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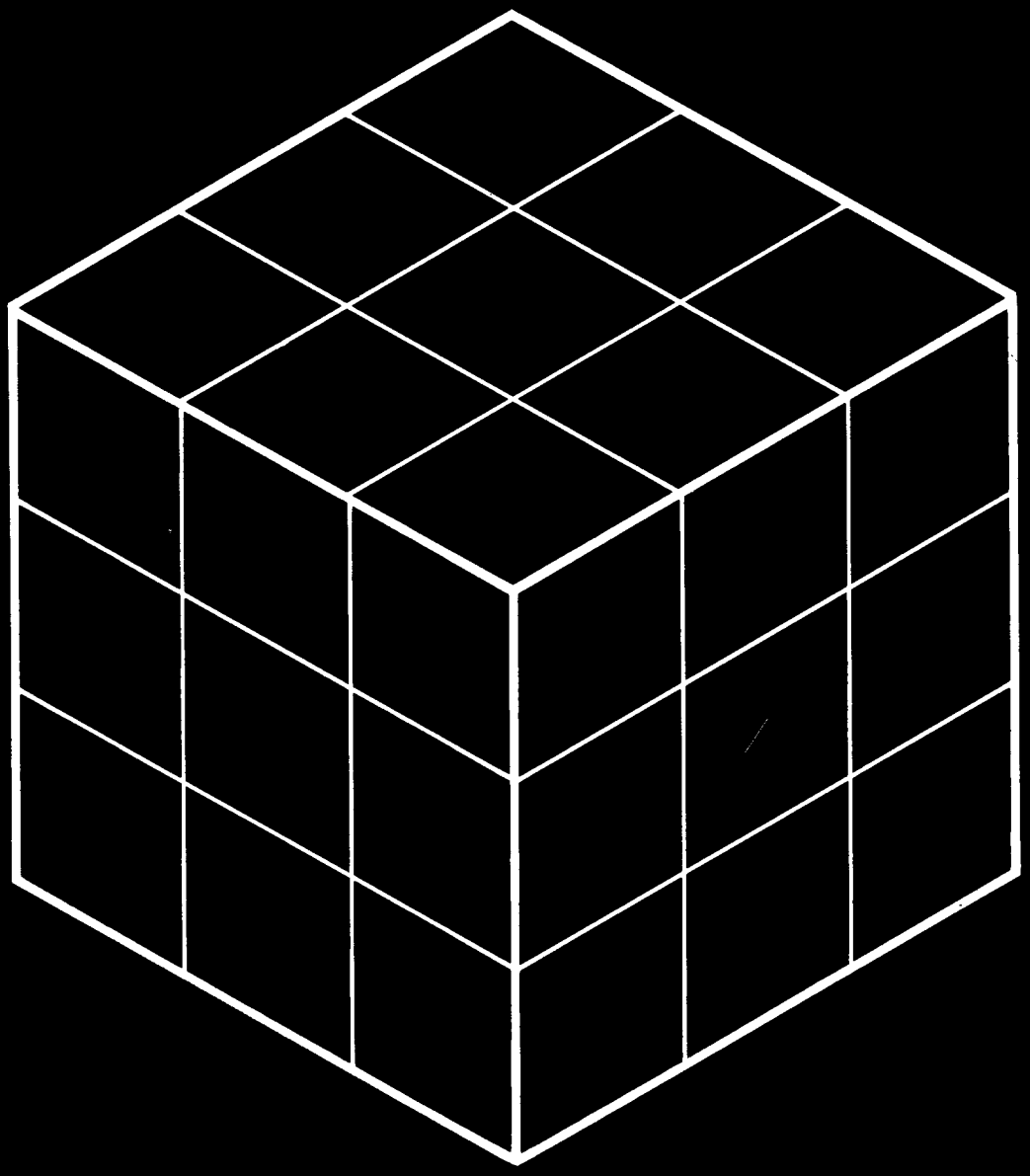

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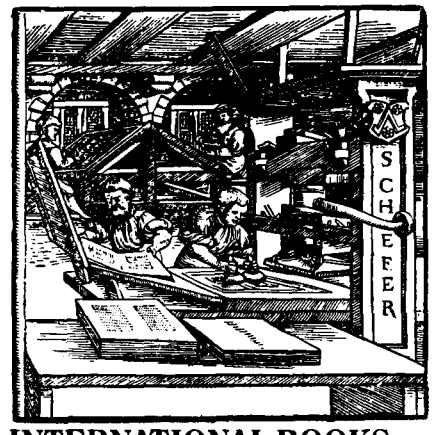

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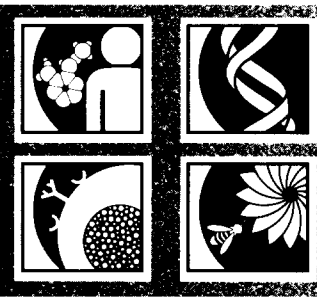

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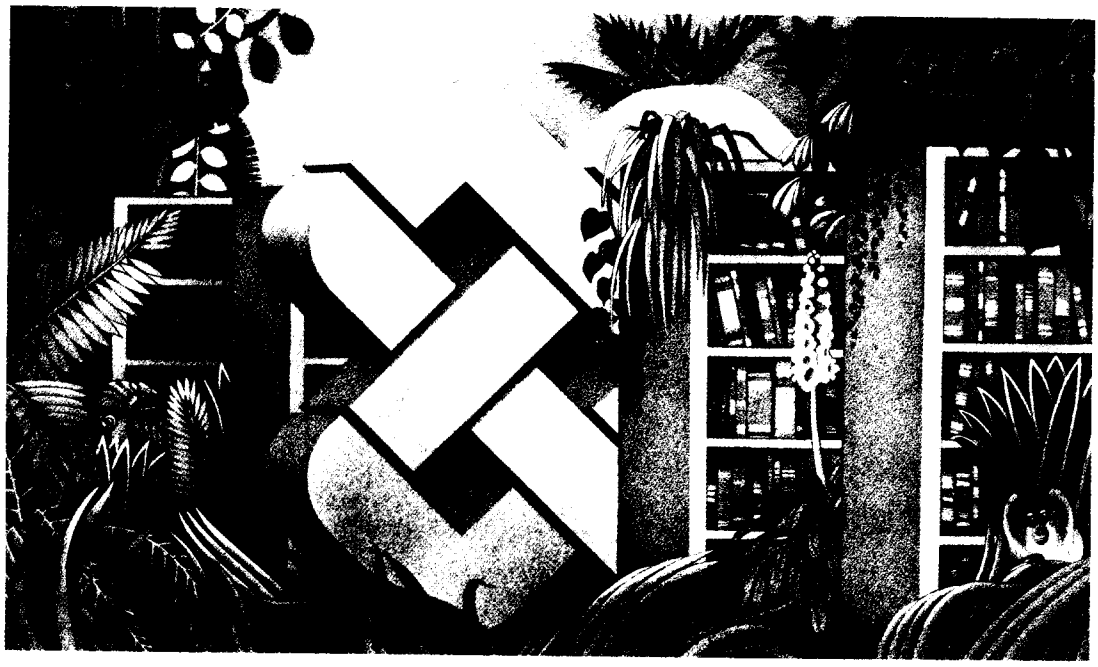

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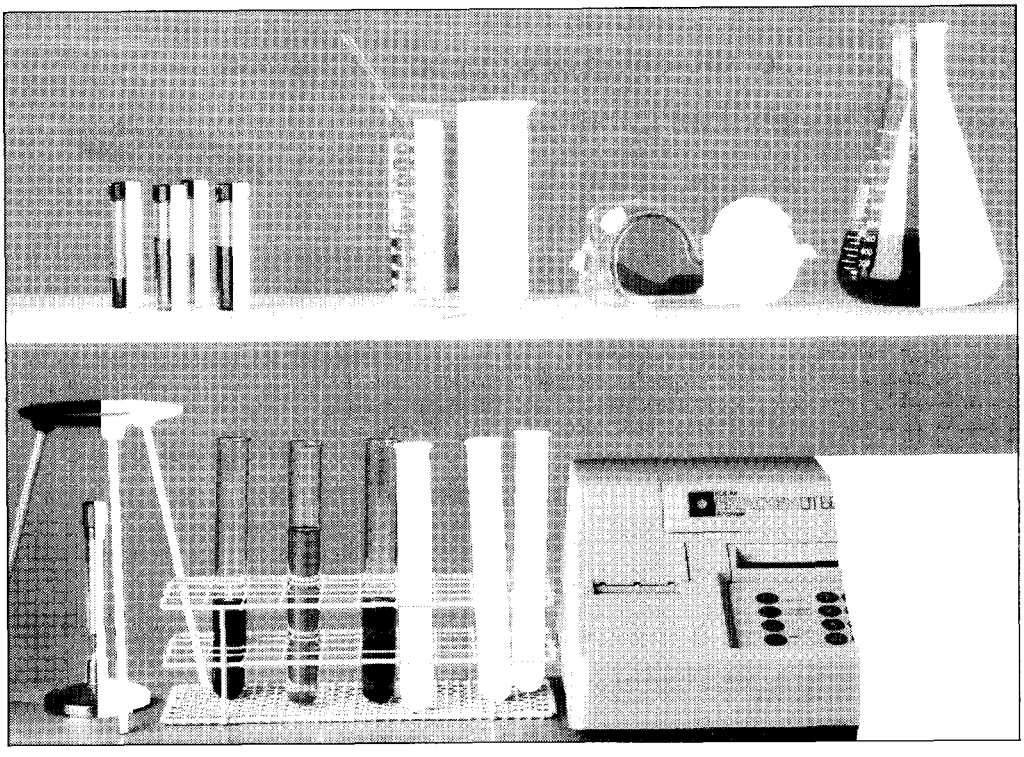

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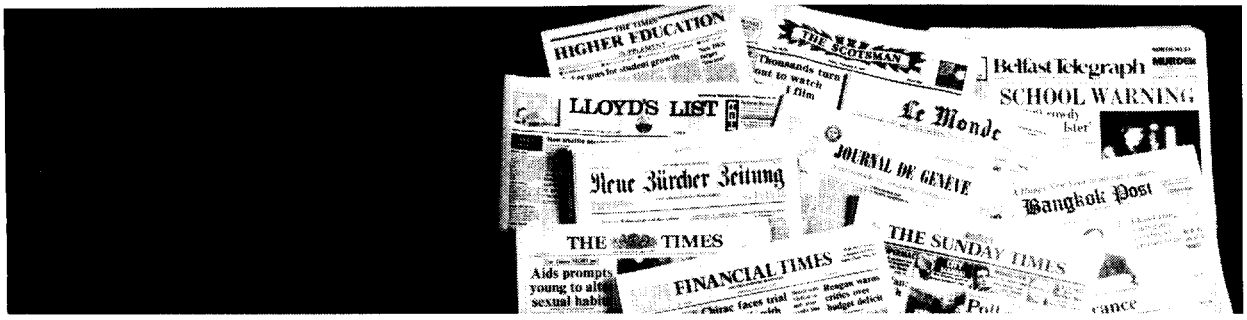

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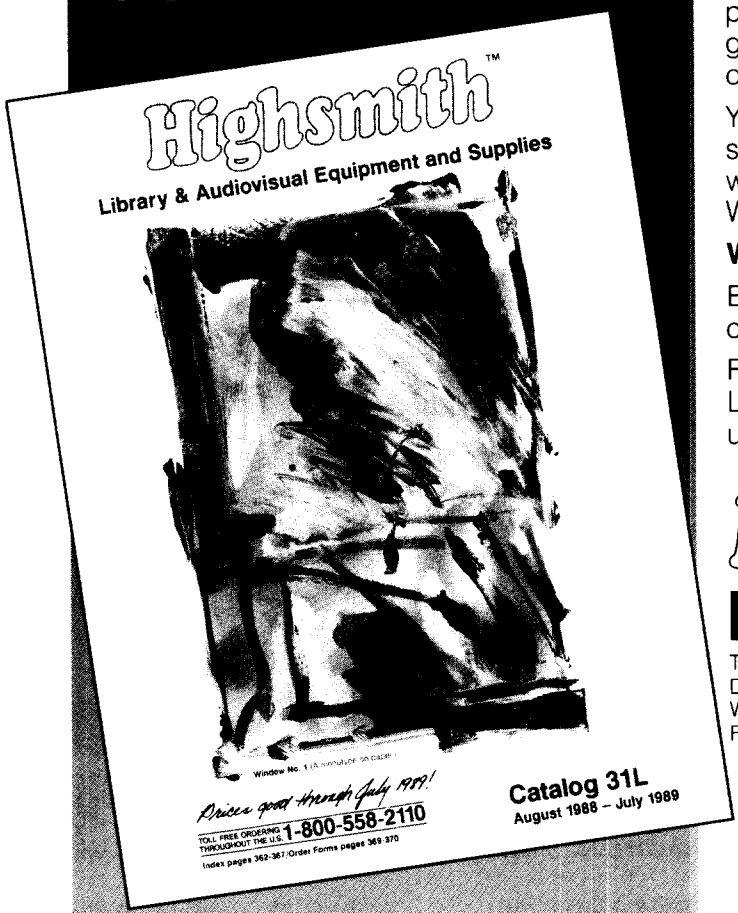

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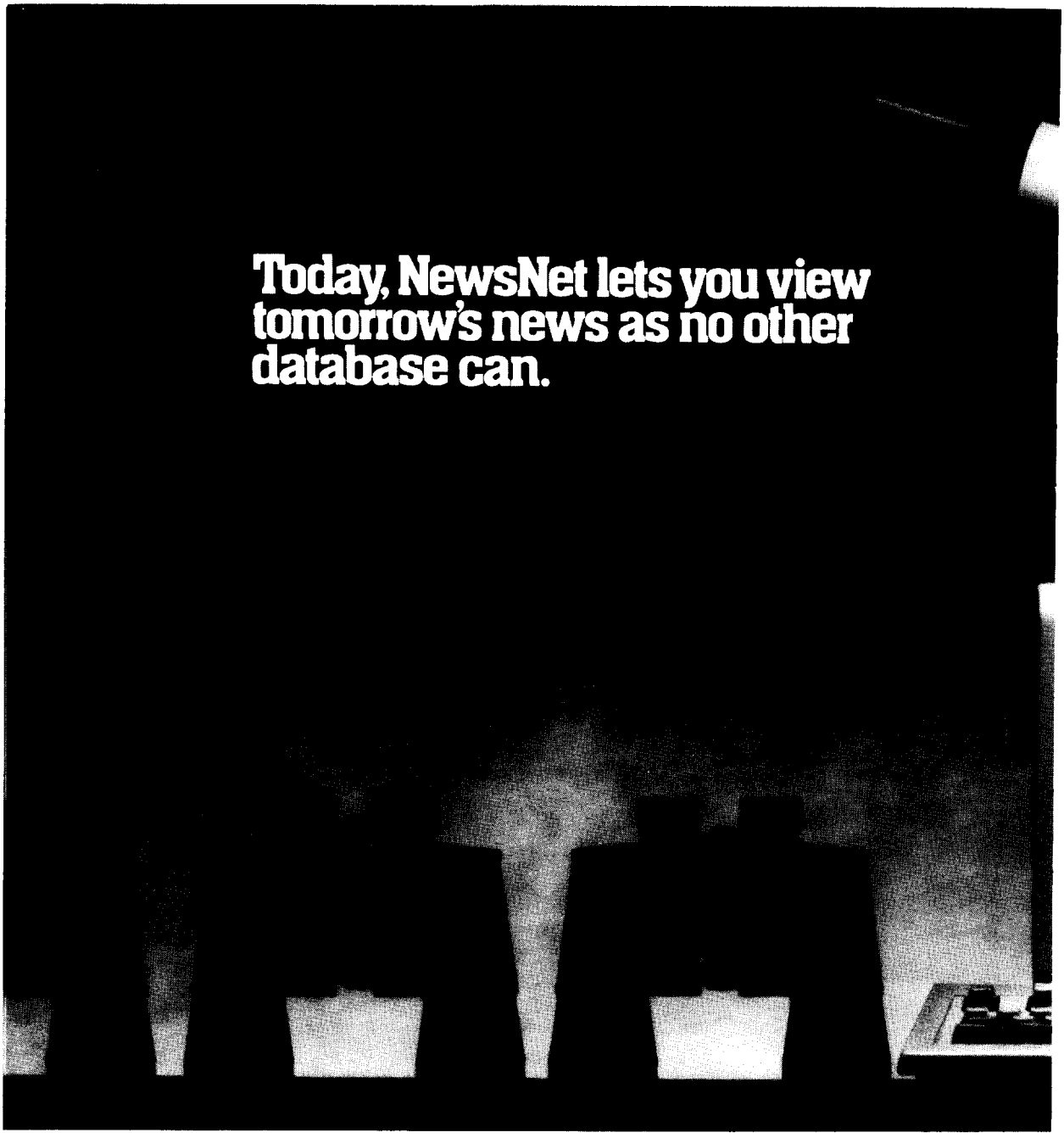

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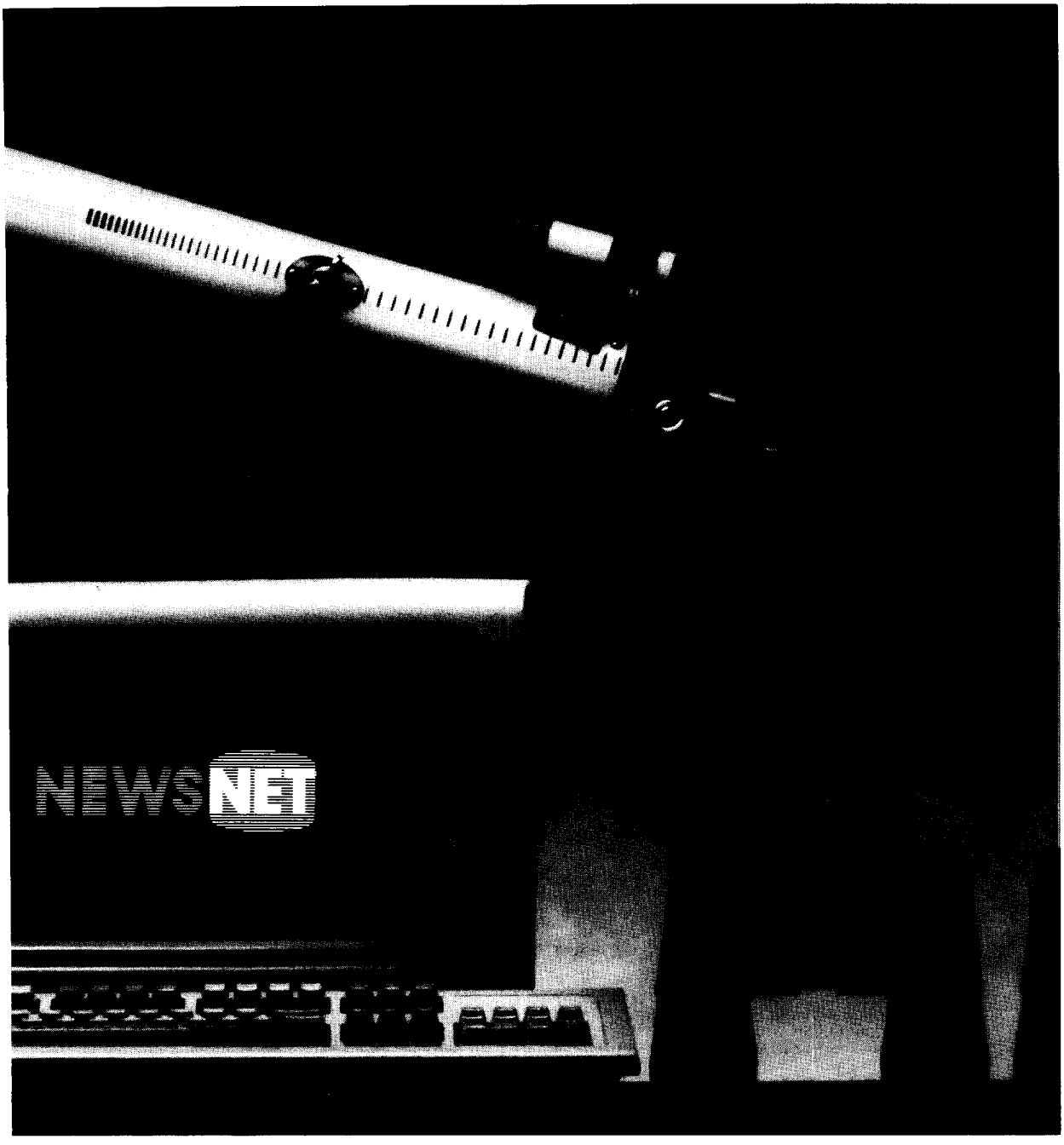

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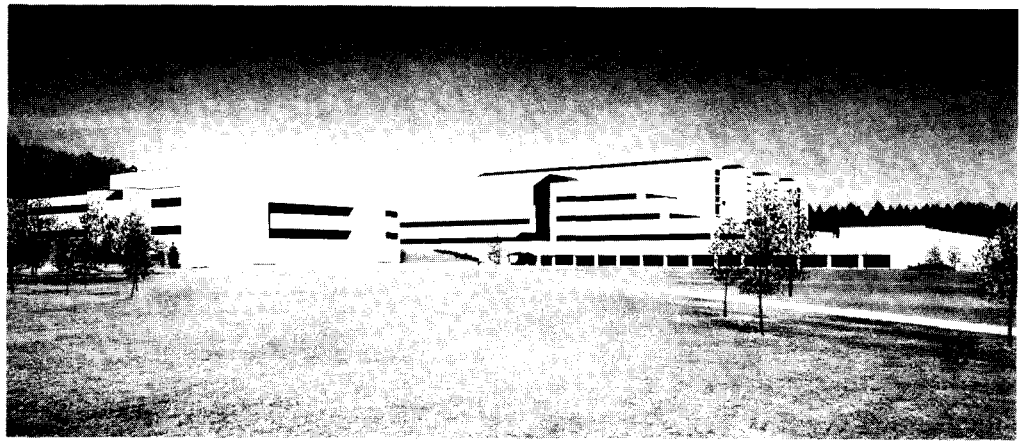

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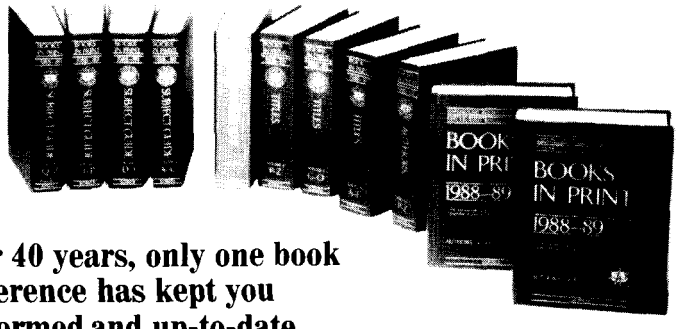

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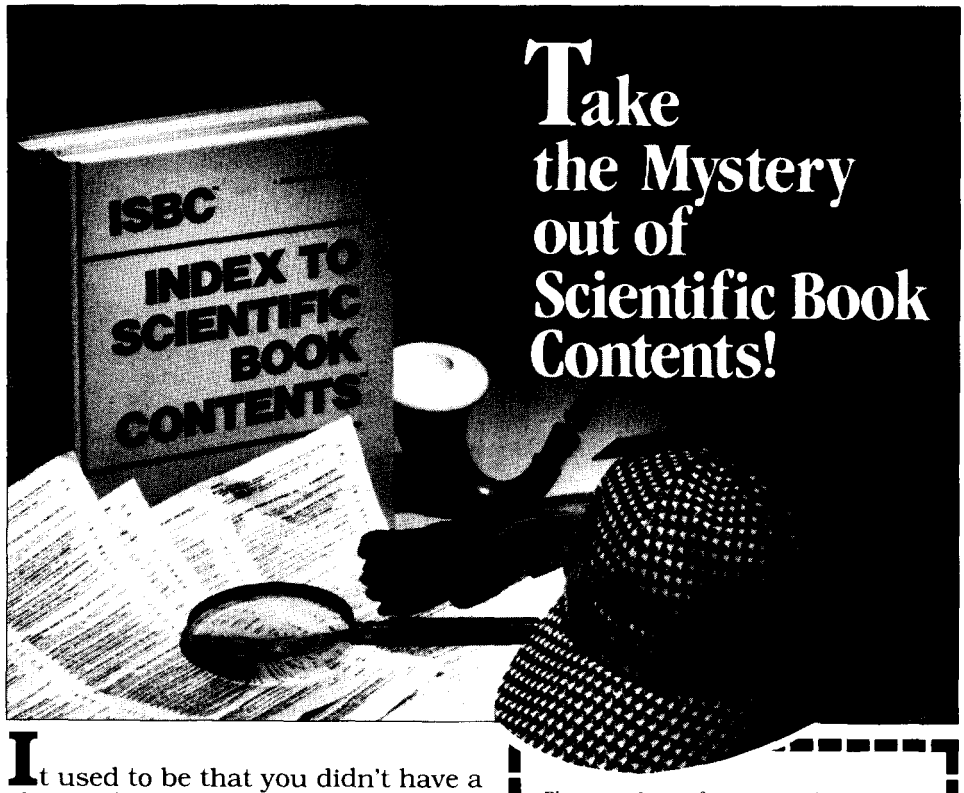

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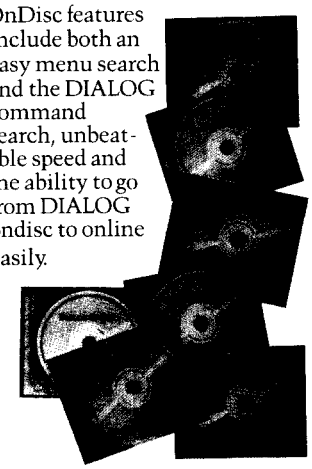

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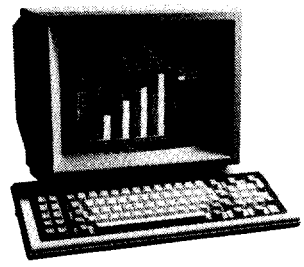

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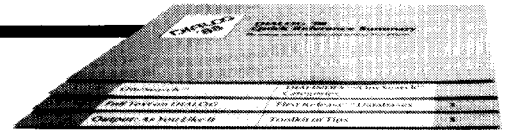

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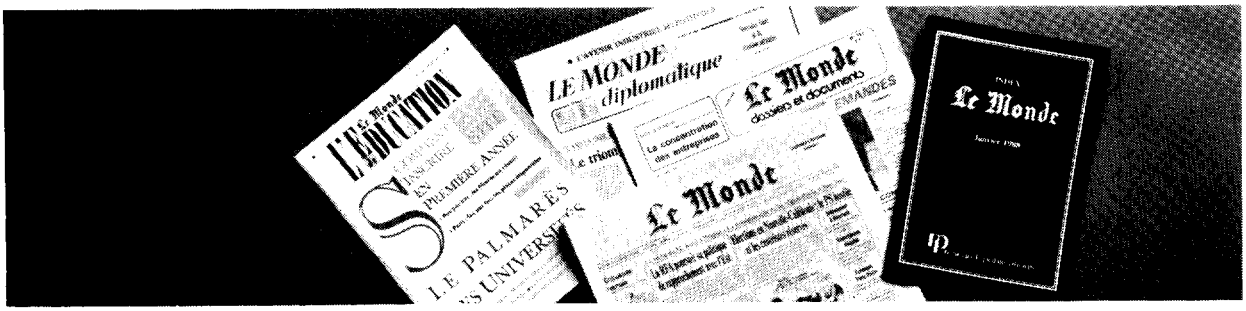

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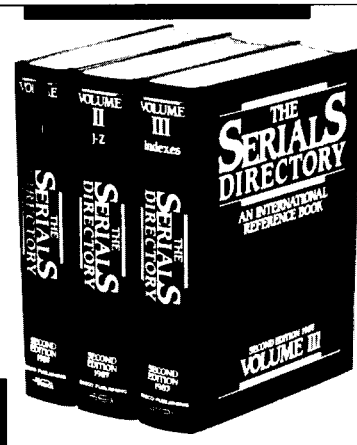

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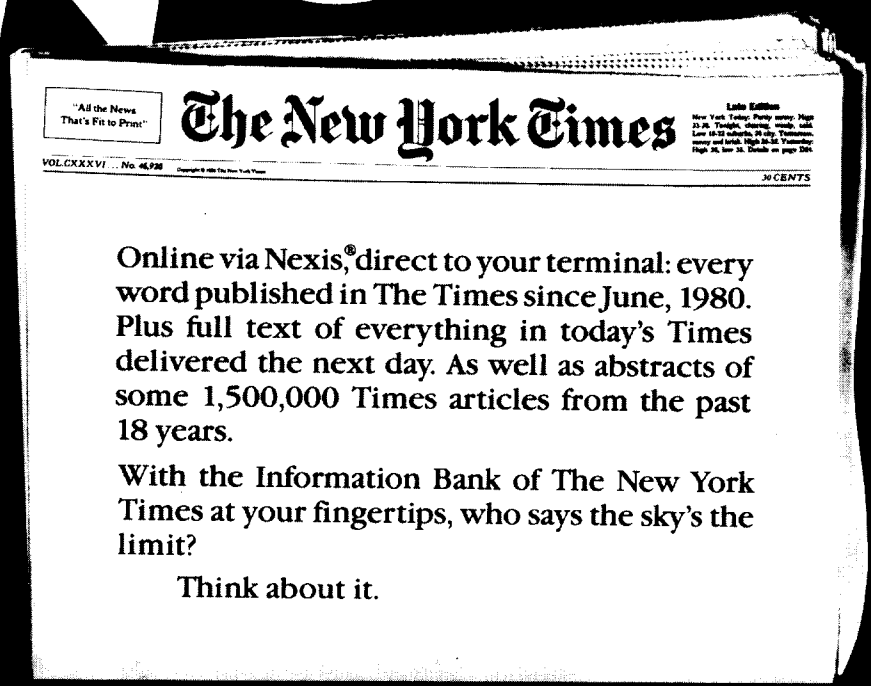

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Corporate Change:
Impact on the Corporate Documents Collection

Steven J. Bell

■ **Mergers and acquisitions, divestitures and company name changes, occur frequently in corporate America. The resulting changes blur corporate identities and complicate company research. Problems are particularly acute for business libraries needing to maintain the accuracy of their corporate documents collections. Monitoring resources that report these corporate actions enables the business librarian to track change as it occurs and use the information in managing the corporate documents collection. The ability to track retrospective changes aids patrons in locating documents for companies with obscured identities. "Deal mania" is a trend that will continue to impact on company research, and business librarians must develop strategies for meeting this challenge.**

Introduction

CHANGE has been occurring within corporate America at a bewildering pace, typified by the ongoing frenzy of takeover activity. Some changes, particularly those among corporate giants, are widely publicized and soon known to all. If these were the only changes of concern in business, corporate change would present few problems. For the business librarian, managing a collection of corporate documents or responding to queries on corporations is complicated by the myriad of corporate changes that have and now are occurring.

