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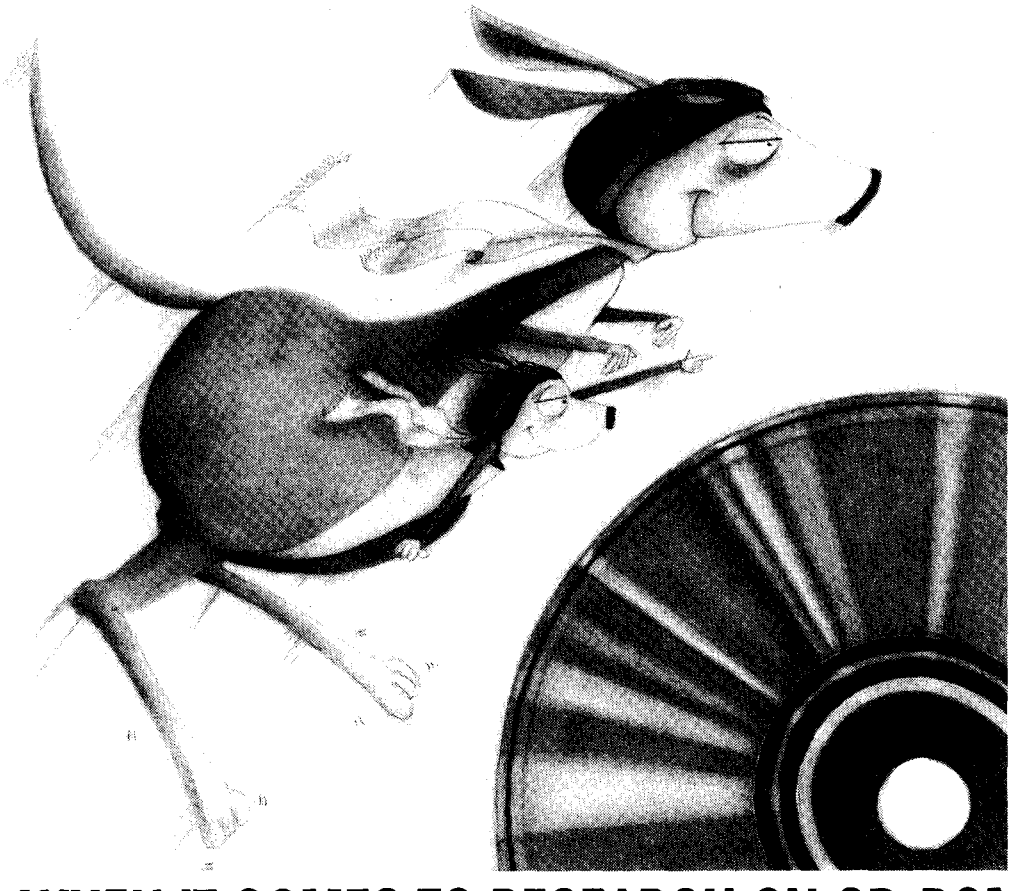

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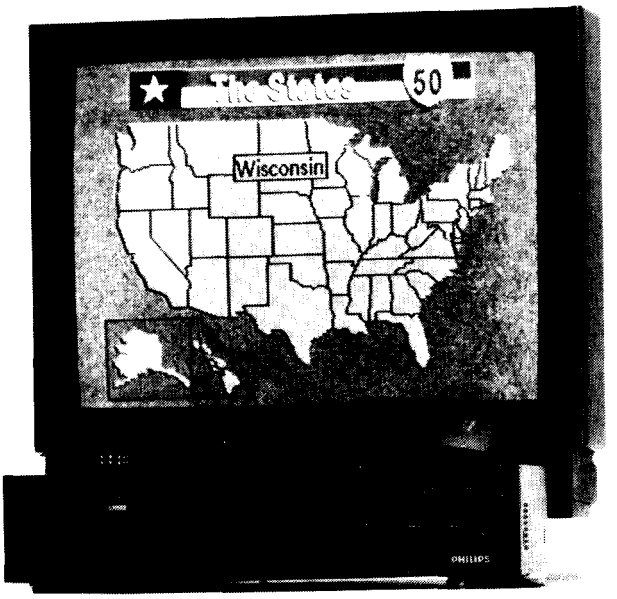

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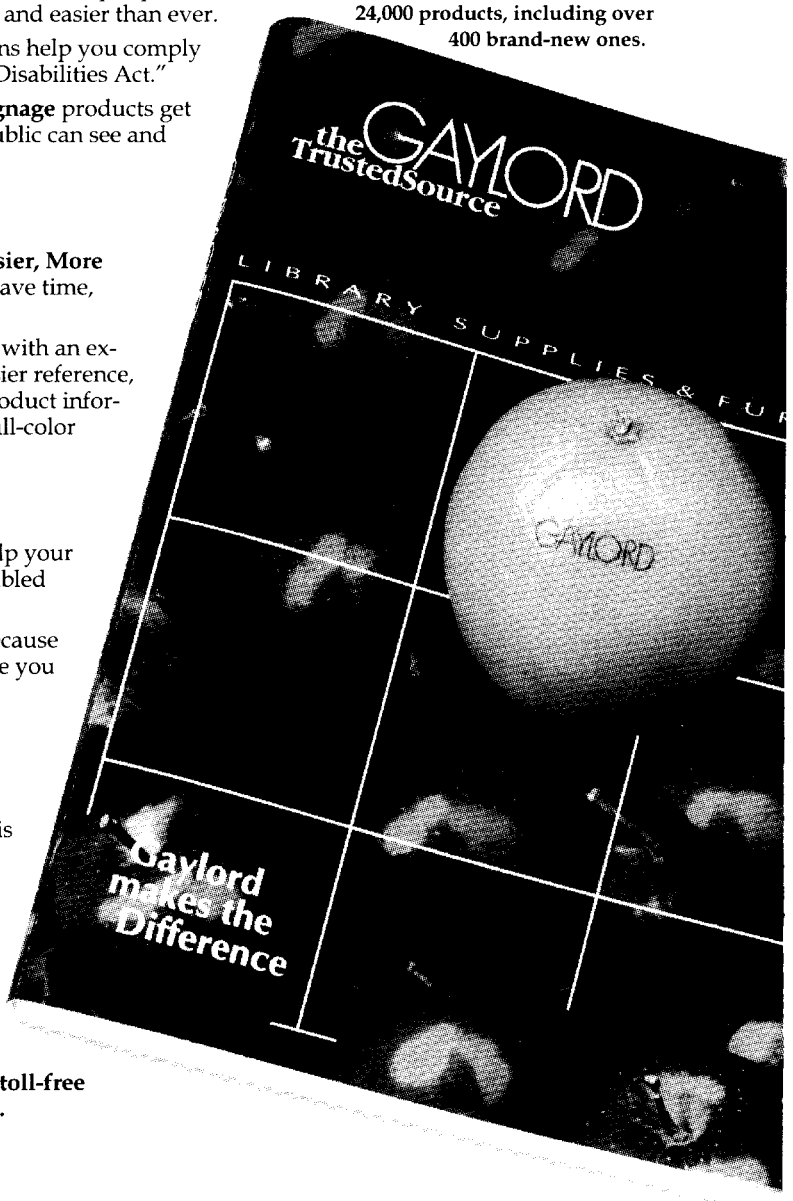

