § 108(g)(2).
20. The guidelines were negotiated by various library associations and publishers' group and were adopted by CONTU (the National Commission on New Technological Uses of Copyrighted Works) and were published in the Conference Report. H.R. Conf. Rep. No. 1733, 94th Cong., 2d Sess. (1976), *Reprinted in* 17 *Omnibus Copyright Revision Legislative History, 1976*, at 72–73 (1976). [Hereinafter cited as Conference Report].
21. H.R. Rep. No. 1476, 94th Cong., 2d Sess. (1976), *Reprinted in* 17 *Omnibus Copyright Revision Legislative History, 1976*, at 74–75 (1976). [Hereinafter cited as House Report].
22. 17 U.S.C. § 108(h) (1976).
23. *Id.*
24. *Id.* at § 108(b).
25. *Id.* at § 108(c).
26. *See* text at notes 20–21.
27. S. Rep. No. 473, 94th Cong., 1st Sess. (1975), *Reprinted in* 13 *Omnibus Copyright Revision Legislative History, 1974-1975*, at 61 (1975). [Hereinafter cited as Senate Report].
28. *Id.*
29. 659 F.2d 963 (9th Cir. 1981).
30. *Id.* at 969–74.
31. *Cert. granted*, 102 S.Ct. 2926 (1982).
32. 659 F.2d 963 (9th Cir. 1981).
33. Conference Report, *supra* note 20.
34. 17 U.S.C. § 108(h) (1976).
35. House Report, *supra* note 21, at 74–75.
36. *Id.* at 75.
37. *Id.*
38. Association of American Publishers, *Photocopying by Academic, Public and Nonprofit Libraries* 12–13 (1978); Association of American Publishers, *Final Comments for the Register's Report to Congress in Accordance with 17 USC 108(i) as Requested May 26, 1982*, 32 (1982).
39. 17 U.S.C. § 105 (1976).
40. *See id.* at §§ 107–108(a).
41. *Id.* at § 108(b).
42. *See contra*, Golub, "Not By Books Alone: Library Copying of Nonprint Copyrighted Material," 70 *L. Libr. J.* 153, 153 (1977).
43. Magnuson, "Duplicating AV Materials Legally," 13 *Media & Methods* 52 (1977).
44. 17 U.S.C. § 108(b) (1976).
45. *Id.* at § 108(c).
46. *Id.* at § 108(h).
47. 17 U.S.C. § 117 (1976), as amended by Pub. L. No. 96–517, Dec. 12, 1980, 94 Stat. 3028, codified as amended at 17 U.S.C. § 117 (Supp. V, 1981).
48. *Id.* at § 101.
49. *Id.* at § 117(1) (Supp. V, 1981).
50. *Id.* at § 117(2).
51. *See* National Commission on New Technological Uses of Copyrighted Works, *Final Report*, 26–27 (1979) for a criticism of the inclusion of programs as a type of literary work. [Hereinafter cited as CONTU].
52. 17 U.S.C. § 401 (1976).
53. *Id.* at § 405(a).
54. 46 *Fed. Reg.* 58,307 (1981).
55. 17 U.S.C. § 101 (1976).
56. Squires, "Copyright and Compilations in the Computer Era: Old Wine in New Bottles," in G. Bush & R. Dreyfuss, *Technology and Copyright* at 205, 206, 212–15 (1979). [Hereinafter cited as Squires].
57. CONTU, *supra* note 51, at 41.

58. *Id.* at 39.
59. Henderson, "Copyright Impacts of Future Technology," 16 *J. of Chemical Information & Computer Sci.* 72 (1976), *reprinted in* G. Bush & R. Dreyfuss, *Technology and Copyright*, 343, 352 (1979).
60. Levy, "Copyright Law and Computerized Legal Research," 20 *Bull. of the Copyright Soc'y* 159, 170 (1973).
61. *See* Stern Electronics v. Kaufman, 660 F.2d 852 (2d Cir. 1982) and Atari v. North American Phillips, 672 F.2d 607 (7th Cir. 1982).
62. 17 U.S.C. § 101 (1976).
63. CONTU, *supra* note 51, at 39–40.
64. *Id.*
65. Squires, *supra* note 56, at 229.
66. *See* International News Service v. Associated Press, 248 U.S. 215 (1918) for a discussion of misappropriation, an unfair competition cause of action.
67. Squires, *supra* note 56, at 232.
68. *Id.*
69. CONTU, *supra* note 51, at 39.
70. 17 U.S.C. § 401(b) (1976).
71. *Id.* at §§ 407–12.
72. *Id.* at 407(a).
73. *Id.* at § 407(c).
74. CONTU, *supra* note 51, at 41–42.
75. H.R. 6420, 97th Cong., 2d Sess. (1982).
76. 17 U.S.C. § 506 (1976).
77. H.R. 6420, *supra* note 75.
78. The IBM Scanmaster I is an example of a machine with such capability.
79. R. Neustadt, *The Birth of Electronic Publishing* 119 (1982). [Hereinafter cited as Neustadt].
80. *Id.* at 120.
81. *Id.* at 121.
82. *See* H.R.Rep., No. 487, 92nd Cong., 1st Sess. 7 (1971). The so-called home use exemption for home recording of music was not mentioned in subsequent legislative history.
83. Neustadt, *supra* note 78, at 122.
84. *See* text at notes 77–78.
85. Timberg, "A Modernized Fair Use Code for the Electronic as well as the Gutenberg Age," 75 Nw.U.L.Rev. 193, 198 (1980).
86. Callison, "Fair Payment for Fair Use in Future Information Technology Systems," *Educ. Tech.* Jan., 1981 at 24.
87. Golub, *supra* note 42, at 169.
88. 127 *Cong. Rec.* E4750-52 (daily ed. Oct. 14, 1981).
89. *See* Association of American Publishers, *Final Comments for the Register's Report to Congress in Accordance with 17 U.S.C. 108(i) as Requested May 26, 1982*. (1982).
90. King Research, *Libraries, Publishers, and Photocopying: Final Report of Surveys Conducted for the United States Copyright Office*, at 4–14 (1982).
91. *Report of the Register of Copyrights: Library Reproduction of Copyrighted Works*, 358–63 (1983).
92. *See* American Library Association, *Model Policy on College and University Photocopying for Classroom, Research and Library Reserve Use* (1982).

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Creating a Database for a Small Corporate Library

NOMAD *Bookcat*

Ellen Bates

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■ **Automating the small library in a large corporation is possible using resources that already exist and without expensive equipment, software, or outside consultants. Highly sophisticated software already available may be used to eliminate some of the paperwork, save space and time, and enhance the library's effectiveness. NOMAD, a database management system with flexibility and "friendly" design is described, focusing on its use to create an automated book catalog and spending reports.**

IN 1975, Collins demonstrated the basic features of database management systems (DBMS) and suggested their use in small to medium-sized special libraries "to improve service and accuracy and at the same time reduce drudgery and possibly labor (*1*)." Today, high-level DBMS are being used for many defined purposes by non-data processing (dp) professionals. Software packages with non-procedural languages allow the user to request *what* is wanted from the database without having to specify *how* (*2*).

Corporate employees from executives to librarians are becoming "programmers" by creating and maintaining their own computer files and sorting the output for specific report generation (*3*). Martin discusses the factors that have contributed to this situation, highlighting major software that provide a framework for end-user and dp-professional participation.

NOMAD is a powerful, user-friendly DBMS that was used to create a library database in a small business library at a large corporation. NOMAD has thousands of business users, each with specific information needs. It was developed in 1975 by National CSS, a nationwide time-sharing service. Daniel D. McCracken, its primary spokesperson, recommends it for "non-dp people to gain access to existing databases, . . . volume data entry by data entry clerks, . . . [and] use by dp professionals either to prototype major jobs . . . or for implementing big systems (*4*)." The real breakthrough in the

development of NOMAD is seen as the elimination of programming and hence its ease of use in obtaining reports (5).

NOMAD is available through the corporation's Interactive Corporate Services Department, which provides employee training and professional support in its implementation. The system's versatility "permits the user to build online databases and produce reports" and its user-friendly "English-like language" allows users to modify information for unique on-demand analysis (6).

NOMAD has many commands for computing and reporting numbers, as well as a strong alphanumeric capability, allowing the user to easily change, add, and delete data. NOMAD's internal calendar can add and subtract dates, and when producing reports it automatically dates them. Its efficiency in sorting large amounts of bibliographic information and retrieving that information interactively makes it suitable for a library database.

Costs

As part of the larger organization, the library has access to a shared private network. The company's mainframe computer is an AMDAHL 470/V8. Computer storage is available to users with remote terminals via NCSS with Tymnet as a backup. Computer costs are allocated to each department based on use. Storage is provided on cylinders at $8.00 per month per cylinder and $5.00 is charged per online connect hour.

The cost for the number crunching or sorting NOMAD does is calculated on an internal computation the system performs called Application Resource Units at 4.5 cents each. For example, the cost of alphabetizing data may be automatically computed by calculating how long it takes and how much data is involved.

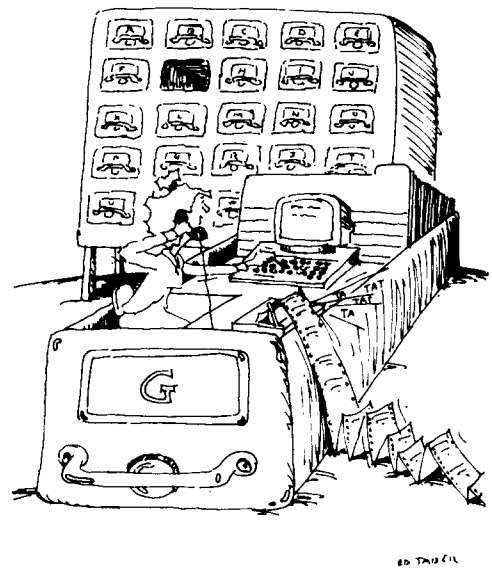
The library currently has eight cylinders reserved for its use. It has one data phone and rents a TI45 300-baud portable terminal at $90.00 per month. The terminal and data phone are also used for bibliographic database searching. Offline printing is done on an IBM 6670 laser printer.

It is estimated that 50 hours were spent initially inputting data and that about two hours per week is the maximum connect time spent to update the database and request reports.

Objectives

Setting objectives is the first step in developing a database using NOMAD. Objectives take account of what one has, what one needs, and what one wants to achieve.

The library houses about 500 volumes, over 125 industry files, and handles about 120 periodical titles. The librarian spends a majority of her time with reference queries. Journals are handled through a subscription agent and were not included in the database. The decision to automate was based on a desire to reduce the amount of time spent on the operations function, eliminate as much paper work as possible, and save space. Integrated subject access to the collection was also desired, and since a fire caused the loss of the



small card catalog, the process of recreating manual sets was not favored.

Bookcat, the file name of the database, was created with the following objectives in mind: 1) to generate an automated book catalog for integrated access to the collection in three sections: author, title and subject; 2) to generate a computerized shelf list; 3) to generate a computerized list by location of individual department holdings; 4) to centralize material purchases in one location but to also allow cost allocations; 5) to generate lists of titles by departments with separate expenditure totals for each department (including the library) and one annual total; 6) to generate computerized acquisitions lists; 7) to provide a summary report by source of purchases with source address, and so on, for reordering items, ordering new items, and following up

Figure 1. Prototype Subject Report.

FORM

*Line 1: Subject

Line 2: Author

Line 3: Title

Line 4: Place: Publisher

Line 5: Pubyear Nopage Notes

Line 6: Callno Docdesc

LINE 1:----BANKING, INTERNATIONAL

LINE 2: FRASER, ROBERT D
LINE 3: INTERNATIONAL BANKING AND FINANCE
LINE 4: WASH, DC: R&H PUBLISHERS
LINE 5: 1979 2VOL
LINE 6: HG3881/F7/NYCO DT: BOOK

LINE 1:----ECONOMICS

LINE 2: DRUCKER, PETER FERDINAND
LINE 3: TOWARD THE NEXT ECONOMICS
LINE 4: NEW YORK: HARPER & ROW
LINE 5: 1981 212P INDEX
LINE 6: HD31/D775/NYCO DT: BOOK

LINE 1:----INTERNATIONAL BANKING S BANKING, INTERNATIONAL

LINE 1:----MARKETING

LINE 2: BUELL, VICTOR P, ED
LINE 3: HANDBOOK OF MODERN MARKETING
LINE 4: NEW YORK: MCGRAW-HILL
LINE 5: 1974 1054P INDEX
LINE 6: HF5415/H3/NYCO DT: BOOK

* Note: All books under same subject would be listed alphabetically by author. Subject heading would precede first listing only.

on orders; 8) to maintain a record of check numbers issued in payment for purchases, avoiding duplicate payment of secondary invoices, as well as providing a record for proof of payment; 9) and for computer storage.

Prototypes

Prototypes are what Martin calls the "pilot operation" in design. The librarian, after specifying the objectives, met with the company's systems analyst to discuss what data would be input, how they would be organized and accessed, what reports would be produced, and what they would look like. Martin's description of this activity is appropriate:

> The analyst discusses an end user's needs with him and then creates a specimen dialog on a terminal. . . . The end user is shown the dialog and quickly trained to use it. Usually, he has some suggestions for changes he would like and the analyst makes these. As the analyst and end user continue their discussion of what is needed,the running prototype is now a focus of the debate which helps to ensure that they are both talking about the same thing (*6, p. 64*).