Many academic business libraries collect corporate documents. In a paper describing the collection practices of these libraries, Bernstein reported that 312 collect annual reports. *(1)* The respondents to Bernstein's survey also reported collecting quarterly reports, 10–K reports, and proxy statements. Many also collect annual reports from foreign companies and maintain microfiche corporate documents collections. Additionally, corporate documents are collected by corporate, law, and public libraries. Bernstein's paper answers many questions about what corporate reports academic libraries collect, how long they are kept, where and how they are stored, and by whom and how they are used. *(2)*

For libraries collecting corporate documents, the primary impact of corporate change is on the organization of the collection. When one publicly held company acquires another,

the acquired company will cease to issue an annual report. Should the acquired company's report be removed from the collection? Should existing reports be left in the file or shifted to a separate file for defunct companies? Should the reports of the acquired company be merged with the reports of its new parent company? If the reports of both companies are left in the file, should there be a cross-reference between them?

These are just a sampling of the questions that arise when considering the effect of change on the corporate collection. The librarian's responsibility is to ensure that patrons are able to find all the appropriate reports for their company research, regardless of the number of corporate changes it has undergone. Each librarian managing a corporate collection may develop a different mechanism for meeting this goal based on the individual characteristics of their collection and patrons. However, there is one function that must be fulfilled if strategies for managing corporate change are to succeed. That function is monitoring corporate change. The librarian cannot react to change without knowing what changes have occurred. This paper will examine the nature of corporate change, and discuss approaches librarians may use to successfully monitor and manage it.

An Overview of Corporate Change

What is corporate change? No business dictionary defines it. It may involve anything as broad as a total corporate reorganization to something as specific as a change in an executive position. For this paper, it may be defined as a change which significantly alters a corporate identity. While there are several types of change which would fit this definition, those with the greatest impact on corporate collections are mergers and acquisitions, divestitures, and name changes. These changes occur frequently and when they do they most always necessitate a change in the structure of the corporate file.

Mergers and acquisitions are unions between two or more formerly independent business firms under a single ownership, accomplished by the complete acquisition of one company's stock by another. The acquired corporation disappears as a separate entity, usually becoming a subsidiary of the acquiring company. This is also known as a "takeover" and may be friendly or hostile. Divestitures occur when a parent company rids itself of a subsidiary through sale or by spinoff to a stockholders group; it may result in the creation of a new company. *(3)* Name changes occur when a business seeks to reflect change in its chief operations or establish a new corporate identity.

The greatest level of change occurs in the area of mergers and acquisitions. The number of transactions has increased steadily each year since 1980. According to statistics compiled by *Mergers & Acquisitions,* 3,701 completed transactions valued at $1 million or more in which at least one party was an American company were recorded in 1987. Because of the October 19, 1987, market crash, this figure is a decline from the 4,323 transactions of 1986. *(4)* As of May 31, 1,212 transactions had already been recorded in 1988. *(5)* Additionally, 1,753 companies took new names in 1987, up 27% from 1986. *(6)* Add to this the hundreds of new company formations, subsidiary changes, bankruptcies, liquidations, and corporate reorganization that occur yearly. The result is confusion about who is in what business and who owns whom.

Monitoring Current Change

Knowing the appropriate sources to monitor information about corporate change will allow librarians to manage that information to the library's advantage. Among the sources available are news releases, newspapers, newsletters, business magazines, and online databases. No one source will provide for complete coverage of change activities. Each may be seen as an integral part of an overall monitoring strategy.

As a tool for disseminating corporate information, the news release is widely used. News releases may be obtained directly from many companies, but owing to rising postage costs the trend toward using electronic news wire services has increased. Those libraries currently on a company's mailing list for the annual report may find they also receive its news releases. They may otherwise be obtained by contacting a corporation's public affairs or stockholder's relations office.

News releases are generally issued prior to

or shortly after change occurs. This enables the library to quickly learn of change. If the library is receiving many news releases it then becomes burdensome to review them for significant information. The time spent on this task is the major disadvantage to using news releases for monitoring corporate change.

Business newspapers offer the most comprehensive reporting of corporate change. The primary source should be the *Wall Street Journal.* The "What's News" column on the front page highlights the most newsworthy corporate developments. Items reporting mergers, divestitures, and more are scattered throughout the *Journal.* "Business Briefs," usually found in section two, tends to concentrate reports of change into several columns. Other daily business newspapers that may help in monitoring change are the *Investor's Daily, Journal of Commerce and Commercial,* and possibly the *Financial Times* for European developments.

For librarians needing to monitor industry-specific change, an industry newspaper or newsletter will provide additional, more in-depth news than the *Wall Street Journal.* Most are weekly publications, but a few exceptions, like *American Banker* or *American Metal Market,* are daily. As an example, consider *Computerworld,* a weekly newspaper for the computer and data processing industry. It reports on takeovers, subsidiary changes, and rumors about anticipated change.

The advantage of the industry-specific paper is the coverage given to firms of all sizes. Change occurring among smaller firms may be overlooked by general business newspapers. News about smaller companies may also be found in the business papers published for different metropolitan areas. Many database vendors now offer electronic indexes to the full text of these regional business papers.

Newspapers present an excellent strategy for monitoring change, but they take time to read—even when they are only being scanned. A possible alternative for librarians who cannot devote much time to monitoring is the business magazine. A regular review of magazines such as *Business Week, Fortune, Forbes, Business Month,* and *U.S. News and World Report* provides an overview of the most current significant business developments. Business magazines are preferable as a secondary source to reinforce what is learned in other sources or to fill gaps left by those sources.

Online search databases may also be integrated into the monitoring process. Databases are available for electronic access to the sources already discussed and more. Online searching will provide rapid and comprehensive access, decreasing the time needed for monitoring. Its chief disadvantage is cost. A librarian would need to weigh the greater expense of online retrieval against its comprehensiveness, speed, and currency.

Online systems will have more utility for libraries monitoring change within a select group of companies or industries. A search strategy can be formulated to retrieve information on them, then saved and reused. This would be fast and cost efficient. Another option is that a business database that is updated daily could be searched using free-text terms such as "name change," "merger," or other phrases related to corporate change. An appendix to this article identifies databases that are appropriate for monitoring corporate change.

There are two final sources that do not fit into the other categories. They are useful primarily for monitoring name changes. The *Bank and Quotation Record,* published monthly by National News Services, Inc., has a page in each issue which indicates corporate name changes recorded thus far in the current year. It omits companies traded over-the-counter. The *Standard and Poor's Guide,* also published monthly, includes a page which identifies the name changes of publicly traded companies.

Tracking Past Changes

Patrons using the corporate documents collection for company research may encounter difficulties in locating information for companies no longer listed in current directories. If a company was acquired, liquidated, or underwent some other change in identity, patrons will need to learn more about the fate of the company. They may also need to research changes that occurred in an industry over time. There are several publications useful for retrospective tracking of complex merger and acquisition activity.

The Predicasts' *F & S Index of Corporate Change* focuses solely on business literature

related to corporate change. It was first published in 1964 and has undergone several title changes. It is useful for most research into corporate changes as it indexes articles by company name, product code, and type of change. It is issued quarterly and there are annual cumulations.

Directory of Corporate Affiliations is most frequently used for "who owns whom" questions, but may also be used to research past corporate change. Each volume contains two special sections of "mergers, acquisitions and name changes." One covers the past year and the other covers the prior 10-year period. This listing applies only to parent company changes. It offers a quick way to determine if a company has been affected by one of these changes in the prior decade. Subscribers also receive a bimonthly supplement called *Corporate Action*. This reports current year changes for both parent companies and subsidiaries.

Several yearbooks focus on the comprehensive reporting of corporate change. Most emphasize merger and acquisition activity. They are useful for obtaining summary statistics on corporate change for a particular year, and for basic research on change by company or industry. *The Merger Yearbook: Yearbook on Corporate Acquisitions, Leveraged Buyouts, Joint Ventures and Corporate Policy*, published by the Cambridge Corporation, provides a summary and analysis of merger activity for the prior calendar year. It reports the date a change occurred, the type of change, price of the transaction, and occasionally gives other financial details.

Merger & Acquisition Sourcebook, published by Quality Services Company, is similar in structure to *The Merger Yearbook*. It offers some additional financial data and a brief textual description of the transaction. It also discusses transactions that began but were not complete, the major "deals" of the year, and identifies potential takeover targets for the current calender year. The publisher recently issued a second volume which focuses on foreign transactions, provides industry reports, and includes a directory of merger and acquisition specialists.

The *Mergerstat Review*, published by W. T. Grimm & Co., differs slightly in that it emphasizes a review of activity, presented with many statistical charts and tables, rather than a comprehensive listing of transactions. This makes it a useful reference for analyzing the trends in merger activity.

The annual "Almanac & Index" issue of the journal *Mergers & Acquisitions*, published by MLR Publishing Company, provides a listing, in the form of an index, to all merger and acquisition activity reported in the journal during the prior calendar year. Each issue of this bimonthly journal features an updated "roster" of activity. The special issue also features articles on merger and acquisition statistics and trends.

For questions specific to public companies that may no longer exist, there are two sources to examine. The *Directory of Obsolete Securities*, published by Financial Information, Inc., is an annual volume that contains a brief profile of companies whose original identities have been lost as a result of a name change, merger, bankruptcy, liquidation, reorganization, or charter cancellation. Commerce Clearing House's *Capital Changes Reporter* is a six-volume, loose-leaf set that records the capital histories of companies. Though it emphasizes a company's issuance of stocks and bonds, this reporter identifies companies experiencing mergers, acquisitions, bankruptcies, and reorganizations.

Responding to Corporate Change

Corporate change clearly presents many challenges for business librarians who manage corporate documents collections. The Lippincott Library at the University of Pennsylvania collects hardcopy annual reports for Fortune 500 companies dating back to the earlier part of this century, microfiche annual reports, 10-Ks and proxy statements for all companies on the New York and American Stock Exchanges, and microfiche annual reports for 5,000 international firms.

Among the current hardcopy annual report collection alone, which includes approximately 1,200 companies, there were 52 incidents of corporate change in the first 10 months of 1986 that necessitated some change in the organization of the file. Most of these changes were the result of merger and acquisition activity or name changes. The present approach to managing change at the Lippincott Library is geared towards limited revision within the file, but with an emphasis on aiding

Appendix

Online Databases for Monitoring Corporate Change

Database	Producer	Update	Sources
Business & Industry News	Predicasts	Daily Journals	Newspaper Newsletters
Businesswire	Businesswire	Daily Releases	News
Business	Dow Jones	Daily Journal	Wall Street
Standard & Poor's News	S & P	Daily SEC Filings	News Wires Newspapers
Newsearch	IAC	Daily Periodicals	Newspapers
Moody's Corporate News	Moody's	Weekly	News Wires Periodicals SEC Filings
M & A	C. E. Simon	Daily	SEC Filings
Regional Business News *	Predicasts	Weekly	Regional/ Local News
Business Dateline	Data Courier	Monthly	Regional/ Local News
DataTimes VU/TEXT Infobank NewsNet Text (Dow Jones) PR News Wire	Various	Daily	Full-text Newspapers, Newsletter, News wires

**recently merged into the PROMT database*

patrons to find needed reports through reference assistance.

For example, if a company is acquired its file is closed when its final annual report is received. No reference will be made in the file to the company's new owner. Nor are the acquired company's reports merged with those of the new parent. The hardcopy file provides only the five most current annual reports from a company, so eventually the acquired company will disappear from the current collection. The approach enables the collection to reflect the changes that constantly occur without the need for labor-intensive maintenance.

The management of corporate change at the Lippincott Library is just one method. Other libraries may want or need to provide extensive cross-referencing. They may merge files of merged companies. Some libraries maintain a card catalog solely for corporate collection; cards may reflect not only holdings but change patterns. Database management software may be incorporated into the task of tracking what is in the collection, and what change the companies have experienced. Whatever response is chosen in coping with the problems presented by corporate change, the librarian managing the collection needs to become familiar with the types of change that occur and the resources that report them when they happen.

Conclusion

This paper has examined the impact of corporate change on business libraries collecting corporate documents. It has identified the complications and confusion it may create. Monitoring and keeping abreast of change help to alleviate some of the problems, but it is ultimately up to each librarian to take this knowledge and apply it in managing the corporate documents collection. Business librarians should acknowledge that "deal mania" is a trend that will continue to affect company information research.

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Steven J. Bell is a reference librarian at the Lippincott Library of the Wharton School at the University of Pennsylvania.

The Dynamic Role of the Information Specialist: Two Perspectives

Ann M. Willard

Patricia Morrison

■ The information specialist is a dynamic link between user and collection, taking an active, high-tech, servicing approach to information access. Information specialists network heavily; search extensively online; are flexible with circulation and cataloging; manipulate, edit, and repackage information; and offer many current awareness services. Their roles engender unique sets of disadvantages and advantages: they may be forced to market services or feel enormous job insecurity; however, they may enjoy better salaries, benefits, and dynamic work responsibilities. The authors draw generalizations about the role of the information specialist from their experiences in two different corporate library settings.

Pat Morrison established the Northern Telecom Electronics Library in San Diego, California, in January 1985. This one-person library has 80 journal titles, 500 books, internal reports, and vendor catalogs which deal with integrated circuits and electronics engineering. Books and audio visual materials on career and management development also comprise a small part of the collection. Pat works for the division of Northern Telecom which manufactures integrated circuits for use in Northern Telecom's phone systems. She reports to the Business Systems Department. (1)

Ann Willard is an information specialist at Kelco Division of Merck and Company Inc., which manufactures speciality chemicals including xanthan gum and alginates. These polymers function as thickeners and stabilizers for a variety of applications such as food products, oil well drilling muds, cosmetics, paint, pet foods, paper coatings, and textiles. Kelco's information center, established in the 1930s, has built an extensive specialized collection of books, journals, patents, and company documents. The information center today is staffed by two professional librarians, a library technician, and two secretaries. The Literature and Information Services Group is part of the Research and Development Department, but increasingly serves other departments, such as Administration and Marketing.

Introduction

AFTER several years working in university libraries, we found ourselves working as information specialists in corporate information centers. One of us went to work in an established company library with other librarians, while the other started up a one-person company library. After several people asked us what differences we found between academic and corporate library work and between small and large corporate libraries, we decided to describe our roles as information specialists in general terms.

The corporate information specialist is a dynamic link between the user and the world of information. The information specialist takes an active role in information access, manipulating data into more usable forms, taking a high-tech approach to find informa-

tion, and putting high priority on the needs of the user. Not only is the role of information specialist dynamic, so is the collection, which changes to meet the company's needs and may be highly specialized.

Money is spent differently in a corporate library. Corporations are more willing to spend money up front on long-distance phone calls or on rushing book orders by Federal Express because they place a high value on getting information quickly. By spending this money initially, a company can sometimes save thousands of dollars by finding out something before their competitors. The expenses of the information center may be allocated as overhead or may be charged back to user departments. In either case, the library must demonstrate that it is cost-beneficial to the company if it is to survive.

There are three areas which define the information professional's role: collection, access, and service. We will discuss these three elements, and will conclude with some of the advantages and disadvantages of being a corporate information specialist.

Since space is expensive, there is often not much physical space for corporate libraries. However, because the collection is highly specialized and dynamic, it does not need to be as large as a more comprehensive, archival collection. To optimize the available space, journals are often retained for only a few years and back issues are held on microfiche rather than bound. Corporate records are often microfilmed to save space, to ensure security, and to facilitate future retrieval.

Internal documents are generally the most important holding in a corporate library, while traditional reference works, books, and journals are less emphasized. However, journal subscriptions are particularly critical to the organization because of the currency of their information and their use by employees to keep up-to-date. Collection development in a corporate library is often a cooperative process, in which the information specialist suggests titles to be purchased or weeded, and makes these decisions in concert with the technical staff and company management.

To supplement the small collection, extensive interlibrary loan and other forms of networking are necessary to acquire materials and to bring the information specialist in contact with other librarians and ideas. Membership and active participation in professional organizations, such as the Special Libraries Association, allows the corporate librarian to exchange information with other professionals and create a network of people to call upon for assistance in answering users' questions. With over 3,000 computer databases available worldwide, the information specialist can tap into these online networks to obtain current information, to locate books and journals, and even to obtain the full text of some journal and newspaper articles. Electronic bulletin boards are used increasingly by information specialists to communicate and share information with other professionals.

Access

Circulation of materials in a corporate environment is different from public or educational systems in two ways. First of all, circulation information is not private; employees are readily told who has what checked out. Secondly, there is more flexibility in due dates; there may not even be a due date. The material is ordered to fulfill a particular need, and, until the employees involved have finished, there is no need to recall it to the library. Perhaps the most successful corporate library is one in which the majority of its collection is in circulation (i.e., *in use*), not on its shelves.

Cataloging is often more casual and less standardized in a corporate library. One reason for this is the limited staff time available for cataloging; but, more importantly, corporate librarians use their catalogs differently and do not need detailed descriptive cataloging that is consistent with MARC standards. Good subject access is important, and sometimes LC subject headings are not precise enough to describe the materials. At Kelco an in-house thesaurus was developed to help solve this problem and to provide indexing terms for its internal reports and other materials. Most books at Kelco are simply cataloged by using the cataloging in progress on the verso of most book title pages. Books which do not have cataloging in them are looked up in RLIN, for which Kelco has a "Search Only" account. The remaining books (usually no more than a half-dozen per month) are given original cataloging. Pat Morrison, without an

on-site library support staff, relies on the NT/BNR/BELL Northern Tricorporate Library System, which catalogs her materials and generates a union list on microfiche.

Access to the collection of the corporate library may be somewhat self-service, but usually the information specialist is expected to provide assistance tailored to the individual user. The information specialist always offers to help; the degree of help depends on the urgency of the project, the user's personal preference, and the position of the requester. Some users will ask to be trained in library use, but many users would rather the information specialist get them what they need, and usually as quickly as possible.

Service

Politics and economics, both on a corporate and global scale, greatly influence needs for service in the corporate library. If the president of the company makes a request, his or her request receives priority: the users of a corporate library are not created equal. Because of the competitive nature of business, information must often be obtained immediately, even at a high cost. Priorities are dynamic, and the information specialist must be able to drop one task to perform another. Information specialists often have responsibilities for functions that are vital to the company, but which are outside the realm of traditional library service.

Service in a company library can be divided into three functions. The first is current awareness, that is, keeping the company informed of important new developments. The second is compiling and packaging information so that it is relevant, organized, and useful. The third is applying traditional information resources and skills to satisfy requirements unique to the organization. Since Kelco has the more established information center and provides a variety of these services, our analysis of the three service functions will be discussed in terms of Kelco's practices.

As part of their current awareness program, the Kelco Information Center routes its new journals to employees in their laboratories or offices. The task of maintaining journal routing records has been automated by using a program developed with dBase II on an IBM Personal Computer. A new employee can be easily added to the system, and a variety of management reports can be generated.

The Kelco Information Center also prepares and distributes, for its R&D and sales/marketing employees, several publications to announce new developments, newly acquired books and journals, new patents granted in relevant technology, and relevant new literature. Some of this information is gathered from online SDIs. *(2)*

In addition to these other current awareness practices, the information center staff scans journals to monitor information on key businesses and technology, and conducts online searches on these developments to prepare summary profiles for company management.

Online searching is an important service in a corporate library, since the collection is usually small and the information requested is often on something that is quite recent. As information specialist at Kelco, Ann Willard spends approximately 40–50% of her time on online searching. This does not mean that she is online all that time; the analysis and packaging of the results require the majority of the time, as many of the searches are quite comprehensive and require extensive editing. Requests for online searches may be mailed or brought in person to the information center. Responses, based upon the urgency and complexity of the project, may take from minutes to 10 working days.

Kelco uses IBM Personal Computers with 2400-baud modems. This has increased the volume of searching, reduced turnaround time, and improved the quality of the final product. Searches are downloaded to floppy disks for temporary storage and editing. The amount of editing depends upon the nature and the purpose of the search. Usually the scientists prefer to see their searches in an unedited format, deleting only the search strategy and duplicate records. Executive, sales, and marketing people generally appreciate more editing. Records from several databases may be merged into one list and put in a chronological or alphabetical sequence. This sorting is performed with a PC-based program developed by Kelco. A word processing package, such as Wordstar® or MultiMate®, is then used to format and annotate the report.

When a company or business profile is compiled, significant developments are ab-

stracted from the online search results and compiled as a chronological list of key events. This provides a basic overview to the attached pages of bibliographic references. A one- or two-page summary about the topic is also provided.

Print sources are also important resources, but it is frequently more cost-effective to search abstracts and indexes online. Due to lack of space in a corporate library, the reference collection must be kept to a well-used minimum. The reference collection functions as a ready reference source and a starting point for online searches.

Another starting point at Kelco is a search of its Research Information System, a database that contains approximately 60,000 records. About half of these records index internal documents, such as research reports, technical graphics and art work, and other internal documentation, while the remaining records index published information, such as journal articles, patents, and books. The level of indexing varies according to the document. Although the system, resident on the IBM/System 38, does not yet support free text or string searching, it does allow searching using Boolean logic and controlled subject terms. The controlled vocabulary was developed at Kelco in the form of a hierarchical thesaurus.

The third service a corporate library provides includes many tasks a librarian might not be responsible for in a more traditional setting. At Kelco, the information center coordinates a number of different activities which in a larger organization would be handled by separate departments.

One such activity is that of publication review. Papers written by Kelco employees for outside publication go through a company review process to ensure they are technically accurate and legally correct. The information center monitors these publications through their various stages, from abstract to published manuscript, and indexes them along the way. The information center also coordinates and indexes the technical artwork for these presentations and publications.

Technical sales literature published by the company is also edited, reviewed, and indexed by the information center. This often requires using "traditional" library reference skills, such as checking the status of trademarks and verifying the addresses of chemical suppliers. For many documents, the text generated by the information center staff on an IBM PC is used as final copy for publication.

The information center also distributes, microfilms, and indexes laboratory notebooks used in Kelco's R&D department. In fact, almost all of the documents the information center handles, except for books and journals, are eventually microfilmed, then housed in the library for future retrieval.

An information specialist may get involved in any aspect of the company that requires organization, information retrieval, and management skills. The information specialist deals with documents and information in a variety of forms. She or he will be expected to develop creative approaches to provide service and package information to further the company's goals.

Advantages and Disadvantages

Four areas that affect job satisfaction are 1) work environment, 2) opportunities for professional growth and advancement, 3) job security, and 4) salaries. The authors viewed these concerns from slightly different perspectives because of the differences in their information centers and companies.

Both authors enjoy the diversity and challenge of a high-tech library. Since the staff of a corporate library is usually small, each person has a great deal of variety in his or her work and is kept extremely busy. Since Ann Willard works with other librarians, she enjoys professional feedback and the sense of working as a team. Patricia Morrison enjoys the independence of a one-person library, but finds herself feeling isolated within the company. Corporate libraries generally run lean on clerical staff, and both authors feel information specialists tend to be burdened with too many nonprofessional duties and stretched in too many directions at once. The heavy demands of a corporate library, although stressful at times, also lead to career growth.

The corporate environment is dynamic; the information specialist's job description changes with the company's needs and direc-

tion. Although the information specialist becomes knowledgeable in a highly specialized area, such as semi-conductors or specialty chemicals, she or he also learns a variety of more transferable skills, such as management, budgeting, writing, networking, and using computers for information retrieval and manipulation. Since corporations rely heavily on online databases for information, information specialists have opportunities to keep up on the latest online search skills. A small library staff means that the information specialist is less likely to have to share the opportunities to attend online workshops and conferences. Because of the opportunities to learn non-traditional library skills, information specialists can sometimes transfer into different positions in the company, such as market research, technical writing, or computer programming. With a small staff, upward mobility within the information center can be difficult, but as the information specialist gains in experience and skills, and as more companies decide to employ librarians, the prospects for finding a new position in another company improve.

The job security an information specialist enjoys depends partly on how well established the information center is, how well it meets the changing needs of the company, and how well its contribution is recognized. Generally, once an academic librarian is granted tenure, his or her job is fairly secure. Corporate librarians are only secure if their companies are doing well and the companies think the information specialist is contributing to that well-being.

Salaries for corporate librarians tend to be higher than the average for other librarians, except for those working for the federal government. *(3)* Many companies provide the same medical and dental benefits equivalent to those offered by universities, and often with full education benefits. Although companies usually offer shorter vacation periods (usually beginning at two weeks annually), they will often send their librarians to national conferences and pay all the expenses.

The *Occupational Outlook Handbook,* published annually by the U.S. government, says that the job situation is improving for librarians because there are fewer library school graduates and because these graduates are taking non-traditional jobs. *(4)* In 1985, a survey of recent library graduates from the University of California, Berkeley indicated that of those responding to the survey, 38% of the class found their first positions in corporate libraries or in non-traditional occupations. *(5)* Although there is a slight upward trend towards hiring librarians for public library positions, *(6)* the number of librarians hired in the academic sector is dwindling, *(7)* and budgets for public sector libraries remain tight. As private industry increasingly discovers the value of information specialists, a greater number of librarians may find themselves pursuing careers in the corporate sector.