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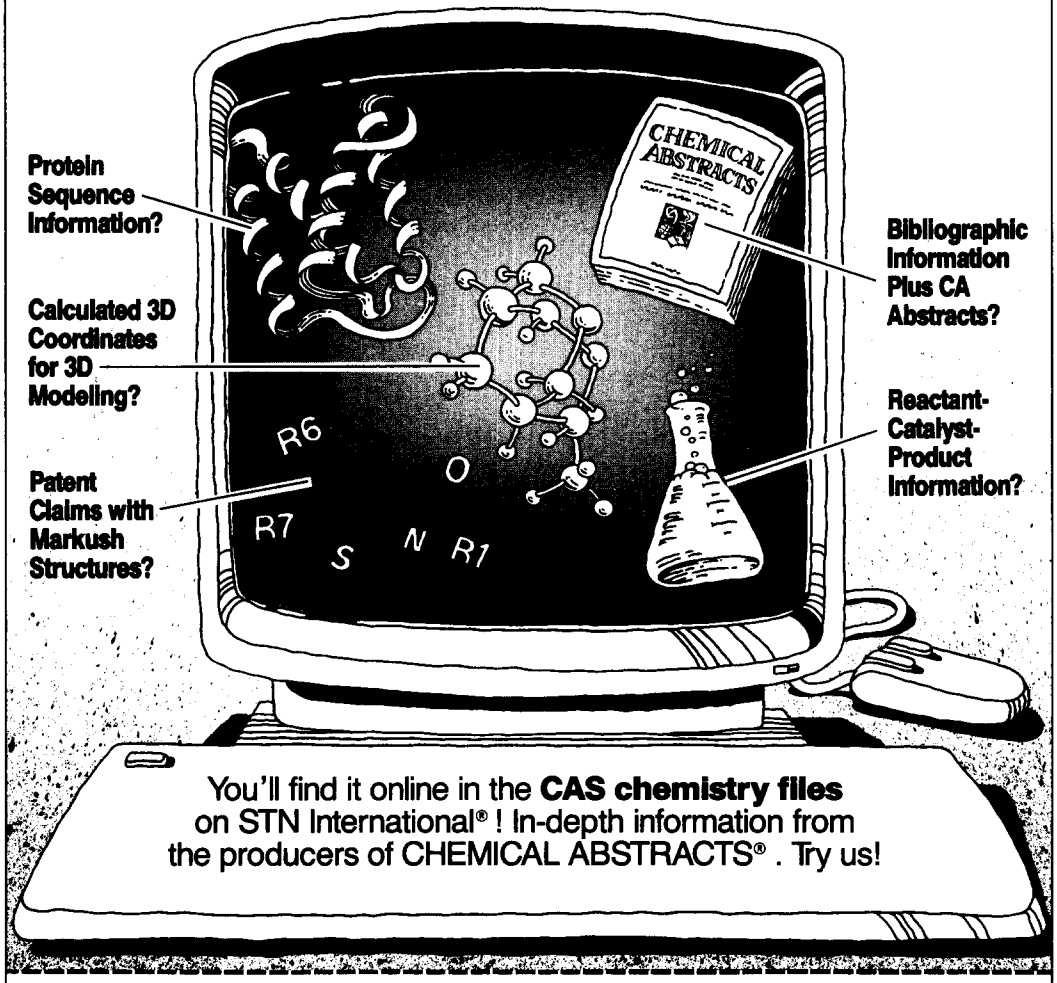

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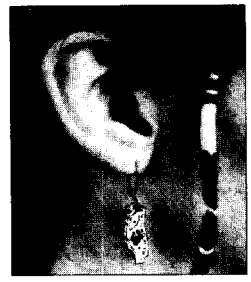

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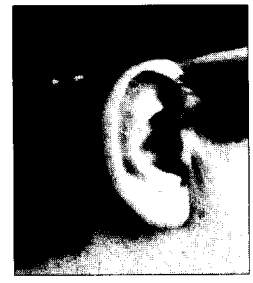

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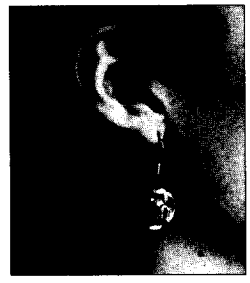

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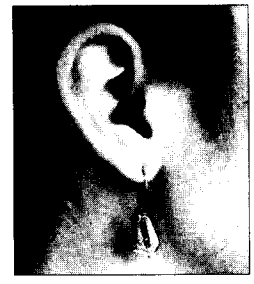

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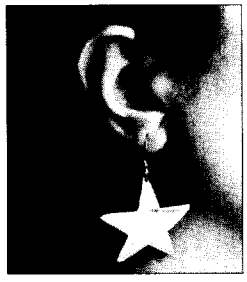

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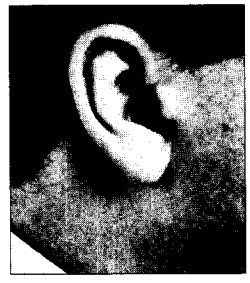

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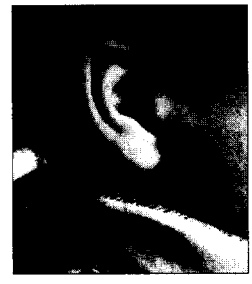

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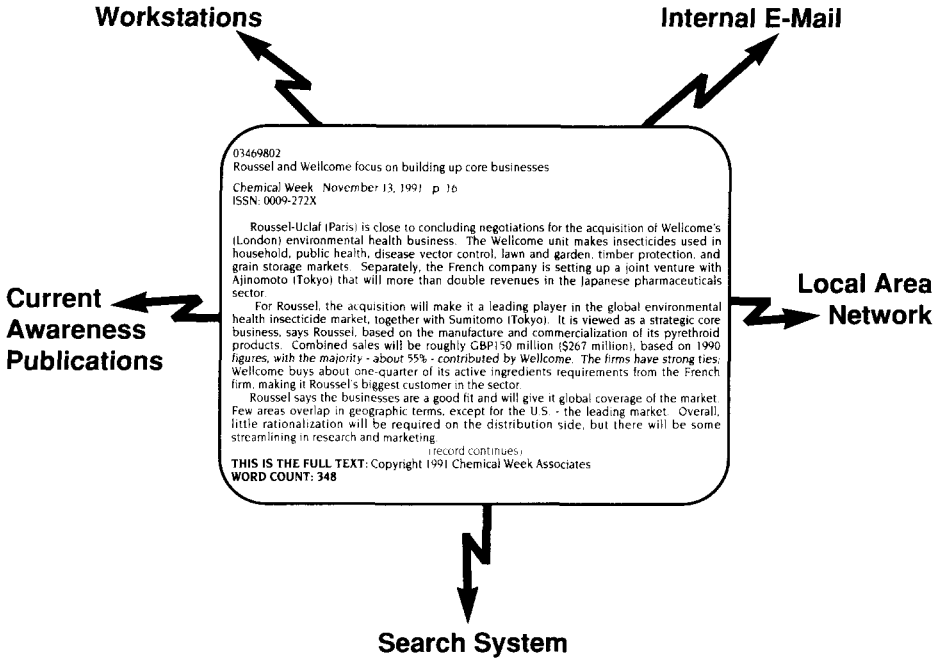

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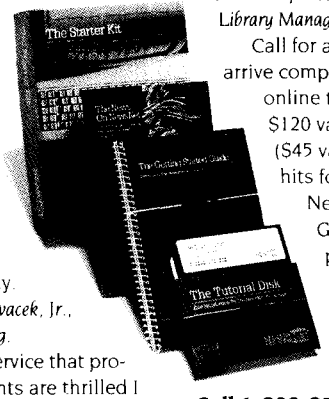

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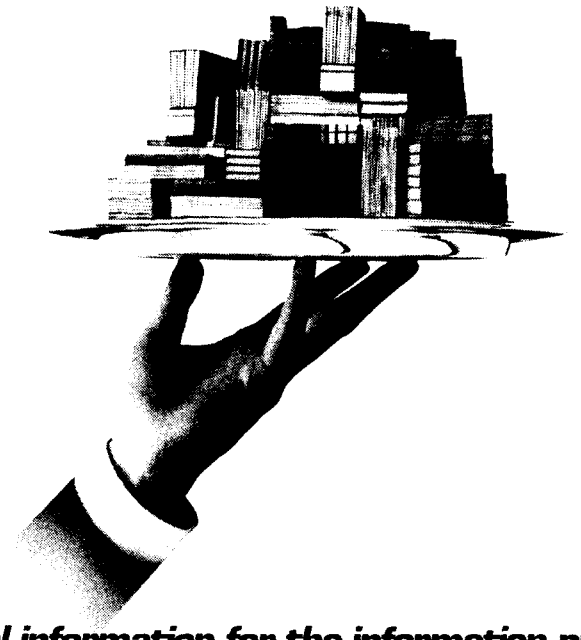

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Automated Authority Control: Making the Transition

By Amey L. Park

■ **Authority control is needed in online databases in special libraries to ensure the consistent use of access points and to establish a reference structure leading the patron to the correct and related headings. Ten steps are given which may be helpful in making the transition from a manual authority file to an automated one. Included is an introduction to authority control and explanations of MARC authority records and methods of file creation. Also discussed are possible policy decisions, training staff by checking the authority file, catching up with authority work, and remaining current with ongoing authority work and the discipline. Guidelines are provided about remaining realistic about automation possibilities.**

Introduction

Authority control provides a finding function to databases such as a library's catalog or to information storage and retrieval systems such as BASIS. Authority control helps a patron find information by providing consistent headings, or access points, which lead to all works in a database by a given author, about a given subject, or under a collective title. In addition, reference headings contained within authority records provide links to other access points and between varying forms of access points.