At this stage, a preliminary menu was created and reports were formatted manually (see Figure 1). The reports included the layout of the book catalog: one page each for the author, title, and subject sections and one bibliographic report by department. Two spending reports were also created: one showing expenditures by department and one showing expenditures by source. Later, acquisition reports were formatted and added to the menu, as shown in Figure 2. The reports served as the basis for identifying the fields that would comprise the data description and the model for establishing procedures for routine reports.

Database Structure

Martin describes a database management system as "the entity that provides programmers or end users with the data they ask for. . . . [I]t finds out what *physical* records contain the data in a given request, has a means of locating those records, and from them derives the logical records that were asked for" (*6, p. 271*).

Every database in NOMAD has a data description that shows what data are stored in the database and how they are stored. The data description is created interactively from a schema and consists of related data items or fields grouped into master segments or records which have various associations with each other. There are two possible structures in NOMAD: hierarchial and

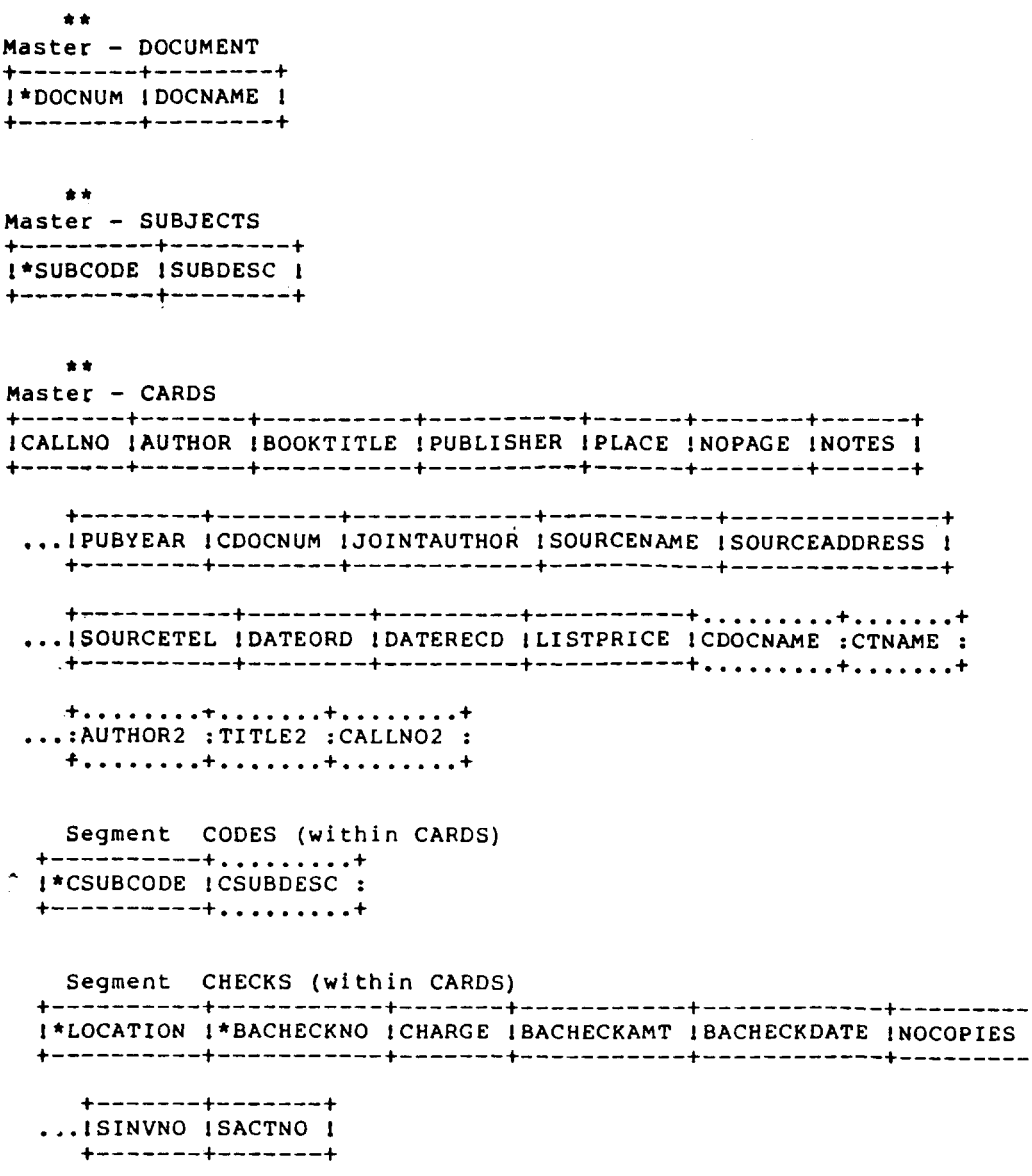
Figure 2. Computer-produced Book Catalog. Subject Report.

```
----BANKRUPTCY

BANKRUPTCY REFORM ACT OF

CHICAGO:              COMMERCE CLEARIN
1978    381P    INDEX
HG3762/CCH/NY    DT:BOOK


BLUM, WALTER J
CORPORATE READJUSTMENTS & REORGANIZATIONS
MINEOLA, NY:          FOUNDATION PRESS
1976    810P    INDEX
HD2741/B4/K3/NY  DT:BOOK


MACLACHLAN, JAMES ANGELL
HANDBOOK OF THE LAW OF BANKRUPTCY
ST PAUL, MINN:        WEST PUBL CO
1956    500     INDEX
HG3762/M3/NY     DT:BOOK


WEINTRAUB, BENJAMIN
BANKRUPTCY LAW MANUAL-1982 SUPPLEMENT
BOSTON:               WG&L
1982    VAR     INDEXES
HG3762/W4/NY     DT:BOOK


----BANKS AND BANKING

BAUGHN, WILLIAM H, ED
BANKERS' HANDBOOK, THE, REV ED
HOMEWOOD, ILL:    DOW JONES-IRWIN
1978    1205P   INDEX
HG1561/B3/NY     DT:BOOK


BAXTER, WILLIAM F
RETAIL BANKG IN ELECTRONIC AGE-LAW&ECO OF EFT
MONTCLAIR, NJ:    ALLANHELD, OSMUN
1977    189P    INDEX
HG000/B3/NY      DT:BOOK


COMPTON, ERIC N
INSIDE COMMERCIAL BANKING
NY:                   JOHN WILEY
1980    191P    BIB-P184, INDEX
HG2491/C644/NY   DT:BOOK
```

relational. *Bookcat* has three masters—documents, subjects and cards—and is hierarchial with relational elements, as shown in Figure 3.

Briefly, relational databases store each record "individually with no pointer linkages to other records" (*6, p. 209*). Hierarchical structures contain pointers embedded in each record to establish the "path" relationship between masters. The subjects and documents masters in *Bookcat* are relational. Each consists of two data items—one a code, the other a description—assigned on a one-to-one basis. The code in turn is defined in segments in the cards master, which is hierarchical and where cataloging elements are grouped. These include fields for call number, title, author, publisher, place of publication,

Figure 3. Database BOOKCAT.



date of publication, number of pages, and notes.

The cards master also contains data items for the source record including source name, address, and telephone, as well as date items for each title, e.g., when it was ordered and when it was received. One additional segment, checks, handles cost allocation including items for location (department charged for material), check number, amount and date, list price, source invoice number, source account number, number of copies charged, and the amount of the charge.

In constructing the data description, two tables were established: one for subject headings and one for document types. Each subject heading is stored in the subject description field and is assigned a unique code, stored in the subject code field on a one-to-one basis. The same is true for document types. Because the cards master is hierarchical, it allows the codes from the two established tables to be defined within its scope. This creates a "path" between the tables and the cards master so that subject and/or document codes can be assigned to call numbers.

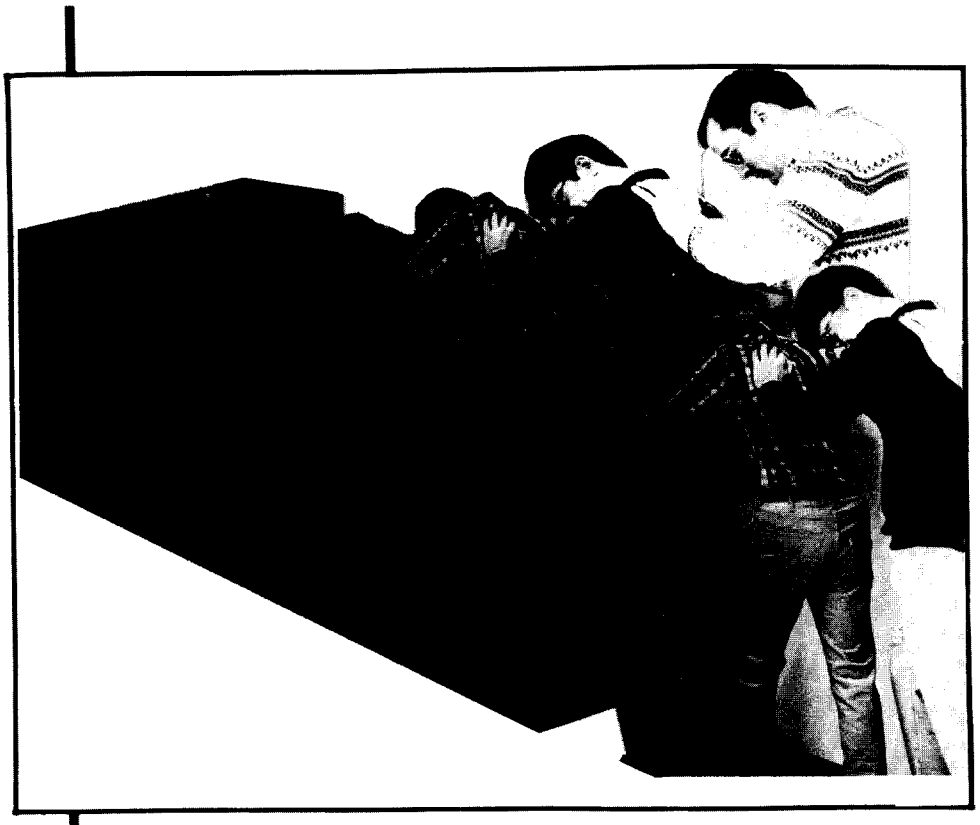
The data description also shows the internal format of each item. This format is either numeric, represented by the digit "9", or alphanumeric, represented by the letter "A." Dates may be given a special format, represented by the word "DATE" and will only be accepted as "MM/DD/YY."

Fixed fields and character limitations were imposed to force the data into manageable output for both routine reporting and interactive requests. Thus, the author field is represented by the format A25, indicating that 25 is the maximum number of characters that will be accepted for the author's name; title is formatted as A45; and the number of pages appears as A5 to allow for the suffix "p" or "vol." The checks segment is formatted with numerics; for example, check numbers always contain 6 digits and are represented as 999999, the check amount item is represented as 99999.99, and the number of copies as 999. The structure of the database meets the library's objectives in the following ways:

- It contains data items for the bibliographic description in the book catalog.
- By defining items in separate segments in the cards master, it establishes paths for sorting bibliographic data by any field.
- It establishes data items and path relationships for cost allocation reports.
- Internal formats provide computing numbers for spending reports.
- Date fields for ordering and receiving materials establish intervals for obtaining acquisition reports and following up on orders.
- Since bibliographic data can be input for books, as well as other documents such as pamphlets, speeches, industry studies, and so on, subject retrieval encompasses all types of materials in the library.

Screening Data

The broad range of on-demand reporting in NOMAD is facilitated by the LIST command. Items whose path relationships have been defined in the data description may now be sorted for simple reports and applied to tasks such as inventory. By specifying, "LIST BY CALLNO BOOKTITLE," an immediate two-column form is provided with call numbers in ascending order on the left side and corresponding titles on the right side. The item immediately following "by" is called the by-item, and the subsequent item is known as the object-item. Descending order may be indicated and more than one object-item may be specified in a LIST request. For example, since notation of bibliographies is made in the NOTES field, two types of reports may be printed by using LIST: 1) LIST BY BOOKTITLE NOTES to identify which books contain bibliographies, or 2) LIST BY CSUBDESC BOOKTITLE NOTES for a three-column report by subject heading



in the left column, corresponding titles listed alphabetically in the middle column, and notes contained in the right column to locate books with bibliographies under specific subjects.

Detailed analysis on numerically formatted data can be performed interactively by using the logical operator WHERE in conjunction with greater than, less than, equal to, and so forth, or with unique report functions such as sum, average, count, max, min, first, or last.

A SELECT command may also be used to screen data when used with LIST. For example, if a report on materials pertaining to a particular subject is needed (such as accounting with a subcode of 1, international finance with a subcode of 2, and management with a subcode of 3) the command SELECT CSUBCODE AMONG (1,2,3) can be issued followed by a report request using a LIST command—LIST BY AUTHOR BOOKTITLE CALLNO. NOMAD will produce a report showing only materials assigned those subject codes.

Procedures

"A NOMAD procedure is a CSS file containing any NOMAD commands" (*5, p. 162*). Once the data description was completed, pseudo data were used to simulate reports and procedures were established by the systems analyst to handle routine reports for the author, title, and subject sections of the book catalog, the acquisitions reports, and two spending reports. The procedures greatly shortened the commands necessary to generate reports and ensure uniformity in reporting.