Acknowledgments

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1. Pat Morrison now works at the National University Library in San Diego, California.

2. SDI stands for Selected Dissemination of Information. Online SDIs, tailored to the user, can be set up on vendors such as DIALOG so that a search strategy is run automatically each time a database is updated. Kelco has several SDIs to set up to monitor the publications of scientific literature and patents issued in the specialty chemical business.

3. In 1984 the average salary for special librarians was $28,421; for college and university librarians, $26,000; and for federal government librarians, $31,350. U.S. Dept of Labor, *Occupational Outlook Handbook,* 1986–87 edition, p. 139.

4. Ibid.

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6. Ibid.

7. Same as reference 3.

This article is adapted from a talk given on December 10, 1985, to the San Diego Chapter of the Special Libraries Association.

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Quality Assurance:
Establishing a Program for Special Libraries

Anne M. Fredenburg

■ **"Quality Assurance" (QA) is a practical tool for library management, a link in the library's relationship with administrative decision makers. Instituting or refining a QA program takes into account formal and informal methods. Described are one library's program and problem-solving model, the role of others in the library's program, types of recordkeeping, and integration of the library program with organizational QA. Positive results include participation in management-level activities and improvement in quality and delivery of services and products. Ten suggestions are made to begin a QA program.**

"WHAT is Quality?" and "How do you assure that your library is doing a quality job?" are two questions special librarians would do well to ask themselves from time to time. Some amusing answers to the first question are the familiar and commercially oriented "Quality is Parkay" and "Quality is Job 1." Rarely, however, do we find a reference to the quality of the library's resources and services, and answers to the second question are also elusive.

For small, special libraries looking to strengthen a relationship with management, establishing a quality assurance program may provide the key. Quality assurance is the vital link in acting on, rather than reacting to, an administrative mandate to produce results, justify the library's worth, and relate what the library is and does to the organization's strategies and goals.

This paper describes the elements that comprise a quality assurance program for special libraries, including a plan for establishing a formal program and tools to refine a quality assurance program already in place. This paper will not offer a complete, instant, ready-to-use guide, because quality assurance, or QA, does not have a generic formula fitting all of our situations. Instead, it is a blueprint from which to extract whatever fits *your* library.

At the outset, it is important to have a common idea of what QA is...and isn't! There are various definitions, such as program effectiveness, quality control, program evaluation, careful appraisal, measurement, or audit. In this decade, the quality circle also points to the spirit of QA and is part of it. One academic definition describes QA as pursuing the truly impossible! According to our organization's quality assurance administrator, it is a systematic method of establishing standards, identifying and monitoring problems, and looking for ways to improve where improvement is

possible. Continuing education does not assure quality, though education is part of it; nor is QA crisis intervention, characterized by a rally to respond to a crucial situation. There are five threads that run through any QA program:

1. *planning*—careful planning is essential to keep this program realistic and practical;

2. *proactive*—an attitude which implies addressing situations before they become problems and heading off problems before they become serious; this is the opposite of reactive, which is allied with crisis intervention, such as efforts to eliminate the library;

3. *improvement*—of a service, a resource, or of general management efficiency;

4. *problem-solving*—which incorporates planning and improvement in a systematic method;

5. *evaluation*—producing *factual* data to establish success, failure, or the worth of any process.

These five terms cut across departmental and institutional boundaries, as does QA itself. For the 1980s, quality assurance has expanded beyond a committee activity to include the entire administrative staff, department heads, and support staff who are all responsible.

Overview of the Library's Program

Sheppard-Pratt Hospital is in the eighth year of an organized, institutionwide quality assurance program. The library is one of 10 departments in the Support Services Division. Department managers spent one year developing guidelines and becoming familiar with a systematic method and recordkeeping. Our initial skepticism about this administrative idea has been replaced by an understanding of terminology and considering QA as a comfortable management activity. The administrative focus remains on the PROCESS, which includes: setting goals; analyzing current activities; identifying problems; setting priorities; implementing changes; periodic evaluation; and consultation with administration. *(1)*

The library's QA plan is maintained in our department's policy and procedure manual. This plan includes a two-page overview, describing the library's general monitoring of services and resources. Initially, two sources were consulted for this overview: the hospital's mission statement and the library's Statement of Purpose, which describes our primary and collateral purposes.

In the past three years, I have also read the organization's strategic plan and yearly updates of goals and objectives. Familiarity with the goals and objectives contained in this plan is *essential* to crystallizing the library's purposes for the overview, to keep the overview current, and to support the broader mission of the organization.

Our overview discussed two topics:

- Activities Monitored for specific resources and services; and
- Problem Indicators to check the success of these activities. *(2)*

Activities monitored in our library's overview include: collection evaluation; acquisition, circulation, and accessibility of resources; online searching; resource sharing; staff training; and basic reference. Two to five Problem Indicators are noted for each Activity. These Problem Indicators are standards of measurement, which would answer this question: "If my administrator came back in 90 days, how would he know if I am succeeding in that library activity?" Journal readers should keep in mind that Activities Monitored and Problem Indicators will differ, in description and number, for *each* library's QA program, though all Activities and Problem Indicators should be clearly and specifically stated when writing the overview.

The following example of a library service describes one Activity and its Problem Indicators. "To give services to staff," is vague and leaves many unanswered questions, such as the following: Services to which staff? Where? How? What *kinds* of service? Are there *limits* to how you will serve? The same Activity could be stated more specifically, as follows: "To make online searching available for clinical and administrative staff, keeping records and statistics on requestors, topics, costs, time spent and feedback from requestors." Examples of Problem Indicators

for this online searching activity are as follows:

- an increase in online search time;
- a decrease in staff requests; and
- staff criticism of search printout results (amount and/or completeness).

The Statement of Purpose and QA Overview are the framework for in-depth analysis of library activities and problem-solving. Identifying problems involves examination of various sources, such as reports, statistics, user records, notes of patrons' comments, minutes of meetings, and direct observation by library staff.

Record Keeping

Once problems are identified, the focus moves to recordkeeping, which serves two basic purposes: 1) To gather background information used as baselines in evaluating activities, and 2) To identify, monitor, and solve problems. Reporting and monitoring problems are done with a one-page, problem-oriented table, which is used for quick referral and is described in figure 1. The key words are Identify, Assess, Describe, and Monitor Actions, all of which comprise a systematic method to track QA activities.

Recordkeeping methods take many forms. In five years we have revised some reporting and recordkeeping mechanisms, which has streamlined the process and eliminated some backup files documenting details of problems. Recordkeeping is somewhat subjective, influenced by each organization's orientation to detail and need for backup information. A more recent direction of QA has tied important QA problems into the annual performance plan, which will be described later.

The monthly report to the division director is now the vehicle to report potential problems and check their status regularly. These problems may later be reported to the quality assurance administrator. Information for the monthly report comes from statistics and input from library staff about ongoing or unique activities. Monthly statistics on reference, circulation, and other activities are analyzed, compared, and contrasted for this monthly report, because statistics in isolation have little value unless put into some context. Another source of information is the Daily Activity Sheet, which support staff developed and maintain to give all library tasks fair attention.

Out-of-the-ordinary reports may also yield useful information. Examples of these would be studies of reference and online searches, quarterly reports from our division to the QA Committee, and counts of daily library patrons and walk-in traffic.

QA information sometimes presents itself in circuitous ways. Example: In 1984 and 1985, the Finance Office requested studies of physicians' usage of the library for insurance reimbursement. Our report to the Finance Office included other staff patrons as well, along with numbers of services and resources used per individual. Results were tallied and applied to an objective to target particular groups and increase their use of the library. At first, these two studies were nuisances—two more reports to steal time from our usual library work; later, however, we viewed them as opportunities for the library to use the results for our own purposes. The results of the 1984 study serve as a baseline for monitoring the library's overall QA per category of library

Figure 1. Table Used for Reporting and Monitoring Problems

IDENTIFY Problem & Date	ASSESS Probable Causes/Reasons	DESCRIBE Corrective ACTIONS Taken-By Whom & Date	MONITOR Further ACTIONS Taken, Follow-up & Dates

patron (i.e., administrator, trustee, physician, nurse, paraprofessional, clerical).

Role of Others in the Library's Program

Who is involved in the library's QA program? Potentially any staff person may help to identify, solve, or diffuse a potential library problem. QA is a partnership encouraging interrelationships among library staff at all levels and, even more broadly, promoting cooperation in the organization. Ongoing education about QA is necessary to continue this cooperative effort. A recent publication advocated education to develop commitment to QA, and stated that any effort to educate others is preferred to no intervention at all. *(3)* Our library's partnership is with these six groups:

- Administration,
- Division director,
- Library support staff,
- Committees,
- Departments, and
- Library clientele.

Getting acquainted with the administration—including the CEO, board members, and medical director—means more possible advocates for the library. Sharing with them our Statement of Purpose and QA Plan can head off misunderstandings between the library and organization's staff. Because of the influence of this group, I caution you against adhering to rigid standards and numbers for judging *all* QA activity. Resolving a potential problem may depend on WHO has the problem, WHERE the problem is located, or WHAT the problem is. It may take only the "right" person with authority, such as the CEO, to express dissatisfaction with a library service and elevate a problem to priority status. Librarians who are department managers realize it is practical and realistic to meet the information needs of top administration, the organization's prime decision makers.

The division director's role is as follows: he has involved department heads in organizing the system; helped to prioritize objectives and QA problems; suggested ways to monitor library problems; helped to evaluate library activities; and reported library problems with widespread impact to the quality assurance administrator.

Each year we discuss library objectives and potential problems and write these into my performance plan, which becomes a mutually agreeable written contract. We work together to clarify, simplify, and analyze what's truly important in planning the library's QA program. Putting the plan in writing makes it more official and forces me to be accountable. The emphasis is on *RESULTS* over activities. For example, proposing an objective to meet with each administrator at least once a year is an *activity* without a specified *result*, and creating good will for the library is insufficient reason to do this activity. A better objective would be to complete the Collection Development Policy, soliciting input from administrators on specific sections of the policy as part of that objective.

A third role is played by library support staff, because they, too, have a stake in quality library operation and are the cornerstone of a proactive QA plan. According to an article in *Supervisory Management*, employees can, and often do, make the difference in producing a quality product or delivering a quality service. *(4)* Our support staff includes clerical staff and volunteers. It is logical to request help from staff doing technical duties on a daily basis, because *they* may know more about a problem than does the librarian! They contribute in these ways:

- Brainstorming potential problems;
- Helping to prioritize problems;
- Suggesting solutions; and
- Doing studies and counts.

However, involving support staff poses potential hazards. New staff need to have reporting channels clarified—when, how, and to whom to identify problems. Support staff tend to identify a problem and follow up on it immediately, unlike the librarian who is more likely to consider the problem in the broader context of total library operation. They must be trained to step back from the problem; report it to the librarian and be prepared to discuss it to determine its immediacy and priority; analyze staff time required to deal with the problem; and consider the effect on the library's program if the problem is not dealt with at all.

Trust must be considered, so that any support staff reporting a problem is not labeled a "squealer" on the team; otherwise, QA efforts could backfire, with problems going unreported. Support staff should not have cause to wonder, "How will reporting this problem come back at me?" We should remind ourselves that QA, by its nature, is problem-focused and does not place blame, but is instead concerned with improvement of the situation.

In essence, we have an informal quality circle. Support staff participate in updating policies and procedures to keep our manual current and usable. They are aware of the QA process, department objectives and accomplishments, and are involved in the QA decision-making process, which results in improving or sustaining staff morale and maintaining quality of the library's services and products. Making QA a grass-roots activity creates a logical problem-solving ladder with solutions originating in the library first, the division second, and, finally, by the QA Committee.

This brings us to the fourth group—committees. Problems that are unsolvable at the division level are referred to the QA Committee, which handles only priority problems. The library's Collection Development Advisory Group is similar to a committee. This group gives feedback on quality of resources and depth of subject coverage; it is also a vital informational link for the library, by taking the library's message back to departments and giving me valuable input on clinical and administrative developments.

Departments, the fifth group, may share similar problems which are reviewed at department heads' meeting. Important problems affecting more than one department or having significant impact on hospital operation are given priority status. For example, the library has worked with three departments—security, communications, and personnel—to solve some high-priority problems related to after-hours access to the library, safety of our resources, and proper identification of all staff.

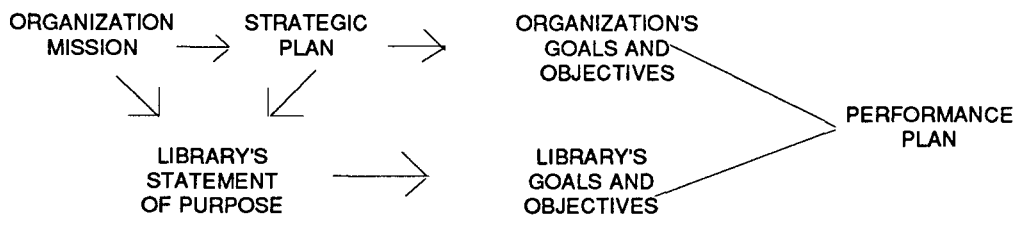
The library's clientele also play a role. This group is a cross-section of the other five groups just described. Their involvement is less formal, often spoken rather than written, with a sense of urgency and suggestions on where and how to improve service. Librarians must harness this resource, asking our clientele how the library's work has helped solve their problems. John Guaspari summarized the importance of our clientele's feedback in his modern fable about quality, published in 1985, when he said, "They may not be able to give a precise definition of Quality, but one thing's for certain—they know it when they see it. What's more—*you'll* know it when they see it!" *(5)*

Integration within the Organization

Integrating the library's QA activities into the organization's program is done with the quality assurance administrator and the personnel department's compensation manager. Initially, our division's quality assurance representative served as liaison with clinical divisions, helping to solve problems in initial planning and clarifying the method. This role has been transferred to the quality assurance administrator, who also acts as a channel for communicating quality assurance information.

The compensation manager brings QA full circle. His expertise is the performance planning and appraisal process, to which I referred in describing our division director's role. The steps toward a performance plan are shown in figure 2. The Organization's Mission deter-

Figure 2. Steps Toward a Performance Plan



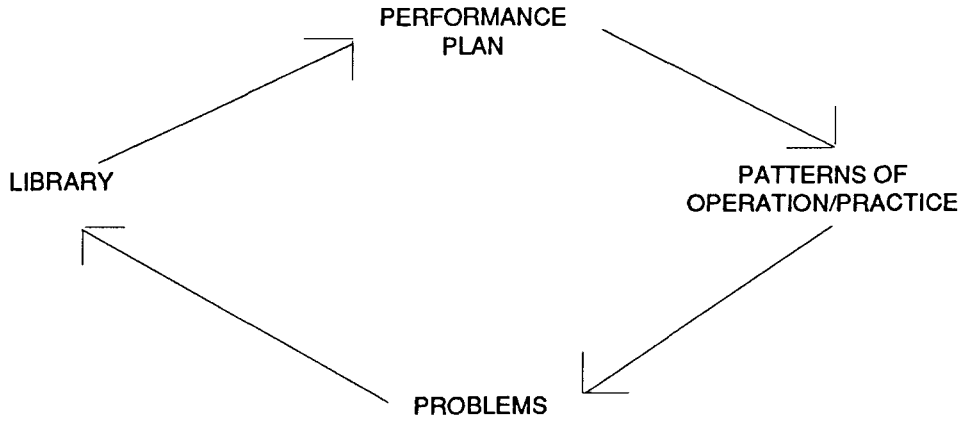
mines the Strategic Plan which pinpoints broad goals and objectives. The Organization's Mission and Plan are also bases for the Library's Statement of Purpose and Goals and Objectives. The Performance Plan is a blend of the two. This plan ensures that the library's goals and objectives are in line with the organization's strategic plan. In the QA process, objectives are ranked and limited to a "reasonable" number, which are determined by their complexity and relative importance. There is an option to add more objectives as the year progresses. This system minimizes overcommitments. It ensures working on high priority activities that fit the organization's Strategic Plan and Objectives rather than working on "personal hobbies," which may fit the librarian's job, but which may not be in line with the organization's overall plan.

The following approach to measuring quality as part of the performance plan would appeal to current management philosophy, which promotes the concept of going straight to the customer. To get an overall impression of how well the library and the librarian were doing, our division director surveyed selected administrators and professional staff. He went *directly* to the primary decision makers to discover the extent to which the library and the librarian were meeting their information needs. This informal survey showed that selected staff had less stringent expectations of library services than did the librarian! The result was an eye-opener and prompted me to reevaluate performance measures for quantity and time frames to complete tasks by making these measures more realistic.

The yearly and interim appraisals stress *improvement* over finding fault. We are accountable for our activities and the performance plan forces looking at issues and problems regularly. As the plan has evolved from prior QA activities, it remains proactive and productive, rather than reactive and retrospective. It is a legally defensible plan, because performance is based on measuring *results*, not behaviors.

As illustrated in figure 3, there is a circular flow in linking quality assurance to a performance plan. The librarian develops a plan with input from appropriate staff. This plan helps to monitor patterns of library operation or practice. Detecting and acting on problems results in improvement of departmental operation, and, ultimately, in quality library service. This quality assurance-performance plan linkage fits in with a current approach to managing white-collar productivity. *(6)* This approach, by Berglind and Scales, entails monitoring activities and results, identifying problems, taking corrective actions and assessing their effectiveness, and giving feedback on need for other changes, all of which remind us of the steps in the QA process.

Figure 3. Flow Created by Linking Quality Assurance to a Performance Plan



Suggestions to Establish a Program

To help you begin a QA program, here are ten suggestions:

1. Put yourself on the same wavelength as decision makers, using their process, record-keeping system, and recommended methods. Adopt their vocabulary and jargon; if they refer to QA as "program effectiveness," then do likewise.

2. Talk with the quality assurance administrator in your organization to keep current on developments in QA applicable to the library and to coordinate the library's activities with the institutionwide program.

3. Be flexible, keeping an open mind to changes in the method.

4. Realize that QA is an idea with many approaches. Adapt what works for you and omit the ideas that don't apply.

5. Also realize that QA is as individual as each library represented here, hence no instant QA guide and no "canned" programs with answers for all libraries' questions. Because of this individuality, any prepackaged program for purchase should be avoided.

6. Be attuned to the library's relationship with its clientele. Educate and get to know your users, asking for their opinions and following-up on work done for them. Be an effective, focused listener. This approach to evaluation has been referred to as the Ed Koch Syndrome, in which Mayor Koch checks the quality of his work by occasionally asking individual citizens of New York City, "How am I doing?"

7. Use informal evaluation methods, such as "corridor conferences" or 15-minute meetings with administrators or department managers to gauge the library's effectiveness.

8. Don't get bogged down with statistics, studies, questionnaires, etc. Be selective in what to study and analyze, avoiding studies for the sake of studies or because, historically, that's the way a task has always been done. Planning to do a study means focusing on a specific library issue or service which can be especially useful as a baseline to evaluate future performance in that area.

9. Since some statistics are necessary, decide which ones are important and what is an appropriate amount of information to gather. For example, we maintain records of our clientele's reference queries, noting topic and requestor's name. This data is used in five ways:

   a. To recognize trends in staff needs and status of requestors;
   b. As a tool for collection development;
   c. To keep all library staff apprised of questions from our clientele;
   d. To plan new or adapted library services; and
   e. For our Education Center's use in planning course content and targeting prospective audiences.

10. Keep a folder or notebook on QA to make note of ideas to put into practice.

Conclusion

There are many results for special libraries and librarians who establish a quality assurance program. A primary benefit relates to both *inter*departmental and *intra*departmental cooperation. Initially, 10 departments of our division were involved in planning and evaluating the program. Departments continue to work together to solve problems, while the library's staff cooperates in the same way.

QA provides an opportunity for the librarian to participate in the broad management of the organization. This is a public relations tool for the librarian to educate administration and forces the librarian out of the library's cocoon to talk with clientele, attend meetings with a wider organizational focus, and serve on committees to gauge how effectively the library meets the needs of the organization and staff. Operating what is *perceived* to be a quality program has expanded the role of the library and the librarian; I am part of the interdisciplinary team working on research,

grant writing, records management, and quality of work life projects.

Quality assurance is a philosophy and a daily concern. It implies a proactive attitude which incorporates planning, problem-solving, evaluation, and improvement. As part of performance planning and appraisal, it provides a framework to evaluate the librarian's development and completion of planned activities. The plan forces looking at issues and problems regularly. There are some similarities between QA and good techniques for management, which is logical, because QA is part of management's concern. Good library management results because the element of surprise is reduced. QA by any other name is still quality assurance if we keep in mind the net result—to accomplish the truly *possible* task of delivering improved service and products to our library clientele.

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This paper is an expanded version of a talk given at the 1986 Medical Library Association Annual Conference in Minneapolis.

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Competitive Intelligence and the Information Center

H. Frances Greene

■ **Continued volatility of the marketplace has led to a renewed interest in competitive intelligence gathering. Corporate leaders are increasingly aware of the need to know more about the external environment in which they compete before making important financial decisions. The development of an intelligence-gathering capability is often assigned to the company's marketing division or, in some cases, its MIS unit. It is suggested, however, that serious consideration be given to library information centers because these centers feature many of the elements needed to build a fully integrative and effective intelligence-gathering system.**

WITH the introduction of hundreds of online databases, library information centers have become increasingly adept at obtaining a tremendous amount of detailed information on companies and on the products and services that those companies have to offer. Interest in this kind of business information has grown in recent years as corporate leaders seek to learn more about the external environment in which they compete and about those events that are likely to help or hinder plans for their organizations' future.

Information gathered on the environment in which a company operates has come to be known as competitive intelligence, or simply CI. Some companies regard this information as so important that they have created entire CI departments. Others have established CI units within existing divisions. Still others have hired specialized firms, such as Information Data Search, FIND/SVP, and Washington Researchers Ltd., to gather information for them. This level of investment clearly indicates that CI has become a highly prized commodity. What is unclear, however, is just why CI has assumed so much importance in recent years. How does it differ from the kind of business intelligence that a "Library Information Center" (LIC) has traditionally provided? Is it possible to incorporate a CI function within an established LIC? And what type of equipment and staff is needed to set up such a program? To answer these questions, we will examine CI's basic approach to information

gathering, and discuss how it differs from the traditional LIC approach. In addition, we will suggest that with some modifications the LIC is an ideal location for gathering and storing CI data.

A Difference of Initiative

Competitive intelligence-gathering is fundamentally a piecemeal operation. It involves fitting together bits and pieces of information from sources both inside (e.g., sales and marketing) and outside (e.g., SEC filings and rating services) the organization until a fairly coherent picture of an industry, a company, or a market emerges. Some information specialists have characterized this process as similar to "assembling a mosaic." *(1)* Others see it as analogous to puzzle making. *(2)* However it is viewed, the process of converting raw data into intelligence is one that involves assembling information from a variety of sources so that a clear image begins to evolve.

Obtaining the bits and pieces of information that are used to construct these images requires considerable initiative on the part of the information manager. Sources from within the organization must be coordinated so that the data from different operational units are channeled directly to a central facility. This information is then combined with that obtained from external sources, e.g., online databases and print materials, to produce a fully integrated intelligence system. Creating such a system enables information managers to operate offensively in assessing the capabilities and intentions of competing organizations *(3)* or defensively in determining how industry analysts and other companies perceive one's own organization. *(4)* In addition, an integrated CI system allows managers to design customized information packages that may be used to profile potential acquisition candidates, to summarize the voting records of members of Congress, or to alert a business unit of an important new development in its area.

Constructing a fully integrated intelligence system is only the first phase in developing a comprehensive CI program. Indeed, the time and effort needed to establish such a system cannot be justified if the information is allowed to become dated. Currency is the hallmark of every intelligence operation. To maintain this currency, information managers are continually monitoring print materials and updating data from online sources. In addition, these managers seek to maintain frequent contact with key information sources within the organization so that new, and updated, field data are systematically incorporated into the knowledge base. *(5)*

Tasks, such as scanning print and non-print sources, coordinating company sources, and assembling disparate data, suggest that information managers are increasingly responsible for anticipating the information needs of their organizations and for initiating programs that will enable them to obtain that needed data. Offor summarizes these growing responsibilities as follows:

> ...taking responsibility for scanning the total operational environment; the origination of primary research to fill gaps in the documented information; the preparedness to take responsibility for the information as passed to the user; the authority to initiate certain levels of action in relation to information received; the responsibility for carrying any particular item of information to the appropriate individual and the presentation of it in such a way as to ensure a response, and the responsibility for the network by which an organization receives and absorbs operating information from its executives. *(6)*

As this list indicates, information managers exhibit a great deal of initiative. Keiser suggests that this "activist" posture or approach is what distinguishes intelligence centers from the traditional corporate library. She states that "while the traditional company library tended to be merely *reactive* to employee requests, the new business intelligence center is *proactive*." *(7)* In effect, she is implying that, in initiating data gathering and organizing activities, information managers are no longer involved in simply responding to their organization's information needs; rather, they are participating actively in generating those needs.

The Importance of CI

Collecting and assessing information in order to better understand the commercial environment in which a company functions has always been regarded as a prudent way to conduct business. Further, attempts to gather

information on a competitor's operation have existed, as Gilad and Gilad observe, "since the dawn of capitalism." *(8)* So what has happened in the past decade that has allowed information gathering to assume such enormous significance? Ghoshal and Kim, in their recent paper, suggest that there are three factors which have played a critical role in making corporate managers realize that changes in the business environment need to be monitored. *(9)*

The first factor is the emergence of global competition. To expand their markets, many domestic manufacturers are increasing sales by exporting products to other countries. Similarly, foreign companies are interested in expanding their markets by shipping goods to the United States. The vast cultural and social differences between these producers, Ghoshal and Kim suggest, "makes the need for environmental intelligence more compelling and complex." *(10)* The two writers explain that, with global competition, environmental factors, such as changes in exchange rates, interest rates, or public policies, affect foreign and domestic competitors differently and, as a result, need to be watched very carefully.

The second factor is the increased volatility of the business environment. Many companies are witnessing the effects of deregulation, shortened life cycles for products, and the convergence of technologies—all of which contribute to a heightened vulnerability. To protect themselves from this increased exposure, many businesses rely on early detection of environmental changes so that they may quickly respond with appropriate counter measures. In addition, these same companies use environmental monitoring not only to detect threats to their businesses, but to identify opportunities as well. *(11)*

The third factor is the dispersion of technological and managerial capabilities such that competitors no longer exhibit significant differences in terms of innovative management techniques or technological competence. As a result, several companies have experienced an erosion in their domination of a particular market, e.g., Xerox and Kodak. This loss of leadership indicates that market position may no longer be determined by technical discoveries or commercial breakthroughs, but by how well firms can anticipate and adapt to continuous change. *(12)*

Whatever the precise cause of the growing interest in intelligence gathering, it is clear that the volatility of the marketplace has played a major role in encouraging companies to closely monitor the business environment by establishing CI programs. As one author noted, "Companies realize that without taking the behavior of the competition into account their strategic plans don't work." *(13)* Many corporate leaders feel that CI offers them a distinct advantage over the competition even if other companies have similar CI capabilities. *(14)* Michael Porter, professor at Harvard Business School, points out that, "If your competitors respond the wrong way to your 'right move,' they can make the right move wrong." *(15)* This suggests that to succeed, or merely to survive, companies cannot afford to ignore their competitor's moves or fail to anticipate changes in the marketplace. These pressures contribute to an escalation in what has been called the information arms race. As one information specialist recently observed, "...with more and more firms gathering competitor information, nobody can afford to stay out of the game." *(16)*

A Matter of Creativity, Not Ethics

Because of the pressure on companies to gather information on the commercial environment, and especially on their competitors, some organizations have been tempted to adopt what have been termed "aggressive" data-gathering techniques. Various methods, such as masquerading as a potential customer to witness a competitor's sales presentation, interviewing a competitor's employees with no intention of hiring them, or rewarding a competitor's employees for providing information, are just some of the techniques used to obtain information by less than ethical means. However, relying on these unsavory techniques is unnecessary, as John Endean of Washington Researchers Limited explains. "A lot of the information gathered unethically actually can be gathered ethically." *(17)* Admiral Ellis Zacharias, the deputy chief of naval intelligence during World War II, agrees with Endean, and adds that 95% of all intelligence is obtained legally and ethically through public sources. *(18)* Acquiring information from publically available sources is what distinguishes CI from corporate espionage. *(19)*

Without engaging in shady or questionable practices, an organization can obtain the data it needs for assessing the strengths and weaknesses of its competitors from legally available sources.