Authority work is the process of creating authority records by making the intellectual decisions required to establish and record the authorized and reference headings following AACR2 standards. Authority control is the process of adding those authority records to a database, ensuring "the establishment of logical links between authority records and access points to bibliographic records."[1] This article focuses on automated authority control and includes guidelines about making the transition from a manual to an automated authority control system.

Need for Authority Control in Special Libraries

Authority control is necessary in special libraries with automated catalogs because it provides quality control, ensuring that headings in bibliographic records are collected in one place and are not scattered among varying access points. Although some have argued that the advent of automated library catalogs would remove the need for authority control, Malinconico points out that "Unless a machine readable database has a coherent underlying organization, sophisticated retrieval can only ensure access to individual items...," and "...an intellectually comprehensive search... can only be ensured by the nature of the organization of the database to be searched."[2]

Authority control is necessary because, without it, material may not be accessible. In a database lacking authority control, books published about nuclear energy may be found under varying forms of subject headings such as "Atomic energy," "Atomic power," "Nuclear power," and others. In such a system, a patron can never be sure that they have found everything in the database about nuclear en-

ergy because the possibility exists that items are located under a different heading that they have not considered as an access point.

In a database with authority control, all books published about nuclear energy are found under "Nuclear energy." A patron searching under any of the above terms is given a reference to the correct heading.

ATOMIC ENERGY
search under
NUCLEAR ENERGY

Authority control is also necessary in online databases because it provides links to other related headings. These links are not present unless they are explicitly coded in the authority record. The patron who searched for the heading "Nuclear energy" in the example above is also provided references to other related headings in use in the database.

NUCLEAR ENERGY
search also under
NUCLEAR CRISIS CONTROL
NUCLEAR ENGINEERING
NUCLEAR EXCAVATION
NUCLEAR INDUSTRY
NUCLEAR POWER PLANTS
NUCLEAR REACTORS

Even though automation allows for sophisticated searching capabilities, database organization results only when there are relationships between headings. These relationships cannot be intellectually established by a computer and they ensure that patrons are directed to all relevant information concerning their topic.

Introduction to Authority Control

Headings which require authority work include personal, corporate, conference, and geographic names; uniform titles such as those for a composer or author; or for works such as the Bible, series titles, and subject headings.

An authority record contains the name or NUC symbol of the cataloging source which established the heading, the standardized and unique established heading, variant forms of the heading ("search under" headings), related forms of the heading ("search also under" headings), notes about the heading—including historical, biographical, and local notes, and the source from which information was obtained in order to establish the heading.

When the authority and bibliographic files are linked, the authority file's cross reference structure is present in the bibliographic file, guiding patrons to the established heading and directing them to topics related to the one being searched. Thus, headings are collected uniformly and consistently in the bibliographic file.

MARC (machine readable cataloging) authority records are created by several sources, including the Library of Congress (LC) and National Coordinated Cataloging Operations (NACO) participants who contribute authority records to LC's authority file. Of course, a library may create local authority records for its online catalog for headings which have not been established by the Library of Congress.

Steps which may be used when making the transition from a manual to an automated authority file are provided below. While the steps are listed linearly, some could occur concurrently.

Step 1: Researching Authority Control: Bibliographies and Tools

Bibliographies on authority control during the past ten years have been written by Auld, Burger, Clack, and Taylor.[3] In addition, Avram, Burger, Clack, Henderson, Runkle, Schmierer, and Tillett have written overview articles and tests devoted to authority work.[4]

Become familiar with tools used to create automated authority records. Creating the intellectual *content* of an authority record requires establishing the correct heading and ensuring that the relationships between headings are consistent. An authority record's *form* is set by MARC standards which dictate the placement of the content in coded fields, allowing for computer manipulation of the data. There are several sources which are used for the intellectual content and form of automated authority work.[5]

Step 2: Familiarization with Online Authority Records

A MARC authority record is made up of a leader and two kinds of fields. Fixed fields each have a definite, "fixed" length, containing data that is important for machine manipulation and provides helpful information to the cataloger.

Some important fixed fields for authority records include the kind of record code, descriptive cataloging rules code, subject heading system/thesaurus code, type of series code, numbered/unnumbered series code, heading use codes (which indicate if the authority record may be used as a main or added entry, subject heading, and/or series entry), reference evaluation code, record update in process code, level of establishment code, and the cataloging source code.

Variable fields contain the actual content of the authority data and vary in length. They are preceded by tags which are composed of three numbers. The digits of the tag may vary depending on the type of heading and are indicated by the use of the variable "x" or "xx." A concise chart listing the variable fields is given in figure 1.

An example of an online authority record as displayed on authority file in OCLC is given in figure 2.

The National Union Catalog (NUC) symbol for the cataloging source that established the heading is given in the 040 field. The established heading is given in the 1xx field.

100 10 Seeger, Pete, #d 1919-

110 20 WABC-TV (Television station : New York, N.Y.)

Figure 1: Format of a MARC Authority Record—Variable Fields

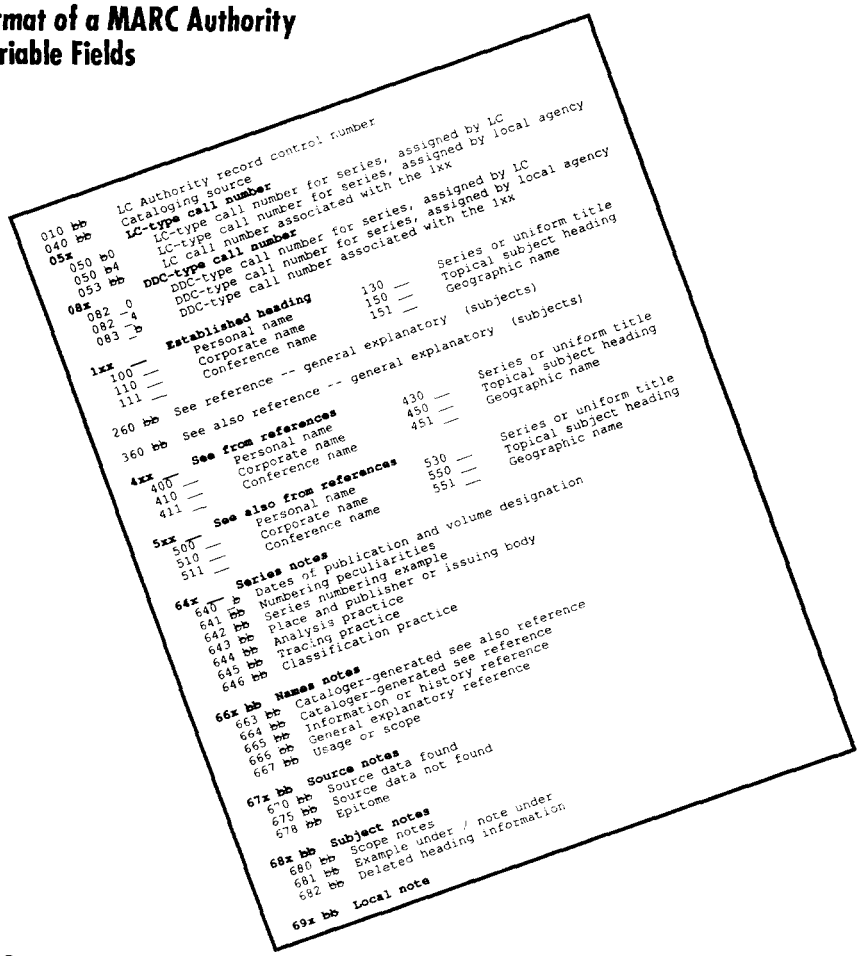
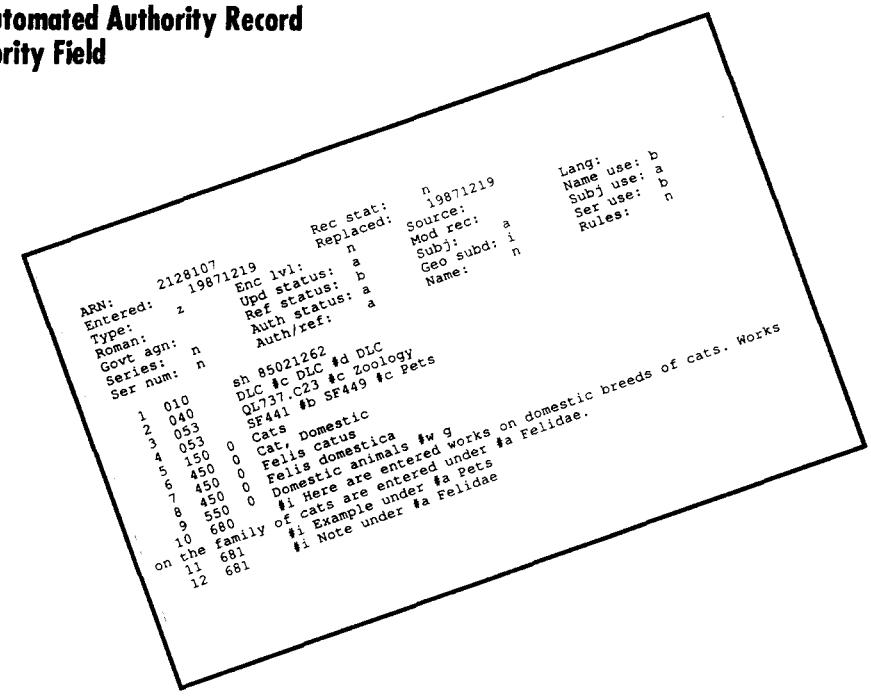