Access

Bookcat is accessed through a menu that is retrieved by logging onto the system with the command "BOOKS." The menu allows the user to choose an activity by indicating the activity number at the prompt. It also contains brief instructions to add, change, delete, and report data (see Figure 4).

Figure 4. Accessing the Menu Using the "Books" Command.*

```
06.29.17 >BOOKS
BOOK CATALOG TRACKING SYSTEM

TO EXIT FROM ANY OF THE FOLLOWING PROCEDURES, TYPE: QUIT

WHAT IS YOUR TERMINAL CARRIAGE WIDTH (80 OR 132)?
>80
$$$$$WHAT DO YOU WISH TO DO:

1) ADD NEW SUBJECTS AND THEIR CODES.
2) ADD NEW TITLES.
3) ADD SUBJECT CODES TO EXISTING TITLES.
4) ADD ACCOUNTING INFORMATION TO EXISTING TITLES.
5) CHANGE INFORMATION.
6) DELETE INFORMATION.
7) REPORT INFORMATION.
8) ACQUISTION REPORTS
9) ADD NEW DOCUMENT ENTRIES


ENTER 1, 2, 3, 4, 5, 6, 7, 8, 9          OR QUIT >QUIT

06.30.18 >LOG
28.19 ARU'S, .02 CONNECT HRS
LOGGED OFF AT 06.30.23 ON  07OCT82
```

* The menu is accessed after logging on at time-of-day prompt with "Books" command. Also shows logging off and ARU computation.

Figure 5. Sample Worksheet.

```
PLS
-2471-056-
PLEASE LOG IN: BOFA;
F 21
;
CSS ONLINE - BOFA

>LINK BOFA NYLIBSUB
PASSWORD:
[redacted]
A/C INFO:
>
BOFA READY AT 07.00.29 ON  29NOV82.
CSS.304 11AUG81
PORT 692

07.00.33 >NOMAD
NOMAD VERSION 6 17FEB82
>EDIT BOOKCAT WSHEET
EDIT:
>PRINT 99
WORKSHEET FOR DATA INPUT INTO BOOKCAT
1) ADD NEW SUBJECTS AND THEIR CODES:
  SUBJECT CODE(9999)/__/__/__/__/
  SUBJECT DESC(A60)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
   SUBJECT DESC /__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
   SUBJECT DESC /__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
2) ADD NEW TITLES:
  CALLNO(A18)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
  AUTHOR(L,F,MI-A25)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
   AUTHOR /__/__/__/__/__/__/__/__/
  IS THIS A JOINT AUTHOR (Y/N) /__/
  BOOKTITLE (APPEND "A", "AN", "THE"-A45)/__/__/__/__/__/__/__/__/__/__/
   BOOK TITLE /__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
   BOOK TITLE /__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
  PUBLISHER(A20)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
  YEAR PUBLISHED(A8)/__/__/__/__/__/__/__/__/
  SOURCE NAME(A25)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
   SOURCE NAME /__/__/__/__/__/__/__/
  SOURCE ADDRESS(STREET, CITY, STATE, ZIP-A35)/__/__/__/__/__/__/__/__/__/
   SOURCE ADDRESS /__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
   SOURCE ADDRESS /__/__/__/__/__/__/
  SOURCE TELPHONE(A12)/__/__/__/-/__/__/__/-/__/__/__/__/
  DATE ORDERED (MM/DD/YY)/__ __/__ __/__ __/
  DATE RECEIVED (MM/DD/YY) /__ __/__ __/__ __/
  PLACE(A18)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/: /
  NUMBER OF PAGES(P,NP,VAR,VOL-A5)/__/__/__/__/__/
  NOTES(INDEX, BIB, ILL-A15)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
  DOCNUM(99)-1=BOOK,2=ARTICLE,3=PAPER,4=THESIS,5=SPEECH,6=INVESTMNT REPT
    7]=GOVT DOCUMENT,8=LOOSE-LEAF,9=PAMPHLET/__/__/
  LIST PRICE(99,999.99)/__/__/,/__/__/__/./__/__/
3)ADD SUBJECT CODES TO EXISTING TITLES:
  WHICH CALLNUMBER(A18)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
  SUBJECT CODE (9999)/__/__/__/__/
  ANY MORE CODES: /__/__/__/__/  /__/__/__/__/  /__/__/__/__/  /__/__/__/__/
4) ADD ACCOUNTING INFORMATION TO EXISTING TITLES:
  WHICH CALLNUMBER(A18)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
  LOCATION (A5)/__/__/__/__/__/
  BOFA CHECK NUMBER (999999)/__/__/__/__/__/__/
  CHARGE (99999.99) /__/__/__/__/__/./__/__/
  BOFA CHECK AMOUNT (9999999.99) /__/__/__/__/__/__/__/./__/__/
  BOFA CHECK DATE (MM/DD/YY) /__ __/__ __/__ __/
  NUMBER OF COPIES(999)/__/__/__/
  SOURCE INVOICE NUMBER(A20)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
   SOURCE INVOICE NUMBER /__/__/__/__/__/
  SOURCE ACCOUNT NUMBER(A20)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
   SOURCE ACCOUNT NUMBER /__/__/__/__/__/
NOTE: FOR MORE THAN ONE ALLOCATION USE ADDITIONAL FORMS
```

(Continued next page)

Figure 5 (cont.)

```
5) CHANGE INFORMATION:
   WHICH FILE DO YOU WANT TO UPDATE: 1)SUBJECTS 2)CARDS 3)CODES 4)CHECKS
    1)SUBJECTS:
  SUBJECT CODE (9999)/__/__/__/__/
    CHANGE (1=CODE, 2=DESCRIPTION) /__/
  NEW CODE (9999)/__/__/__/__/
  NEW DESC(A60)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
      NEW DESC /__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
      NEW DESC/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
    FOR MORE CODES AND DESCRIPTIONS USE MORE FORMS
    2)CARDS:
  CALLNO(A18)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
    ITEM TO BE CHANGED: FROM________________________________________
         TO_______________________________________
                        FROM_____________________________________
         TO_______________________________________
     FOR MORE CHANGES USE ADDITIONAL FORMS
    3)CODES:
  CALLNO(A18)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
  SUBJECT CODE TO BE CHANGED(9999)/__/__/__/__/
  ENTER NEW CODE(9999)/__/__/__/__/
  SUBJECT CODE TO BE CHANGED (9999)/__/__/__/__/
  ENTER NEW CODE(9999)/__/__/__/__/
    4)CHECKS:
  CALLNO(A18)/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/__/
  ENTER LOCATION(A5)/__/__/__/__/__/
  ENTER BOFA CHECKNO(999999)/__/__/__/__/__/__/
    ITEM TO BE CHANGED ______________________________________________
    NEW VALUE ______________________________________________________
      FOR MORE CHANGES USE ADDITIONAL FORMS
6)DELETE INFORMATION (FOR CARDS ONLY)
  CALLNO(A18)/__/__/__/__/__/__/__/__/__/__/__/__/__/ __/__/__/__/__/
7) REPORT INFORMATION:
   A MENU OF 7 CHOICES WILL APPEAR
8) ACQUISITIONS REPORTS:
   A MENU OF 3 CHOICES WILL APPEAR
EOF:
```

Books and other materials are cataloged onto a worksheet which is used for online input. A sample worksheet is shown in Figure 5. Similarly, information from invoices (for generating spending reports) is entered onto worksheets for database input. Because character limitations within each field require frequent abbreviations, care is taken that these are consistent from one record to the other. The worksheet was created online and is stored on the computer. It is a separate file and may be retrieved and edited interactively.

User Manual

A user manual was created to document the database. It states the objectives of *Bookcat*, technically defines each field, and sets guidelines for bibliographic input. It also contains basic instructions, such as for logging on, and simulated terminal sessions which may be used to teach the novice how to use the system.

Conclusion

Economies of scale being what they are for a small library, the creation of a database using the organization's existing resources and the expertise of a computer specialist on staff is an exciting and cost-effective way to making a small collection more accessible. Since subject headings can be assigned to any format the library user may identify everything on a subject in the collection by perusing the computer-produced book catalog. Acquisition reports can be produced automatically at intervals

of the library's choosing and the data may be "rearranged" based on need for unique reports. Invoices and checks issued in payment for materials may be used to produce spending reports formalized in procedures. The powerful capabilities of a database management system to handle large amounts of information allow the size of the database to be expanded and also permits changing the data and deleting out-of-date elements in the database.

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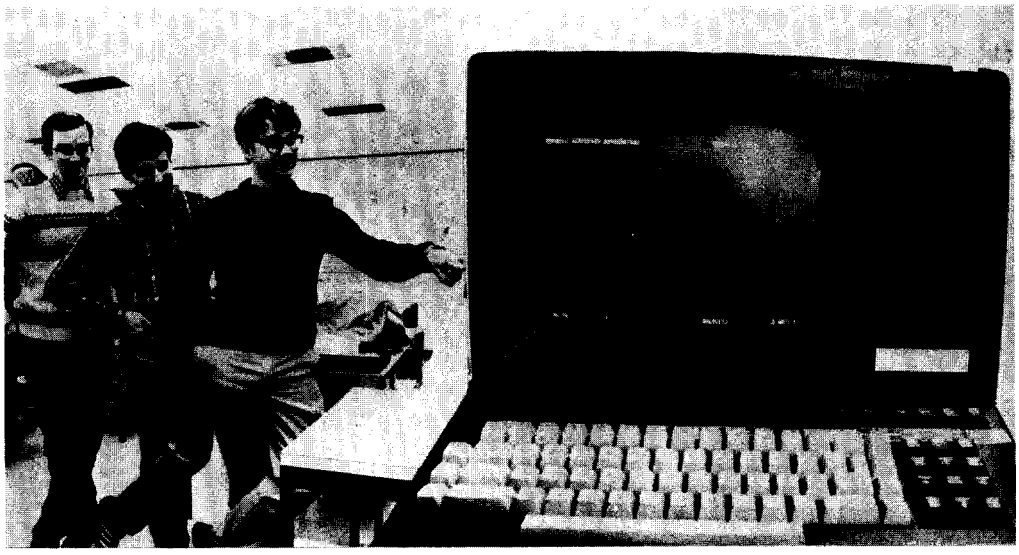

Education for Special Librarianship

Michael E.D. Koenig

■ **A survey of special librarians/information officers in major industrial corporations reveals major discrepencies between what practitioners regard as important and what library schools traditionally regard as the necessary core of the field. From these factors, a number of recommendations for library education are derived. Most conspicuous is the proposition that the time has arrived for special librarians to become active in the accreditation process.**

THERE is no dearth of articles in the library literature on the subject of education for special librarianship, so why do we need another one? One answer is that education for special librarianship is far more important than it has ever been before. Special librarianship is no longer a stepchild category as in "academic," "public," "school," "special" and "other." The consequences of this development are major; library education has an obligation to respond smartly to the needs of special librarianship, and special librarianship has an obligation and an opportunity to guide and evaluate that response.

It is not news that an increasing proportion of library school graduates is finding employment in the special library sphere. For 1981, Learmont and Van Houten report that 24.0% of reported placements were in special libraries, and 5.9% in "other information specialties"—a combined total of 29.9% (*1*)—while in 1969, Frarey reports that "other libraries and library agencies" accounted for 14.2% of placements (*2*). In a dozen years, the special library and "other" placement has doubled, from 14.2% to 29.9%.

The exact magnitude of the increase is clouded because the data are somewhat incomplete, and more important, because of the porous distinction as to what is and what is not special librarianship. For example, some of the jobs classified as "college and university" are those that one would also think of as special libraries. The porousness of such distinctions should be kept in mind when analyzing the other data on libraries, as well.

The increasing importance of special librarianship is also reflected in the changing terminology used in *Library*

Journal articles on library school placement. From 1951 to 1980 special libraries were simply lumped under "special and other placements" (1951–1966), and "other library agencies" (1967–1979). From 1980 to date, Learmont has separated "special libraries" and "other information specialties" (3). For the purposes of this article, the term "special libraries" will be used in the broader sense to include nontraditional jobs such as those in the information industry, as well.

Placement and Quality of Source

It is particularly interesting to look at the job placement of library school graduates in relation to the perceived quality of the library schools from which they graduated.

Questions concerning the quality of library education and of library schools are subject to much debate. In 1981, Herbert White conducted a survey among practitioners and academics, asking them to identify the leading library schools in regard to three criteria: the quality of their master's degree program; the quality of their doctoral program in preparation for library education and research; and the quality of their doctoral program in preparation for library administration (4). Six rankings result (3 questions × 2 classes of respondents). White carefully makes no attempt to collapse the six rankings into one overall ranking. The lists of leading schools are dominated by fourteen institutions, ten of which appear on all six lists, and four more which appear on at least three lists; the other library schools make only scattered appearances.

Seeking safety in the law of large(r) numbers, the author chose to use the larger of the two intuitively attractive cut off points, 14 rather than 10, and to define the class of library schools perceived to be of higher quality. These are shown, arranged alphabetically, in Table 1.

When the placement of graduates by highly rated library schools is examined in comparison to other library schools, a marked difference becomes apparent in the proportion of special library placements. In 1981, while the other library schools reported 25.5% of their placements in "special libraries" and "other information specialties," the highly rated library schools reported 35.5% of their placements in those fields—a placement rate approximately 40% higher than that of other library schools.