To acquire information on a competitor's operation, CI managers do not need to depend on spying to achieve their objective. Rather, they rely on creative research techniques. Fuld contends that, "Truly creative researchers can take apparently commonplace sources and turn them into powerful intelligence tools." *(20)* What he means is that while many of us overlook strategic information because it is not presented as such, intelligence gatherers tend to piece information together from a strategically imposed perspective so that its significance becomes apparent.

Their approach involves first breaking down the desired information into separate components or units and then finding a source for each of these subunits. Rather than asking directly, 'What is competitor X's marketing strategy?,' Fuld explains that a researcher will produce another set of questions, such as: 'Is the company planning to open new service outlets?'; 'Has the company increased its sales force?'; 'How much advertising space has the company purchased?'; etc. *(21)* Finding sources to answer each of these questions is not only simpler, but it is also legal. Moreover, after collecting the answers to these questions, an information researcher can assemble them so that a reliable assessment of company X's marketing plans is revealed.

Another technique that CI people use to obtain information is to ask whether there is anyone else who would have had the need for such information or who might be involved in producing the desired information? Answering this inquiry can lead researchers to less orthodox sources such as help-wanted ads, industrial development authorities, Chambers of Commerce, Uniform Commercial Code filings, local newspapers, or even the yellow pages. In their investigation of an oil refinery purchase, for example, Vella and McGonagle found that while traditional financial sources reported that the facility sold for $420 million, their online research into the transaction, using *industry* sources, revealed that the actual purchase price was $200 million, and that the buyer used internal funding. *(22)* Similarly, Law-Yone of the Washington Researchers found newspaper and magazine editors to be so knowledgeable in locating difficult to obtain information that the author was able to construct an entire profile of the privately held Perdue Chicken Company. *(23)* Such an achievement would have been impossible without relying on these alternative sources, since private companies are not required to disclose any financial or operating information to public agencies.

As these techniques indicate, CI gatherers do not need to resort to illegal or unsavory means in obtaining the information they require. There are a number of alternative methods for locating information that have nothing to do with breaking the law or acting unethically. As Fuld asserts, "Everything we do is legal and ethical." *(24)*

Getting Down to Basics

Like any other new program, CI involves some basic requirements before it can become fully operational. Without a doubt, the most important requirement is establishing a central facility which serves as a clearinghouse for all business intelligence. Some companies, Gilad and Gilad observe, attempt to rely on a decentralized intelligence-gathering system where each division is responsible for its own data collection. "Targets and priorities are determined by the division alone and...information is rarely shared with other business units." *(25)* Two problems, however, arise from this type of organization. First, there is the redundancy or duplication of effort, as each department strives to collect the information it needs. IDS's Fuld complains, "I can't tell you how many times two individuals from the same company have called me to locate the same study." *(26)* Second, CI depends on the convergence of data to function properly and, with a decentralized organization, that confluence is much more difficult to achieve.

Centralized facilities, on the other hand, reduce redundancy and make it easier for the data to be assembled and shared, since all divisions transmit their information to a single, organizing unit. This procedure enhances the coordination and sharing of data—data that might prove important in detecting changes in a competitor's behavior or in an industry's regulatory environment. For ex-

ample, a piece of data having little significance for its reporting unit may be exactly what is needed to establish a suspected change in a major competitor's distribution channels. Similarly, Hershey, in his article on CI, points out, "A piece of information that seems unimportant at the time of its collection might provide a valuable clue when linked with some future data." *(27)* Thus, by collecting information and storing it in a single location, researchers can begin to interpret even subtle changes in the competitive, regulatory, and technological environments that will enable them to develop a more complete picture of what their organization might expect.

A second requirement of CI systems is the availability of a large number of resources. To provide detailed financial, production, distribution, marketing, and technical profiles of a competitor's operation, intelligence gatherers need to access a broad spectrum of information sources—sources well beyond the limits of the organization. Fortunately, the introduction of hundreds of online databases has aided CI researchers by offering a fast, efficient way to locate an extraordinary amount of information (derived from SEC filings); others provide information on almost any subject. There are databases that contain reliable financial information (derived from SEC filings); others provide information on the advertising and marketing of consumer products and services; and still others offer in-depth summaries of a company's position in relation to its objectives, market share, and prospective sales. Indeed, online information has become so plentiful that articles advising users on how and where to find specific CI data are becoming increasingly common. *(28)*

Certainly databases have become an exceedingly valuable tool for acquiring a vast amount of information, but it is important to keep in mind that they have their limitations. Often the information contained in a database will not be current enough to capture fast-paced changes, like those pertaining to pricing or management appointments. This may be true even though the database producer offers daily and weekly updates. Another limitation is that the data may not be sufficiently detailed to allow the performance of an individual product line to be observed. Sales data, for example, are sometimes reported as an aggregate figure combining several product groups. Because of these limitations, online searching should not be relied on exclusively for CI, but should be regarded as an important part of a broader operation that includes a company's internal sources.

A third element of any intelligence-gathering system is personnel. In a recent article, Fuld notes that corporate management frequently appoints someone from marketing to be their chief information officer. *(29)* He suggests that this may not always be a good decision, since most marketing people are trained to assess broad overviews and trends while CI involves assembling detailed fragments. He writes, "The tools used for each job can be very different. A person trained as a marketing researcher may not have the expertise or knowledge required for intelligence-gathering." *(30)* If experience in marketing is not the optimal background for intelligence work, then what type of training or skills are regarded as good prerequisites for this type of work?

There are a number of important skills needed to become an effective information manager. First, there is the location of sources. An information gatherer needs to know where to find all types of information that are relevant to the concerns of his or her organization. This includes knowing who collects it, what it is used for, and if there are any alternative sources. Further, the individual should have some expertise at maneuvering through the labyrinth of data that is available. In an information-driven society such as ours, we seldom suffer from too little data, but are often mired in too much. One information specialist recently described what happened to a group of people who decided to use DIALOG, "After some training, they wanted to throw in the towel, because they suddenly became aware of how complicated this is, how expensive it is, and how long it takes to know where to go to get the precise information needed." *(31)*

Another useful skill which an information manager should exhibit is the ability to organize and index a large body of information. The data generated by the different business units, added to that gathered on the industrial, competitive, regulatory, and technological environments, suggest that an extraordinary amount of information is involved in intelligence operations. If this data is to prove of any value it must be organized in some systematic

way and indexed such that it can be retrieved easily. As a result, the information manager should be proficient at creating systems which organize large quantities of information such that it can be accessed easily and used effectively.

The fourth, and final, requirement for constructing a CI system centers on the equipment that is needed to properly store the data. Not too long ago, dealing with large amounts of information meant that a mainframe computer was required. Because of this, suggesting an information-intense program like CI would have been a very expensive proposition. However, today many microcomputers are capable of handling the data of their mainframe predecessors and of performing the same functions at notably higher speeds. This development enables CI to be conducted using any local microcomputer network that the organization uses. Depending on the company's network and available equipment, instituting a CI program may involve little more than the purchase of an additional PC unit and/or the equipment needed to access the company's central network.

In addition to whatever hardware is required, a fully functional CI system will need some software packages to operate the equipment. Again, depending on the organization's resources and on the level of sophistication at which the intelligence unit is expected to function, the software may include several programs, e.g., a file-indexing and retrieval program, a spreadsheet program, a database management program, etc., or it may involve just one. In any event, a CI unit cannot function without a database management system that will allow the storage, retrieval, and manipulation of both alpha and numeric data. Some of the better database management programs currently on the market are known as "relational systems." Unlike earlier DBMS programs, relational systems, such as dBASE III plus, Paradox, R-BASE, etc., allow information to be retrieved from a number of different files and reorganized either to form an entirely new file or to generate a special report. This offers users great flexibility in assembling and organizing information.

As these requirements suggest, considerable preparation is involved in acquiring an information-gathering capability. Decisions regarding how the different business units may be coordinated so that information reaches the central facility, what type of resources are available beyond the company's contacts, and who the organization can hire with experience in collecting and organizing data represent just a few of the considerations that arise in developing a CI program. (Other considerations include decisions concerning the type of information to be collected, discussed below.) In looking at these requirements, it becomes quite clear that to succeed CI necessarily involves a commitment from top management. As one intelligence director commented, "New systems will demand that people change how they think, work, and interact. This takes effort. Effort can only come with commitments from the top down." *(32)*

Where to Start?

Almost all CI experts agree that the first priority in beginning an intelligence operation is to identify what type of information your company needs and how that information will be used. As noted earlier, we live in an information age where the risk of being overwhelmed by an abundance of data is much greater than the prospect of not finding what it is you want. By basing the organization's information needs on how and who will use it, a clearer definition emerges regarding what data should be retained and what should be discarded. Ainsworth recalls that while constructing a CI system at Pitney Bowes, she and her coworkers, "Time and again, returned to the decision point—If it was not about a company, product, or industry, why include it in the file?" *(33)*

Although decisions on which data to collect will vary from company to company, at least two types of information should be gathered by almost all organizations: industry and competitor data. Industry information is generally used for long-term, strategic planning because it relates to the broader economic, technological, legislative, and social environment in which a manufacturer operates. Competitor information, on the other hand, is used for prompt, tactical decisions since it deals with the current business practices of competing organizations that make up the

immediate business environment.

Information relating to these two areas may be organized according to the industry/competitor distinction or, as some prefer, an industry/competitor/product designation. In either case, the data pertaining to each category are assigned to a specific file. Industry files typically include:

1. An overview that would enable an entrant to acquire a basic understanding of the industry.

2. Statistical data regarding the current status and projected growth of the industry.

3. A list of experts or analysts who make a point of tracking developments in this commercial category.

4. An analysis of trends and forecasts that indicate the predicted future of the industry.

Because they involve many more components, competitor files tend to exhibit a greater number of subcategories. They are usually organized as follows:

1. Business Description
   a. Name and address of company
   b. Description and history of business
   c. Plant location(s)
   d. Manufacturing statistics
   e. Labor

2. Personnel
   a. Organization chart
   b. Biographical profile of executives

3. Financials
   a. Assets and liabilities
   b. Securities
   c. Earnings

4. Product Lines
   a. Name and brief description
   b. Sales figures
   c. Price
   d. Market share
   e. Distributors
   f. Suppliers

5. Research & Development
   a. Key personnel
   b. Patents filed
   c. Technological developments

6. Marketing
   a. Approach or strategy
   b. Advertising information
   c. Sales force
   d. Demographic profiles

7. Government
   a. Legislation
   b. Regulation
   c. Litigation

In constructing competitor files, it is important not to overlook your own organization. Seeing your operation as others see it is invaluable in terms of defending against external threats, e.g., unwelcomed takeover bids. McGonagle calls this "defensive" CI, and stresses that even if the perception is mistaken just knowing it can prevent a company from being surprised. *(34)*

Marshalling Resources

Gathering data on each area of a competitor's business will involve assembling a considerable armamentarium of resources. Figure 1 shows how an organization's internal sources may be combined with online databases to provide much of the needed information. Figure 2 gives the names of database files that are likely to contain specific information, together with the type of information that may be obtained from each business unit.

In addition to these sources, CI experts recommend obtaining subscriptions to local magazines and newspapers in the communities where major rivals have facilities. (35) This is suggested because articles on plant expansions, labor force reductions, and help-wanted ads tend to appear in community papers first and, thus, provide early warning signs that some important changes are in the offing. To keep current, experts also strongly advise engaging a clipping or SDI service to scan current publications for competitor data. *(36)*

Figure 1.

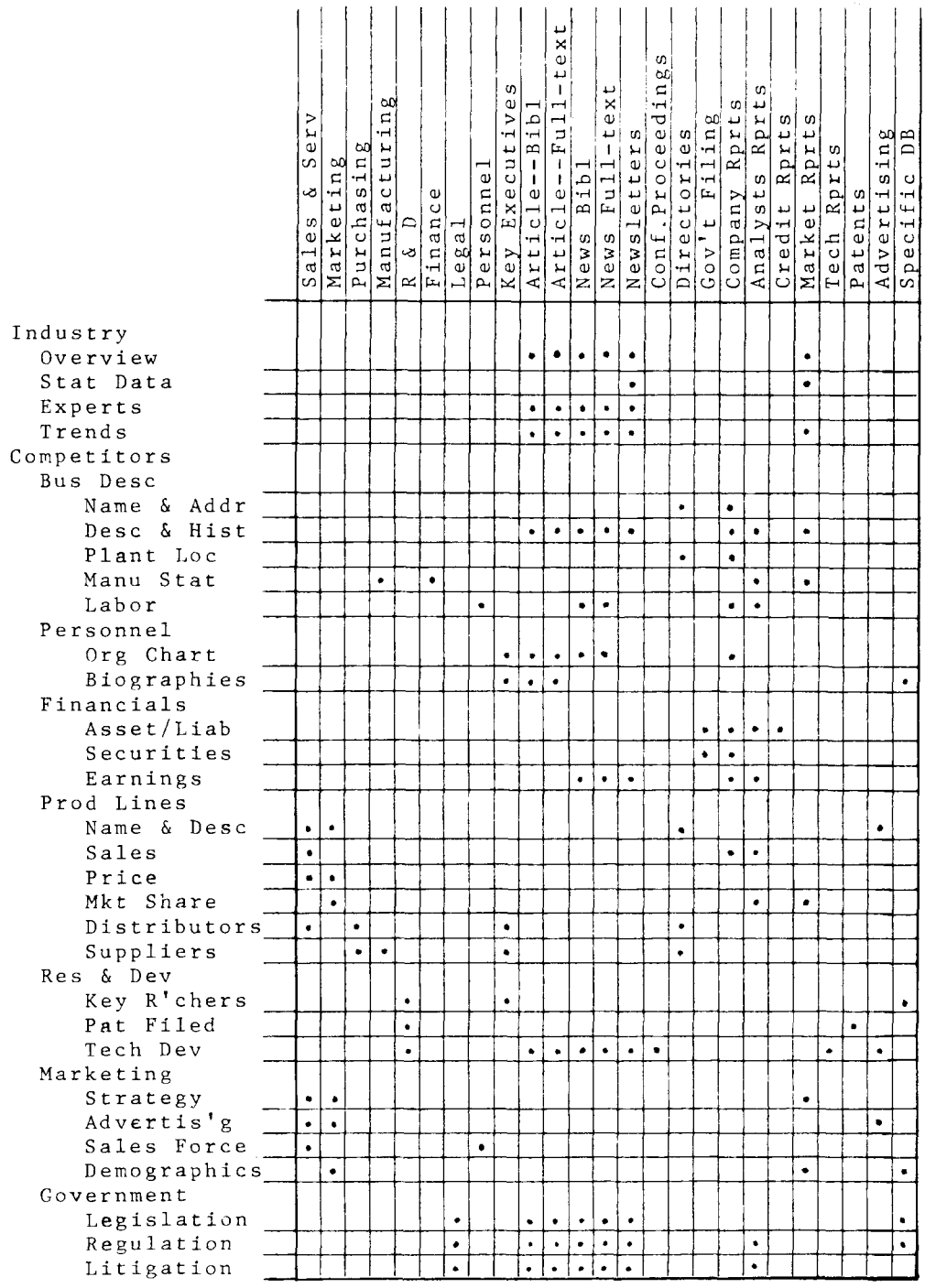
Sales & Serv
Marketing
Purchasing
Manufacturing
R & D
Finance
Legal
Personnel
Key Executives
Article--Bibl
Article--Full-text
News Bibl
News Full-text
Newsletters
Conf.Proceedings
Directories
Gov't Filing
Company Rprts
Analysts Rprts
Credit Rprts
Market Rprts
Tech Rprts
Patents
Advertising
Specific DB
Industry
Overview
Stat Data
Experts
Trends
Competitors
Bus Desc
Name & Addr
Desc & Hist
Plant Loc
Manu Stat
Labor
Personnel
Org Chart
Biographies
Financials
Asset/Liab
Securities
Earnings
Prod Lines
Name & Desc
Sales
Price
Mkt Share
Distributors
Suppliers
Res & Dev
Key R'chers
Pat Filed
Tech Dev
Marketing
Strategy
Advertis'g
Sales Force
Demographics
Government
Legislation
Regulation
Litigation

Figure 2.

Sales & Service	Product lines, regions, pricing policy, major distributors, sales approach, promotional materials, size of sales force, salary structure
Marketing	Product lines, pricing policy, market share, advertising, sales force, customer demographics
Purchasing	Principal distributors and suppliers
Manufacturing	Plant and equipment capacities, major suppliers
R & D	Key researchers, patent filings, emerging technologies
Finance	Cost structure
Legal	Legal and regulatory activities
Personnel	Labor and sales force data
Key Executives	Executive data, new distributors & suppliers, researcher data
Article--Bibliographic	ABI/INFORM, MANAGEMENT CONTENTS, TRADE & INDUSTRY INDEX, ADVERTISING & MARKETING INDEX, BUSINESS & INDUSTRY NEWS
Article--Full-text	DOW JONES NEWS, BUSINESS DATELINE, NEXIS-MAGAZINES, HARVARD BUSINESS REVIEW, NEWSNET PREDICASTS (various)
Newspaper--Biblio	NATIONAL NEWSPAPER INDEX, DATA-TIMES-NEWSPAPERS, NEWSPAPER INDEX
Newspaper--Full-text	BUSINESSWIRE, INFOBACK, DOW JONES NEWS, VU/TEXT, NEXIS
Newsletters	NEWSNET, NEXIS-NEWSLETTERS
Conference Proceedings	CONFERENCE PROCEEDINGS INDEX, INDEX TO SCIENTIFIC & TECHNICAL PROCEEDINGS, IE ENGINEERING MEETINGS
Directories	DUN'S MARKET IDENTIFIERS, ELEC YELLOW PAGES, S & P CORPORATE, THOMAS REGISTER ONLINE
Government Filing	DISCLOSURE II, COMPUSTAT, MEDIA GENERAL DB,
Company Reports	S & P NEWS AND CORPORATE, VALUELINE, MOODY'S PROFILES, PTS ANNUAL REPORTS
Analysts Reports	MEDIA GENERAL DB, DUN'S FINANCIAL PROFILES
Credit Reports	TRW PROFILE, CREDIT BUREAU, DUNSPRINT
Market Reports	INVESTEXT, A.D. LITTLE, FIND/SVP
Technical Reports	NTIS, FED RESEARCH IN PROGRESS
Patents	LEXPAT, WORLD PATENTS INDEX, PATSEARCH
Advertising	ADTRACK, MARS, COMPARE PRODUCTS
Specific Databases	MARQUIS WHO'S WHO, AM MEN & WOMEN OF SCIENCE, DONNELLY'S AM PROFILES, ONSITE, CIS, FED REGISTER ABSTRACTS

Accommodating Full-text and Numeric Data

The final consideration in developing an integrated CI system is where to locate it. To many companies, CI's association with information is sufficient reason for assigning it to the Management Information Systems (MIS) division. However, as Ramocki notes, MISs are designed to deal with quantitative data that pertain to internal operations and are not "well adapted to integrating qualitative information which is about all that is available on the competition." *(37)* In other words, CI and MIS tend to be incompatible because they are designed to serve two different functions. Information consultant Marydee Ojala sees this problem as one of competing "cultures," where CI represents a full-text, externally oriented world of strategic intelligence, while MIS is geared toward a number-dominated, internally oriented world of operations. *(38)* While this dichotomy is not absolute, i.e., CI also includes numeric information, it suggests that MISs may not be flexible enough to accommodate the full-text data that are an integral part of CI operations.

Another area that is often overlooked, but well suited to dealing with both full-text and numeric data, is the LIC. Brooks observes, in his article on corporate intelligence centers, that management tends to overlook these centers because they still associate them with the archival function for which many were founded. *(39)* This is unfortunate because LICs exhibit a large number of attributes that make them ideal candidates for CI programs. *(40)* To be specific, LICs feature:

- *A central location.* Many LICs are centrally located and they interact frequently with other departments within the organization. This arrangement makes them particularly attractive as a facility for consolidating the data that is obtained by various business units.

- *Information access.* There is no question that through online databases, LICs have access to an inordinately large and diverse group of sources outside the organization. Further, they have trained personnel who know how to use those sources and who can find information quickly and cost-effectively.

- *Techniques for organizing data.* As information professionals, LIC managers are especially skilled in organizing and indexing information for easy retrieval. Their expertise enables them to deal with large quantities of disparate data.

- *Storage capabilities.* With the development of personal computers, the issue of storage no longer poses a serious problem. Like most modern, information-based operations, LICs usually have some type of computer available to them for storing large quantities of data.

As these features suggest, information centers exhibit many of the capabilities that are needed to build an integrated CI system. With a few simple modifications (e.g., participation in company planning sessions, an increase in the number of assistants, and the cooperation of operating units in reporting field data), these centers could provide companies with the edge they need to become truly effective competitors.

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Authority Files for Microcomputer Databases

Scott Brandt

■ **The growing ease with which large databases can be developed and maintained on the microcomputer causes concern for consistent data administration. The concept and practice of authority control in the past applied to the card catalog has been shown to apply to databases and is seen as a valuable tool for linking records and providing integrity and consistency. The function of an authority file is examined and comparisons are made to relational database capabilities. The application of authority control to a microcomputer-based database is demonstrated and other applications are suggested.**

THE number of library operations which can be automated is nearly exhausted. The extent to which those operations can be automated, however, has hardly been realized. Recent developments in microcomputer capabilities make it necessary to look closely at how operations are being automated. Microcomputers, readily available to almost everyone, can be used simply for storage and retrieval of great quantities of data. But to take full advantage of them, the knowledge gained from years and years of dealing with printed information must be applied to the online counterpart. In particular, we must ensure the integrity and accuracy of locally built databases by applying authority control to the construction and maintenance of these files.

Databases and Microcomputers

Surveys have shown the extent to which libraries have integrated microcomputers into their operations, and the degree to which in-house design of databases is supported. *(1)* Much of the application of microcomputers is the automated extension of traditional bibliographic library services, such as analytics, bibliographies, and indexes, to local uncataloged materials. These and other lists of such materials form databases or files which are easily maintained, updated, and accessed. Terence A. Brooks, among others, has stated that database design and management is "an area of particular expertise for library and information science professionals" since

"catalogs, authority files and thesauri, and indexes are our tools of trade." *(2)*

Microcomputer database construction is not a new application in libraries. Pratt has noted examples as far back as 1980. *(3)* However, continual software and hardware developments contribute to the ease with which databases can be built and maintained. It is the processing and file manipulation capabilities of the microcomputer which lend themselves to automating bibliographic library services. With its online capability of allowing sorting, searching, and updating, the microcomputer accomplishes what was previously maintained by a typewriter and/or photocopier, correction fluid or erasers, and a lot of alphabetizing and filing. Now, with increased local storage being offered (100 MB hard disks, Bernoulli boxes, and soon CD ROM/WORM), larger files can be built and maintained locally. With the development of such databases comes the need for good data administration and control.

As library automation has increased and expanded to various levels, concern for management and control of data has also increased. Data administration, at first only the problem for giant databases like OCLC, soon became the concern of libraries with online catalogs. Now concern is also felt at the microcomputer level where database management systems (dbms) are used to design applications. The problem of data management has long been a concern of people working in the data processing industry and has followed into libraries with the extensive creation of databases. But David R. MacDonald notes that the industry's ideas about database administration closely resemble the concept and practice of authority control, which libraries have long applied to the card catalog. *(4)*

Authority Control

Authority control has traditionally been defined as "a process for insuring consistency of headings in a library catalog," and usually consists of distinguishing forms of headings, showing relationships and documenting decisions. *(5)* In the past this applied mainly to the card catalog, but also to some extent to the construction of abstracts and indexes. With automation this type of control is logically extended to bibliographic databases. Perhaps the most familiar example is the LC authority files associated with OCLC, which are used to ensure control over entries in the catalog. At the microcomputer level, the authority file serves to provide consistency and integrity in a database.

Since the days of Cutter, librarians have recognized the importance of establishing an authority file to maintain consistency and integrity of headings so that similar records could be linked through collocation in the catalog. In large part, authority control was implicit in the syndetic catalog advocated by Cutter, although guidelines on how to establish and apply such control have been sparse. (6) Some method was needed to keep track of cross references and also to ensure that names and headings were established with uniformity and accuracy. Burger notes that the systematic construction and maintenance of authority files and their use grew from efforts of people like Dorcas Fellows who sought to record the sources and process used to identify unique forms for names. *(7)*

As more and more libraries convert to online catalogs, authority control is being looked at closely as a part of data management to ensure consistency and integrity of entries as well as to interrelate records that share a heading. *(8)* As applied to bibliographic databases, authority control is more than a device which is used to establish and relate headings—it can do so automatically and literally "link" records together. As such, authority control can be seen as the quintessential tool for data administration.

As the number and size of local microcomputer-based databases continue to grow, authority control is necessary for the same reasons that apply to online catalogs. Headings need to be consistent to maintain the integrity of the database for sorting and searching. Relationships need to be established to allow access to like items. The documentation of authority decisions is essential for file maintenance. Usually this can be provided on a microcomputer with the use of a database management system.

In the past, the storage and processing capabilities of a mainframe computer were needed to handle large files which would require authority control, though microcomputers are now approaching similar capabilities. It is not likely that many libraries have had access to a

mainframe computer for maintaining local files other than an online catalog. Some academic and special libraries, though, have had access to mainframe computers through ties with research departments. An example of a system that started out on a mainframe and was converted to a microcomputer-based system follows.

A CODEN-based Authority File

A listing of journals received daily had been provided as a current awareness service in the Chemistry Library at Indiana University since before 1976. The list of journals was typed as issues arrived. The service allowed faculty and students to view the day's receipt of 10–15 journals quickly and in one place, and served to answer the often asked question of whether a particular issue had arrived. In 1982, the service was evaluated and a decision was made to update and automate the system. Requirements for the new system were that it reduce keying of data entry, provide accurate and consistent files and printouts, allow for easy update and maintenance, and be accessible online.

It was decided that a program based on key access through CODEN (originally described by Charles Bishop as "the combination of letters, numbers and symbols assigned to a document" for a journal abbreviation *(9)*) would best serve the purpose and satisfy requirements. An authority file (figure 1) was established which had two fields—journal title and CODEN. A secondary file of daily listings was built by entering the CODEN and issue information (volume, issue, and date).

Figure 1. The Mainframe-based Authority File

EXPEAM	EXPERIENTIA
FDCSB7	FARADAY DISCUSSIONS OF THE CHEMICAL SOCIETY
FEBLAL	FEBS LETTERS
FEPRA7	FEDERATION PROCEEDINGS
0378–3812	FLUID PHASE EQUILIBRIA
ZACFAU	FRESENIUS' ZEITSCHRIFT FUR ANALYTISCHE CHEMIE
0538–7590	GAS AND LIQUID CHROMATOGRAPHY ABSTRACTS
GCITA9	GAZZETTA CHIMICA ITALIANA
GLDBBS	GOLD BULLETIN
HCACAV	HELVETICA CHIMICA ACTA

The program matched the daily CODEN with that in the authority file and would then print a list and also make a file of the corresponding titles with the information entered in the issue field (figure 2). Known as CLARS (Chemistry Library Augmented Reporting System), the system was designed primarily for listing, and did not attempt to duplicate holdings information which was recorded elsewhere. Success was recognized in that time spent in typing was decreased considerably, accuracy and consistency of output was ensured, and the system allowed online access to the daily listing file.