Figure 2: Automated Authority Record in the Authority Field



111 20 Olympic Games #n (21st : #d 1976 : #c Montreal, Quebec)

130 0 Solemn League and Covenant #d (1643)

150 0 Cats

151 0 Le Mont-Saint Michel (France)

Invalid (search under) references are given in 4xx fields, and variant, valid (search also under) references are given in 5xx fields.

There is a parallel tagging structure within the 1xx, 4xx, and 5xx fields that can be seen in figure 1 and in the above examples. The tag for personal names ends in "00," hence a 100 is an established heading for a personal name, a 400 is an invalid heading for a personal name, and a 500 is a related heading for a personal name. Likewise, the tags for corporate names end in "10," conference and meeting names end in "11," series and uniform titles end in "30," subject headings end in "50," and geographic names end in "51."

Series notes and decisions about their tracing practices are found in 64x fields, notes about the source of information used to establish the heading are in 67x fields, notes about subject headings are in 68x fields, and local notes are in 69x fields.

Following each tag are two indicators, one or both of which may contain blanks. Indicators provide information useful to the computer and cataloger.

Subfield values further specify information within each variable field. Subfields are preceded by a delimiter mark (#). Examples of subfields for the 100, 400, and 500 (sometimes referred to as x00 fields) include #q for the qualifier, #d for the date, #t for a title (as in a name/title heading), and #m for the medium of performance (in a name/title uniform heading for a musical composer).

100 10 Beethoven, Ludwig van, #d 1770-1827. #t Sonatas, #m piano

100 10 Shakespeare, William, #d 1564-1616. #t Hamlet

100 20 T-W-Fiennes, Richard N. #q (Richard Nathaniel), #d 1909-

One important subfield in 4xx and 5xx fields warrants additional explanation. Subfield w (#w) is present only if there is a special relationship between the heading in the reference and the established heading. It is summarized in Figure 3.

There are four positions for subfield w, each of which must be considered independently of the other four positions. The first position is a special relationship code, the second is a tracing restriction code, the third is an earlier cataloging rules code or an earlier form of heading code, and the fourth controls the display of the reference to the public. Coding all four positions is required only if the fourth position has relevance. The character "n" may be used in preceding positions to act as placeholders so that subsequent values can be coded. An "n" means that the position is not applicable for the heading.

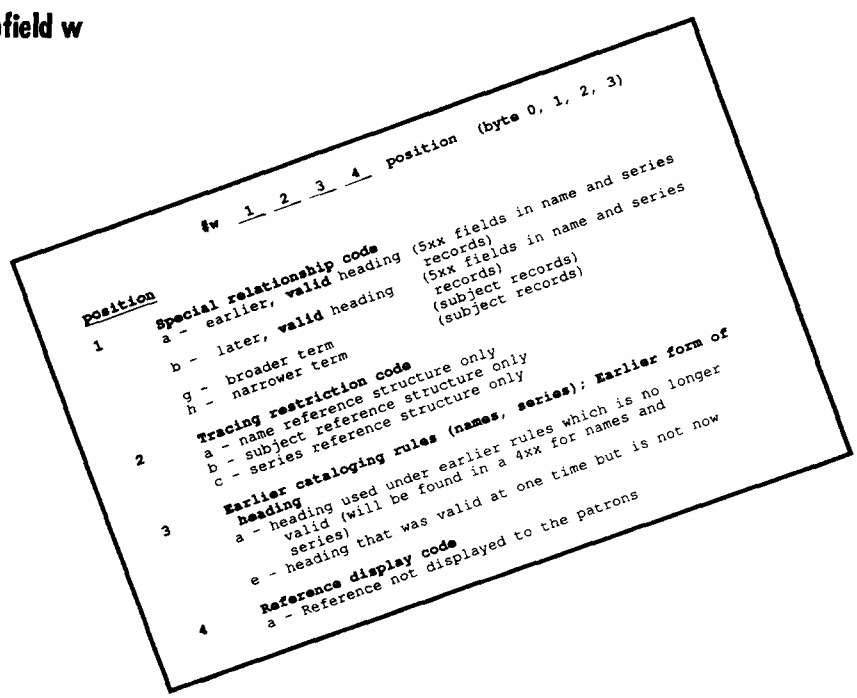
Step 3: Creating an Authority File

Smaller libraries or those lacking funds to purchase vendor services may opt to create the authority file inhouse. If this method is chosen, authority records should be created for each access point in the catalog, especially those headings which require cross references. Authority records can be added by exporting the records from a bibliographic utility or by rekeying the authority record.

After the authority file is created, the bibliographic file should be checked to ensure consistency between authorized headings and bibliographic headings. Computer-generated listings of the 4xx fields can be used to create lists of possible incorrect headings. These lists can then be searched against the bibliographic file and corrections applied to bibliographic headings that are found in conflict with the authorized heading.

The most effective and least time-consuming method of creating an authority file is to pay a vendor to create the file and to apply corrections to the bibliographic file. Dalehite has provided a description of services offered by vendors.[6] Such services vary, but they typically include processing archival bibliographic tapes that were created by a bibliographic utility. This is done by matching bibliographic headings against LC's name (includes series records) and subject authority tapes and/or Medical Subject Headings

Figure 3: Subfield w



(MeSH) and creating a tape of matching authority records. The library may also opt to have the vendor correct bibliographic headings based on the authority record structure.

Step 4: Determining Workflow and Local Policies

Determining the workflow and local policies to be followed when doing authority work in an automated environment calls for deciding who will be responsible for authority work and control tasks, including creating the intellectual content of the records, adding authority records to the database, checking the consistency and relationship between the headings and references, evaluating the file and its effectiveness, and training staff members. Another important decision is to determine the point at which authority work will be performed, either pre- or post-cataloging. Decisions such as these are often dependent on the system with which the library has chosen to automate its catalog.