Such a marked difference raises the possibility that the phenomenon may be a function of geographic location. Special library employment, in comparison to school, public, and academic library employment, does tend to be concentrated in major metropolitan areas. Perhaps the emphasis upon special library placement of the highly rated library schools is, therefore, simply a function of local employment opportunities.

To examine this question, special library placement within the major regions of the country was examined. The regional breakdown used was that of the "Accredited List" of North American library schools issued by the American Library Association (5).

In the Northeast, the six highly rated library schools from that region (see Table 1) reported 39.5% of their placements in special library jobs, while twelve other library schools in the Northeast reported 30.8%. In the Midwest, the five library schools shown in Table 1 reported 33.5% of their placements to be in special libraries, while twelve other library schools in the Midwest reported 17.6%.

Elsewhere, the number of highly rated library schools is so small that we must treat any comparisons gingerly, as one must treat all small sample statistics, but the tendency is in the same direction. In the West, the two library schools in Table 1 report 31.9% special library placement, and four other library schools report 28.9%. In the Southeast, the one library school in Table 1 reports 14.3% special library placement, while the other eleven li-

brary schools report 13.0%. There are no library schools in Table 1 from the Southwest.

To examine the location/job opportunity question in another manner, the author somewhat arbitrarily fashioned a list of the following seven major metropolitan areas with a high concentration of special library jobs: Boston, Chicago, Los Angeles, New York, Philadelphia, San Francisco/Oakland/San Jose, and Washington. He then compared the special library placement within these areas.*

The six institutions in Table 1 located within those major metropolitan areas reported 44.7% placement in special library jobs, while nine other institutions within those areas reported 38.4% placement in special libraries. It seems that there is, indeed, a tendency for library schools in those areas where one would expect a greater number of special library jobs—the Northeast and major metropolitan areas—to emphasize special library placement. But this does not account for the phenomenon whereby highly rated library schools place a higher percentage of special library positions. The tendency for the highly rated library schools to produce disproportionately high special library placements is not an artefact related to location or local employment conditions.

Table 1. Fourteen Top-Rated Library Schools.

Arranged alphabetically:

California (Berkeley)	Indiana
California (Los Angeles)	Michigan
Case Western	North Carolina
Chicago	Pittsburgh
Columbia	Rutgers
Drexel	Simmons
Illinois	Syracuse

Data interpolated from H. White (*4*).

Another question emerges: Is this a long standing phenomenon or a relatively new one? The answer seems to be the latter. If we examine the data for 1969, the placement profiles of highly rated library schools in terms of public, school, academic, and "other" library positions is virtually identical to the overall profile and to the profile of less highly rated library schools.†

A tangential question also arises as to whether highly rated library schools tend to focus on other areas of librarianship, in addition to special library placement. There does appear to be a similar but proportionately smaller focus on academic librarianship. The highly rated library schools report 26.8% of their placements in academic jobs, while other library schools report 20.6% of their placements in academic jobs. This focus is neither as large (26.8% versus 35.5% of placements), nor proportionately greater in comparison to other library schools (30% versus 40% greater, respectively). The data reported above are summarized in Table 2.

Why is it that the more highly rated library schools are producing a disproportionately high number of special library placements? There are two plausible conjectures. The first is that the highly rated library schools have more promptly and more wholeheartedly

* The question of whether a library school is in a major metropolitan area in terms of placement opportunities is a very subjective one. What about, for example, the University of Rhode Island, in a pastoral local setting, but in the heart of the BosWash corridor of special library job opportunities? The author's choice is probably conservative in terms of supporting the results reported. The inclusion of institutions such as URI in the comparison would have widened the gap between Table 1 institutions and other institutions.

† We are here comparing 1980 ratings with 1969 placements. It could well be argued that comparison with a more contemporaneous set of ratings would be more appropriate. However, such ratings do tend to be rather stable over time, and such movements as there were would for the most part be within the group, rather than across the group boundary.

Table 2. Special and Academic Library Placements.

Placements	Highly Rated Institutions	Other Institutions
Special Library Placement		
1981 Overall	35.5%	25.5%
1981 Northeast	39.5%	30.8%
1981 Midwest	33.5%	17.6%
1981 Metropolitan	44.7%	38.4%
1969 Overall	15.2%	13.7%
Academic Library Placement		
1981 Overall	26.8%	20.6%
1969 Overall	34.7%	34.9%

extended their curriculum to include topics in information science and information management; indeed the willingness to innovate and the inclusion of new concepts and techniques in their curricula may be a determinant of their high rating. As a result, their graduates have been better equipped to compete for jobs in the field of special libraries, an environment in which the new information technology has been adopted and implemented more promptly and more thoroughly than in other areas of library service.

The second and complementary conjecture is that through a process of self-selection on the part of students, the more highly rated library schools attract better students, and these better students are then more likely to choose special library jobs. This perception of student self-selection is a part of the reason the author has insisted on "perception as to quality," "highly rated," and so on, rather than discussing quality per se, and why the author is quite willing to collapse White's data into one rank. Questions as to the validity of such data to measure "quality" persist, but clearly they measure "perceived quality" well.

It is tempting to interpret the data in terms of the emergence of new technology and students' tendency to want to go where the action is. If one were to try to measure where the action is, one would posit it to be in special libraries, with academic libraries somewhat behind, and the least action in public and school libraries. The job placement of highly rated library school graduates falls precisely in that order—the greatest positive disproportion in the area of special libraries, a rather lower positive disproportion in the area of academic libraries, and a negative disproportion in the area of public and school libraries. In short, one can "explain" the observed patterns in terms of better students tending to choose the more highly rated library schools, and those better students tending to choose the jobs where the action is.

The Perception in the Field

A survey was recently conducted among and by the information staff of 28 major firms in areas such as pharmaceuticals, electronics, chemicals, petrochemicals, food products, and what can best be described as "multidisciplinary" areas.* The firms chosen represent large industrial organizations in industries that tend to be research and information intensive. Among them, these 28 firms provide 500 to 600 special library/information jobs. The survey primarily addressed the educational background of those information professionals, but it also asked some re-

*Additional information regarding this survey may be obtained by contacting the author.

vealing questions about the perceived utility of courses the respondents had taken, as well as courses they had not taken (either through choice or because of unavailability) that they now wished they had.

The survey reported data from 249 respondents, of whom approximately one-half (126) had professional library training, an MS in Library Science or an equivalent.

In addressing the utility of the courses taken, respondents were asked to rank courses on a 1-to-5 scale, 1 being "irrelevant" and 5 being "very important." Table 3 presents data based on the responses of those with an MS in Library Science or equivalent library training. The table reports the percentage of respondents who had taken typical library school courses and the percentage of those who rated the individual courses as either 4 or 5, that is, "important" or "very important."

Examining Table 3, the most striking aspect is the relatively minimal overlap between the courses ranked most important and those courses one would think of as constituting the traditional core or foundation component of a master's program in librarianship. General reference is the only traditional core component of a library education to receive a high percentage of "4" or "5" ratings.

The dividing line chosen to distinguish between those courses identified as important and other courses seems defensible. The top five are those courses identified as "important" or "very important" by more than half of the respondents; in addition, the 18% gap (55%–37%) at that point is the largest on the scale. Defining which courses constitute the traditional core is somewhat subjective, of course. Nonetheless, the difference in ratings given to the two rather disparate cores suggests where library schools need to make changes.

The courses identified as particularly important fall into two conceptual classes: 1) the reference function, i.e., online searching and general and specialized reference; and 2) information management, i.e., online searching, programming, and management/administration. There is hardly a positive relationship between the perceived importance of courses taken and the frequency with which those courses were taken. This is probably not so much a function of selection as of availability. Courses such as online searching may not have been part of the curriculum at the time the respondents received their degrees. Indeed, 31% of the respondents received their degrees in 1970 or earlier.

If we make the assumption that the lack of a positive relationship is a function of availability rather than selection, then this data argues strongly for the need for major curricula revision. This view seems to be supported by the answers to the question, "What courses did you not have that you wish you had taken?" The responses to this question are reported in Table 4 and are clearly congruent with those in Table 3. Again, the conceptual classes of the reference function and information management emerge in dominant positions among those courses which one might expect to be taught in a program of librarianship or information studies. One might also classify the results as clustering in two areas: computer science aspects and management/administration.

The respondents also assigned importance to foreign language studies and subject competence in science and engineering. The importance of subject competence in these areas is obscured to a degree in Table 4, since many of the responses in that category were very specific.

When the responses are analyzed and classified, the following results (shown in Table 5) emerge. The most frequently mentioned courses (42%) are those in the area of library and information science (including computer operations and programming), followed almost evenly by subject courses in the areas of science and engineering (25%) and business/management (24%). The importance of subject expertise emerges as

Table 3. Ranking of Library Science Courses.

	Course	Percentage of Respondents Who Took the Course in Library School	Percentage of Those Who Rated It Important or Very Important
Traditional Core Components	Online Searching	45%	83%
	Specialized Reference	93%	76%
	(General Reference	97%	69%
	Programming	58%	56%
	Management/Administration	82%	55%
	(Abstracting/Indexing	65%	37%
	(Bibliography	90%	37%
	(Cataloging & Classification	98%	36%
	(General Background (Core)	97%	31%

Table 4. Courses Respondents Wish They Had Taken.

	Professional Courses	No. of Responses	Subject Discipline
MS IN LIBRARY SCIENCE RESPONDENTS	Programming	45	
	Online Searching	37	
	Computer Science	30	
	Management & Bus. Administration	22	
		16	Foreign Language
		14	Chemistry
	Statistics	13	
		11	Physics
	Mathematics	10	
	Economics	10	
	Specialized Reference	10	
	Accounting	9	
	Systems Analysis	7	
	Technical Writing	7	
		7	Biochemistry
OTHER RESPONDENTS	Management & Bus. Administration	36	
	Programming	20	
	Computer Science	20	
	Specialized Reference	18	
		15	Chemistry
	Online Searching	13	
		12	Foreign Language
	Statistics	12	
	Accounting	10	
		10	Electronics
	Economics	9	
		9	Polymer Chemistry
	Abstracting & Indexing	7	
		7	Psychology
		6	Biochemistry
	Technical Writing	4	
	Systems Analysis	3	

Table 5. General Subject Areas of Courses Respondents Wished They Had Taken.

Area	Total Number of Mentions		Number of Specifice Course Areas Mentioned
Librarianship and Information Science	297	(42%)	36
Science and Engineering Courses	177	(25%)	34
Business/Management	169	(24%)	21
Miscellaneous	70 (28 = Foreign Language)	(10%)*	20

*Percentages sum to 101 because of rounding aggregation.

essentially equal to that of business/management, a result that is not obvious from the list of most frequent responses (Table 4).

Another observation from Table 4 is the essential similarity among the responses of library school-educated information personnel (MS in Library Science or equivalent) versus those of others. The library school graduates put somewhat more emphasis upon programming and computer science aspects and somewhat less upon management/administration than did the others, but the differences are slight. The library school graduates stressed mathematics, while the others, many of whom have a subject background which includes mathematics, did not. The other respondents stressed abstracting and indexing, while library school graduates, most of whom (65%) took such a course, did not. Specialized reference, not available to the "others," appears much higher on that list. With the exception of those very logical differences, the lists are strikingly similar.

The data presented are not meant to be representative of all special librarians. The population studied was not a random sample of the domain of special librarianship, but it does represent a significant segment—what one might call the Fortune 500 segment of special librarianship. This segment is atypical to the degree that the resources it can deploy to handle information problems and the speed with which it can adopt and implement new technologies is more developed. As a consequence, this segment experiences trends and formulates new perceptions and new prescriptions early on. The impact of these new technologies is, of course, by no means limited to this segment. Technology, at least in certain areas such as legal research, is affecting other special libraries just as rapidly.

Ramifications

What Are Library Schools Doing?

Library schools appear to be moving in the desired direction insofar as their curricula is concerned. The list of courses added versus courses dropped in the 1982 *Library Education Statistical Report* provides some data on this point (*6*). This publication reports data for the 1981/82 academic year. Unfortunately, similar data was not collected in previous years. The report classifies the courses into groups. The author has taken the liberty of further dividing the "processes" category into "special library related" and "other" (see Table 6).

Clearly, the greatest growth is occurring in the area of information science and management, with the more traditional areas remaining static or declining. Even that apparent stasis, when examined more closely, is encouraging. Of the eight courses added in "librarianship," four have titles containing the

Table 6. Categorization of Library School Courses Added and Dropped in 1981.

Course Type	Number Added	Number Dropped	Balance
Online/Computer-Based	10	1	+ 9
Management	14	3	+11
Resources	13	16	− 3
Librarianship	8	7	+ 1
Processes:			
Special Library related	11	5	+ 6
Other	8	9	− 1
Special Groups and Types of Libraries	10	6	+ 4
Media	10	3	+ 7

phrases "information science" or "information studies," while only one of the seven dropped courses contains such a phrase. Similarly, the course titles of three of the ten added courses in media contain the word "communications" and might well be thought of as information science, while none of the dropped courses can be so described.

Another observable phenomenon of interest to special librarians is the growth of continuing education programs. The data in Table 7 are taken from the 1980, 1981, and 1982 *Library Educational Statistical Reports* (*6*).* The number of continuing education offerings increased to a marked degree in only two years, as did hours and enrollment. As might be expected, the increase in hours and enrollment was not as great as the increase in the number of offerings.