Figure 2. Daily Input and Printed List Using CLARS

? jacsat vol. 256, no. 13, august 15, 1987

? nwscal vol. 102, no. 1412, may 31, 1987

JOURNAL OF THE AMERICAN CHEMICAL SOCIETY

VOL. 256, NO. 13, AUGUST 15, 1987

NEW SCIENTIST

VOL. 102, NO. 1412, MAY 31, 1987

The CODEN was chosen as the main access point and link between the two files because it was short—a six-character alphanumeric designator—and because it was a standard and unique code for each journal. Most chemistry journals use and display CODENs on their covers, in part because they have been extensively used by Chemical Abstracts Service. For the few journals which did not have a CODEN assigned to them, either a suitable CODEN-type abbreviation was found in CASSI, the Chemical Abstracts Service Source Index, or the ISSN number was used. Alternatively, a unique CODEN was simply devised in-house. With CASSI used as a source of reference, the CODEN file, served as an authority file. Because the daily file was matched against the CODEN file, the two files were cross-checked and authority control was achieved.

While the system was easy to use, maintenance was a little difficult because a knowledge of the operating system commands was needed. Other problems arose which sometimes created inconveniences. For the most part the system was not interactive—the daily CODENs and issue information were entered in batch online, and errors or a new CODEN not entered in the authority file were not noticed until after processing. Of greater frustration were the upgrades in the hardware or operating system which sometimes came with little advance notification and caused problems with using and maintaining the program.

Microcomputer Authority Control

During the time the listing system was used and maintained on the mainframe, the library acquired microcomputers. After further review, it was decided that a microcomputer-based system would be sought. The same requirements were held for this system as for the first one, with three additional demands: that the system would be easy to use, that the system would emulate as closely as possible the system used on the mainframe, and that electronic delivery of the listing (via e-mail) would be easily accomplished. The first requirement would ensure carryover of training to the new system, and the second would eliminate excess manipulation of the format of the list for transferring from one machine to another.

A readily available dbms package was chosen, PC-File/R, which fulfilled the requirements and was easy to learn and use. As a simple relational dbms program, PC-File/R allowed two or more files to be linked by fields and thus maintained the integrity of the system as an authority control system. In addition, the package allowed flexibility in printing—not only could the order of fields for print-out be manipulated, but the list could be printed to disk in a variety of formats, fulfilling the second requirement of the micro-based system by allowing for direct electronic transfer (figure 3).

Figure 3. Daily Input and Printed List Using PC-File/R

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jacsat

256

13

August 13, 1987

nwscal

102

1412

May 31, 1987

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SOCIETY
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NEW SCIENTIST
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As before, the CODEN file serves as the authority file and CASSI can be used as the source of authority for the journal title, if necessary. The CODEN file was downloaded directly from the old system and modified for use with the new system. This file now contains four fields: the CODEN field, two title fields, and a subject field that allows sorting of the file by subject. A fifth field could be added as a memo field to document authority decisions.

The second file allows for the input of date (provided automatically), CODEN, title (provided automatically by link), volume, issue/

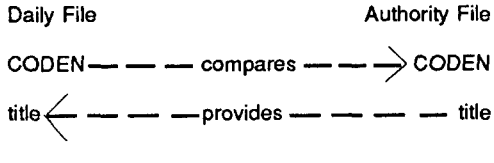
part number, and date of issue. The CODEN field in the second file is linked to the CODEN field in the authority file and, whenever a CODEN is entered for a daily list, the authority file is searched for a match. When a match is found, the title from the authority file is copied over to the second file. This authority control process detects whether there is a record for daily CODENs entered and indicates when no match is found.

Additional success has been gained with the microcomputer-based system and its related authority control. A further decrease in the amount of inputting has been realized and, because the software can be either menu- or command-driven, maintenance is much easier. Consistency and accuracy of files is maintained. The system is operated in much the same way as CLARS, so training has been minimal. File output has allowed electronic delivery of daily listings through local e-mail.

Relational Database Management Systems

It is in large part the inherent capabilities of a relational dbms which allow for an authority control system on the microcomputer level. A relational dbms allows more than one file to be open at a time and allows links or relations to be made between the files. When the link is a dependent one (as in the CODEN-based system using PC-File/R where the title field in the daily file depends on the primary file for its information), then the control is built in (figure 4). With more extensive relational dbms packages, like dBase III, a similar control is implicit in that relations are established when records are entered in a data table. *(10)*

Figure 4. Relational Link in the Authority Control System



The need for the automatic relations or links of a relational dbms for an authority control system has been dealt with at length by Malinconico. *(11)* He demonstrated how crucial it is for the implicit links, which are interpreted using the authority source, to be made explicit, "mechanical" links by the system or its software. The relational authority control system is seen to have three components: the implicit relationship which distinguishes between headings, the decision as to how that relationship is to be expressed, and the explicit relationship as manipulated and controlled in data administration. These closely resemble the components of a traditional authority control system as mentioned earlier.

Authority Control Applied to Other Databases

The example of a CODEN-based authority control file given above shows how such a system can be used to maintain accuracy and integrity of a database as well as reduce keying of input. This relatively simple system works well for the purpose it was designed, though it does not really attempt to distinguish headings or show the interrelationship between serials titles and CODENs. It could perhaps be expanded to do so or applied to an online serials database which includes holdings.

Other applications might be more suitable in requiring authority control. One example might be a database of bibliographic citations. Links can be made between journal title, author, and address fields and authority files to ensure integrity and define relationships. Currently such files are being maintained to some extent by scholars and researchers using such programs as ProCite, Refl1, etc. Databases of locally held theses or reports would also be targets needing authority control to some degree. Subject headings could be established in a thesaurus or authority file which could be linked to records to ensure consistency and accuracy for searching—a locally derived thesaurus could be derived if an appropriate one does not currently exist. Though such databases may not be considered large enough to warrant an extensive authority control system, they do need good data administration, which such a system provides.

An obvious database which does need such control is, of course, an online catalog. Recent expansions of microcomputer hardware which could allow up to 16 MB RAM, 250 MB drive capacity (and more), and 20 MHz processing time rival small- to medium-sized mainframes in their capacity to handle an online catalog. In fact, a newly announced microcomputer lacks only the capabilities to string together several drives and handle several times as many users to equal a mid-sized mainframe's capacity. It is at this level (hundreds and thousands of records) that an authority control system becomes essential.

Authority control, whether for small databases or large, cannot simply be imposed on a system, however. It takes planning and designing, as well as extended maintenance once it is implemented.

Relationships must be drawn, an authority source determined, interpretations made, and decisions documented prior to inputting the first record. Solutions for larger databases are only now being found for authority control in online catalogs. With foresight and knowledge from past experiences, perhaps problems with microcomputer-based authority control can be avoided.

Acknowledgments

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10. Brooks, op. cit., p. 5.

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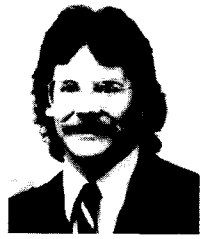

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Building Bridges:
LIS-IAIMS-BioSYNTHESIS

Naomi C. Broering

Bonnie Cannard

■ **Recent progress in library automation and networking is redefining the library's traditional role. The Georgetown University Medical Center Library, developer of the Library Information System (LIS), has been involved in automation for nearly a decade, and was one of the first institutions to receive an NLM IAIMS grant. The two projects have evolved together. New LIS modules, such as Document Delivery and the ALERTS ™/CURRENT CONTENTS ® Search System, have been designed in a reciprocal LIS/IAIMS environment. BioSYNTHESIS, a current IAIMS research project, is a prototype information tool for tomorrow.**

Introduction

THE age of the totally electronic medical library has arrived. It is common to find that academic medical center libraries are either fully automated, in the process of automating, or planning for system automation. Integrated systems are the logical choice because they accommodate a master bibliographic record and therefore facilitate work flow and information access. The integrated concept was introduced to medical libraries through the National Library of Medicine's (NLM) Integrated Library System (ILS) implemented at the Pentagon Army Library in 1979. *(1)*

Only a few years later in 1983, Jones and Marcum stated, "the focus of integrated systems has been on library systems that manipulate the bibliographic record. This concept must shift to one that involves the integration of many information systems, and with this shift in focus comes a new perspective to the role of the library." *(2)*

The electronic medical center library of today has emerged as a focal point for Integrated Academic Information Management Systems (IAIMS), a program spearheaded by the NLM for improvement of information flow in medical centers. Medical library databases are being recognized as an essential part of medical center information systems accessed through an institutional network system. The intent of IAIMS is to transmit biomedical information from various sources to users at the place and time it is needed. In the IAIMS environment of tomorrow, integration of information will occur at the system level,

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and the multiplicity of sources will be transparent to users. This approach to information management is also applicable to special libraries and is already evident in the corporate sector.

LIS: A Stepping Stone to IAIMS

The Georgetown project demonstrates how a decision to automate a library in 1979 transformed it into a high-tech IAIMS site by 1987. "Bringing the library to the user" was the rationale for the library automation project launched by the Dahlgren Memorial Library at the Georgetown University Medical Center in 1979. A decision was made to acquire an in-house dedicated minicomputer, abandon costly piecemeal automation projects, and design an integrated library information system. It was recognized that to achieve the project goal, library records needed to be coordinated into one computer system.

By 1981, version 1.0 of the Georgetown University™ Library Information System (LIS) was completed and ready for users. LIS met its objectives for improved patron information services, for more efficient and cost-effective technical processing activities, and for better information management. The components designed in LIS not only handle the basic functions normally included in an integrated system (cataloging, circulation, acquisitions, serials), but provide capabilities and services beyond these basic tasks (in-house bibliographic databases, networking, and word processing). The miniMEDLINE SYSTEM™, a self-service bibliographic module which allows users to execute searches of a portion of the NLM's MEDLINE file, was the first in-house database available through LIS.

The system has been continuously enhanced and expanded. Many of the enhancements are a result of suggestions from users. Recent components include AV Booking/Information Resources Management, Document Delivery, Reserves, a Multiple Library version, and ALERTS™/CURRENT CONTENTS® Search System.

As part of the IAIMS project, other components which integrate information, bibliographic, and gateway systems are also available to Georgetown users. They include:

Information Database
Physicians Data Query (PDQ)
Clinical Computer Information System
RECONSIDER (Micromedex-Drug System)

Bibliographic Databases
ALERTS™/CURRENT CONTENTS®/
THE miniMEDLINE SYSTEM

Internal Gateway
BioSYNTHESIS

External Gateway
Full Text System

System Features. The system components interact and share data (figure 1). Because of common push-button approaches and system similarity, once users learn to search the catalog, they also grasp the concept for using miniMEDLINE and ALERTS/CURRENT CONTENTS. There is a master bibliographic file for the library's holdings, which means transactions recorded in one component are instantaneously accessible by other components.

System Software/Hardware. LIS software is written in ANS MUMPS, a standard language designated by the American National Standards Institute (ANSI). LIS uses the MUMPS system software developed by InterSystems Corp. Standard MUMPS was selected because of its excellent text string handling capabilities, hierarchical file structure, and efficiency for interactive database applications. Goldstein substantiated the powerful, high-level capabilities of MUMPS, which enables system design and implementation in a cost-effective manner with minimal programmers. *(3)*

The system functions on Digital Equipment Corp. (DEC) series minicomputers which include VAX and PDP versions. The size of a library's files and anticipated number of simultaneous users determines the CPU and disk storage capacity required to operate the system.

Technical and Functional Features. Integration begins at the system level, where one master bibliographic record is used by all modules. Individual modules also share other

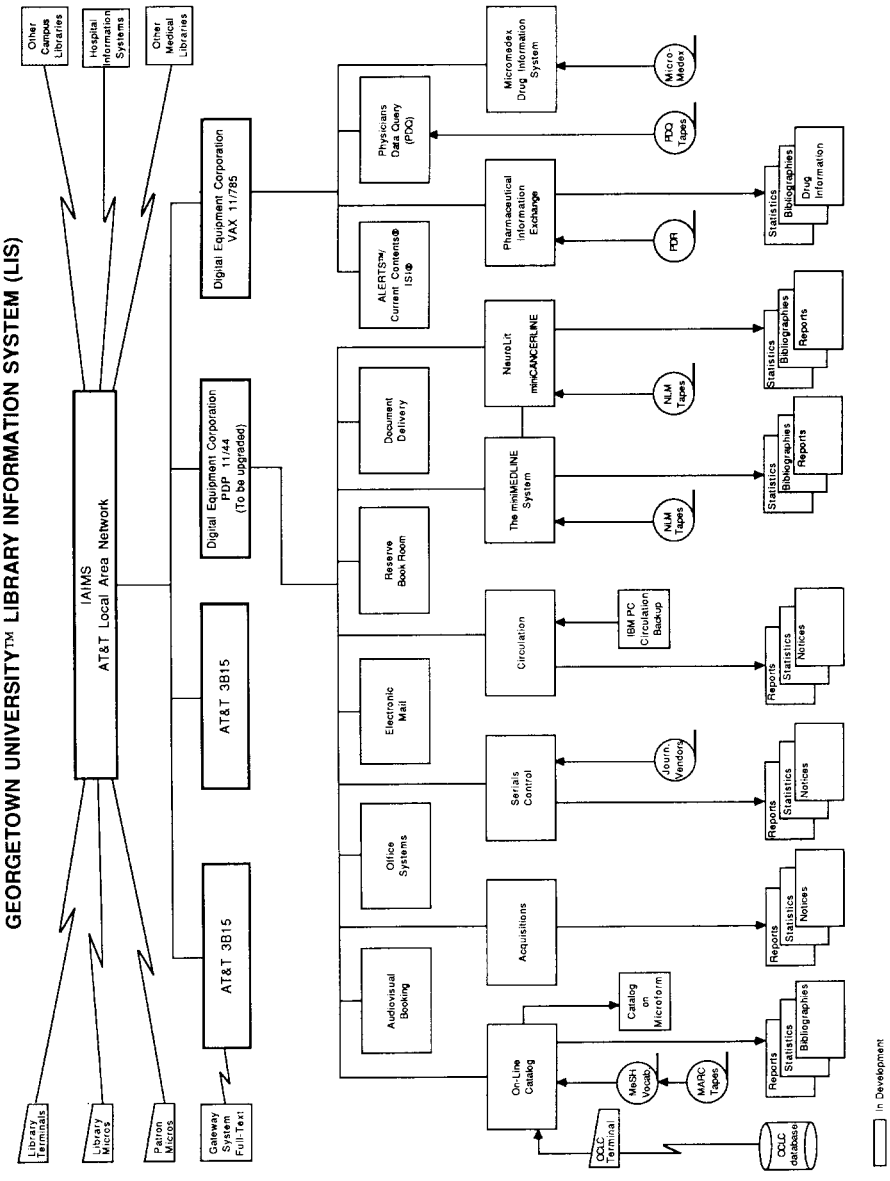

GEORGETOWN UNIVERSITY™ LIBRARY INFORMATION SYSTEM (LIS)
IAIMS
AT&T Local Area Network
Other Campus Libraries
Hospital Information Systems
Other Medical Libraries
Library Terminals
Library Micros
Patron Micros
Gateway System Full-Text
AT&T 3B15
AT&T 3B15
Digital Equipment Corporation PDP 11/44 (To be upgraded)
Digital Equipment Corporation VAX 11/785
Audiovisual Booking
Office Systems
Electronic Mail
Reserve Book Room
Document Delivery
ALERTS™/ Current Contents® ISI®
Physicians Data Query (PDQ)
Micromedex Drug Information System
Acquisitions
Serials Control
Circulation
IBM PC Circulation Back-up
NeuroLit miniCANCERLINE
The miniMEDLINE System
Pharmaceutical Information Exchange
PDR
PDQ Tapes
Micro-Medex
NLM Tapes
On-Line Catalog
Catalog on Microform
MeSH Vocab.
MARC Tapes
OCLC Terminal
OCLC database
Journ. Vendors
Reports
Statistics
Notices
Bibliographies
Drug Information
In Development

Figure 1.

major files, such as the patron and item files. The value of this design feature has been proven in the development of new components. Each new component utilizes the building blocks established by the previous modules. Differences in library policies are accommodated through a sophisticated parameter maintenance function. The catalog database includes a merger of monograph, journal, and audiovisual records searchable through dictionary and divided catalog options.

System integrity, standards, security, and man/machine interaction are high-priority features. LIS follows accepted standards for cataloging and serials control. It maintains MARC records, follows the NLM or LC classification, and incorporates AACR2 rules. Interface with the NLM Medical Subject Headings (Mesh) vocabulary assures standardization of subject headings for creation of the "user-friendly" catalog and miniMEDLINE modules.

Security and data protection are accomplished at the system, terminal, and user levels. Patron/user interaction is kept very simple and requires minimal instruction. Staff functions are more complex, but follow typical work flow and include help screens.

An Update of LIS Components

LIS has been previously reported in the literature, (4,5,6) but the components undergo sufficient enhancements yearly to warrant an update of its current functions. The system is currently operating under version 3.0, and new components have been added since LIS was last reported. One of the most significant additions to LIS is the multiple library version; it has a unique approach for a main library to add branches or other institutional libraries to its central computer system.

Overall, the features which LIS users favor have been maintained; it is menu driven with one entry point (figure 2). A conscious effort to use clean screen displays throughout the system continues, even as new components are added. In the Online Catalog, the miniMEDLINE SYSTEM and ALERTS/CURRENT CONTENTS users access information through two steps: 1) to enter their search term(s), and 2) to display or print selected references.

Doc—Dahlgren Online Catalog. The catalog contains records of the library's holdings, including books, journals, and audiovisuals. It provides users with a dictionary as well as a divided catalog for accessing holding information. The search points—which include keyword (Boolean AND), Author, Title, and Subject (Boolean OR)—have been enhanced extensively.

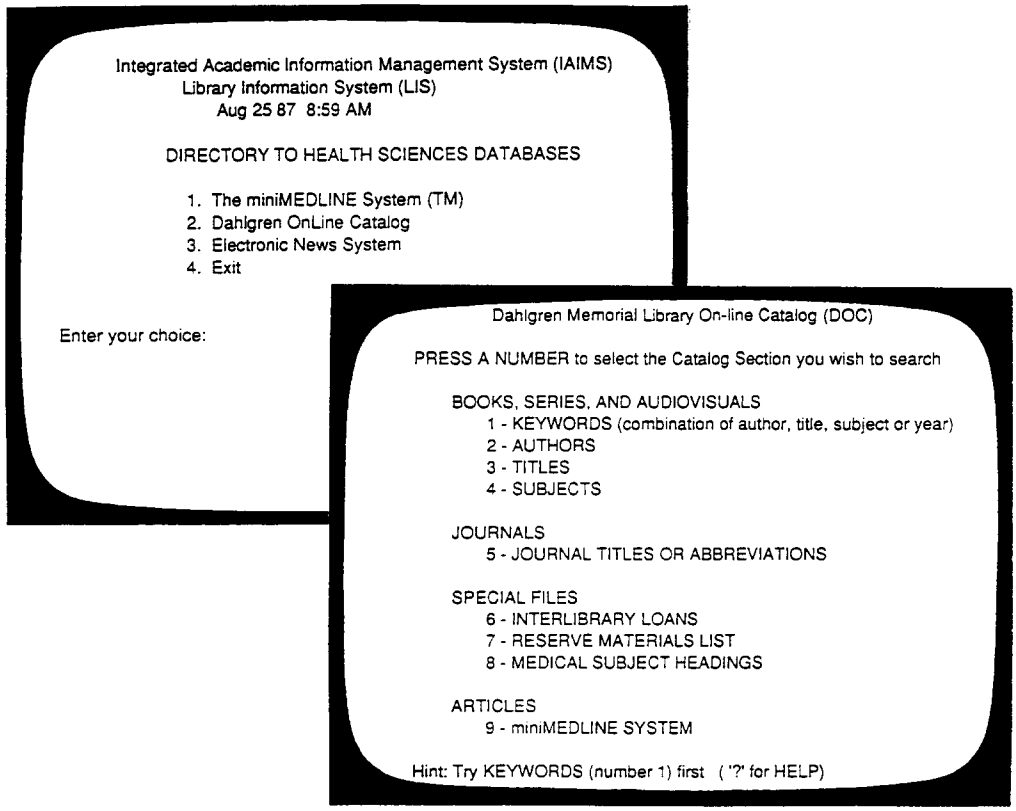
There are still three levels of record display, but users have more search capabilities. The first two are an abbreviated display and a full display that replicates the card catalog and contains the call number as well as the circulation status and location of the item (figure 3). The third is a detailed MARC record display used primarily by the cataloger for maintenance of the master bibliographic file. MARC records enter the system via magtape, online transfer from OCLC, or direct keyboard input. The record is then modified as needed and stored in LIS.

Circulation. All standard circulation functions such as checkin, checkout, renewals, holds, overdues, fine notices, patron notices, inquiry, and reports have been expanded. The major files are comprised of patron and item files (books, journals, or audiovisuals) with barcode cross reference. Management reports on patron use and extensive statistical gathering are included. An IBM PC based backup circulation system has been added to collect circulation-transaction data when the main system is down and to upload and file these transactions when the main system is again operational.

Acquisitions. This component is totally integrated with LIS; it interfaces with the circulation system for the item file and with the public online catalog so patrons are immediately aware of on-order or in-process items. It also provides a single point for pre-order searching by staff. The acquisitions module contains files for regular and standing orders, vendors, and fiscal transactions. It produces order, claim, cancel, and return forms and provides fiscal reports and statistical data.

Serials. The serials component is MARC based. It allows the library to maintain journal bibliographic records that follow national standards. There is also a capability to output holdings data for the NLM DOCLINE database. A major advantage of a fully integrated serials control system is that, the instant new

Figure 2. IAIMS Directory to the Health Sciences Databases and LIS Menu for the Online Catalog



issues are received and checked in, the information is immediately accessible to the public in the online catalog. Other special features of the serials component include subject searching, claiming, binding control, routing, and capabilities to load subscription data from vendor invoice tapes (figure 4).

Networking/Document Delivery. The networking features allow dial-up to the system from remote sites. As an outgrowth of a small interlibrary loan request function developed for local use, a full-service document delivery service, which allows both individual users and other libraries to request loans or photocopies, is currently under development and testing. Library users may also suggest purchases.

AV Booking/Information Resources Management. This new component was designed to meet the special needs of learning resources and information centers. It includes functions for advanced scheduling of audiovisual media and equipment, microcomputer software and hardware, and reservation of viewing rooms, computer classrooms, and conference rooms.

Reserves. This module began as a simple list of course reading assignments and has now developed into a full-fledged component. Reserves includes special capabilities for handling of items, such as reprints, which are not included in the master bibliographic file. Patrons may search reserves through the main catalog menu by course name, course number, instructor, author, or title. Reserve lending is handled through the circulation module.

Office Automation (Word Processing). The office automation system includes a word processing feature that is useful for preparing major documents where more than one individual participates in writing the manuscript. LIS help screens are also maintained in the word processor. This allows individual libraries to edit the screens if desired.

Spanning the Bridge

The miniMEDLINE SYSTEM. This user-friendly bibliographic search system provides access to a subset of the NLM MEDLINE file. It is a collection-oriented, in-house system designed for use by students, residents, researchers, and faculty seeking basic information in the core journal literature for educational and patient care needs. Once a small file, today the database contains over 200,000 citations, including abstracts, from nearly 500 journals covering a period from 1983 to the present. Georgetown subscribes to the NLM MEDLINE tapes and converts the records to the miniMEDLINE format. The file is updated monthly.

The enhanced version includes capabilities to search a growing database rapidly, to retrieve abstracts, and to incorporate the annually revised Mesh tapes released by NLM. As part of the IAIMS project, new capabilities are continually added. The new features are transparent to users, which means they benefit from more complex system capabilities without needing to learn new search routines.

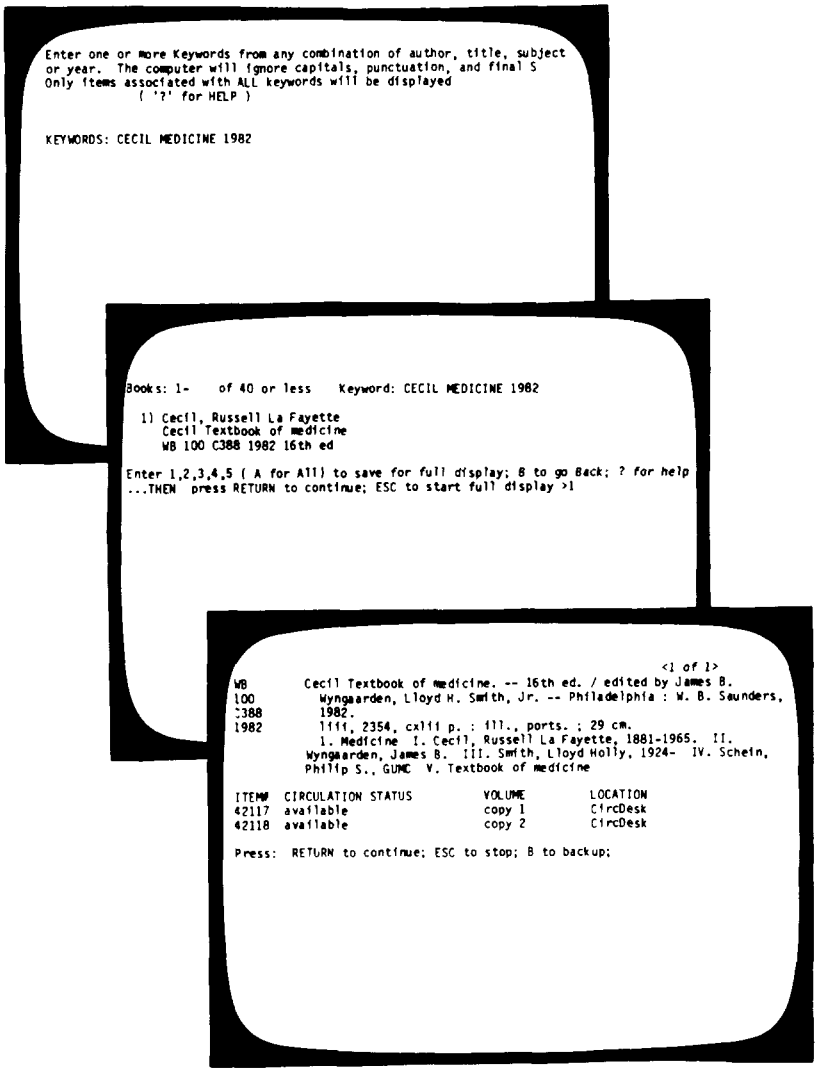
Users can still conduct their searches through a menu with nine options. There are three search steps, which include entry of a search term or terms (author, title word, journal, or subject), display of references or abstracts, and printing. The selected citations are printed in alphabetical order by journal title. The last options allow users to begin new searches or to quit searching (figure 5).

The miniMEDLINE SYSTEM is clearly the "front runner" in popularity with users. Since 1982, when the system became operational, the data-gathering capabilities have enabled the library to monitor system use and user behavior patterns. Experiencing almost overnight success in the first two years (1982–1984), miniMEDLINE clocked almost 4,000 hours and over 28,000 searches. *(7)* Data show that in the most recent two-year period (1985–1987), user connect hours doubled, increasing to 9,362 hours and to over 46,000 searches (figure 6).

The degree of sophistication exhibited in use of miniMEDLINE varies enormously. Users generally refine their searches quickly and print only those references they need. The average search time is 12 minutes and the average printed references are 6 citations. Novice users feel more comfortable with single-subject searches, although the more experienced users have learned to use Boolean AND/OR logic.

Because miniMEDLINE is maintained in the library's dedicated minicomputers, it is available free to registered Georgetown library borrowers, practically 24 hours a day for

Figure 3. The Public Online Catalog Has Two Levels of Screen Displays



Levels of screen displays include 1) an abbreviated three-line display and 2) a full display with circulation status.