Local policy issues include the following list of questions:

1. Should the library alter fields in an LC or NACO-provided authority record? How will those changes be recorded? Are there any circumstances in which an LC-established heading (1xx field) will be changed in the local authority file? Will all 4xx's (search under references) from LC's authority records be retained?

Libraries that are members of a bibliographic utility cannot make revisions to authority records in the utility, but can usually make revisions to records in their local file. A library may decide that it will modify Library of Congress or other NACO authority records in its local database.

Some libraries add death dates to personal name headings or make other changes that are not in the LC authority record. A library may also delete information in LC records, such as references that contain foreign spellings for popular authors, because those references are not helpful to its patrons.

If modifications are made, certain conventions are recommended. Subfield d (#d) with the institution's NUC symbol should be added to the 040 (cataloging source field) to indicate that the local library modified the authority record in their local database. Additionally, the library should add a 69x (local) note that explains how the record was modified.

2. Will the library switch to LC practice for series headings, or will it continue to follow its own local practice?

If a vendor created the series authority file, it was done by matching bibliographical series headings against a national authority file, such as the Library of Congress'. As such, resulting series authority records which are added to the local library's online authority file reflect LC's series treatment, which is not necessarily the local library's series treatment.

If a library decides to continue their local practice for series, the 64x (series notes) fields are most often modified. It is recommended that the library include LC's practice in each field following their own practice for clarification.

645:: #a t #5 OKentU #a n #5 DLC

In this example, Kent State University Libraries traces a series while the Library of Congress does not. Recording LC's practice helps explain bibliographic series tagging to catalogers using LC cataloging copy.

3. Who may initiate the request for an inhouse change and who is authorized to make the changes?

Because of the need for accurate information in the authority file, only those staff members who understand authority work well should be permitted to revise authority records. Changes to authority records could be requested by any staff member or patron, but should be reviewed by a professional cataloger who is responsible for deciding whether or not the revision should be made.

4. Who will be permitted to authorize global changes?

Global changes are changes applied to strings of characters wherever they appear throughout the database. Strings of characters that should not be altered may be revised if global changes are initiated without careful thought. If not properly restricted, for example, changing "U.S." to "United States" changes every occurrence of "U.S.," including those cases where "U.S." is part of a corporate heading. Because of the possible danger, this function should be performed or reviewed before action by a professional cataloger.

5. Will the library stop 5xx's (search also from references) from displaying to the public by coding the fourth position of subfield w "a"?

In many automated systems, coding the fourth position of subfield w (#w) in 4xx (search under) and 5xx (search also under) headings stops the reference from displaying to the public. In the following example, the patron would not be given references from "Atomic energy" or "Nuclear physics" to "Nuclear energy " if the authority record for "Nuclear energy" appeared (in an abbreviated form) with the fourth position of subfield w coded "a".

150 0 Nuclear energy
450 0 #w nnna #a Atomic energy
550 0 #w nnna #a Nuclear physics

Libraries that are interested in maximizing available entry points should leave the fourth position of subfield w blank. Following is the form the abbreviated authority record for "Nuclear energy" would take if the fourth position of subfield w is not coded.

150 0 Nuclear energy
450 0 Atomic energy
550 0 Nuclear physics

The references would display to the patrons in the following way.

Atomic energy	NUCLEAR PHYSICS
search under	search also under
NUCLEAR ENERGY	NUCLEAR ENERGY

References from 4xx and 5xx headings always lead *from* the heading in the 4xx or 5xx *to* the heading in the 1xx. As long as the library does not add authority records for headings that are not in use at the library (in this example, there should be no authority record for "Nuclear energy" if the library owns no items under that heading), the patron will never be directed to a point at which there are no headings, but always from access points to additional access points.

A library may choose not to display some kinds of references to the public including those that are made only for the catalogers' use, such as 4xx (search under) references that are made to normalize punctuation. If a library does not want to display a reference, it should code the fourth position of subfield w "a."

6. Does the library need to have an authority record for every access point in the database, or only certain ones? Which ones fall into the category for inclusion?

Some systems automatically create an authority record for each incoming heading. These records "hold" the access point for all its uses throughout the database. Libraries whose systems are not set up this way may establish an authority record for only the "parent" or main part of the heading, for subject headings with subdivisions which have cross references, and for records which may prove useful to the patrons or staff. Some libraries include only those records which contain cross references or important notes.

Step 5: Training Staff and Step 6: Checking the Authority file

Up to this point, the librarian responsible for overseeing authority control has probably been the library's only "authority expert." After automation, more staff members need to become familiar with the authority file.

Training staff to use the automated authority

file can best be accomplished if it is combined with the checking of the authority file. Training the staff members who will be using the file to check it will familiarize them with it and help them to feel a sense of ownership towards it.

Some errors may be present in the database which should have been detected during the inhouse or vendor authority edit but were not. A sample of authority records and bibliographic access points should be checked for incorrect dates, misspellings, typographical errors, and incorrect delimiters. Names that are used often should be checked because they have the greatest chance of containing inputting errors. Examples include access points such as composers, United States presidents and other world leaders, popular authors, and common geographic names.

Some libraries check each authority card against the vendor created authority file and transfer local cross references and notes to the online record. A library may also wish to record local notes and explanations to the records in its online authority file. This amount of checking can be very time consuming.

If a library decided to continue its local analytical, tracing, and classification series practice as opposed to switching to LC practice, each series authority card should be checked and the online series authority record modified in order to ensure that the online records reflect local practice.

Some automated systems print lists of headings which are problematic in the database. Systems like this may not require the sampling described above; rather, the library can rely on the lists to detect problems. Library staff who will use the system for authority work in the future can investigate these printouts, which will also familiarize them with the authority file.

Step 7: Catching Up With Authority Work

Upon the delivery of a vendor-created authority file, the library will need to add authority records for access points that have been used since the date the library's bibliographic archival tape was sent to the vendor.

There are two methods that can be used to record which authority records should be added to the library's local authority file. A library can save printouts or cards for these access points and add them to the authority file after it is returned from the vendor or a "gap" tape containing the bibliographic records that were created after the library's records were first sent to the vendor can be sent to the vendor. A process similar to the one in which the authority file was created would then be performed on this "gap" tape.

After completing this step, the authority file should be current and complete.

Step 8: Keeping Up With Ongoing Work

After the authority file is created and made current, the library needs to keep up with its ongoing authority work. This includes dealing with revised authority records and adding authority records for incoming bibliographic records. Libraries can keep up with current work inhouse or through a vendor.

Revisions to established headings of authority records create a conflict in a local system when a bibliographic record containing a newly revised access heading conflicts with a heading that already exists in the database. Libraries that perform inhouse authority control may use the *Cataloging Service Bulletin*, a quarterly publication, and the *Music Cataloging Bulletin*, a monthly publication, to supply them with lists of revised headings.

A library may decide not to use these lists, but to maintain local consistency and change authority and bibliographic records only when a conflict is created by an incoming bibliographic heading.

If the authority file and bibliographic file are not linked, all bibliographic records affected by authority record changes must be revised. If the authority and bibliographic files are linked, this step is automatic.

Libraries whose automated systems allow for global change capabilities are able to revise bibliographic records with relative ease. Libraries whose systems do not permit global changes may decide that some changes require too much work and opt not to revise the headings; however, the conflict between existing bibliographic access points and incoming ac-

cess points will only increase over time.

Libraries that do inhouse authority work should continue to add authority records for current cataloging to the file as well as keep up with revised headings. Workforms with specific fields for each type of authority record should be designed for headings that LC has not established.

Many automated systems supply lists of new headings after they have entered the database. These lists can be used to spot problems in headings and to start the workflow for adding authority records to the database.

Some bibliographic utilities continue to allow access to authority records which LC is updating. The fixed field "Record update in process" for these records are coded "b" and a 667 field (name usage or scope note) describes the change being made and the date that the change was initiated. If these records are added to the database, special care should be taken regarding the note. Additionally, the record should be examined again in several months to revise the record in the database after LC has made the change(s).

Ongoing authority work is available through vendors for libraries who lack the staff to perform inhouse database maintenance. The library periodically sends the vendor a tape of bibliographic records from the date of the vendor's last authority edit. The vendor then processes this tape in a procedure similar to the one used to originally create the file. Local authority workforms may be used by special libraries subscribing to ongoing vendor authority service to create authority records that have not been established by LC but are of interest.