What Should Library Schools Be Doing?

One proposition that can be drawn from the data is that library schools need to revise their views about the function and the scope of their core requirements (those courses mandatory in a master's degree program). As Herbert White has pointed out, academic training in librarianship is almost unique among professional disciplines in terms of the scope of its core program and the conception that all graduates should have a common set of professional skills that equip them for virtually any entry-level job (*7*). This concept may have been more defensible before the "Information Controllability Explosion" (*8*), when the course options open to a library school student were limited. Now, with the plethora of new options available to information specialists, room must be made for new courses in either of two fashions: The course of study can be extended or the core can be reduced.

Although there has been some interest in a two year master's program, there has been relatively little discernible movement in the two-and-one-holf years since the 1980 Columbia Conference on the two-year master's degree program (*9*). If there is continuing motion in that direction it is exceedingly deliberate. Given the increasing complexity and scope of the information environment in which we operate, a two-year program is becoming advisable. Within the present economic situation, however, it seems unlikely that library schools will move with any rapidity toward a two-year program, much as we might approve that action.

The remaining option is to reduce core requirements and encourage more

*Volume 2, 1980, was the first year such data were reported.

specialization within the existing master's degree programs. Library schools seem to be moving in this direction, but the author knows of no quantitative data to support that contention. Revising core requirements seems to be a perennial hobby of library school faculty committees, and the reports to the American Association of Library Schools repeatedly mention revision of core requirements but seldom say anything explicit about the nature of those revisions (*6*).

A second proposition is that library schools need to develop and emphasize courses in the areas of information science/information technology and management, including both classical business administration courses and information resource management. In these areas, there does appear to be evidence that library schools are changing. The data in Table 6 show that changes are being made in a positive direction, but the magnitude of change indicated is not as reassuring.

The changes in the four categories—online/computer-based, management, special library related processes, and special groups and types of libraries—have a total positive balance of thirty new courses, or less than one half of one new course per year per library school. That is not a dramatic rate of change given the magnitude of the problems revealed in Tables 3 and 4. It seems clear that library schools must add new courses at a rate substantially greater than what they appear to be accomplishing.

A third proposition derives from the relatively low percentage of library school graduates who had taken some of the most highly rated and desired courses (see Tables 3 and 4) and the congruence between those courses taken and valued and those courses not taken but desired. There is a substantial need for continuing education courses and programs, particularly for librarians who received their training in the pre-online era. The online era may be said to have begun in 1971 when SDC launched the first commercial service and OCLC became operational, but in terms of library education, the transition came at least several years later, typically in the second half of the 1970s. The change in the content of the librarians' scope of training has been dramatic; it is almost a standard litany among returning post-master's students that "it's a completely different world than when I went to library school."

Some schools are now offering a post-master's certificate that is not an "all-but-the-dissertation" consolation prize. Rather, it is a program aimed at the confluence of information science/technology and management but defined loosely enough to be either a retrofit program for the pre-online master's degree holder, or a program of specialization for the currently enrolled student. In the latter capacity, it fulfills the goals of a two-year master's program, and the student receives both a master's degree and a post-master's certificate. Since such a program is outside the purview of ALA's accreditation procedures, the library school is afforded greater flexibility in how it chooses to implement such a system. A drawback is that the recognition afforded to a post-master's certificate is still minimal.

Table 7. Extent of Library School Continuing Education Programs.

Academic Year	Number of Events	Clock Hours	Total Enrollment	Enrollment/Event
1979/80	374	4,165	17,302	46
1980/81	502	4,667	20,611	41
1981/82	624	5,942	23,303	37
% Change 1979/80 to 1981/82	(+67%)	(+43%)	(+35%)	(−19%)

Accreditation

A role in the accreditation process is an obvious point of leverage for special librarians. A dozen years ago, when "other" libraries and library agencies accounted for a mere 14.2% of library school placement, and when public, school, and academic positions accounted for 85.8% of job placement, it would have been ineffective to question ALA's role in library accreditation. Now it is appropriate.

If we include the other information specialties with special libraries, what was once the miscellaneous category is now the dominant category. (The data for 1981 indicate the following percentages of placement: Special and Other = 29.9%; Public = 27.3%; Academic = 23.6%; School = 19.2%) (*5*). Furthermore, as discussed earlier, for many of the highly rated library schools, the percentage of special library placement is much greater than 30%.

This phenomenon indicates that the increase in special library placement is a trend that will continue for some time. It should be added that placement data probably underestimate the proportion of library school education devoted to special librarianship.

Placement figures are reasonable indicators for the mainstream, full-time master's student. An increasing proportion of library education, however, is either part-time, post-master's, or both. It is the author's belief that most of these students—for example, those attending Columbia's post-master's Certificate in Information Management—become special librarians. If data for such students were available, the figures indicating the special library proportion of library education would probably be significantly higher. Indeed, a significant number of North American library schools reported in 1980/1981 that their special library placements exceeded 50%. Those schools are Case Western, Catholic, Chicago, Columbia, Drexel, Maryland, Montreal, Pratt, and Toronto (*1, 10*).* For such institutions, the question cannot be avoided whether ALA, or more properly ALA alone, is the appropriate organization for accreditation.

We are fast approaching the time when some kind of librarianship/information science equivalent of the Engineers Joint Council may be the appropriate mechanism for accreditation. Ideally, such a "Joint Council" would include not only the American Library Association and Special Libraries Association but also the American Society for Information Science and other professional organizations. Despite recent reports in the literature to the contrary, ALA does not (with the exception of some Canadian Library Association participation) permit non-ALA members on its accreditation committee or on its site visit teams.

The most important reason why special libraries should have a role in the accreditation process is that their needs differ substantially from the perceived needs of the traditional ALA constituency. The ALA component which is most like special librarianship in its needs is academic librarianship. A relatively recent study of how academic research library directors perceive the appropriate emphasis of library education is revealing.

The data, collected by the Task Force on Library Education of the Association of Research Libraries (ARL), represent the views of 76 of 111 ARL library directors surveyed on what they felt to be the most important educational needs of entry-level academic library personnel, and what would have been most important to them at a point five years later on in their career paths (*11*). The data are two years older than the data reported earlier for special librarians and do not

*The overlap between the U.S. schools on this list and in Table 1 is of course substantial. Those not listed in Table 1 are urban and Canadian institutions which, as White points out, are probably the victims of (typically unconscious) bias in a survey in which the large majority of respondents are non-Canadians.

Table 8. Industrial Special Librarians' Rankings of Importance of Courses Taken vs. ARL Library Directors' Rankings.

	Course	Special Library Rankings	ARL Rankings (out of 19 choices) At Job Entry	5 Years Later	Average
	Online Searching)	1	7	7	7
	Specialized Reference) Special	2	8	10	9
	Programming) Library	3	19	19	19
	Management/Administration) Core	4	15	15	15
	(General Reference)	5	1	1	1
Tradi-	(Abstracting/Indexing	6	Not included as possibility		
tional	(Bibliography	7	2	3	2.5
Core	(Cataloging & Classification*	8	9	9	9
	(General Background (Core)†	9	12	13	12.5

*Closest ARL equivalent is "theories of organizing information."
†Closest ARL equivalent is "knowledge of library issues."

reflect how librarians perceive their own needs; however, a comparison is still instructive. Table 8 is derived by recasting the data in Table 3 and comparing them to the rankings of similar topics compiled by Marchant and Smith from the ARL data (*12*).

Clearly the ARL library directors see things much differently. The five courses that special librarians identify as most important have, by ARL standards, only an average rank of 10.2 out of 19, that is, below average; the traditional core ranks much better—6.25 out of 19. The traditional core is obviously more congruent with the needs of ARL libraries than with those of special libraries. Particularly surprising is the low importance given to programming (19 out of 19) by ARL library directors, and the relatively low importance given to management/administration (15 out of 19). More striking, ARL library directors apparently see no increase in the importance of management/administration as personnel advance along their career paths; indeed, they see no skills changing appreciably in importance as a librarian's career path develops.

Traditionally, ARL libraries have been the more prestigious segment of ALA, and correspondingly, ARL library directors have tended to be very influential in ALA. These are the voices that are influencing ALA and its accreditation standards. If academic librarians' views as to the important component of library education are so divergent from our own (and we can certainly expect school and public librarians' views to be at least as divergent), then the need for special librarians to make their voices heard is almost indisputable.

There are additional issues that relate specifically to the question of accreditation. One concerns the balance between who should do the teaching—practitioner or researcher. Under the ALA accreditation guidelines, there is a strong bias against part-time faculty, which is a de facto bias against practitioners.

While the use of part-time faculty certainly can be abused, and accreditation standards should protect against that abuse, education for special librarianship requires a substantial modicum of use of part-time faculty. Not only are part-time faculty needed to teach some courses in their entirety to supplement the full-time faculty; practitioners are perhaps even more useful as guest lecturers to supplement full-time faculty within courses. The use of part-time faculty is advisable, particularly at this juncture when there is a pressing need

for new courses and when library schools are fettered with tenure constraints that prohibit rapid realignment of faculty competencies.

Another legitimate issue concerns the proper balance in a professional education between the present and pragmatic, i.e., that which will be useful to job seekers, versus the conceptual, i.e., that which will serve them better over time. As the author has pointed out in "The Information Controllability Explosion" (*8*), the rapidly accelerating rate of technological change will produce dramatic changes during one's professional career, with many of those changes affecting special librarianship.

Library education must attempt to prepare students not only for the immediate job market but also for the largely unpredictable technological changes that will characterize their career environment. Since both sides of this balance are of particular importance to special librarians, the special library community should have an important role in formulating the accreditation standards that address it.

The Domain

Perhaps an even more fundamental reason for concern with the process of accreditation is the question of what is the domain of library education. Is library education an institution-based domain, or is the basis more conceptual, such as knowing how to put information away and find it again?

Clearly, it should be the latter; a library school is about libraries only to the extent that a journalism school is about newspapers. Admittedly, terminology poses a problem since within librarianship there is no equivalent of the word "journalism." "Information Science" is too narrow in its connotations to some, and too broad (encompassing, for example, hardware design) to others. Perhaps we should coin a new word like the French "informatique."

The question of domain is not a theoretical or philosophical one to special librarians; it is a valid operational concern. The boundaries between special librarianship, records management, office automation, database administration, data administration, information management, information resources management, and so forth, are becoming increasingly indistinct. The central thread is knowing how to put information away and find it again. These are all areas of importance to the special librarian, particulary as that central theme is recognized and these areas begin to be integrated under rubrics such as data administration or information resources management. The essential identity of librarianship and data administration is masked by variant technical jargon (*13*). For special librarians who must operate across those lines, particularly those who hope to administer broadly in those areas, it is exceedingly important that library schools define their domain broadly. This, perhaps more than any other reason, is why special librarians need to become involved in the accreditation process and thereby gain the opportunity to impel library schools to define the domain of the profession more broadly.

Library education must attempt to prepare students not only for the immediate job market but also for the largely unpredictable technological changes that will characterize their career environment.

Recruiting

A problem that consistently surfaces is that of recruitment to library school, specifically the tendency for library schools to be selected by students with liberal arts backgrounds rather than engineering or science backgrounds (*14*). As White has pointed out (*7*), library schools and the profession at

large are limited in the measures they can take to correct this problem, since the pool of applicants to library schools is determined by the applicants themselves; however, these applicants appear to be taking corrective action on their own. The number of undergraduates who select liberal arts majors is declining due, primarily, to more candid assessments of job opportunities. In particular, the number of women who choose science and engineering majors is increasing, seemingly exponentially (*15*). In short, the pool of traditional library school candidates is declining, and there will be a larger pool of candidates with quantitative, scientific or engineering backgrounds.

Chemical Documentation (now *Journal of Chemical Information & Computer Science*) and that was where the action was first, most of it in special libraries.

We have similarly allowed academic libraries to appropriate the term "research library." Even most special librarians are not aware that they have an equally valid claim to the title "research library." For example, it came as a surprise to the author some years ago as he was perusing Raffel and Shisko's programmatic cost analysis of the MIT library system (*17*) to realize that, in terms of library dollars supporting the R&D function, his library system at Pfizer, Inc., was a research library system equal in size to MIT's, and that,

A role in the accreditation process is an obvious point of leverage for special librarians. . . . [However] the most important reason why special libraries should have a role . . . is that their needs differ substantially from the perceived needs of the traditional ALA constituency.

Rather than simply letting the market economy take its course, is there anything the profession can do to potentiate the increased selection of library schools by students with sci/tech backgrounds? While perhaps not very direct, one positive step would be to update our image. The name of the Special Libraries Association, and indeed the name, "library," are liabilities and should be replaced with all possible speed. As Keeler succinctly puts it, "try to have your title changed from 'librarian' to almost anything else (*16*)."

We have failed to convey that special librarianship is where the action is. Students, for example, often express surprise that the *Journal of Library Automation* (now *Information Technology & Libraries*) is comparatively new, founded only in 1968. There was a journal of library automation long before that, but it was called *Journal of*

if measured in terms of resources expended in support of research, there are at least as many special libraries of ARL size as there are academic libraries of ARL size. We continue to obscure these perceptions, not only from potential students but even from ourselves as long as we continue to call ourselves special librarians.