Figure 4. The Menu Approach of the Serials Control Module Serves as a Gateway to Specific Operational Functions

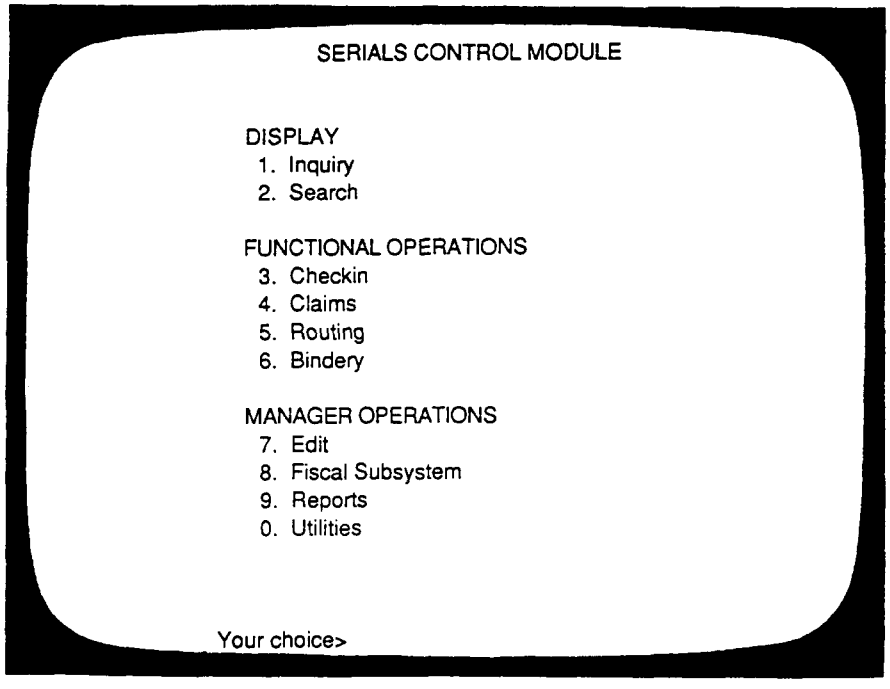
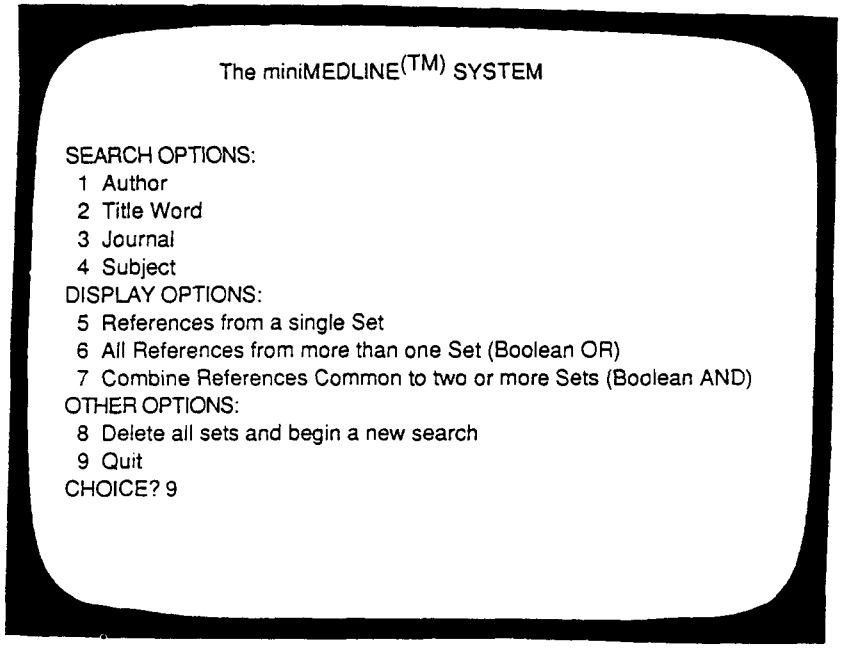


Figure 5. Menu for the miniMEDLINE SYSTEM



users with home computers and all hours the library is open through in-house terminals. There are about 200 individuals who dial-up the system. There are also access sites throughout the medical center—in each of the schools (Nursing, Medicine, Dentistry, and the Graduate School in Basic Sciences) and in the University Hospital. Expanded remote access capabilities are being implemented through the IAIMS-sponsored Local Area Network (LAN).

The current miniMEDLINE database at Georgetown consumes over 900 megabytes of disk storage on a DEC VAX 785. For the IAIMS project, an abbreviated backup system is also available. Each year's file requires approximately 200 megabytes of storage depending on the number of references and abstracts in the database. The database is limited to three years to maximize retrieval speed and ease of searching.

ALERTS/CURRENT CONTENTS Search System. This component is based on a subset of the Institute for Scientific Information's (ISI) CURRENT CONTENTS database, which contains an index of the latest articles in scientific subjects published in journals. The ALERTS interface software is a user-friendly, self-service bibliographic search system with retrieval routines similar to those of miniMEDLINE. It provides the ability to store a search strategy for use at a later date. Search access is by author, title word, or journal. It displays single or combined sets with Boolean operators and automatically prints lists of references selected by the user (figure 7).

CURRENT CONTENTS has five sections: Biology and Environmental Sciences, Chemical and Earth Sciences, Clinical Practice, Life Sciences, and Technology and Applied Science. The CURRENT CONTENTS sections currently used by Georgetown are Clinical Sciences and Life Sciences. The system is undergoing testing and evaluation, and is gaining popularity with basic and clinical science researchers of the Medical Center.

Multiple Library Version. This version enables libraries to form a network to share a computer system. Affiliated libraries selected for inclusion in the network share a master bibliographic file, while maintaining their own patron and item files. With this approach users can easily search the catalog of each affiliated or branch library and also the union catalog of the libraries participating in the network. A distributed database system to enable libraries to form a network having more than one computer is a potential future enhancement. This would allow users to search catalogs residing on networked computers.

LIS At Other Libraries. What began as a system designed to meet the needs of the Dahlgren Library at Georgetown has been shared with other institutions since 1982. Today over 30 libraries use LIS or a portion of it such as miniMEDLINE (Table 1).

TABLE 1. Health Sciences Libraries Using LIS

Cornell Univ. Medical College
- Memorial Sloan Kettering
- Payne Whitney Psychiatric Clinic
- Hospital for Special Surgery

Eastern Virginia Medical School
Albert Einstein School of Medicine
- and Montifiore Hospital

Catherine McAuley Health Center
George Washington Univ. (miniMEDLINE)
Hahnemann Univ.
Medical College of Georgia
Medical Univ. of South Carolina
Morehouse School of Medicine
Ortho Pharmaceutical Corporation
Rush-Presbyterian-St. Luke's M.C.
St. John's Medical Center—Tulsa
SUNY, Buffalo (miniMEDLINE)
Texas Coll. of Osteopathic Medicine
Texas Tech Univ. Health Center
- Lubbock, El Paso
- Odessa and Amarillo

Thomas Jefferson Univ.
Univ. of Alabama at Birmingham
Univ. of Nebraska
Univ. of South Carolina
Univ. of Tennesse Medical Units
Univ. of Texas at San Antonio
- Tyler Medical Center
- Audie Murphy VA Hospital

Univ. of Medicine and Dentistry
- of New Jersey (4 campuses)

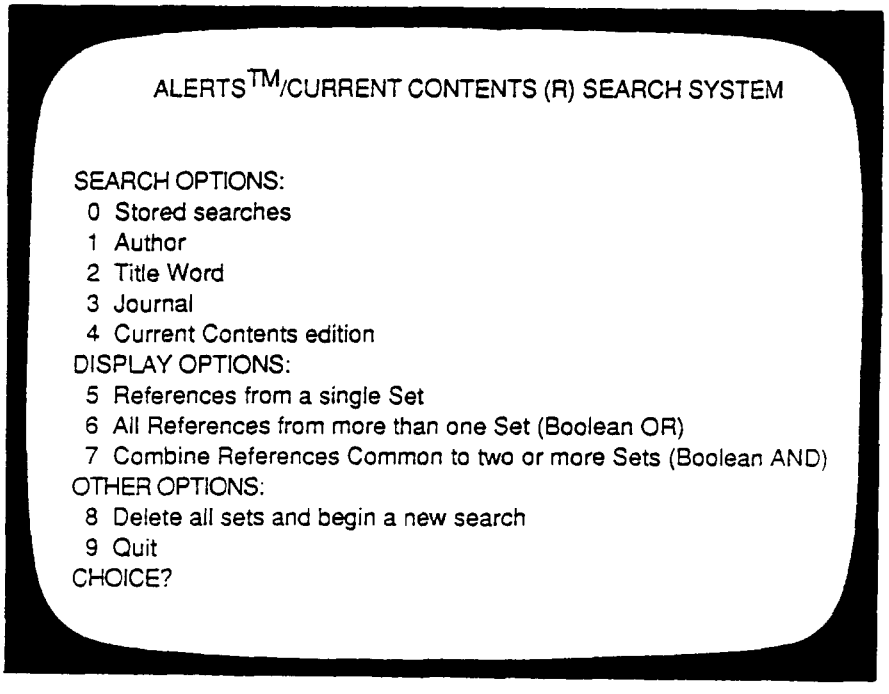
Univ. of Virginia
Upjohn Corp. (14 branch libraries)
Yale Univ. Med. Coll. (miniMEDLINE)

Figure 6. The miniMEDLINE SYSTEM Statistical Data

SYSTEM USE	8/82-8/83	7/83-6/84	2-YR. TOTAL	7/85-6/86	7/86-6/87	2-YR. TOTAL
1. Searches	11,274	16,897	28,171	23,140	22,974*	46,114
2. Users (Students, residents, faculty)	1,608	2,311	3,919	3,064	2,967	6,031
3. Time Spent (hours)	554	3,518	4,072	4,187	5,175	9,362
Total Time (minutes)	33,283	211,098	244,381	251,228	310,520	561,748
Average Time (minutes)	3	12	9	11	13	12
4. References Printed	47,207	99,662	146,069	128,625	144,102	272,727
5. Average References Displayed	25	42	34	47	53	50
Average References Printed	4	6	5	6	6	6

*No activity 69 days during computer room renovation

Figure 7.



LIS and IAIMS: Bridging the Gap

Having LIS in place has been advantageous to the Georgetown IAIMS project. LIS serves as a hub for IAIMS activities and has inspired development of projects that have led to recent grant awards. A notable outcome of the strategic planning contract award from the NLM was the book entitled *Strategic Planning: IAIMS at Georgetown University Medical Center (8)* As outlined in this work, new LIS components will be linked to the IAIMS network. The two systems (LIS and IAIMS) are becoming almost synonymous. The special IAIMS databases, mentioned previously in this paper, harmoniously link to LIS databases. Together they are evolving into a useful, decision-support system for medical center students, researchers, and practitioners seeking information for improved patient care.

BioSYNTHESIS: Crossing the Bridge

The latest development of the IAIMS project is BioSYNTHESIS, an intelligent retrieval system. It is an interface system that can retrieve information based on disparate computer systems. *(9)* Design features of BioSYNTHESIS include a "robot-like" mechanism that responds to a user query for bibliographic or factual information by searching the IAIMS databases on whatever computer they may reside. The IAIMS project uses heterogeneous computers: DEC and AT&T minicomputers.

BioSYNTHESIS finds the most appropriate database to retrieve the requested information. The ultimate features of BioSYNTHESIS are, for example, to automatically search protocols on PDQ, also search miniMEDLINE for articles and abstracts, and, through a gateway, transmit a message to an external vendor database for a full-text article. The user only needs to input the search question and BioSYNTHESIS becomes the knowledge user which travels through the databases seeking the appropriate response.

Design work on BioSYNTHESIS began in July 1986. By April 1987, a skeletal model was demonstrated to the IAIMS executive board members at Georgetown. Architectural approaches have been developed as have software portions for a prototype. This work will continue as a multi-year technical research effort of the proposed Georgetown full IAIMS project.

Conclusion

Overall, the LIS and IAIMS projects have resulted in numerous publications and presentations involving Georgetown. Over 200 national and international health professionals visit the library annually to see LIS and discuss their plans for IAIMS. Considerable time and effort is devoted to sharing knowledge, so others can benefit from Georgetown's experience, and to monitoring and modifying the system to achieve the greatest possible excellence. The activity around the library is extensive, often more than can be handled comfortably, but it is also exciting and personally rewarding.

Acknowledgments

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Japanese-style Management: A Bibliometric Study

Sachie Noguchi

■ **Unlike most contemporary sciences in Japan, the subject of "Japanese-style management" is special; it evolved out of Japanese standard management practices and was recognized and praised outside of Japan. This study, applying the bibliometric method, examines the characteristics of the literature on "Japanese-style management" in Western languages and investigates Japanese contributions to the development of this subject. It was found that the literature is a little more scattered than Bradford's law predicts, and that the transfer of information about "Japanese-style management" is carried out more by Japanese authors writing in Western languages than by publications issued in Japan.**

Introduction

The concept of "Japanese-style management" is unique in several ways. Unlike most contemporary sciences in Japan, this concept has its origin there rather than in the West. It evolved out of standard Japanese management practices. Yet "Japanese-style management" received little acknowledgment in Japan until it was recognized and praised outside. It is also noteworthy in that it has become popular outside of Japan in spite of the language barrier, which often prevents the flow of information from the country.

Bibliometrics is the quantitative analysis of the various features of some body of literature. It is used to identify the pattern of such properties as publication, authorship, and citations of the literature in the hope that such regularities can give an insight into the dynamics of the area under consideration. *(1)* It can be used, for example, to study features of the literature *on* some subject (as identified in some type of bibliography) or of the literature cited by writers on some subject. Analyses of bibliographical data, as Lawani *(2)* discussed, enable us to describe such characteristics as core authors, countries of publications, and productive journals of the literature produced in the field, while analyses of citation data give insight into such characteristics as age of cited publication, languages, and who cites whom of the literature cited, and presumably used, by researchers in the field.

Bradford's law of scattering is an important bibliometric phenomenon that relates to the proportional distribution of articles on a given subject within the total number of journals publishing them. *(3)*

> If scientific journals are arranged in order of decreasing productivity of articles on a given subject, they may be divided into a nucleus of periodicals more particularly devoted to the

subject, and several groups or zones containing the same number of articles as the nucleus. Where the number of periodicals in the nucleus and succeeding zones will be 1:a:a2 ...*(4)*

In this form, "1" represents the number of journals in the nucleus and "a" is a multiplier.

The present study used bibliometric methods to determine how much Japanese authors and Japanese sources have contributed to Western literature on "Japanese-style management," as well as to study how this literature was scattered over the journals.

Bibliometric studies pertaining to the work of Japanese authors have been published in the past. For example, Mushakoji *(5)* studied the *Journal of Economics* (*Keizaigaku Ronshu*), in the period 1931 to 1944, to identify such nature of materials as types (books, journals, etc.), countries, and languages of publications; median citation age used by Japanese economists; and to show what Japanese economists regarded as the important works in economics in pre- and mid-war Japan. Haigh *(6)* also studied the Western influence on the geographical publications of Japan by citation analysis of the *Geographical Review of Japan* and six Japanese geographical serials written in Western languages but published in Japan. Both of these studies dealt with foreign sources in Japanese journals, but not with Japanese sources in Western language journals.

Otsu's study *(7)* examined the characteristics of cited Japanese publications selected from the *Science Citation Index* and the *Social Science Citation Index*, and compared the literature in these two areas by such characteristics as publication type, type of institution, contributing Japanese as well as non-Japanese journals, and language of publication.

Methodology

Journal articles on "Japanese-style management," published from 1971 to 1984, were drawn from the ABI/INFORM database; a few other sources, such as *Social Science Citation Index*, were used to supplement this database. No clear-cut definition of "Japanese-style management" exists. This management style is characterized by a complex of factors, such as life-time employment; consensual decision making; collective responsibility; slow evaluation and promotion; an implicit and informal control; nonspecialized career path; and holistic concern. For this study, articles were selected as relevant if their contents discussed all or several of these multiple factors; articles which treated only a single factor, e.g., "life-time employment," were not selected.

The bibliographic items found in this way were referred to as "first- level literature" *(8)* on "Japanese-style management." They were used to determine the general characteristics of the publications on the subject, to see whether the Bradford's law of scattering applied to these publications, to examine how interest in the subject spread from just a few persons to a much wider population, and to determine how many Japanese sources and authors of Japanese descent contribute to the literature. The literature was sorted by published source journal, country of publication, year of publication, ethnic origin of author, and with/without reference.

The "second-level literature" is defined as the literature referred (i.e., citation) by the first-level literature. It was used to investigate the nature of the source materials used by authors in the subject field. The citations were sorted by type of publication, age, country of publication, language, and ethnic origin of the author.

Results: First Level

The search identified 336 articles from 140 journals (periodicals) published in the United States, United Kingdom, Japan, Canada, Germany, the Netherlands, and India in the period 1971 to 1984. Japan itself contributed only four journals and 34 articles: about 3% of the journals and about 15% of the articles.

Table 1 indicates the number of articles published by country and publishing year. The number of published articles on "Japanese-style management" increased substantially in 1981, peaked in 1982 and 1983, and showed a decline in 1984. That articles on "Japanese-style management" in Japanese journals increased in 1984 reflects the fact that the subject received little attention in Japan until it was recognized and praised outside of Japan.

Table 1. Number of Articles by Country and Publishing Year

Year	Country Total	United States	United Kingdom	Japan	Canada	Germany	Netherlands	India
Total	336	245	41	34	9	5	1	1
1984	55	37	9	8	0	0	0	1
1983	75	51	12	6	5	1	0	0
1982	76	60	10	3	2	1	0	0
1981	52	41	4	5	1	1	0	0
1980	18	12	1	5	0	0	0	0
1979	13	9	0	2	1	1	0	0
1978	17	13	0	2	0	1	1	0
1977	7	6	1	0	0	0	0	0
1976	4	2	2	0	0	0	0	0
1975	5	3	1	1	0	0	0	0
1974	6	5	0	1	0	0	0	0
1973	5	4	0	1	0	0	0	0
1972	2	1	1	0	0	0	0	0
1971	1	1	0	0	0	0	0	0

Table 2 shows that the 336 articles are scattered over 140 different journals. The journals are arranged in descending order of productivity (the most productive journal published 13 papers, the next most productive published 12, and so on to the bottom of the list which shows 76 journals contributing one article each). Following Bradford's law, the data can be divided into three zones, as follows:

zone 1: 111 articles in 13 periodicals

zone 2: 113 articles in 33 periodicals

zone 3: 112 articles in 94 periodicals

Table 2. Bradford Distribution

A Number of Journals	B Number of Articles	AxB
1	13	13
1	12	12
1	11	11
1	10	10
2	9	18
1	8	8
3	7	21
5	6	30
4	5	20
6	4	24
15	3	45
24	2	48
76	1	76
140		336

The multiplier between zone 1 and zone 2 is approximately 2.5, and the multiplier between zone 2 and zone 3 is about 2.8. The literature is a little more scattered than Bradford's law predicts. Approximately one-third of the literature is produced by the 13 journals of zone 1, which constitute only about 9% of the contributed journals.

Table 3 shows the 15 journals which contributed the most articles. The remaining articles are scattered over 49 journals. Seventy-six journals contributed one article each to this topic in the 14 years studied.

In all, 407 authors *(9)* contributed to the 336 articles. William Ouchi contributed eight times (2% of total); Vladimir Pucik, five times (1.2%); and Masumi Tsuda, three times (1%). Ten authors contributed three times each, 31 authors twice each (15.23%), and 298 authors wrote only once on the subject (73.22%). Eighty-three articles (25%) were identified as written by 61 authors (15%) who have Japanese ethnic backgrounds based on their surnames (regardless of other background such as nationality and education). For the purpose of this study, these authors are defined as "Japanese authors."

Of the 336 articles, only 156, about 46%, contained bibliographical references to sources used by the authors.

Results: Second Level

The 156 articles yielded 2,678 citations to 1,836 items. The types of publications which these citations were dispersed to include monographs, journal articles, government documents, research reports, newspapers, serials, dissertations, conference papers, unpublished papers, publications of international organizations, personal communications, and others. Table 4 shows total citations and Japanese source citations by type of publication. Monographs and journal articles are the two major types: monographs and parts of monographs account for 47.7% of the literature cited and journal articles contribute about 41%.

Table 3. Journals Contributing Most Articles

Order	Title of Journals	No. of Articles
1	*Columbia Journal of World Business*	13
2	*International Management*	12
3	*Management Japan*	11
4	*Harvard Business Review*	10
5	*Industry Week*	9
6	*Training & Development Journal*	9
7	*Academy of Management Review*	8
8	*California Management Review*	7
9	*Japanese Economic Studies*	7
10	*Management World*	7
11	*Advanced Management Journal*	6
12	*Fortune*	6
13	*Industrial Management*	6
14	*Personnel Administrator*	6
15	*Technology Review*	6

Table 4. Citations by Type of Publication

Type of Source Cited	Total Number of Citations	Number of Citations to Japanese Sources	% of Citations to Japanese Sources	Total Number of Items Cited	Number of Japanese Items Cited	% of Total Items That Are Japanese
Total	2678	304	11.4	1275	227	17.8
Monograph	1111	146	13.1	614	114	18.6
Journal Article	1080	80	7.4	285	41	14.4
Part of Monograph	164	22	13.4	141	22	15.6
Newspaper	78	12	15.4	17	6	35.3
Government Document	71	32	45.1	58	32	55.2
Research Report	60	10	16.7	57	10	17.5
Conference Paper	47	0	0	43	0	0
Dissertation	19	0	0	15	0	0
Unpublished Paper	16	0	0	16	0	0
Personal Communication	9	0	0	9	0	0
Serial	9	2	22.2	9	2	22.2
Pub. of Intern'l Org.	8	0	0	5	0	0
Others	6	0	0	6	0	0

Publication years of cited materials range from 1984 back to 1792. Table 5 shows the citations by year and type of publication. The year most cited was 1981, which was an important year for the development of "Japanese-style management": Two of the most cited books, W. G. Ouchi's *Theory Z (10)* and R. T. Pascale's *The Art of Japanese Management*, (11) were published, and several of the most cited journal articles, including R. H. Hays' "Why Japanese Factories Work," *(12)* S. Wheelwright's "Japan—Where Operations are Really Strategic," *(13)* N. G. Hatvany and V. Pucik's "Japanese Management Practices and Productivity," *(14)* and C. G. Burck's "Working Smarter," *(15)* also appeared in this year.

It seems that a television program entitled "If Japan Can, Why Can't We?," produced by L. Dobyns and televised as the "NBC White Paper" in June 1980, stimulated awareness about "Japanese-style management" in the United States. This may help to explain the significant increase in the publications on the subject in the period 1981 to 1983.

Some 2,592 of the sources cited (about 97%) can be identified by country of publication: 1961 (about 73%) were published in the United States, 304 (about 11%) in Japan, 186 (about 7%) in the United Kingdom, 30 (about 1%) in Belgium, 20 (about 1%) in the Netherlands, and the remaining (about 4%) in Germany, Canada, France, Hong Kong, Switzerland, Australia, Italy, Denmark, Sri Lanka,

Table 5. Citations by Year and Type of Publication

Year	Total	Monograph	Part	Periodicals	Newspaper	Gov.Doc.	Res.Pape.	Conf.	Dissert.	Unpub.	Personal	Inter	Serials	Others
	2678	1111	164	1080	78	71	60	47	19	16	9	8	9	6
1984	18	4	2	6	1	0	2	1	1	0	0	0	1	0
1983	122	22	13	55	8	3	6	10	0	1	3	0	1	0
1982	169	54	4	74	18	1	5	3	4	1	2	0	2	1
1981	401	142	5	199	21	4	6	12	3	3	2	2	1	1
1980	203	49	15	110	15	2	3	3	0	4		1	0	1
1979	218	102	9	90	6	3	5	0	1	0		1	1	0
1978	187	32	6	133	4	4	6	0	2	0		0	0	0
1977	118	27	9	61	3	5	3	4	2	0		2	1	1
1976	104	50	14	29	2	2	3	2	2	0		0	0	
1975	121	45	26	40		1	2	3	0	3		1	0	
1974	93	29	8	46		6	3	0	1	0		0	0	
1973	136	80	5	33		8	4	3	0	2		1	0	
1972	59	20	1	28		3	4	0	2	1			0	
1971	109	43	3	55		3	3	1	0	0			1	
1970	86	51	3	26		3	1	1	1	0				
1969	53	29	9	12		3	0	0		0				
1968	73	56	4	9		2	2	0		0				
1967	68	46	4	15		2	0	1		0				
1966	39	25	2	9		1	1	0		1				
1965	41	15	9	12		3	0	2						
1964	24	18	2	3		1	0	0						
1963	25	17	0	4		4	0	0						
1962	25	18	0	6		1	0	0						
1961	20	10	1	7		1	1	0						
1960	12	10	0	1		1		0						
1959	17	9	3	4		1		0						
1958	31	29	0	2				0						
1957	3	3	0	0				0						
1956	7	5	0	2				0						
1955	2	1	0	1				0						
1954	7	7	0	0				0						
1953	4	2	0	2				0						
1952	4	4	0	0				0						
1951	9	5	3	1				0						
1950	8	6	0	2				0						
1949	3	1	0	1				1						
1948	2	2	0	0										
1947	4	3	1	0										
1946	11	10	0	1										
1945	5	5	0	0										
1944	1	1	0	0										
1943	0	0	0	0										
1942	0	0	0	0										
1941	2	2	0	0										
1940	2	2	0	0										
1939	2	2	0	0										
1938	6	5	0	1										
1937	0	0	0											
1936	1	1	0											
1935	0	0	0											
1934	4	2	2											
1933	3	3												
1930	1	1												
1911	1	1												
1729	1	1												
Unknown	11	4	1	0	0	3	0	0	0	0	0	0	1	2

India, Singapore, Sweden, Malaysia, and Lebanon.

The highest cited author is W. G. Ouchi (117 citations), followed by R. T. Pascale (62), R. E. Cole (57), and P. F. Drucker (50). Two additional authors are each cited more than 40 times. The 424 authors who were cited more than once each (about 32% of the cited authors) account for 2,124 citations (about 70% of total citations).

Among these cited authors, 221 (16.6%) are identified as Japanese authors. The 685 citations to their works represent about 22% of the total citations by author.

Conclusions

The purpose of this study was threefold: 1) to determine Japanese contributions to the literature on this subject in Western languages; 2) to identify whether there are nuclear journals for a new and specialized subject like "Japanese-style management" as Bradford's law indicates; and 3) to investigate how the flow of information from Japan to overseas countries took place.

Contributions of Japanese sources to the first-level literature during the period of 1971 to 1984 are minor; they contributed only about 3% of the journals and 15% of the total articles. About 15% of all the authors, however, are identified as Japanese authors, and they contributed 25% of all the articles.

The second-level literature revealed a somewhat higher amount of contribution by Japanese sources: 304 citations were identified as published in Japan, which consists of about 11% of the total citations; 221 are identified as Japanese authors of 685 citations—they are 16.6% of the total cited authors and their works represent about 22% of the total citations.

Japanese sources, however, are cited much less than Western sources: 304 citations to 227 Japanese publications account for only 11% of all the citations and 17.8% of total publications. Among the 2,678 citations, only 11 (.44%) Japanese language items are cited by non-Japanese authors. When Japanese language items are cited at all, they tend to be cited by Japanese authors.

Compared with the total citations, Japanese citations consist of a higher percentage (53.3%) of monographs and a lower percentage (26.3%) of journal articles. About 45% of all the citations to government publications are accounted for by Japanese government publications.

The results of this study clearly indicate that Japanese language materials were little used by non-Japanese authors and suggest that language is certainly an impediment to the use of Japanese materials. The transfer of information about "Japanese-style management" overseas is carried out more by Japanese authors writing in Western journals than by publications issued in Japan itself.

The mechanism of the flow of information from Japan to abroad had been studied little before. Yet Japanese achievements in business, industry, and technology have alerted Western countries to the necessity of monitoring Japanese information more closely and efficiently. This present study clarifies some insights into Japanese information usage for the development of literature on "Japanese-style management" and suggests the impediments of use and transfer of Japanese information. It would seem useful to extend a similar study in some other fields to clarify further the use and transfer of Japanese information.