Step 9: Staying Current in the Discipline

Three ways to stay current with developments in the field of authority control are to read professional journals, become active in professional organizations that discuss authority control issues, and subscribe to BITNET lists that discuss authority issues.

Professional journals that are likely to publish articles related to authority control include *Cataloging & Classification Quarterly, Library Resources and Technical Services*, and *Technical Services Quarterly.*

The Association for Library Collections and Technical Services (ALCTS) Cataloging and Classification Section (CCS) Authority Control Interest Group (ACIG) meets regularly at summer and midwinter American Library Association conferences to discuss topics of interest to librarians responsible for authority control. Additionally, many automated systems have authority control interest groups which meet regularly. These groups act as resources for librarians using the same automated system and as lobbying agents to the vendor who sells the automated system, working to ensure that system improvements are made.

The BITNET discussion list AUTOCAT at UVMVM actively discusses authority and cataloging issues. Authority questions are often posted to this list and answered by professionals with authority control expertise. Other BITNET discussion lists discuss issues of interest to users of particular automated systems.

Step 10: Retrospective Work

As local library databases merge with other libraries' databases, headings will inevitably conflict and database problems will have to be resolved. Retrospective "cleanup" projects which are necessary after each database load can be done inhouse or through a vendor. Ongoing vendor work is described in step eight above.

Libraries who opt for inhouse authority control should repeat step six to find errors resulting from database loads. Subject heading conflicts can be found through the use of Burgett and Roberts' compilation of revised subject headings from 1973 until 1988.[7] Additional lists can be found in the introductory pages of each *Library of Congress Subject Headings.* Some automated systems print lists of conflicting headings which require investigation, thus repeating step six and checking lists may not be necessary.

Conclusion

It is important to stay realistic about what automation will and will not do for the library.

Automated authority work does not decrease the *amount* of work to be done, although it may change the *kind* of work that is done. Automation makes problems more blatantly noticeable and harder to ignore. The automated system is very literal and requires great attention to detail. Typographical errors are not overlooked by the computer as they were by a card filer or patron. At the same time, automation usually makes problems easier to correct. Global changes, when performed with caution, allow for quick revision of bibliographic records.

The payoff for maintaining an automated authority file and its links to the database is great: improved consistency and fewer conflicts among access points along with the establishment of linking headings leads to greater access to information for patrons. ■

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Burger, Robert H. "Selected Bibliography" in *Authority Work: The Creation, Use, Maintenance, and Evaluation of Authority Records and Files* Littleton, CO: Libraries Unlimited, Inc., 1985. pp. 115–120.

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Taylor, Arlene G. "Research and Theoretical Considerations in Authority Control," *Cataloging & Classification Quarterly* 9 (Summer 1989): 29–56.

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Tillett, Barbara B. "Considerations for Authority Control in the Online Environment," *Cataloging & Classification Quarterly* 9 (Summer 1989): 1–11.

[5] Tools used for the intellectual content of authority work include:

Anglo-American Cataloging Rules. 2nd ed. Chicago: American Library Association, 1988. (AACR2, Rev.)

Library of Congress Rule Interpretations. Washington, DC Cataloging Distribution Service, Library of Congress, 1989–

Cataloging Service Bulletin (CSB). Washington, DC: Processing Services, Library of Congress.

Library of Congress Subject Headings (LCSH). 14th ed. Washington, DC: Cataloging Distribution Service, Library of Congress, 1991.

Subject Cataloging Manual: Subject Headings. 4th ed. Washington, DC: Cataloging Distribution Service, Library of Congress, 1991.

The tool which is most often used for the form of automated authority records is:

USMARC Format for Authority Data Including Guidelines for Content Designation. Washington, DC: Library of Congress, Cataloging Distribution Service, 1987– .

This is an indispensable resource for librarians responsible for the form of authority records in their library's database, just as AACR2 is a required text for librarians responsible for the intellectual content of the authority records. It provides explanations about the use of each fixed and variable field and gives tagging and subfield directions. Examples of MARC fixed and variable fields and the display of complicated references are provided.

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The Weeding of a Historical Society Library

By Cindy Steinhoff Drake

■ **The Nebraska State Historical Society began a major deaccessioning (weeding) of its library in October 1985. By the time the weeding was finished in November 1986, the Society had become embroiled in a major controversy over the handling of this project. A summary of the events leading to the decision to weed, the procedures used, and the results achieved may be of benefit to other libraries facing this issue.**

Background

Since the founding of the Nebraska State Historical Society in 1878, the Society Library has played a major role in its operation. Its collecting policy followed the Society's collecting policy, which encompassed "everything that, by the most liberal construction, can illustrate the history of Nebraska—its early settlement, its progress or present condition—which will be of value or interest to succeeding generations." The Society was declared a state institution in 1883. In 1907 the Society's statutory authority provided that it should collect material "pertaining to the history of the world, particularly to that of Nebraska and the West." Under these liberal policies the library collection expanded to the point that by 1946 storage became a critical problem.

That same year a new superintendent of the Society, Dr. James C. Olson, informed the executive board that the library contained great quantities of material not pertinent to the history of Nebraska or the American West. He felt there needed to be a new definition of the library's scope by strictly limiting its collection to material pertinent to the history of the state and the region of which it was a part. Ht requested an inventory of the library's uncataloged holdings (backlog) to determine what to incorporate into the Society's collection and what to cull. Olson proposed that the Board authorize him to offer discarded books to agencies in Nebraska, then to agencies in other states, and to sell the remainder. The Nebraska Attorney General in 1947 ruled that because the Society was a state institution, it needed legislative authorization for the disposal of state-owned material. With the help of Arthur Carmody, a Society Board member and a state senator, Legislative Bill 223 was approved on March 19, 1949, giving the Society immediate authorization to "sell, exchange, destroy or otherwise dispose of any surplus, damaged, defective. or duplicate books, or materials in its collection." With this legislation in place, the library could focus on weeding both its uncataloged and cataloged material.

Response to this legislation was slow over the next 18 years. The inventory Olson requested estimated the backlog at 50,000 items in 1950 but at 30,000 in 1952. Between 1950 and 1957, the library sent out 11 lists of backlogged material consisting of 4,153 titles. It cataloged another 5,265 titles (consisting of 11,846 volumes). The library report for 1960 showed disposition of surplus material had ceased. Evidently other projects had higher priority. After 1968 the staff concentrated on new collections such as 1,000 genealogical publications transferred from the State Law Library and a major private collection consisting of 21,000 volumes. Because much of the latter collection duplicated existing holdings,

fewer than 2,000 volumes from it remained after the 1985–86 weeding.

Weeding of the cataloged portion of the library proceeded at an even slower pace. The 1950 inventory showed 5,811 cataloged titles which accounted for 13,726 volumes. By the late 1960s only 56 titles were removed. Between 1968 and 1975, unwritten guidelines permitted weeding of 2,677 volumes. From 1975 until fall 1985 the library staff found it increasingly difficult, and finally impossible, to keep up with cataloging new titles and to complete processing new donations. Weeding ceased, and a new backlog accumulated, because there was no clearly defined collection policy to limit acquisitions or provide for weeding.

The last accurate record of cataloged materials (1975) showed 30,130 titles which included 65,738 volumes. Ten years later the head librarian estimated the collection at 100,000 cataloged and uncataloged volumes. One exasperated staff member claimed that the books reproduced when left in the dark. That possibility began to seem more and more likely as the backlog continued to grow.

The 1984 Evaluation

In 1984 the Society Board recommended a self-study of all functions of the Society. The head librarian and the staff evaluated the library and prepared a report which included future plans based on the evaluation.

An outside consultant's review of the library, part of the self-study in September 1984, included 20 recommendations; most emphasized the need for additional space and funding. Two recommendations suggested evaluating the collection policy and creating a policy for deaccessioning (weeding). The director of the Society, preparing to retire, acknowledged that weeding was needed and asked the head librarian to plan for it. In November the head librarian wrote a brief procedure outlining the paperwork necessary to deaccession individual items but prepared no formal policy. The final self-study report prepared by the head librarian in December 1984 included a collection development policy which mentioned deaccessioning in a single sentence. Despite the consultant's recommendations, there was no policy for deaccessioning.