Promoting Our Image within Library Schools

There is much that can be done within the library school to educate and recruit future special librarians. As the Conant report points out, few students (some 8%) come to library school with the intention of beginning a career in special libraries (*18*). This is not surprising considering our professional image. Relatively few students have had contact with special libraries before

Only if library education modernizes and enlarges its horizons can we, as a profession, take advantage of the burgeoning perception of information as a resource of great importance, and of information handling as a process of central concern to an organization.

commencing library school, while almost all are familiar with public, school, and academic libraries. Given the brevity of a typical master's degree program, students must make course and program selection decisions early on in the program. However, perhaps as a residue of the concept of commonality and interreplacability of librarians (at least at the entry level), career days and other career planning functions typically do not take place until the spring semester when it is too late for the student to alter course by any appreciable degree.

This suggests that Special Libraries Association, as a professional organization, should have an active program that deliberately attempts to reach students early on in their educational program. For example, those students admitted to library school might be given a packet of information at registration. Local SLA Chapters could be encouraged to host Special Library Career Days at nearby library schools early in the academic year—the earlier in the term the less competition there will be from competing activities and the greater the chance that a student can rethink his or her choice of courses. Additionally, SLA headquarters could act as liaison to facilitate and promote such interactions between local SLA Chapters and the library schools, and to prepare educational literature packets. Some of this work is already being done; however, the scope of activities needs to be broadened and promoted more visibly by SLA.

Conclusion

The nature of librarianship is changing with dramatic rapidity. Special librarianship, in its broad definition, is fast becoming the dominant category of library/information employment. The time has arrived for special librarians to assert themselves and adopt an active role in guiding the process of library education. Without such an effort, the rate of modernization of library education will be too slow. Only if library education modernizes and enlarges its horizons can we, as a profession, take advantage of the burgeoning perception of information as a resource of great importance, and of information handling as a process of central concern to an organization.

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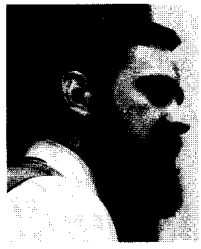

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Actions of the Board of Directors January 26–28, 1983

The SLA Board of Directors met at the Newporter Inn, Newport Beach, California, Jan 26–28, 1983, during the Association's 1983 Winter Meeting. Meetings of the Chapter and Division Cabinets were also held at the Winter Meeting. Actions taken as well as important reports heard by the Board are summarized below.

New Board Member Welcomed—At the Newport Beach Winter Meeting, Jean Martin joined the Board of Directors as Division Cabinet Chairman-Elect. She was elected by the Board at its Fall Meeting (October 1982) to fill the unexpired one-year term (June 1982–June 1983) of Jane Cooney, who was forced to resign the post in September 1982 due to unforeseen financial difficulties of her employer. Ms. Martin will succeed Valerie Noble as Division Cabinet Chairman in June 1983.

Association Finances—At the opening Board session, Executive Director, David Bender, announced that SLA's unaudited 1982 financial statement shows a year-end surplus of $112,000, due largely to income generated by the publications and continuing education programs, SLA's investment portfolio, and the success of the Association staff in reducing overall expenditures. The Board voted to expend $5,000 of the surplus on essential Association Office renovations. The remainder ($107,000) will be allocated among SLA's Computer Fund (40%), Building Fund (30%), and Reserve Fund (30%). Of the portion earmarked for the Reserve Fund, $20,000 will go toward SLA's projected 1983 legal and programming expenses for copyright matters, and $7,500 will fund some of the activities and programs SLA is planning for its 75th anniversary year (1983/84).

The Board approved a policy for the acceptance of gifts and bequests made to the Association.

The Executive Director reported that the fund balance of the Special Programs Fund has surpassed $30,000. According to the procedures established by the Board for administering the Fund, $5,000 will be available in 1983 to support programs such as publications, research projects, public awareness activities, etc. The Board set Sep 2, 1983, as the final date for receipt of applications for Special Programs Fund grants.

Building Search—The Board considered the progress of the staff's search for a headquarters building for relocation of the Association Office. In June 1981, the Board authorized the staff to undertake the search within a 50-mile radius of the Association's current Manhattan location. A Building Inspection Committee, comprised of SLA members in the New York area, was authorized to assist the staff with its search for property. To date, 66 buildings have been inspected.

The Executive Director spoke before both Chapter and Division Cabinets on the building search effort and the status of the Building Fund that was established in January 1982 to support this project. To provide Cabinet members with additional information on the building search, a fact sheet was distributed at these sessions.

Government Relations—A legislative program for 1983 was considered and adopted by the Board. It was prepared by the Government Relations Committee in consultation with the Executive Director. The ten points of the 1983 legislative program are:

1. Encourage enactment of legislation which advances library and information services in the public and private sectors.
2. Monitor library and information personnel standards which will have an impact on the development and de-

livery of library and information services.
3. Monitor copyright legislation to ensure that libraries in the public and private sectors receive equitable treatment.
4. Encourage the enactment of legislation which will foster the uses of new information technologies.
5. Encourage the enactment of legislation which will foster international exchange of library resources including internships for, and the sharing of, library and information personnel.
6. Encourage the enactment of federal legislation which will foster the exchange and sharing of library resources by means of telecommunications and postal services.
7. Seek a program whereby public documents and information are easily accessible and readily available to the special library community.
8. Encourage the collection of library statistics which reflect the needs of the special library community.
9. Support funding for library and library-related programs.
10. Support funding for the National Endowment for the Arts, National Endowment for the Humanities, and the Institute of Museum Services.

The Chairman of the Government Relations Committee reported that the library community and the staff of the U. S. Office of Personnel Management were at an impasse on the occupational standards for federal librarians. During the previous 14 months, SLA and other library associations and groups had opposed both the first and second revisions of the standards and especially the limitations placed on the representatives of library groups for review and comment on the second revision. The Board discussed a fact sheet prepared by the Government Relations Committee for publication in the *SpecialList* (see January 1983 issue) in which the Committee urged members to (1) write to their senators and representatives to request OPM not to publish the proposed Library-Information Service Series, GS-1410, and the Library Assistance Series, GS-1411, and (2) request that the standards revision be opened up to a task force, chaired by OPM, which could include representatives from professional associations, the national libraries, and the federal library community, as well as from the Federal Library Committee.

The Board heard a concern of the Cincinnati Chapter and the Chapter Cabinet regarding attempts by some private sector information providers to abridge and limit the federal government's information dissemination efforts, solely for their own gain. Because the bulk of this information is generated and collected at public expense, the Board acted to instruct the Government Information Services Committee to prepare and distribute a statement of support for continued and increased government involvement in information dissemination.

Copyright Matters—The Board reviewed developments in the copyright arena, including the recommendations in the report of the Register of Copyrights on the Copyright Office's five-year review of Copyright Law of 1976. Because the report is considered to be generally unfavorable to positions held by the library community, the Board decided to earmark a portion of 1982 surplus income for previously unanticipated expenses related to copyright issues.

The Board endorsed a statement of copyright prepared by the library representatives to the Photocopying Discussion Group convened by the Register of Copyrights, Oct 21, 1982. The statement, which is intended to replace the notice that is currently being affixed to every photocopy of a copyrighted work made by a library for a patron or for another library, reads:

> "Further reproduction of this copy is governed by provisions of the U.S. Copyright Law; reproduction in violation of that law is prohibited."

The Board reaffirmed its support for the work of the Ad Hoc Committee on Copyright Law Practice and Implementation of the Council of National Library and Information Associations, which for several years has developed and presented consensus positions of the library community on matters relating to the Copyright Law. The Board also commended Efren Gonzalez, the Chairman of the SLA Copyright Law Implementation Committee (who also serves as Chairman of the CNLIA Ad Hoc Committee), for his continuing leadership and extraordinary insight into the many facets of the Copyright Law.

Long-Range Planning—Vivian Arterbery, Chairman of the Special Committee on Long-Range Planning, reported to the Board on the success of the Chapter Cabinet train-

ing session on the Nominal Group Technique, conducted at the Winter Meeting by Dr. Mary Frances Hoban, SLA's Program Assistant for Professional Development. Most chapters will use the technique at chapter meetings this spring to rank Association priorities. The results of the chapter meetings will be used by the Special Committee to refine the ranking of priorities established by the Board at its 1982 Fall Meeting. (See *SL*, January 1983, p.84.)

Immediately following the 1983 Annual Conference, the Board will meet and use the Nominal Group Technique 1) to assess the future environment of the Association, 2) to evaluate Association resource options, and 3) to define the long-range planning process beyond October 1983.

The Board passed a resolution of commendation for Dr. Hoban on the very fine support she has provided the Special Committee on Long-Range Planning and on her excellent leadership in conducting Nominal Group Technique sessions in both Board and Chapter Cabinet meetings.

Chapter and Division Activities—Vivian Arterbery, Chapter Cabinet Chairman, reported that the Chapter Cabinet had approved a motion for the drafting and incorporation into the *Chapter Guidelines* of guidelines for the establishment and administration of online user groups within the chapter structure.

The Board accepted a recommendation of the Division Cabinet for denial of a petition for the establishment in SLA of a division on women's interests in the profession. It was thought by both the Cabinet and the Board that another means (for example, a section of an already established Division or the SLA committee structure) would be a more appropriate mechanism for accomplishing the objectives of the petitioners.

The Board considered the alternatives suggested by the Picture Division executive board and the Executive Director for repayment of the $2,600 Picture Division loan that became due on Jan 1, 1983. As a result of a financial crisis, the Division is unable to repay the interest-free loan the Association extended to it for revitalization of its quarterly publication, *Picturescope*. The Board accepted the Division's suggestion for repayment, whereby two-thirds of the Division's 15% royalty from sales of *Picture Sources 4*, up to $2,600, will be turned over to the Association.

Publications Program—In January 1980 the Board established a three-member Publications Committee as a standing committee to advise the Association's Publications Department in planning the scope and subject matter of serial and non-serial publications. At the request of the Publications Committee, the Board took two actions relative to the Committee: 1) to increase the Committee's membership from 3 to 5 members in order to provide representation of the diversity of member interests; and 2) to refer the Committee's definition to the Committee on Committees for review of the charge of the Publications Committee to more precisely define its duties and responsibilities.

Association Awards—The Awards Committee reported to the Board its selection of recipients for the Association's 1983 awards:

Hall of Fame: Lorraine A. Ciboch
John Cotton Dana Award: Arleen N. Somerville
SLA Professional Award: Ron Coplen and James Matarazzo

The Board voted to endorse the Award Committee's nomination of Andrew A. Aines for Honorary Membership. Mr. Aines's nomination will be submitted to the membership for election at the Annual Business Meeting, Jun 8, 1983.

The recommendations of the Scholarship Committee and the Positive Action Program for Minority Groups Committee for the number and amount of SLA scholarship and minority stipend awards for the 1984/85 academic year were approved:

SLA Scholarships—up to two $5,000 awards;
Minority Stipend Awards—up to two $2,500 awards.

The Scholarship and Positive Action Committees also asked the Board to institute procedures to insure that scholarship and stipend winners are enrolled in library school at the time they receive their awards. The Board adopted a procedure of making scholarship and stipend checks payable jointly to the individual recipient and the library school. The Board's action also gives the staff the option of negotiating another mutually acceptable procedure with library schools that do not accept the jointly payable check method.

Interassociation Relations—The Board declined an invitation from the Council of Professional Associations on Federal Statistics (COPAFS) for SLA's participation in the group as a member. It was felt that both the benefits of membership to SLA and the group's financial stability were uncertain.

An invitiation from the Council on Library/Media Technical Assistants (COLT) for the appointment of an SLA representative to the COLT Certification Committee was not acted on due to lack of information on the purposes of the Committee and the need for SLA's participation.

Conferences and Meetings—The Board heard a final report on the 1983 Annual Conference (New Orleans) from Didi Pancake, Chairman of the Conference Program Committee. Fred Roper, Chairman of the Conference Program Committee for the 1984 Annual Conference (New York) presented a preliminary report on plans for the Association's 75th anniversary conference. Throughout the Winter Meeting there were ample opportunities for Division Officers to meet for discussion and coordination of their program plans for both conferences.

Pittsburgh was selected as the host city for the Association's 1987 Winter Meeting (January 26–30).

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The next meetings of the SLA Board of Directors will be held in conjunction with the 1983 Annual Conference, June 4–9, in New Orleans.

SLA'S SILENT AUCTION

This is an opportunity for you to buy valuable products for well below selling price and to help the SLA Building Fund. Many of the vendors exhibiting at the SLA Conference have donated products to be auctioned off in New Orleans. *Those attending the Conference* can stop by the donor's booth to inspect the product and register a bid. You may bid more than once. Each of these booths will be posting the current highest bid.

Not Attending the Conference?

We will miss you; but you don't have to attend to participate. A partial list of vendors and products appears in the April 1983 *Special List.* Advanced bids on these products will be accepted at the SLA Office. Send your name, address, and the product name, and tell us how much you would like to bid. Bids must be received by May 1, 1983.

Bidding will be closed on Wednesday, June 8, 1983 at 1:00 p.m. Winners will be announced immediately. Winners must submit payment by June 30, 1983. If payment is not received, the next highest bidder will be declared the winner. All payments are to be made to the SLA Building Fund.