Acknowledgments

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A Mathematical Approach to Branch Library Operations:
A Case Study

Joyce Taylor

Tacey Viegas

■ **Eight years of patronage and circulation data were collected at the School of Education at the University of Mississippi to portray the performance of their branch library. Using analyses of multiple regression and double exponential elimination, the authors concluded that patronage at the library was highly dependent on the use of reserve and text material. The addition of a juvenile section in 1984 forecasted an increase in circulation which would warrant an improvement and growth in the collection.**

Introduction

THE need for collecting statistics has been cited in a few articles, in order to measure a library's performance and to point out a few changes, if any, in the existing system. The MITRE corporation, a federal research center, has been conducting such studies. One of their publications lists statistical applications in library usage, staff size and productivity ratio, information costs, and different levels of service. *(1)* Another approach, the Randall's Rationalized Ratios, calculates ratios among the collection size, acquisitions, and loan and borrower counts. These ratios were used to explain guidelines to improve industrial library operations. *(2)*

The Association of Research Libraries (ARL) published their policies and procedures for reviewing and evaluating branch libraries. ARL states that the analysis of data of a unit's independent collection is essential in order to

improve, maintain, or close a branch library. *(3)*

The School of Education's branch library at the University of Mississippi had been keeping records since its initiation in July 1977. It employed a full-time librarian, a part-time librarian, and 2 of 12 student assistants at all times. A collection of about 8,000 was initially available to faculty and students, of which about 5,600 were regular text books, 300 recent reserve periodicals, and 100 audio-visuals. An extension was included in fall 1984 to house about 7,000 juvenile books. The last inventory listed a total collection of about 19,000, with 8,000 books in the juvenile section.

Patronage and circulation data were collected in order to answer a few questions every three to five years:

a) What were the strengths and weaknesses of the library in terms of collection?
b) Was the library providing adequate student services?
c) Did the library support research requirements?
d) Was the branch library a financial burden to the main library system?

Method

Two statistical packages, Biomedical Data Package (BMDP) and Statistical Analysis System (SAS), were used to conduct multiple regression analysis. The data were classified as:

1) Independent variables—Patronage (P) and Circulation (C)
2) Dependent variables—Term (T), Month (M), and Circulation (C)

The variable T was assigned a value of 4 for Summer, 3 for Spring, 2 for Fall, and 1 for the Semester Break. The variable M received a value of 1 for January, 2 for February, 3 for March, etc. The AMDAHL 470–V8 computer was utilized to calculate the coefficients of each variable and their correlation.

Forecasting measures were obtained by "Double Exponential Smoothing." *(4,5,6)* To study the pattern of the data, a plot of Count versus Months was constructed (figure 1). A histogram (figure 2) was drawn to depict the circulation in the last 3 years.

The double exponential elimination analysis employs two alpha values, alpha 1 and alpha 2, which range from 0.1 to 0.5. The best values to suit the data had to be determined by trial and error: The calculated counts of Patronage and Circulation were compared with the actual observed counts of data collected between 1980 and 1985. The best alpha values were then used to forecast for 1986–87. A BASIC program (figure 3) was designed for this analysis that would forecast for the Summer Juvenile data (see steps F(4) and F(5) on lines 100 and 180). The alpha values used were alpha 1 = 0.3 and alpha 2 = 0.4 (see lines 15 and 16).

This computer program was used to predict the patronage and circulation for the academic year 1986 to 1987. Patronage scores between the years 1981/82 to 1985/86 were used. The circulation count was divided into the reserve, text, and juvenile sections, and the individual scores between the years 1984/85 to 1985/86 were used.

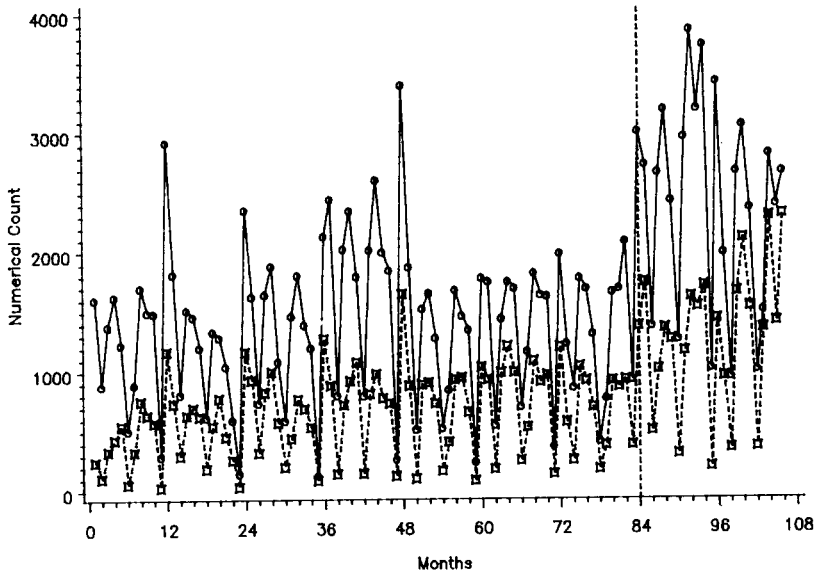
Results

The results of the Multiple Regression Analysis are as follows:

1) $P = 483.92T - 9.73M + 505.58$ ($r^2 = 0.3555$)
2) $C = 270.07T - 0.26M + 132.75$ ($r^2 = 0.3039$)
3) $P = 1.45T + 476.59$ ($r^2 = 0.7817$)
4) $P = 1.31C + 123.94T + 286.59$ ($r^2 = 0.7983$)

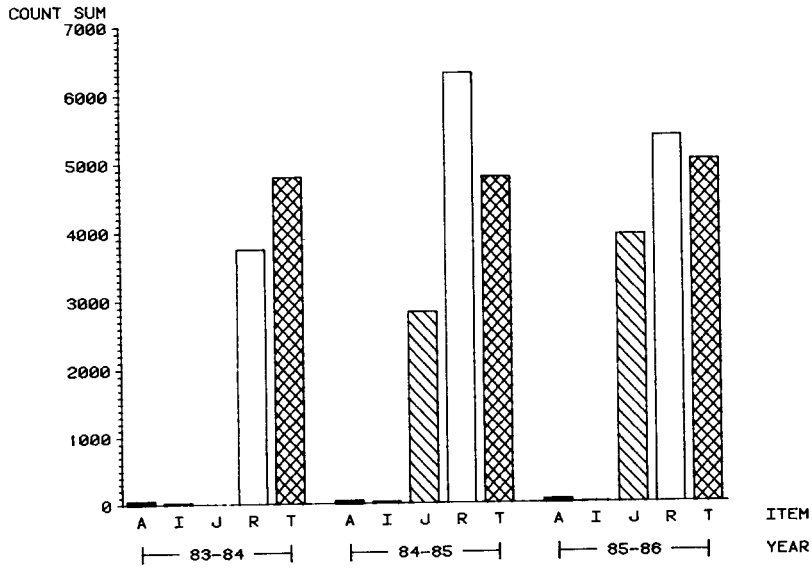
The library's patronage and circulation were enhanced by the large, positive coefficients of the variable "Term" as seen in equation 1 and 2. The order of contribution was the greatest in Summer, Fall, and Spring and the least during the Semester Breaks. The primary use of the library was correlated with the circulation of books and other material and not with the term or month of the school year. This is evidenced by the increase in the r-square value from 0.3555 to 0.7983, as seen in the first and fourth equations.

Figure 1. Patronage (—0—0—) and Circulation (- - □ - - □ - -) Trends in the School of Education Library



The verticle reference indicates the time of introduction of the Juvenile Section.

Figure 2. Circulation Breakdown in the Last Three Years



Key: (A) Audio-Visual; (I) Interlibrary Loans; (J) Juvenile; (R) Reserve; (T) Text.

Figure 3. Computer Program Used to Forecast Data

```
10  DIM A(5), S1(5), S2(5), B(5), F(5)
15  READ AL1, AL2, A(1)
16  DATA .3, .4, 448
20  FOR T = 2 TO 3
25  PRINT "AL1=.3,AL2=.4 SUMMER JUV"
30  PRINT "TYPE IN ACTUAL VALUE FOR PERIOD"; T
40  INPUT A(T)
45  NEXT T
50  PRINT "PD";TAB(10);"ACTUAL";TAB(20);"S1";TAB(30);"S2";
51  PRINT TAB(40);"B";TAB(50);"F";
55  S1(1) = A(1)
56  S2(1) = A(1)
57  F(2) = A(1)
60  PRINT TAB(1);"1";TAB(10);A(1);TAB(20);S1(1);TAB(30);S2(1)
65  FOR T = 2 TO 3
70  S1(T) = S1(T-1) + AL1 * (A(T) - S1(T-1))
80  S2(T) = S2(T-1) + AL2 * (S1(T) - S2(T-1))
90  B(T) = S2(T) - S2(T-1)
100 F(T+1) = S1(T) + (S1(T) - S2(T)) + B(T)
110 PRINT T;TAB(10);A(T);TAB(20);S1(T);TAB(30);S2(T);
120 PRINT TAB(40);B(T);TAB(50);F(T)
130 NEXT T
140 PRINT TAB(50);F(4)
145 INPUT A(4)
147 FOR T = 4 TO 5
150 S1(4) = S1(3) + AL1 * (A(4) - S1(3))
160 S2(4) = S2(3) + AL2 * (S1(4) - S2(3))
170 B(4) = S2(4) - S2(3)
180 F(5) = S1(4) + (S1(4) - S2(4)) + B(4)
190 PRINT T;TAB(10);A(T);TAB(20);S1(T);TAB(30);S2(T);
200 PRINT TAB(40);B(T);TAB(50);F(T)
210 NEXT T
220 PRINT TAB(50);F(5)
230 END
$ ENTRY
```

The plot of Count versus Months (figure 1) illustrates an increasing trend in patronage and circulation on the addition of the juvenile section in 1984 (indicated by the vertical reference line). Table 1 shows the value of patronage between 1981/82 to 1985/86 and the forecasted values for 1986/87. The large predicted values for 1986 to 1987 are explained by the increase in patronage since 1984. This increase is directly related to the addition of the juvenile book section in the library.

The histogram (figure 2) portrays a steady use of the text, reserve, audiovisual, and interlibrary loan material, with an increase in use of juvenile literature between 1984 to 1986. Similar treatment of this data forecasted an increase in use of circulation material, as seen in table 2. For example, juvenile counts of 215, 237, 265, 356, 513, and 499 between 1984 and 1986 forecasted values of 562 and

Table 1. Forecasted Values of Patronage

	1981–82	1982–83	1983–84	1984–85	1985–86	1986–87 Forecasted
Summer	1833	1873	2126	3085	1992	2442
Fall	1442	1634	1599	2768	2703	2910
Spring	1340	1569	1558	3442	2352	2896
Break	432	646	736	1227	983	1185

alpha 1 = 0.3 and alpha 2 =0.2

Table 2. Forecasted Values of Circulation *

	1984–85				1985–86				1986–87 Forecasted			
	Su	F	Sp	B	Su	F	Sp	B	Su	F	Sp	B
Reserve	688	389	689	173	364	664	358	51	605	683	739	143
	581	712	696	183	-	911	869	174	600	681	735	142
		416	833	100		610	554	-				
			854				827					
Text	617	413	315	218	435	645	706	254	564	516	560	171
	525	413	648	69	-	689	672	149	562	520	563	169
		591	434	68		419	375	-				
			483				688					
Juvenile	448	215	155	112	146	356	301	52	166	562	782	25
	335	237	271	59	-	513	751	44	99	630	860	10
		265	267	34		499	490	-				
			428				792					

alpha 1 and alpha 2 = 0.1
alpha 1 and alpha 2 = 0.1 or 0.2
alpha 1 = 0.3 and alpha 2 = 0.4

Su: Summer; F: Fall; Sp: Spring; B: Break

*each value represents a monthly count

630 for the next two months in Fall 1986/87.

Conclusion

The application of multiple regression and double exponential elimination has been demonstrated in this case study. The School of Education's library was used mainly for checking out circulation material, as seen by the strong correlation between circulation (C) and patronage (P). The juvenile, reserve, and text material were the strength of the library's collection, as observed in the collection data and the forecasted results.

Since the last month of data collection, various changes have been made in the university library system that support these results. The School of Education evaluated the purpose and functions of its library in the summer of 1986. A decision was made to divide the library collection. The text and juvenile material were retained and the reserve, periodicals, and function of interlibrary loan have since been returned to the main library. Explanations for this move were given. The library was a financial burden and did not adequately support research in education. On the other hand, it provided excellent reading resources for students aiming to be preschool, primary, and secondary school teachers.

Acknowledgments

The data for this case study was provided by the late Ms. Joyce Taylor, to whom this article is dedicated.

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Joyce Taylor is the late librarian of the J. D. Williams Library at the University of Mississippi. She served the University for 15 years and was in charge of the School of Education Library.

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The National Geographic Society and its Library Celebrate 100 Years

Susan Fifer Canby

WHEN young Gilbert H. Grosvenor first visited the National Geographic Society's headquarters in 1899, the future editor found the small rented half-room "littered with old magazines, newspapers, and a few books of records, which constituted the only visible property of the Society." *(1)* From these meager resources evolved the automated library that today serves the Society's widening activities for the diffusion of geographic knowledge. To commemorate the Society's centennial, the following is a history of this venerable facility.

Hubbard Hall. Although there were mentions as early as 1894 in the *National Geographic Magazine* of a library collection, the first formal library area was created in 1903 when the Society moved to its newly completed quarters, called Hubbard Hall, at 16th and M Streets in Washington, D.C. Deposited in the cornerstone of Hubbard Hall was a document that read, "The Library is the gift of Mrs. Gardiner Greene Hubbard, who joins her children in establishing this memorial to her husband. *(2)* The library was on the second floor, approached by a splendid double stairway of marble and later, in 1927, graced with paintings of adventure and discovery by N. C. Wyeth. In the great room itself, dominated by a huge fireplace of carved Indiana limestone, glass-fronted bookcases lining the circumference held approximately a thousand books. The library of that day served as an all-purpose reception area as well as a reading room for members.

Greely Polar Collection. The impetus for transforming the dual-purpose reception-reading room into a formal library probably came in March 1918 from General A.W. Greely, one of the National Geographic Society founders. He wrote to Editor Grosvenor, "Advancing age and changed conditions cause me to dispose of my geographic library, [1,600 volumes] collected during the past 30 years. It is the largest private polar and subpolar collection known to me. *(3)* The very next day, Dr. Grosvenor accepted it; however, the Greely collection, along with the remainder of the Society's library, had to remain temporarily in boxes, since the reading room had been given over to Red Cross ladies who were rolling bandages as part of the war effort and storing them in the glass-fronted bookcases.

First Librarian. On January 1, 1920, Librarian Kathleen Hargrave set about organizing a small research library. By August she requested that a large world globe be placed in the reading room to assist library users in locating books. The globe was necessary because she had set up a unique geographical classification scheme. Books were arranged "as nearly as possible in the positions of the countries on the map" *(4)*—the polar regions in the far north and south of the room, and the hemispheres split on the room's east and west sides. "A trip around the reading room," noted

Miss Hargrave, "was a trip around the world." *(5)* This distinctive classification system served as a hallmark of the Society's library for more than half a century.

Going Public. While the library had been open to members and visitors since 1903, Miss Hargrave's cataloging and reorganizing provided an occasion officially to open it to the public in November 1920. The varied clientele it attracted enthralled Miss Hargrave: "What a colorful and fascinating procession!..Almost upon arrival from overseas were travelers with no other personal connections in America than their memberships in the National Geographic Society so that they had the Geographic family feeling of coming home." *(6)* Early visitors included "aviators planning ocean and other long distance flights...artists looking for accurate background material for paintings...army and navy officers and United States consuls reading about the new countries to which they had been assigned." *(7)* General Greely, Captain Bob Bartlett, Lincoln Ellsworth, Admiral Richard Byrd, and Alexander Graham Bell were familiar figures.

Changing of the Guard. Miss Hargrave resigned in December 1928. She left a book collection of 14,000 volumes and a staff of five. Among the remaining staff members was Esther A. Manion, who found herself promoted to librarian. Miss Manion guided the library for the next 36 years.

War Years. World War II saw the library's familiar clientele of explorers and travelers largely replaced by military and government researchers seeking geographical information. "Most of the Library's efforts were spent in aiding the armed forces, the writers of survival manuals, and the compilers of travel guides for military personnel and strategists," *(8)* Miss Manion noted. As many as 2,000 requests a year came for information related to the war effort; the library maintained a separate vertical file for war clippings. Miss Manion saw profound changes. "World War II stimulated interest in foreign countries and the systematic study of all branches of geography," she wrote, "but it also "marked the end of the romantic era of exploration." *(9)*

Bulging at the Seams. A library student wrote in 1950, "My first impression upon entering the [National Geographic Society] library was that it was the most picturesque, book-laden, book-burdened room I had ever seen." *(10)* The library was adding more than 1,000 volumes annually to meet staff research needs. The pace quickened as the new president and editor, Melville Bell Grosvenor, broadened the Society's role to include book publishing and television. By 1957, the collection numbered 23,000 books and 159 drawers of clippings, overseen by a staff of 12. A year later, Mr. Grosvenor suggested that the library build a collection of the Society's research and exploration reports so that they could be instantly available to scientists and to the staff.

The First Big Move. In 1962, the Board of Trustees revised the bylaws to establish a new committee "charged with responsibility for the acquisition and maintenance of a library on geographic subjects, suitable for the Society's research, educational, and editorial needs." *(11)* In response to the pressing needs caused by inadequate staffing and shelf space, the Library Committee took action and moved the library to the first floor of the old Explorers Hall in the 16th Street Building. In December 1964, after more than 40 years in Hubbard Hall, the library staff of 20 moved 43,000 books and racks of file cabinets to the home they would occupy for the next two decades.

Miss Manion Retires. With the move complete, Miss Manion relinquished her position in September 1965 to become librarian emeritus. She spent the next seven years evaluating and cataloging books in the rare book room, identifying 157 items published before 1800; a Ptolemaic atlas printed in Ulm in 1486 was the library's only incunabulum.

A New Librarian. Virginia Carter Hills was named to succeed Miss Manion. The library's collection expanded explosively under Mrs. Hills direction, growing at a rate of about 3,500 books a year and passing the 60,000 volume mark in 1976. The influx strained the geographical classification system to the extent that it became difficult to expand and confusing to use.

Reorganization. Beginning in January 1981, the geographical classification system was abandoned and the Library of Congress classification system was adopted to conform with the standard used in most research libraries. Simultaneously, the library started to weed its 71,000 volumes to ease the reclassification project. The Clipping Service began

to convert its subject headings to machine-readable format. Communications improved with a new brochure, the library's monthly newsletter, *Gateway to Information*, and regular orientations to the library. Meanwhile, plans for a new M Street building—including a new library—were progressing, and Mrs. Hills spent much of her time with architects of Skidmore, Owings & Merrill. She was intent on keeping the best of the old library while building into the new one ample space for staff readers and visitors.

Change of Command. With the new library planned for the most part, Mrs. Hills retired in April 1983. She had managed the library through a period of transitions while it positioned itself for automation. During her tenure as librarian, the staff rose from 20 to 29 and the collection grew from 45,000 to 75,000 volumes. Susan Fifer Canby was promoted to library director.

Closed to the Public. Because of the construction underway on the M Street building, the library was closed in 1983, except for staff use, for the first time since officially opening to the public in 1920. The map library, which for 44 years had been a part of the Cartographic Division, transferred administratively to the main library in January 1984.

New Quarters/New Image. In August 1984, the long-scattered library with its two miles of shelved books and magazines, thousands of maps, and two-and-a-half miles of clipping folders was pulled together in its new facility in the refurbished 16th Street building. Public interest in the gracious new quarters showed that the library still was a focal point of the Society. The library hosted festive receptions for the members of the District of Columbia Library Association and local librarians who assisted the Society library with reference and interlibrary loans. New brochures for the staff and the public were made available. The documentation of this reintroduction process won the library the John Cotton Dana Library Public Relations Award of the American Library Association.

Automation at Last. With the '80s came moves toward automation that radically changed library procedures. The first step was the MINI MARC system, which allowed the library to translate its catalog records into machine-readable format. Next came access to remote database services, such as DIALOG, WILSONLINE, KIDSNET, VU/TEXT, and DATATIMES. The Library Committee supported the purchase of Northwestern University's integrated software (NOTIS), which enabled the library to automate acquisitions, cataloging, circulation, and public access catalog. The library also became a member of OCLC in 1987. With 1987 came the customizing of the new online catalog, ORBIS (Online Reference and Bibliographic Information System), the installation of terminals and printers, and the training of library staff in the use of the software.

Automation's Impact. For the first time, using ORBIS, staff members gained access to the library's collections from their offices. As a result of automation, interlibrary loans of the National Geographic Society Library rose 111% in 1987, and the library's ability to create bibliographies soared by an average of 100% each year during the first seven years that remote databases replaced manual compilation. Most important, the library positioned itself to network electronically with other libraries. In an era when no single library can own or store everything, electronic networking will be essential to support the Society's expanding commitment to diffuse geographic knowledge.

Additional Reading

For additional information on the history of the National Geographic Society, readers may wish to consult C. D. B. Bryan's *The National Geographic Society: 100 Years of Adventure and Discovery*, New York: H. N. Abrams, 1987.

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L'Association Francaise des Documentalistes et des Bibliothecaires Specialises

Linda J. Rober

This article is based on a meeting of September 14, 1987, between Marie-Odile Mury, president of the Alsatian Chapter of L'Association Francaise des Documentalistes et des Bibliothecaires Specialises (ADBS), Jean-Michel Rauzier, former president of the Alsatian Chapter, and Linda J. Rober, science librarian at Oregon State University. Ms. Rober was working at the University of Strasbourg Science Library on an exchange program at the time. The meeting was held at that library, the Bibliotheque Nationale et Universitaire de Strasbourg, Section des Sciences, and was supplemented by copious notes, brochures, and diverse information graciously provided by the French participants.

ADBS

L'Association Francaise des Documentalistes et des Bibliothecaires Specialises (ADBS) is the most representative association for information science professionals in France. It was created in 1963 with the goal of promoting the profession by developing the exchange of ideas and experience in the national as well as international arenas. *(1)*

Jean-Michel Rauzier, former president of ADBS's Alsatian Chapter, discusses the aims of the association in his article "Les Groupes Regionaux de l'ADBS":

> Programs, information, continuing education, representation, such are the principal aims of ADBS. Throughout France this association makes every effort to develop ties and exchanges among information professionals involved in the handling and dissemination of information, to cultivate the knowledge, installation and development of new technologies in information science and in related disciplines, to contribute to the ongoing training of documentalistes and librarians; and to represent them both in the private sector and the public domain. *(2)*

ADBS Activities

The activities of the ADBS are varied, chosen to advance the aims of the association. There are programs of continuing education, meetings addressing technical innovations, annual conferences, and activities offered in conjunction with other organizations whose goals are similar.

Continuing Education Program. Continuing education courses last from one to five days; registration fees range from 2,000 francs to 7,000 francs ($333.00 to $1,166). A sampling of courses detailed in the ADBS catalog for 1987–1988 are as follows:

> How to Manage the Promotion of Information Products and Services
> Better Informed at Less of a Cost:

Awareness of Analysis of Value
How to Charge-back the Cost of Online Searching
Installation of an Information System on a Micro
Mastering MS/DOS to Effectively Use on a Micro
Knowing How to Use Databases
Learning How to Sell Your Information Service and Its Products

Meetings and Congresses. There are a multitude of opportunities to attend meetings organized by ADBS. Members benefit from preferential rates at various meetings, continuing education courses, and annual congresses both in the regions and in Paris.

Organizational Structure

ADBS is comprised of commissions, regional chapters, and special interest groups.

- *Commissions* cover the following issues: employment, continuing education, profession and qualifications, publications, information techniques, and database users.

- *Regional chapters* cover almost every region in France: Alsace, Aquitaine, Auvergne, Bourgogne, Bretagne, Centre, Cote-d'Azur-Corse, Ile-de-France sud et ouest, Langueduc-Roussillon, Pays de Loire, Lorraine, Nord-Picardie, Basse-Normandie, Rhone-Alpes-Grenoble, and Rhone-Alpes-Lyon.

- *Special interest groups* represent the members' special focuses in the areas of: special social actions, agriculture, audiovisual, legal information, economics, electronics/information, science/telecommunications, medicine/pharmacy/biology, developing countries, newspapers, social sciences, and transportation/equipment.

Membership Dues

Dues are 355 frances ($59) per year; 390 francs for foreigners. The dues include membership in a chapter and in a special interest group.

Publications

ADBS publishes both a journal and a monthly bulletin. The *Documentaliste: Sciences de l'Information*, their specialized journal on information science and technology, is intended for all professionals to keep them informed of everything concerning the profession and of events occurring in their regions. There are five issues per year. The journal has been in existence since 1962 and is currently distributed in 55 countries. *ADBS Informations*, a monthly in-house bulletin, provides association information to all ADBS members and keeps them informed on the association's leadership and the activities and projects of the chapters.

The Alsatian Chapter

The Alsatian Chapter is an active part of the national association. According to its monthly newsletter of January 1988, for example, there were plans for a program and presentation at two information centers that together comprise "The Regional House of Innovation." The presentation was on its activities in the areas of the protection, innovation, and online searching of information and on personalized services concerning patents, trademarks, designs, and models. Other chapter-sponsored activities included a guided tour of the Medical Branch of the Bibliotheque Nationale et Universitaire de Strasbourg, organized by the Health Network, and a tour of the Information and Production Center of the car manufacturer Peugeot, at Mulhouse.

Programs aside, the Alsatian Chapter has an effective network of members charged with developing contacts in their own profession as well as throughout the information industry as a whole. This network serves to support the professional development of members, and to offer tangible solutions to common problems.

Commentary from Linda J. Rober

At our meeting of September 14, 1987, both Mr. Rauzier et Mme. Mury impressed me with their open attitudes toward networking with other libraries and librarians for the purpose of solidarity and for seeking solutions to common problems, and their openness to discuss

with me their frank thoughts on the status of French librarians and documentalists.

First of all, we reviewed the difference between a "conservateur," a "documentaliste," and a "bibliothecaire." These professionals differ in the kind of training and diploma they have and by the type of work they do. In France a "documentaliste" has probably the highest status, working in private industry or governmental information centers, conducting database searches and interlibrary loans, and handling the nuts and bolts of information organization and dissemination to a clientele who needs information immediately. They have earned a diploma that licenses them to do all this, but it is not as high a diploma as that earned by "conservateurs." A "conservateur" is a librarian of the highest diploma, having graduated from one of the two national library schools and educated in preserving the culture of civilization. Typically they have an impeccable background in the liberal arts and are taught to conserve tradition, just like their title says. More and more, however, their training has been encompassing all the more innovative technologies of information science. Traditionally, they work in universities. A "bibliothecaire" has a lesser diploma and is, in fact, a paraprofessional or library technician, working in any type of library or information center.

ROBER: What do you think about the trend in closures of special libraries?

RAUZIER: There is a contradiction. These closures create fewer employment opportunities for librarians at a time when industry has a greater need for information. At first glance, one sees that there is a growth of access to information by computer and that these computer tools diminish the need for librarians—that perhaps the role of the librarian can be played by others at various places in the organization. But this is *not* true. The role of creating information systems should be done by the people who are trained in those areas, who know equally well both the users and the information systems themselves.

ROBER: Is the role of the French special librarian changing?

MURY: Indeed. Historically, librarians were most nearly archivists, closed off; even their present day title of "conservateur" means conserver. Nowadays, that has certainly changed.

ROBER: What kind of school training do French special librarians have? Does it reflect the new roles librarians are playing in industry?

RAUZIER: The schools and library institutes are very much oriented to teaching the new information technologies. There are six different ways a librarian or documentaliste can be licensed.

1. *CAFB* (Certificat d'aptitude aux fonctions de bibliothecaire) is a national diploma to "sous-bibliothecaires" (library technicians) who have completed a library program after their Bac (high school diploma). The library technician is then specialized to work in particular institutions, such as a high school library, business library, etc., rather than being specialized to work in a particular subject area.