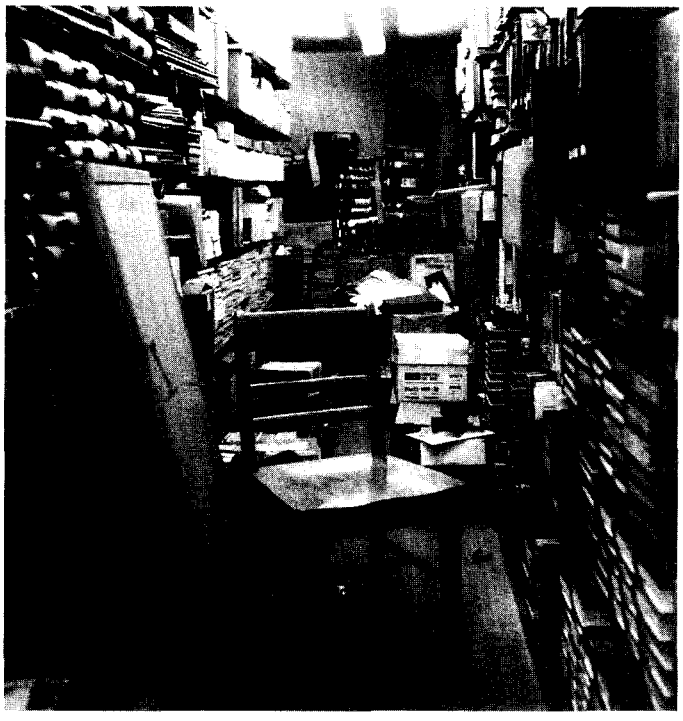
As a result of the consultant's report and the director's request, the head librarian in February of 1985 revised the collection policy and added guidelines for "deselection." Neither the collection policy nor deselection guidelines amounted to a clear policy with well-defined procedures.

When a new director, Dr. James A. Hanson, arrived in June 1985, he found the library facing a crisis much like the one that existed when James C. Olson became superintendent in 1946. The crowding had exceeded the capacity of the library's reading room—two assigned stack levels (photograph 1)—and the overflow areas, and had limited use of public access areas by patrons and staff. Hanson directed that the library be weeded, particularly when he concluded that the plans to move the library into quarters vacated by the society museum in 1983 were not feasible due to lack of funds and the new area's lack of weight-bearing capacity.

The Deaccessioning Project

Since the small library staff could not handle a massive weeding, the director devised a team approach for deaccessioning, scheduled to begin in November 1985. He chose five staff members from outside the library, each qualified by formal training and experience in specific areas of Nebraska and Great Plains history such as frontier history, pre-territorial and local history, Indian and military history, archaeology, anthropology, and material culture. The library's representative was the head librarian, whose special interest was genealogy. An additional library staff member helped the head librarian handle the paperwork. The head librarian later delegated her team responsibilities to the assistant librarian. Other staff members participated occasionally to add expertise in areas such as folklore, architecture, Nebraska authors, or to substitute for absent members. The team worked one hour per day, five days per week, from November 1985 until November 1986. The team's combination of training and cumulative work experience at

Photograph 1



the Society of over 76 years gave it a depth of knowledge about material needed for research in specific fields as well as material relevant to general Nebraska history.

During the weeding, team members examined and evaluated each title. The team began with cataloged items and moved down the shelves, literally passing each volume from hand to hand. Members examined uncataloged works, box by box. In most cases, all team members had to agree to discard a title. When the members disagreed, one member's expertise in the relevant field was the deciding factor. Library staff completed paperwork and packed discarded books in boxes to be moved to a holding area. Approximately one hour of paperwork followed each hour of weeding, not including pulling cards from the public catalog. That task required several additional months.

The team found that the collection policy written in 1985 was inadequate for some of the situations it confronted, and it developed a more comprehensive collection policy as the work proceeded. Nebraska imprints, local history, and genealogy were easy to evaluate, but the team needed a more specific definition of "the West" for history, anthropology, and politics. The team established ten criteria which became the standard for current acquisition and weeding policies. One criterion was the number of copies of each title to be kept. Since most non-Nebraska imprints could be borrowed from other sources, the team decided to keep one copy of each book that met the criteria of the updated collection policy when it was a secondary source or a professional publication. Two or three copies of all Nebraska imprints were retained, one for public use and one or two for security copies. The library had stopped interlibrary loan of hard copy in 1954. The team decided not to retain extra copies to furnish a new system.

To minimize mistakes, the entire society staff had five "book look" opportunities to review all discarded books. Anything that looked as if it had been discarded by mistake was rechecked. A few items came back into the collection through this method, for example, books by little-known Nebraska authors. Staff could select discarded books for use as office copies; nothing went for personal use.

The tedious task found its light side when

the team began to choose a weeded book as the "Book of the Day" and then "Book of the Week." Although each book might be valuable in another library, it lacked value to ours. Some of the winners included *Life Histories of North American Cuckoos; Goatsuckers, Hummingbirds, and Their Allies; History of France in Words of One Syllable;* and *Getting the Most out of Your Circular Saw.*

The Public Response

In addition to the technical and professional considerations, the weeding project encountered a problem of public relations. Even though the state statute of 1949 authorized weeding and the Board had approved the director's plan, controversy developed. A few months after the weeding began, individuals, particularly genealogists who had been misinformed about the purpose and extent of the weeding, began sending letters to the Society and its Board demanding the director's ouster. From its beginning the library had collected out-of-state genealogy and history material, and by the 1970s it had become the unofficial genealogy library for the state. Because of the team's concentration on Nebraska and the American West, some genealogists believed that the team was discarding the category of books most useful to them. The team had begun with a liberal policy in those two areas. It had kept all out-of-state and county histories as well as historical journals from other states, discarding only duplicates. The team applied the same standards to the genealogy collection, consisting of approximately 10,000 family histories and out-of-state genealogy books, and only 257 duplicates were discarded. But the views of a minority of Society Board members and a few disgruntled employees, personally unhappy with Dr. Hanson's decisions in other areas, encouraged the promulgation of misinformation in the news media as well as by word of mouth. Most critics ignored repeated invitations to attend a weeding session and review the process. They questioned the qualifications of team members who were not "trained librarians." The team members, qualified in specific professional areas, took the task seriously. Since the library collection was the primary source of printed material for their own research as well as the primary source on Nebraska history, they, more than anyone else, understood that errors in weeding could affect their resources later.

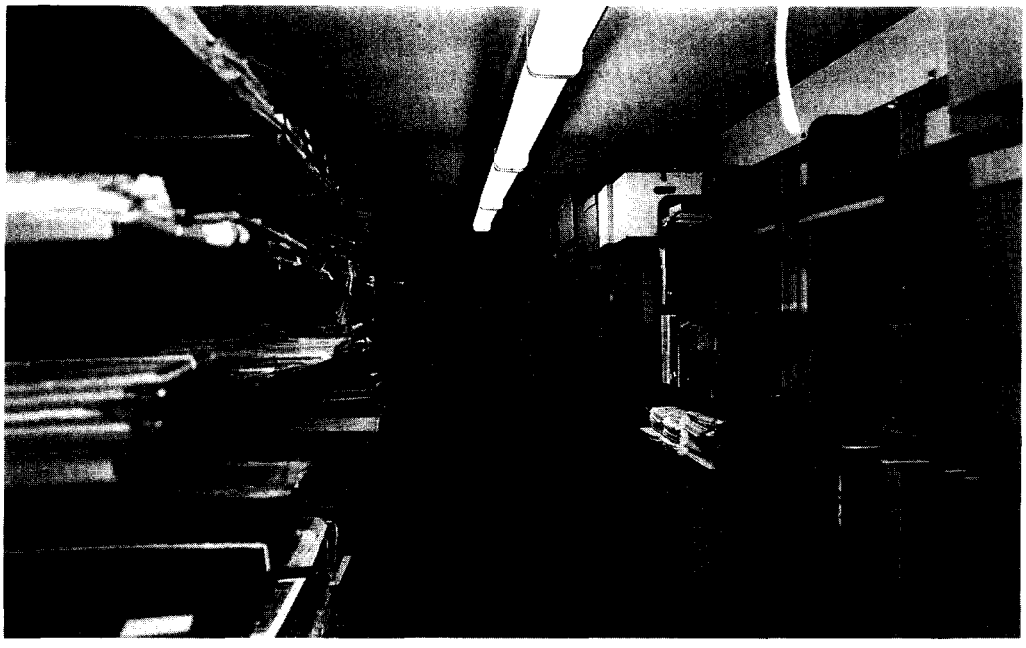
Dr. Hanson was originally given approval by the Board to dispose of weeded books in much the same manner as had been requested by Dr. Olson in 1946. He recommended that all weeded books go to the University of Nebraska Library for selection of useful titles and then to the Nebraska Library Commission. Titles returned from the commission would be sold.