REVIEWS

Collection Development and Public Access of Government Documents: Proceedings of the First Annual Library Government Documents and Information Conference, Peter Hernon, ed., Westport, CT, Meckler Publishing, 1982. 160 p. $35.00. LC 82-3435; ISBN 0-930466-49-7.

Over the past fifteen to twenty years, government publications and government publications librarians have become much more visible in the library world. Although slow in developing, this visibility and interest are now beginning to spawn serious research on many facets of government publications. The maturation of government documents as a significant field in librarianship, with its own emerging professional and scholarly literature, makes it a natural choice to be the subject of one of several new annual conferences sponsored by Microform Review, Inc. *Collection Development and Public Access of Government Documents* is a collection of papers delivered at the first annual Library Government Documents and Information Conference held in Boston, Mar 3–4, 1981.

Most of the speakers will be familiar to government documents librarians, and many of the topics are easily associated with these individuals through their writings. Briefly, Bernard Fry, Director, Research Center and Professor, School of Library and Information Science, Indiana University, argues for a theoretical base for documents librarianship and emphasizes the need for more planning in documents collections.

Papers by LeRoy Schwarzkopf, (Regional Depository Librarian, University of Maryland as well as editor, *Documents to the People*) and Charles R. McClure, Associate Professor, School of Library Science, University of Oklahoma, examine the history and possible reorganization of the depository library program, respectively. Joe Morehead, Associate Professor, School of Library and Information Science, State University of New York Albany, eloquently and persuasively argues for more attention to the quality of government information and its uses.

William Barrett, Deputy Public Printer, U.S. Government Printing Office, surveys the technology available to GPO during the 1980s. Lucianna Marulli-Koenig, Bibliographer, Dag Hammarskjold Library, United Nations, explores possible approaches to collection development in U.N. documents. Peter Hajnal, Head, Government Publications Section, University of Toronto, provides an overview of UNESCO materials.

Peter Hernon, Associate Professor, Graduate School of Library and Information Science, Simmons College, and Gary Purcell, Professor, Graduate School of Library and Information Science, University of Tennessee, report on their ongoing research into the collection development practices of U.S. depository libraries through their use of GPO's automated depository item number list and data from GPO's 1979 Biennial Depository Library Survey.

Finally, Peter Hernon and Clayton Shepherd, Associate Professor, School of Library and Information Science, Indiana University, present the preliminary results of their analysis of government publications cited in the *Social Sciences Citation Index*.

Taken as a group, the papers cover the dual themes of the conference—collection development and public access issues concerning government publications—in a rather haphazard manner. This lack of focus is exacerbated by a truism in any collection of essays—the papers are uneven in quality. Several were intended to be delivered and not to be read. The two most interesting papers and the most sophisticated analyses (albeit the findings in both cases were only preliminary) were those co-presented by Peter Hernon, who presided over the conference and who edited the conference papers for publication.

Although the essays are interesting, one is left wishing for a concluding analysis of the implications of the papers regarding future public access and collection development in government publications. Nevertheless, the papers raise crucial questions, present exciting possibilities for further research, and once again demonstrate that many long-held assumptions in the field of government publications have yet to be examined.

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The Shrinking Library Dollar by Dantia Quirk and Patricia Whitestone. White Plains, NY and London, Knowledge Industry Publications, Inc., 1982. 170 p. $24.95/cloth. ISBN 0-914236-74-1.

If you are interested in analyzing trends for materials in all types of libraries *The Shrinking Library Dollar* is a good place to begin. This industry study of the library market gives an overview of U.S. libraries; reviews the library markets for general books, professional and reference books, periodicals, systems, audiovisual and other materials; profiles twenty-two firms involved in various segments of the library market; and lists selected sources for further information. A scant index completed the book.

Information from a not-for-profit corporation, the Book Industry Study Group, is incorporated in this report along with data from other organizations, both governmental and nongovernmental. The Book Industry Study Group is funded by business interested in the future of the book industry. The library market is a primary source of income for the book and periodical publishing industries in the United States.

A basic premise of the authors is that "libraries at the beginning of the 1980's stand at the crossroad of change." Although technology exists to increase the efficiency of many library services, budget constrictions, inflation and extra-library information services (e.g., personal computers) threaten libraries.

The study is limited by the availability of sufficiently long and current data on which to base current and future estimates. It does an admirable job of analyzing the essential elements of the market for publications and systems in libraries. The data given in tabular format have a beginning range from 1962 to 1978. Projections are commonly made to 1984, a year generally used by broader industry studies, such as the *U.S. Industrial Outlook*, as recently as 1980. The compilers would have done well to extend their projections to 1986 to stay comparable to the broader studies.

Publishers and vendors of books and periodicals, as well as marketers of systems, audiovisual and other materials, are vitally interested in libraries. We are their best customers, spending a conservatively estimated $1,575,000,000 in 1980—with an increase to $2,230,000,000–$2,858,000,000 in 1984. Every librarian who does business with any of these suppliers should read this book.

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Careers in Information, by Jane F. Spivack. White Plains, N. Y., Knowledge Industry Publications, Inc. c. 1982. $27.50; LC 82-7188; ISBN 0-914236-70-9; ISBN 0-914236-83-0 (pbk.)

The library profession is experiencing an evolutionary stage of its development and *Careers in Information* is indicative of the changes which are rapidly occuring around us. According to the authors, the need for organization and access to information has never been greater. The book's nine chapters attempt the difficult task of defining the world of "information" and its many and varied careers. Spivack asked informed and experienced information professionals to write the first six chapters.

Charles T. Meadows, Dialog Information Services, provides an overview of the information world in the first chapter. Lois F. Lunin, Herner and Company, describes the work of information specialists, the latter being defined as those "who are processing information using new computer-based technologies." In chapter three, Margaret Myers, American Library Association, discusses the work of librarians. While she brings out the difficulties facing us as new technologies impact on the profession, she believes that librarians will continue to play a pivotal role as information professionals. Both Lunin and Myers end their chapters with "Career Sketches," short vignettes which illustrate the diversity of information careers. Helena Strauch, consultant on office information systems, in chapter four looks at information entrepreneurs, with some basic "how-to" advice on starting your own business and making it work.

Chapter five, written by F. Woody Horton, formerly of the Office of the President and the Federal Paperwork Commission, covers the work of information professionals in the federal government. It includes a clear description of the various

opportunities in government, an outline of how to enter the federal service, and more importantly, guidelines on how to succeed within it.

Herbert White, School of Library Science, Indiana University, in chapter six, discusses the training of those professionals who must face the ever demanding challenges of the future. While the traditional requirements of the field of librarianship still remain relevant, the education of professionals must prepare candidates who can relate to people and ideas and "who will use appropriate technology for solving the problems of the information interpretation process." An important section for the prospective information professional deals with the "Yardstick for Judging Programs."

The last three chapters by Jane F. Spivack, Drexel School of Library and Information Science, discuss "Career Planning and Professional Growth," "Finding a Job," and "Placements and Salaries." Within these sections is practical advice on topics ranging from résumé writing and interview techniques to sexism and salaries. Two valuable appendices are a "Handbook and Manual for Career Planning and Job Searching" and a fairly comprehensive and diverse bibliography.

Perhaps the most significant point of the book is that librarians are not alone in the information field. Some of us might question the inclusion of some of the information "jobs" listed and discussed (Is every person "pushing paper" in the world an information professional?). The book gave great cause for optimism in what appears to be an unending degree of opportunity within the field. The editor/author has more than adequately met the needs of her audience as stated in her introduction. Spivack directed this book towards college students and graduates trying to make a career choice and career placement officers in both graduate and undergraduate schools. However, the book is also valuable to library and information science educators attempting to prepare students for the broader applications of the information industry. It is also a useful tool for information professionals who may be considering a job change.

This title is recommended for the above audiences and any library with a basic professional collection.

Hollace A. Rutkowski
Reference and Research Services
The Franklin Mint
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Ahead of Its Time: The Engineering Societies Library, 1913-80, by Ellis Mount. Hamden, CT, Shoe String Press, 1982. $25.00 cloth. 213 p. ISBN 0-208-01913-8.

This book is based on the author's dissertation, completed in 1979, on the history of the Engineering Societies Library in New York City. According to the preface, the book updates the dissertation through 1980 and places emphasis upon services, networking activities, and the collection, showing the extent to which this great library has participated in helping to pioneer certain concepts and practices. Careful reading suggests that the material has somehow suffered in the rewriting for publication. Also questionable is the idea of an "update" for a period of about one year in a work that is essentially historical in nature.

It is an important book, however, and there is a great deal of interesting history about the Engineering Societies Library in it. Mount presents a quick look at the Library as it is today and then proceeds to tell us how it got that way. Notable administrators and staff are treated in several chapters, mainly in the light of their influence on the development of the collection. One wishes for more flesh on the bones of some of these studies for it is evident that some people are more interesting than they may seem in the pages of this brief book. The genesis and evolution of the Library was a route apparently marked by considerable distrust and meddling before a true amalgamation of the collections of the several societies was achieved. We also receive a good account of the long flirtation with the *Engineering Index,* an affair never quite consummated but of mutual advantage to both parties nevertheless.

Mount discusses in some detail the cataloging activities and the concept of the classified catalog at the Engineering Societies Library, drawing attention to the small group of large technical libraries for whom this type of catalog has been an important

user-oriented development. The author's description of cataloging could have been helped by illustrations at appropriate places of the cards described. In a curious last, short chapter about the future, the hope of being able to lower the costs of cataloging is expressed. Nowhere else has cost been discussed except for reference to projects undertaken some years ago. This chapter says nothing significant, and its vague statements could have been completely omitted from the book.

Several graphs comprise the appendix material of the book. A large body of notes citing the sources of information for each chapter, followed by an adequate index, complete the contents of this volume. In spite of shortcomings and price this is an important title and it is recommended for any collection in which engineering libraries or the history of libraries receives emphasis.

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Marketing the Library, by Benedict A. Leerburger. White Plains, N.Y., Knowledge Industry Publications Inc., 1982. $24.50, 124 p. ISBN 0-914236-89-X.

This volume is an exceedingly useful publication. It is a "must" acquisition for every librarian charged with responsibility for promotion or otherwise interested in marketing's possible relevance to his/her profession. But its many attractive features notwithstanding, the volume also has one very serious shortcoming. *Promoting the Library and Its Programs* would have been a far more appropriate title. The author focuses almost exclusively on promotion, admittedly one very important aspect of marketing. However, other equally important aspects of the same subject receive little or no attention.

This volume is a "how to" publication in the most positive sense of that term. It contains useful information on the role of publicity, the preparation of press releases, and the effective promotion of special programs. Community relations and fund raising are also discussed at length. Particularly effective sections explore the pitfalls associated with a newsletter, the promotional possibilities of annual reports, the best way to set up displays, the organization of a Friends of the Library Group and how to obtain a "yes" vote on bond issues. Useful approaches to solving the unique promotional problems of academic and special libraries are also presented.

The volume provides an excellent introduction for those with newly assigned promotional responsibilities. The frequent references to what libraries and librarians have actually done and the many detailed exhibits are especially strong features. Librarians with prior exposure to any of the topics covered may find little that is new or different. However, an easy to read format, the relatively complete though concise treatment of all aspects of library promotion, and the many "for example" exhibits combine to provide a useful reference even for the more experienced.

The volume's principal weakness is the aforementioned inadequate treatment of most aspects of marketing other than publicity and public relations. One finds, for example, no reference to the desirability of libraries reexamining their product lines and recognizing that they compete for market share with other activities and institutions. Marketing strategy, market segmentation, the product life cycle, and diffusion theory are but some of the many other topics which also deserve mention in any overall treatment of library marketing. Indeed, such topics have been discussed at some length in the library world's own professional journals. The author makes no reference either to these articles or, with one exception, to the burgeoning text and journal literature on all forms of nonprofit marketing.

Marketing the Library could be considered a product inadvertently being marketed under a somewhat deceptive brand name (its title). Much can be said in favor of the publication once all concerned, including its author, realize that it deals almost exclusively with promoting the library rather than with marketing.

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Decision Making for Library Management, by Michael R. W. Bommer and Ronald W. Chorba. White Plains, N.Y. Knowledge Industry Publications, Inc., 1982, 178 p. $27.50 (pbk). ISBN 0-186729-0001-3.

This book resulted from a project, funded by the National Science Foundation, to develop a management information system for academic libraries. The authors offer a useful framework for decision making by defining decisions to be made in managing the basic functional areas of the academic library.

Decisions are grouped into three categories: strategic planning, managerial control, and operational control. Decision making for library functions, such as collection development, user services, physical facilities, are defined for each level or category.

A decision support system or management information system is the major topic of the book. The information system described utilizes data easily generated by computer-based systems existing in many academic libraries. Methods of data gathering and analysis are described, as well as techniques for synthesizing the data into a set of quantitative relationships to assess performance of an academic library relative to objectives and user demand.

Discussions of quantitative methods for determining institutional productivity (levels of instruction and research), will be especially useful to academic librarians. Data needed to measure and define instructional programs and research projects often can be generated from administrative data processing systems and incorporated into the library's decision support system.

Academic librarians who plan to design or implement online systems for circulation, acquisitions, and catalog access can use this book as a guide to building management information modules into these systems. Existing systems also can generate needed data with the addition of appropriate software.