2. *IUT* (Institut Universitaire de Technologie) is a more general program of documentation, intended for librarians and documentalistes who will work in private industry and companies.

3. *DESS* (Diplome d'etudes superieures specialisees) is a university program which awards diplomas in documentation and in information science.

4. INDT (Institut national des techniques de la documentation) is a program similar to the DESS above; the differences between the two are minimal.

5. *CRDP* (Centre Regional de Documentation Pedagogique) is the program for documentalistes. In 1986, there were 1,000 candidates applying for entrance, hoping to be chosen for the two positions available in the country that year.

6. *ENSB* (Ecole Nationale Superieure des Bibliothecaires) is a national university that awards a "license" equivalent to the U.S. master's degree in library science (MLS). There is currently in France what the French call "a vertiginous number of candidates for the ENSB diploma."

In the school establishments, that is, the high schools and the community colleges, librarians and documentalists are recruited if they have a license or professional diploma. In these schools there are separate libraries for the teachers, apart from those for the students.

ROBER: Given that librarians are trained in these areas, what is their actual status in their own organizations? How are they viewed hierarchically?

MURY: Still today, the functions and services provided by librarians are often viewed in some industries to be so much "frou-frou." In times of budgetary restraint, the library and the librarian are still the first to go.

ROBER: What do salaries look like for French special librarians?

RAUZIER: The most recent official survey was done by ADBS in 1984 and, just to give you an example, at that time the chief of a department, say, of cataloging or reference or interlibrary loan, was earning 10,000–10,500 francs ($600–$630) per month. Things have not improved much since that time. The highest average salaries are found in the sectors of insurance, followed by biology, chemistry, atomic energy, and the environment. In contrast, the lowest average salaries are found in recreation, commerce, publishing, health, media, and agriculture. The salary scales normally follow the level of diploma. The lowest salaries are going to graduates of the IUT: 30% of them earn less than 6,000 francs monthly; although, their salaries fluctuate, as do those of the CAFB graduates who earn between 6,000–7,000 francs monthly. For a master's diploma in information science/communications, the average salary is from 8,000–9,000 francs monthly, and for INTD and DESS graduates, it ranges from 9,000–10,000 francs. (In 1987, there were 6 francs to the U.S. dollar.)

As mentioned previously, administrators earn an average of 10,000 francs per month, with the highest 10% earning 16,000 [$2,666] per month.

ROBER: What does ADBS think of ties with other special librarians?

MURY and RAUZIER: Yes, absolutely in favor! That is one of the major aims of the entire association, and we make every effort to forge these ties. We do it through networking, through meetings with other organizations, through our various publications. Already, the ADBS journal, *Documentaliste*, is distributed in 55 countries...and growing!

References

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SLA 1988 Triennial Salary Survey Draft Report

Tobi Brimsek
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The Special Libraries Association conducts an in-depth salary survey of its members every three years. During the intervening years, the Association surveys a random sampling of members to obtain statistically valid data. The objective of the survey is to collect and disseminate salary data for use by employers, employees, students, and guidance counselors. It allows SLA members to compare their salaries with those of their peers. The survey results provide salary data applicable to special librarians and information specialists in a broad spectrum of work environments.

The comprehensive 1988 survey, as in the past, includes data on library budget, industry type, and job titles. Questionnaires were mailed to members and associate members in April 1988. Of the 10,475 questionnaires mailed, 4,089 surveys were returned, providing a response rate of 39%.

The complete results of the 1988 survey will appear as a separate publication entitled *SLA Triennial Salary Survey 1989*. This article presents some of the preliminary data which we hope that SLA members, their employers, and the library and information community will find useful.

Table 1 reports the changes in mean and median salaries from April 1, 1987, to April 1, 1988, within the United States Census Divi-

Table 1. 1988 Mean and Median Salaries by Census Division in Rank Order of Percentage Change in Median from 1987 to 1988

Census Division	Median 1987	Median % of Increase	Median 1988	Mean 1987	Mean % of Increase	Mean 1988
New England	25,605	24.9	32,000	28,210	20.5	34,001
Pacific	29,340	15.8	34,000	31,060	14.7	35,651
East North Central	27,000	14.9	31,030	28,818	14.9	33,120
Mountain	24,400	14.7	28,000	26,263	11.4	29,282
Middle Atlantic	30,000	13.3	34,000	31,415	16.6	36,635
West South Central	27,000	11.1	30,000	28,327	14.6	32,485
South Atlantic	28,800	9.3	31,500	30,904	8.8	33,627
West North Central	26,125	6.4	27,814	27,153	10.9	30,126
Canada*	34,000	5.5	35,900	34,453	7.6	37,079
East South Central	27,500	4.0	28,600	28,883	5.8	30,586
Overall United States	27,500	17.4	32,000	29,676	14.9	34,110

*Salaries reported in Canadian dollars. The exchange rate on April 1, 1988, was approximately Canadian $1.23=United States $1.00. On April 1, 1987, the rate was approximately Canadian $1.30=United States $1.00.

Table 2. Salary Distribution by Census Division in Rank Order of 1988 Median

1987 Rank by Median	Census Division	Average Lowest 10%	25th Percentile	Median	75th Percentile	Average Highest 10%	Mean	No. of Respondents
1	Canada*	21,631	31,300	35,900	42,209	58,693	37,079	417
2	Middle Atlantic	20,640	28,000	34,000	43,000	63,622	36,635	786
3	Pacific	21,485	29,000	34,000	40,000	57,111	35,651	563
9	New England	19,749	27,000	32,000	39,000	56,572	34,001	277
4	South Atlantic	19,808	26,400	31,500	39,300	56,887	33,627	570
6	E. North Central	18,898	26,353	31,030	38,926	54,854	33,120	580
7	W. South Central	18,868	25,740	30,000	37,200	55,860	32,485	182
5	E. South Central	18,686	23,440	28,600	33,800	53,346	30,586	67
10	Mountain	17,592	23,750	28,000	33,260	44,591	29,282	140
8	W. North Central	17,688	23,000	27,814	35,000	53,102	30,126	192
	Overall U.S.	19,528	26,800	32,000	39,500	57,943	34,110	3,357

*See note to Table 1.

Table 3. Salary Distribution by SLA Canadian Chapter in Rank Order of 1988 Median*

Chapter	Median	Mean	No. of Respondents
Western Canada	37,413	38,297	92
Toronto	35,000	36,747	190
Eastern Canada	34,331	37,247	116

*See note to Table 1.

sions and Canada. The table presents the changes both in dollar amounts and in percentages.

The survey indicates increases in median salaries from 4% up to 24.9%. The median salary in dollars ranges from $27,814 in the West North Central Region to $34,000 both in the Middle Atlantic and Pacific Regions. The median salary for Canada, reported in Canadian dollars, is $35,900.

Table 2 lists the salary distribution in rank order of median salaries for Canada and the nine United States Census Divisions. In comparing rankings with the 1987 update, the top three regions remain Canada, the Middle Atlantic, and the Pacific. The New England region showed the greatest change in moving up five positions.

Table 3 lists the salary distribution in rank order of median salaries for SLA's Canadian chapters. As this is the first year that these data can be presented by chapter, no comparative data are available.

These data represent a preliminary report from the 1988 salary survey. In addition to historical and comparative data, the full survey will include coverage of salary in conjunction with a wide variety of variables in approximately 70 pages of U.S. and Canadian charts including:

- Salary Distribution by Sex
- Change in Earnings by Sex
- Salary Distribution by Census Division
- Salary Distribution by Type of Institution Ranked in Order of Median Salary
- Salary Distribution by Primary Responsibility in Rank Order of Median Salary
- Salary Distribution by Organizational Entity
- Salary Distribution by Primary Responsibility Within Type of Institution
- Salary Distribution by Number of Employees Supervised
- Salary Distribution by Number of Professional Employees Supervised
- Salary Distribution by Number of Technical Employees Supervised
- Salary Distribution by Number of Clerical Employees Supervised
- Salary Distribution by Number of Professional Employees Supervised for Men and Women
- Salary Distribution by Number of Technical Employees Supervised for Men and Women
- Salary Distribution by Number of Clerical Employees Supervised for Men and Women
- Salary Distribution by Education Level: Highest Subject Degree
- Salary Distribution by Education Level: Highest Library Science Degree
- Salary Distribution by Highest Subject Degree Within Type of Institution
- Salary Distribution by Highest Library Science Degree Within Type of Institution
- Salary Distribution by Subject Field in Which Respondents Hold Degrees in Rank Order of Median Salary
- Salary Distribution by Subject Field in Which Respondents Hold Degrees Within Type of Institution
- Salary Distribution by Years of Other Professional Experience
- Salary Distribution by Years of Library Experience
- Salary Distribution by Total Years of Professional Experience
- Salary Distribution by Total Years of Professional Experience for Men and Women
- Salary Distribution by Years With Present Employer
- Salary Distribution by Number of Employers
- Distribution of Respondents by Race and Minority Group Categories
- Age Distribution of Respondents
- Salary Distribution by Age Group
- Employment Status, April 1, 1987—April 1, 1988
- Salary Distribution by Job Title
- Salary Distribution by Job Title Within Census Divisions/Regions
- Salary Distribution by Job Title for Men and Women
- Salary Distribution by Budget Range
- Salary Distribution by Budget Range With Organizational Entity
- Salary Distribution by Budget Range Within Type of Institution

The *SLA Triennial Salary Survey 1989* will be available from the Special Libraries Association Order Department for $25.00.

Actions of the Board of Directors June 10 –11 and 17, 1988

The SLA Board of Directors met at the Marriott City Center in Denver, Colo., June 10–11 and 17, 1988, as part of the activities of the Association's 79th Annual Conference. Actions taken and reports of note are summarized below.

Association Election—The Tellers Committee reported the results of the Association's mail ballot election. The newly elected officers are as follows: Muriel B. Regan, President-Elect; Catherine A. Jones, Treasurer; Marlene Tebo, Chapter Cabinet Chair-Elect; Beth Paskoff, Division Cabinet Chair-Elect; Ann W. Talcott, Director; and Gloria Zamora, Director. James B. Tchobanoff was elected Secretary to the Board.

Scholarship Recipients—The Scholarship Committee reported the names of the recipients of SLA scholarships and stipends. Debra Kay Barnes and Christopher Forney received SLA Scholarships. Carrie Robinson and Jacquelyn Cenacveira received the Positive Action Committee for Minority Groups Stipends. Beth Paskoff received the Plenum Scholarship.

FBI Library Awareness Program—The Board of Directors voted to oppose the activity of the FBI Library Awareness Program. The official policy of the Association now states:

> The Association reconfirms its endorsement of the rights of users to have access to information and the protection of the confidentiality of library records maintained by public institutions.
>
> The Association maintains that no individual, including groups of individuals, has the right to restrict the use of public resources in such a way as to deprive one's access to needed and appropriate information.
>
> The Association opposes the activities of the FBI Library Awareness Program.

Financial Matters—The Board approved a revision to the existing Gifts and Bequests Policy and adopted a Gifts-in-Kind Policy. The Board also reviewed a revised Investment Policy that had been adopted in principle at the 1988 Winter Meeting.

Following review of the 1987 audited financial statements, the Board received a report on the distribution of surplus income from 1987. A total of $109,010 was distributed as follows:

> $10,000—Task Force on the Perception of the Information Professional
>
> $15,000—Executive Development Academy
>
> $42,005—General Reserve Fund
>
> $25,203—Building Reserve Fund
>
> $16,802—Special Programs Fund

Long-Range Plan Renamed—Prior to its scheduled meeting, the Board gathered to discuss the Association's Long-Range Plan and the goals and objectives of the plan. In session, the Board later approved a new mission statement for the plan and renamed the Long-Range Planning Committee the Strategic Planning Committee. The new mission statement reads as follows:

> The mission of the Special Libraries Association is to advance the role of its members in putting knowledge to work thus taking a leadership role in shaping the destiny of our Information Society.

Caucus Guidelines Approved—The Board heard the final report of the Special Committee on Association Structure and approved, in concept, the "Guidelines for Caucuses." Included in the guidelines was the definition of a caucus: "an informal group within SLA intended to serve as a focus for the interaction of members who share a common interest not covered by any Association Division or Committee."

Caucuses must be made up of a minimum of 15 members and will be led by a convener. Caucuses

will be authorized for a period of up to two years and must be reauthorized at the end of two years. A $6 fee was established for membership in caucuses. Authorized caucuses will be listed in the *SpeciaList* to inform the membership and to enable all who are interested to join. An "Informal Checklist for Forming a Caucus" is available to assist those individuals interested in establishing such a group.

Research Committee Established—Following a lengthy report from the Special Committee on Research, the Board approved the establishment of a Standing Committee on Research. The Board also acted on several additional recommendations included in the report. The Board approved, in concept, the research program; instructed the Committee on Committees to recommend a charge and composition for the Research Committee to the Board at the Fall Meeting; charged the committee with the responsibility to review and recommend recipients for the Special Programs Fund Grant; allocated the remaining funds from the Special Committee into a newly established subsidiary fund for research; and disbanded the Special Committee on Research. The Board expressed its appreciation to the Special Committee for its work.

Association Office Operations Committee—Upon the recommendation of the Association Office Operations Committee (AOOC), the Board approved a new job description and evaluation form for the Executive Director and changed the position from a grade 10 to unclassified. The Board also approved a new three-year contract for the Executive Director which was signed at the meeting.

The Board also heard a report on the costs of an 800 telephone line as requested. Total costs of the 800 line would be approximately $85,000 per year. No further action was taken by the Board.

An Emergency Spending Policy was also approved by the Board which allows the Executive Director to spend up to $30,000 for emergency repairs to the Association headquarters. In cases where the Executive Director must take action, the President or President-Elect must be notified and the emergency repairs will be funded by the Building Reserve Fund. The policy was prompted by an emergency involving the headquarter's air conditioning system which required immediate action to repair the system.

Committees—The Board approved new charges for the Positive Action Program for Minority Groups and the Publisher Relations committees to reflect changes in the assignments of those committees.

Consultation Committee Chair Ellen Steininger Kuner presented a revised policy statement and guidelines for the Consultation Service which is provided by the Association's chapters. The Board approved the new policy and guidelines for the service which was established by the Association in 1956.

The Board reauthorized the Special Committee on Retired Members' Activities.

Conferences and Meetings—The Board approved the city of Seattle, Washington, as the site of the 1997 Annual Conference.

Association staff received notice from the Sheraton Palace Hotel in San Francisco, site of the 1989 Winter Meeting, that a full-scale renovation of the hotel would begin in January 1989. Due to the inconvenience this would cause, the Board authorized the Executive Director to select and enter into a contract with another hotel to host the Winter Meeting in San Francisco.

Connie Kelley was appointed chair and Harold Miller was appointed deputy chair of the 1990 Annual Conference Committee. Committee members are Nick Mercury, Esther Horne, and Susan Hill.

Professional Development—The Board heard a report on the Employment Referral Service. Association members will receive details on the service in a mailing later this year. Introductory fees for the service will be $50 (member) for a six-month listing for individuals seeking employment and $150 for a one-month posting for employers seeking applicants.

The Board also heard progress reports on both the State-of-the-Art Institute and Executive Development Academy. The Institute is planned for October 17–19 in Washington, D.C., and is entitled "Global Ties Through Information." The Executive Development Academy will be offered March 5–11, 1989, in conjunction with Carnegie Mellon University in Pittsburgh, Pennsylvania. The registration fee for the Academy will be reduced by $1,000 to $2,600 due to the allocation approved by the Board from the 1987 surplus. Information on both educational events is available from the Professional Growth Section.

The Professional Development Committee also presented the final draft of SLA's Graduate Education Position Statement to the Board for its approval. The statement discusses five subject areas which are key elements in the education of special librarians. The Board approved the statement.

Publishing Services—Included in the report on SLA's Publishing Services Section was information on the publication of *Tools of the Profession*, suggested readings compiled from SLA divisions. The book is now available from SLA's Order Department.

The Board also approved a Resolution on Serials Pricing in which the Association "encourages serials publishers, both foreign and domestic, to moderate price increases for their publications in order to maintain their markets and the availability of information published in scholarly scientific and technical series."

Chapter and Division News—Chapter and division news was as follows:

- The South Atlantic Chapter has changed its name to the Georgia Chapter.
- The Aerospace Division received a loan of $3,750, which is to be repaid by June 30, 1989, at 6% interest.
- The Publishing Division contributed $1,000 to the Ron Coplen Leadership Address Fund.
- The Library Management Division contributed $1,000 to the Task Force on the Image of the Information Professional.
- The Environmental Information and Natural Resources divisions are planning a merger.

Next Meeting—The Fall Meeting of the Board of Directors will be held October 20–21, 1988, at the Association office in Washington, D.C.

Reviews

The American Woman, 1987–88, edited by Sara E. Rix for the Women's Research and Education Institute of the Congressional Caucus for Women's Issues. New York: W.W. Norton & Company, 1987. 350 pp. ISBN 0–393–30388–8. $7.95.

The publication of this book marks the 10th year of the Congressional Caucus for Women's Issues. It is the exciting first of what the authors hope to be an annual publication. If succeeding volumes are as well researched, *The American Woman* could be the *World Almanac* for facts on women in the U.S., serving legislators, public policymakers, and scholars. I envision the current volume being as commonplace as the *World Almanac* on reference shelves and older volumes being used as an important historical tool.

The American Woman includes in-depth chapters on the history of women in 20th century America, women and the family and economy, and the women's movement. There are brief chapters on "Women in Business," Women in Sports," "Women in Science, "Women in Higher Education," and "Women in Theatre," among others.

A year in review for 1986 includes highlights of the year in terms of women: March 4—the introduction of H.R. 4300, the Parental and Medical Leave Act of 1986, by U.S. Rep. William Clay and U.S. Rep. Patricia Schroeder; June 19—The *New York Times* decides that Ms. is fit to print.

The chapter on women and the family is excellent and timely. Author Andrew Cherlin, professor of sociology at Johns Hopkins University, points out that combining work and family life has become a central family issue of the 1980s. There will not be a return to the days when most married women stayed home, and this has important implications for public policy. Cherlin states that "our economic institutions have not yet adjusted to the fact that most workers no longer have a spouse at home to take care of family matters. Until such adjustments are made, two-earner couples and employed single parents will face difficulties in combining family life and work life." The plight of single mothers is evident in the statistics. Single mothers and their minor children experience a 73% decline in standard of living in the first year after divorce, while their husbands experience a 42% rise. However, not all is deteriorating for women. Cherlin cites the significant improvement in the standard of living for older women.

The chapter on women and the economy repeats some information from the chapter on women and the family. However, without being redundant, we are reminded of the interdependency of issues of family and economy. Author Nancy Barrett, professor of economics at American University, discusses the wage gap, displaced homemakers, trends in women's employment, and child care. It is a mistake, she says, to dismiss the events taking place in women's working lives with the adage: "Women have always worked." The typical women's work patterns have been dramatically altered and, therefore, many societal attitudes have been rendered obsolete.

The research in the book is meticulously documented. It is well indexed, which is important, as it is unlikely that this book will be read cover to cover. A librarian or researcher will be using *The American Woman* to retrieve specific information and data on a particular aspect of women.

Thirty-nine tables and figures of data pertaining to women are presented in the appendix. Keep in mind that, like the *World Almanac*, the data presented is a year or two behind the date of publication. There is a description of each table preceding the appendix, as the editor has anticipated that it is hard to grasp the content of each table quickly. Tables include such topics as "Proportion of Female Workers in Selected Occupations, 1975 and 1985." (Librarians were 81.1% female in 1975 and 87% female in 1985.)

This first volume has chapters on Black women and Hispanic women. I hope that future editions of *The American Woman* will include chapters on Asian and Southeast Asian women. Asian groups are having enormous cultural and economic impact in

many areas of the country. It will be important to examine the women's issues in the Asian communities.

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Marketing/Planning Library and Information Services, by Darleen E. Weingand. Littleton, Colo.: Libraries Unlimited, 1987. 152 pp. ISBN 0–87287–516–4. $23.50, U.S.; $28.00, elsewhere.

Although planning is becoming established in library management, the marketing approach is a subject of sometimes hot, philosophical debate. Nevertheless, marketing concepts can be related to traditional library planning techniques, such as community analysis or needs assessment, and can provide valuable insights into the planning and design of library programs and services.

Weingand presents the marketing approach to planning as a strategic management tool which can be used in a variety of library and information service settings. The book is divided into two major sections. The first provides background with discussions of the nature of marketing, the philosophy of planning, and the integration of the two into a single process. The second section is oriented toward implementation of the marketing/planning process and covers creation of a planning team, determination of mission and role statements, the marketing audit, goal setting, product analysis and design, costs, objectives, distribution, promotion, implementation strategies, and evaluation. A good bibliography on planning and marketing for libraries completes the book.

Weingand draws heavily on Philip Kotler's *Marketing for Nonprofit Organizations* (2d ed., Prentice-Hall, 1982), the recently revised *Planning & Role Setting for Public Libraries* by Charles R. McClure et al. (American Library Assn., 1987), and the author's The *Organic Public Library* (Libraries Unlimited, 1984) and integrates the three into the marketing/planning approach of the present volume. Unfortunately, Weingand does not go much beyond this integration. For example, the text on mission and role statements, chapter 5, is only three-and-a-half-pages long. Further development of the concepts presented through analysis and examples would add a great deal as would fuller treatment of basic marketing concepts; many are defined and described sketchily and other appropriate concepts such as market segmentation, which is helpful in understanding target audiences, are not covered at all.

Although the book is directed to librarians in all types of libraries and to library entrepreneurs, textual emphasis is on public libraries. Special libraries and information centers and information entrepreneurs receive attention primarily via "Scenarios for Further Thought." These are brief scenarios of library planning situations at the end of each chapter where the reader is invited to apply the concepts outlined in the chapter.

The book's chief value is as a simple introductory text on the marketing/strategic planning process. Those interested in applying the process to specific situations need to expand on the information presented here with further research and reading in both marketing—Kotler is helpful here—and in planning programs and services in specific library/information service contexts.

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Strategic Marketing for Libraries: A Handbook, by Elizabeth J. Wood with assistance from Victoria L. Young. (Greenwood Library Management Collection), New York: Greenwood Press, 1988. 240 pp. ISBN 0–313–24405–7. $37.95.

The title of this book straddles its two parts very nicely. One half of the volume is about marketing theory and its applications to library management. The other half is about strategic planning, as a method of library management, and the role of marketing theory in such planning. *Strategic Marketing for Libraries* says it all.

Marketing theory goes beyond promotion and public relations. When the literature is synthesized and applied to library management, a number of useful concepts emerge

which will assist management in choosing the most appropriate target for a library to pursue. Which marketing opportunities are being missed in the library's familiar environment? Which segment of current patrons is being overlooked? Which segment of non-users is most likely to respond to a new service? Marketing a library centers on serving clients' information needs. Continuity of strategic planning is as good a method as any for achieving the aims of the library. Both rest firmly on a broad statement of purpose, the mission which the library proposes to fulfill. The authors have summarized the management literature in these two specialized aspects, clarified the terminology, pinpointed the nonprofit elements, and dovetailed the two processes with library examples, graphs, and tables.

The book is conceived as a handbook and one of its most useful elements is the careful attempt to translate management terms (jargon) into words that pin down their real meaning, in brackets, while using them in their proper places in the management design. Those of us who read a good deal of the management literature often find that these terms (which are sometimes used carelessly or interchangeably) tend to slide around and develop static, rather like a fading radio station. In this book their meaning in context is very clear and repeatedly clarified. Every section begins with a definition.

The orthodox method for writing an article, a thesis, or a book is to begin with an outline and to proceed by filling out the headings. From one point of view this handbook is an extended outline which has been elaborated into increasingly specific indentations. The more important of these have subsequently been expanded into chapters and cross-referenced until the book presents a total framework for library management planning which incorporates marketing segments to implement the stated goals. This format need not be accepted altogether as a rigid formula, but it can be very useful as a guide in identifying opportunities for growth and markers for achievement of a library's objectives. One observation is perhaps important to make, however. Like most management theory, this handbook formalizes plans and activities, which any good manager would arrive at, without necessarily tagging them with management labels. Many of the ideas presented are simply common sense.

Take the term"product development," for instance. In the management field this might range from a new package for an old product to a new form (liquid rather than powder) or perhaps an entirely new concept (frozen yogurt as well as frozen pudding). For an academic library a seminar on the use of the online catalog might be a new product for current users. In a public library a lecture by a popular author might delight the clients who borrow all his books and might extend their interest. For a special library a new service such as online searching might be installed to draw out new users as well as old ones. This is a simple example of how *Strategic Marketing for Libraries* presents its ideas, and it illustrates both the clarification of terms that the book offers and the fact that, however formally designated, you knew it all the time.

Bibliographic support for the carefully programed chapters is extensive and overlapping. The body of literature being discussed is limited, and certain texts which are broad enough to underwrite nearly every chapter reappear in most of the bibliographies. The bibliographic essay, however, seems unaccountably truncated. It selects only one or two aspects on which to comment. The planning documents in the appendix, on the other hand, are well worth studying as examples of the thesis of the book.

This handbook on planning and marketing is recommended as a guide for library managers in academic, public, and special libraries, large or small, who are groping for effective methods of outreach to their constituencies. There are not many volumes which address these aspects of management so thoroughly or so lucidly.

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Information for Contributors

General Information

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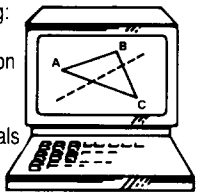

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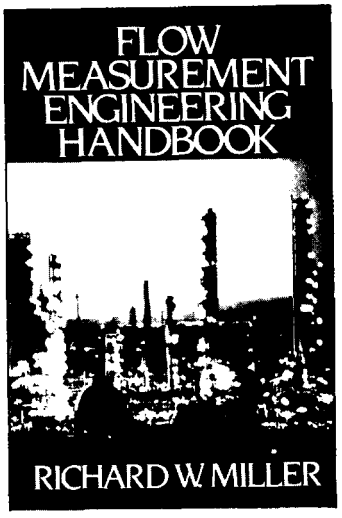

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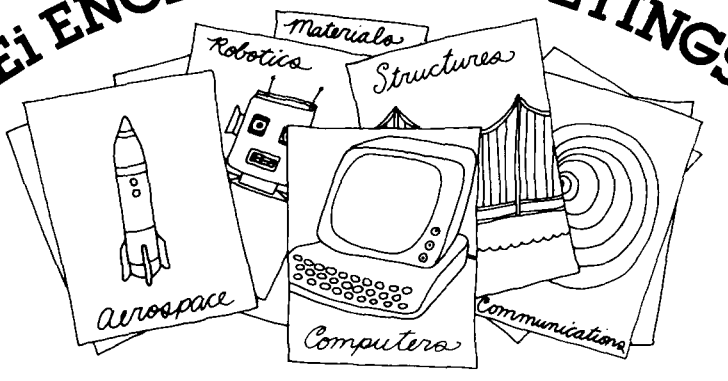

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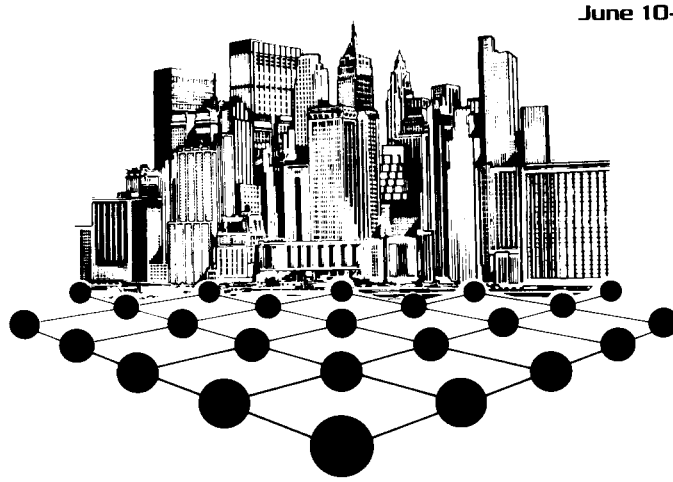

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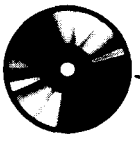

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