Special librarians who work in information management environments will find limited value in this book. While the authors recognize that document transfer is not the same as information transfer, their performance data measure access, collection size, and document transfer services associated with more traditional academic libraries. The book does not discuss content or source databases, improved and expanded bibliographic databases, document fulfillment services, or electronic publishing. Each of these services has provided a viable option to collection building in the special library/information center, as well as expanding the quantity and variety of readily available information. Another gap in the book, important to special librarians, is the lack of discussion concerning delivery of information in "real time." The timeliness of information delivery often is critical in a corporate environment and should be included in any set of performance measures.

Despite its limited applicability to special libraries, the book succeeds in providing insight into decision making processes in academic libraries. It offers guidance in planning and evaluating academic library services and techniques for building a management information system to support decision making. The book is a worthwhile addition to the academic library director's reading shelf.

Miriam A. Drake
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Policies of Publishers: A Handbook for Order Librarians, by Ung Chon Kim. Metuchen, N.J.; Scarecrow Press, 1982. 173 p., $15.00. LC 82-685; ISBN 08108-1527-3.

The ordering of books in special libraries is always a unique experience. While the reasons for ordering may vary (current needs, special projects, retrospective, or collection development) the process is basically the same. Find out the publisher and order the book. The speed and urgency of the order depend on the need of the user. Some libraries may use a vendor (either by choice or by corporate policies) and some will order direct, but having an aid in this ordering process is helpful.

When ordering direct there are a few tools of the trade (*Literary Market Place, Book Buyers Handbook,* and *Books in Print*) which might be considered obvious tools to refer to, but there is always the obscure and in this case, most helpful source—*Policies of Publishers: A Handbook for order Librarians,*

by Ung Chon Kim. In the new 1982 edition, we have a useful source for the order librarian which has much valuable information.

In 1980, a series of workshops jointly sponsored by SLA's Publisher Relations Committee and AAP's Library Relations Committee were conducted with representatives from large and small libraries and large and small publishers. Various problems inherent in the order process were discussed so that the librarians might better understand the publishers and *visa versa*. While some librarians at the workshops were aware of the *Policies of Publishers* and commended its usefulness, other librarians present and most of the publishers present were not aware of the source. All present were made aware of the usefulness of this source, with librarians who did not know about it wanting more information and publishers wanting to make sure that they were listed.

The standard tools will give addresses and in remote cases some discount information, but nothing is as extensive and well researched as the Kim book. This book goes into detail, giving specific addresses for ordering, returns, prepay information, discount schedules, returns, shipping and billing information, back order and standing order policies. With cross-references for subsidiaries, distributorships and imprint relationships the book covers about 500 publishers policies. There is a wealth of information here and the book is highly recommended for any kind of library.

Ron Coplen
Harcourt Brace Jovanovich, Inc.
New York, N.Y.

Computer Basics for Librarians and Information Scientists, by Howard Fosdick. Arlington, Va., Information Resources Press, 1981. 203p. $19.95. LC 81-80539; ISBN 0-87815-034-X.

Judging from the title, this ought to be the book we have waited for. While many volumes have been written which aim to introduce library automation and data processing to managers, few approach the details of hardware and software specifically from the librarian's point of view.

Fosdick aims to bridge the gap between books on library automation addressed to library professionals and the literature of computer science, and to some extent he succeeds. In the final analysis, however, it is not clear whether the audience this work addresses is library school students in a "computer familiarization course" or, more properly, library managers who must make system decisions to meet their information management needs. These two groups do have different needs, and the book falls somewhere between the two.

The opening chapter on hardware offers a clear explanation of the basic concepts of computer memory and internal data representation. However, the discussion dwells on core memory, with little emphasis on semiconductor memory which brought about the revolutionary developments in memory capacity in the 1970's. Microchips and microprocessors are not mentioned again until the last two pages of the book in the all too brief chapter on mini and microcomputers. Memory and storage systems are further discussed in chapters 3, 4 and 6, along with guidelines on how to calculate the capacity of different types of storage. In between is an unexpected but useful chapter on personnel involved in a data processing operation and their relationship to library staff and management. Fosdick explains the distinctions between libraries which have their own dedicated systems and those sharing centralized facilities. This chapter contains brief but important advice for library administrators about how to manage and communicate with systems analysts and programmers. As computing resources become cheaper and more powerful, it is inevitable that more librarians will find themselves managing dedicated computing facilities.

If the author had continued to keep this management audience in mind for the rest of the book, it might have been a more successful volume. For example, the chapter on documentation is excellent, carefully describing the types of documentation required, who is responsible for what levels of documentation during the life of a project, and the importance of documentation, to which the author rightly concludes libraries have paid insufficient attention.

The remaining chapters on software and programming languages contain as much information as the administrator is likely to need, and the basics are clearly described. It

would have been useful if Fosdick had provided more information on database management systems. He touches on the concept of the "total systems approach" facilitated by database systems without really making it clear that this is the foundation stone of today's emerging intergrated library systems.

This volume does have a place in library literature collections as a reference volume. It is disappointing that the author, an expert on current developments in library technology, does not relate computer basics to these developments and instead dwells on large, mainframe computers—almost exclusively those of IBM. Fosdick acknowledges that any book including small computer systems is foredoomed to a degree of obsolescence even during its publication. More frequent comparisons of the capabilities and limitations of different types of computers would have lessened this danger and been valuable.

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Information Management and Organizational Change. Proceedings of an Aslib ference, London, June 6-8, 1981. London, Aslib, 1982.

In a time of exceptional change within the field of information retrieval, the theme of the 1981 ASLIB Conference, "Information Management and Organizational Change," was well-chosen.

The conference consisted of four sessions dealing with the various aspects of change as it affects information specialists in the organizational setting. Organizational patterns are no longer static and pose serious challenges to information specialists when coupled with the technological changes of today.

The papers in the "Organizational Factors" session emphasize coordination and flexibility in meeting changes, where the two basic considerations are organizational change and the analysis of the flow of information within the organization. Patterns of services, information transfer, storage and retrieval are the foundation of information management to a greater extent than ever seen before. Coordination between the component parts, when coupled with the patterns of information flow, will make the difference between the success and failure of an information system within the organization.

Information technology is undergoing such rapid and constant change that practitioners, as well as educators, need to rethink their priorities in order to prepare for tomorrow's technology. The emphasis remains on understanding the nature of information and recognizing user needs.

The third session of the conference dealt with the human side of information management. The training and qualification of information managers should include a clear picture of their objectives. The realization of these objectives depends heavily upon the application of their skills within the working environment. Meeting user needs within the changing organization requires an analysis of user priorities based on research of the user population and its relationship to staff levels. The establishment of this ratio is an important factor in defining future goals, policies, and tactics.

In the final session, D. A. Lewis addresses the problem of information management in the context of the "outside world." He advises managers to be "concerned with the management of change, not just the management of information." As managers in the world of information, this final paper is important because it synthesizes all of the important concepts of information management which must be developed to meet future needs in an environment constantly in flux.

This series of papers is timely and provides an excellent basis for information managers to assess the changing environments in which they must work. The conference proceedings are highly recommended as required reading for professionals in information management and related fields.

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Participatory Management in Libraries, by Donald J. Sager. Library administration series, no. 3. Metuchen, NJ, Scarecrow Press, 1982. 196p. $14.50. LC 82-783; ISBN 0-8108-1530-3.

Another text on participatory management? Well, not exactly. Sager states in the introduction, "The purpose of this book is to review some of the common problems that both the supervisor and the employee face, from the perspective of a practicing library director, and demonstrate how participatory management might contribute as an alternative management technique." He accomplishes this modest purpose well and provides a highly readable, practical guide to the use of this technique.

The monograph contains an introduction and eleven chapters. Chapter 1 presents a mercifully brief background review of the development of management theory from Taylor to participatory management. (hereafter referred to as PM). Chapter 2 identifies what elements comprise PM and defines what PM is, as well as what it is not. Chapter 3 is a review of some library experiences with PM and some of the problems or barriers to its adoption. Chapter 4 outlines conditions which may improve organizational performance.

Chapter 5 considers the steps necessary to plan for PM, while Chapters 6 and 7 deal with the structures for participation and roles in PM. Chapter 8 presents four case studies and Chapter 9 deals with the issue of economic return in a nonprofit organization. Chapter 10 discusses problems in PM, while Chapter 11 addresses the future of PM in libraries.

Sager is a realistic advocate of PM. Although he advocates this technique as a way of motivating employees to greater organizational identification and increased production, he presents the problems it can generate, both for the organization and the employees.

This book can be recommended as a good introduction to participatory management. If, after reading it, you find yourself sharing Sager's enthusiasm, the bibliography will lead you to more detailed study.

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Scientific Management of Library Operations, Richard M. Dougherty and Fred J. Heinritz. Scarecrow Press. 1982. $15.00. 274p. ISBN 0-8108-1485-4.

When it was first published in 1966, *Scientific Management of Library Operations* was eagerly read and re-read by systems analysis teachers and practitioners in all kinds of libraries. Despite its less than perfect illustrations and its really horrid typescript, the book delivered a great deal of information not easily found elsewhere.

The new edition is not greatly changed from the first, although all items from the first edition which were continued in the second have been spruced-up and the illustrations improved. Obsolete material, such as the section on the slide rule, has been omitted.

The chapters on forms design and costs are especially well done. A new chapter, "Human Factors Engineering," is welcome in spite of its very short length. However, it doesn't pose any threats to older books on human engineering.

The authors have also incorporated a new chapter on project planning techniques. The major portion of the chapter centers on PERT, ancient fare to many special librarians and especially those in military establishments. A new chapter on flow charting also incorporates material on decision tables and the relatively obscure decision tree.

The book contains some errors, as all books seemingly must. An unfortunate error in the labeling of figures in the decision table section may put off some readers. Also, the "Typical Library Organization Chart" on pages 48-49 may be typical of a college or university library, but it isn't typical of libraries in general.

This second edition, with its more legible typeface, will appeal to the librarian who is charged with analyzing or designing a system. In addition, anyone who is concerned with time management, cost analysis, project planning, and, in particular, forms design should find the volume a welcome addition to a bookshelf.

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Samples of references to other types of publications follow.

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Whitney, Eli (to Assignee), U.S. patent number (date).

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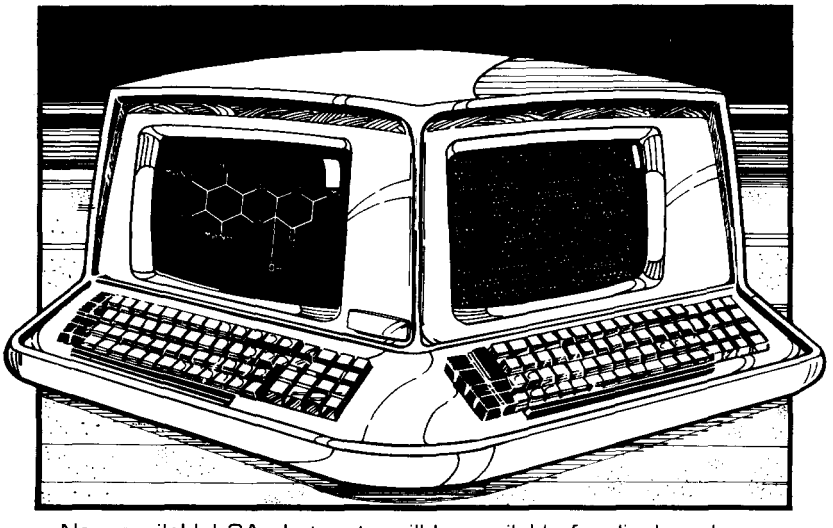

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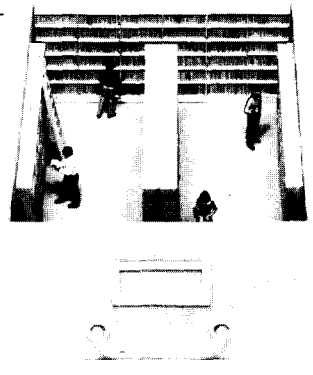

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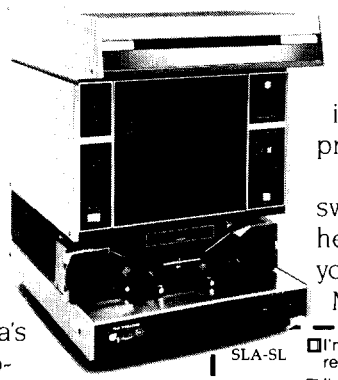

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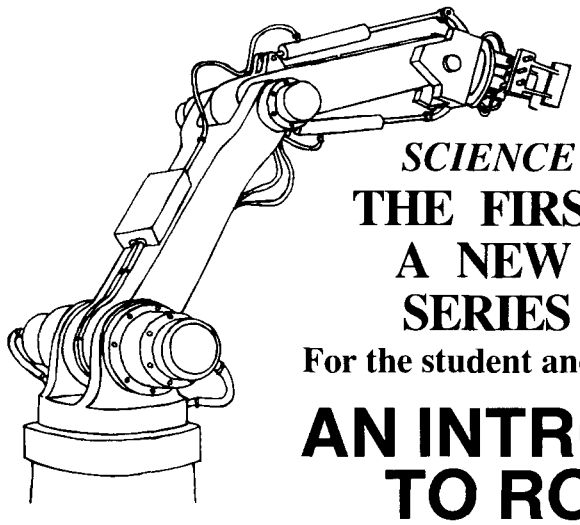

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