Because of the public controversy, the Board voted in April of 1986 to give the books from the weeding directly to the Nebraska State Historical Society (NSHS) Foundation. This was seen as an expedient to defuse the controversy even though the foundation had no mechanism to deal with the books. The foundation refused to accept the books. At the October 1986 meeting, the Board, still concerned about negative publicity, directed Director Hanson to contact the American Association for State and Local History for recommended external evaluators. From the list the NSHS President selected Dr. Lawrence Towner, President and Librarian Emeritus of the Newberry Library. Towner's evaluation supported the weeding procedures and recommended the disposition of the weeded books as Dr. Hanson had originally outlined. Towner also concluded that the controversy over the library had little to do with books. Rather it reflected a political battle between the society's new leadership and a few Board members and employees who resisted change. The Society Board voted to accept the evaluation of Dr. Towner in February of 1987. Although diehard critics refused to accept this settlement, the furor subsided, and work on the project continued. At its conclusion the team estimated that it had weeded 20,000 books or one-fifth of the collection.

The Benefits

Before the weeding, lack of space had necessitated splitting some Dewey Decimal sec-

Photograph 2



tions into several storage areas, and books were "lost" in the system. With irrelevant and duplicate material removed, library staff cleaned up the stacks and restored logical order to the collection. The stack levels now not only have material in order, but also have shelf room for expansion (photograph 2).

After removing the deaccessioned materials, the library staff revised its plans for moving into larger quarters with a more realistic and economical approach to shelving needs. Instead of the originally estimated cost of $75,000, the library moved into expanded quarters in September of 1987 for slightly less than $25,000. Because the public performs its research in the new area, the reading room contains the most frequently used sections of the library: genealogy and Nebraska local history. Stack areas formerly open to the public are now closed. On October 8, 1988, the remodeled library was dedicated as the James C. Olson Research Library, in recognition of his contributions to the Society.

Shipments of weeded books to the university began. University librarians kept approximately ten percent of the weeded material and returned the rest to the Society. The Nebraska Library Commission declined to examine the weeded books.

As books returned, Dr. Hanson, the only staff member with experience in appraising books, did the last sorting and priced them. This provided another opportunity to retrieve books discarded by mistake. At the Society Board meeting in June 1988, the Board approved a book sale to be handled by the Museum Shop. The first 2,000 books went on sale July 1, 1988. Proceeds from the book sale were put into a trust fund for library acquisitions.

New Acquisition Policies

To ensure a systematic continuing acquisition procedure, Director Hanson named three staff members to a Library Acquisition Committee. This committee has focused its efforts on acquisition of specific titles through purchase or donation according to the collection policy as the weeding committee refined it. It also coordinates purchases and donations with other major libraries in the area to avoid duplicating specialized materials. Even though the

systematic weeding ended in November of 1986 and the move to new quarters was finished in September 1987, deaccessioning continues. Library staff is now doing a complete inventory, preparing for further automation, and dealing with preservation problems identified during the weeding. The library staff continues to weed in the collection as it does inventory. The team effort is still used in a modified form with the Technical Services Librarian contacting former committee members for their advice on retention of certain titles that need closer inspection. The team effort has also been used for the past three years in weeding the Museum Collections Department of the historical society.

The team approach devised by Dr. Hanson had several benefits to the library. Without the intensive weeding project the small library staff would have been weeding into the next century. The Society staff now has a better understanding of the strengths and weaknesses of the library collection. The new collection policy and procedures for weeding established in the last three years provide for an ongoing deaccessioning process.

Summary

Although most libraries may not find their deaccessioning projects becoming the focus of a political battle for control of the institution, we feel there are three areas to address when a library contemplates weeding. First, establish a well-defined collection policy. It may need updating during weeding but not extensive revision. Second, obtain statutory and/or Board authority for deaccessioning. The board or advisory group should be fully informed about the collection policy, preparations required, and the results expected. Third, anticipate groups that may be critical of the weeding and brief them before the project begins. Inform all staff associated with your organization of the purpose and extent of the project and of their responsibility to maintain a professional manner and support their institution's policies when handling the public's inquiries. Weeding your library may be a challenge, but the library itself and/or the institution of which it is a part will benefit, because the collection will then serve the institution's goals and objectives. ■

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Production of a Periodical Index by a Special Library

by Martha M. Stewart and Jackie L. Hatton

■ **This paper describes the rationale, method, automation developments, and future directions of the *Air University Library Index to Military Periodicals*, a subject index to 81 English language military and aeronautical periodicals. The thesaurus of subject headings, and the software and hardware to produce the *Index* have all changed over the 40+ years of its existence. Attempts to take advantage of new technology, i.e., a CD-ROM product or a computer file of the *Index* mounted on an integrated library system, are also discussed.**

Publishing a periodical index is an unusual activity for a library. But the Air University Library at Maxwell Air Force Base in Montgomery, AL does just that—it publishes the *Air University Library Index to Military Periodicals* (hereinafter called the *Index*). This index is distributed throughout the world to over 1,500 libraries and institutions. Except for printing and binding, it is created entirely at the library.

Air Force Professional Military Education

Air University Library is part of Air University which is the education center for the United States Air Force. Air University conducts professional military education (PME) and continuing educational programs at the Air War College, Air Command and Staff College, Squadron Officer School, and the USAF Senior Noncommissioned Officer Academy. Degree-granting and specialized educational programs are conducted at the Air Force Institute of Technology, a satellite campus of Air University, at Wright-Patterson AFB, OH. The Ira C. Eaker Center for Professional Development conducts courses for military personnel who are wing commanders, comptrollers, chaplains, etc. The Air University Center for Aerospace Doctrine, Research, and Education develops, analyzes, and tests Air Force concepts, doctrine, and strategy and the Air Force Wargaming Center conducts computer war games for the USAF and other Department of Defense (DOD) organizations.

Air University Library (AUL) is the largest library in the Department of Defense and the largest federal library outside Washington, DC. The library's mission is to provide professionally directed academic research and information services to Air University and the Air Force. AUL's collection emphasizes military science, aeronautics, international relations, leadership, management, and particularly, Air Force and DOD operations. The library's collection includes 380,000 monographs and bound periodical volumes, 500,000 military documents, 870,000 maps and charts, 150,000 regulations and manuals, and over 700,000 microforms. The library's Integrated Library System offers electronic access to AUL's collections and those of its branches—the Maxwell Community Library, the Gunter Community Library, and the library at the USAF Senior Noncommissioned Officer Academy located at nearby Gunter Air Force Base.

The *Index* is part of this mission. Its primary purpose is to serve the educational and research requirements of Air University students. An index to 81 English language military and aeronautical periodicals, it is published quarterly with an annual cumulation. The *Index* was created in 1949 to provide access to periodical information about military science to students and faculty at Air University schools; it continues in that vein today. There is no other index quite like it to provide this information to Air Force PME students.

Producing the *Index*

Four people produce the *Index:* an editor, assistant editor, and two library technicians. This staff is called the Editing Section and is part of Systems Division, the library's technical services unit. The editor and assistant editor are professional librarians. The indexing is done by librarians in the library's Reader Services Division. These librarians work directly with the students and faculty of the schools and are in touch with their research needs. They are subject experts who publish bibliographies and provide reference services. There are also several indexers (called cooperative indexers) at other Air Force, Army, Marine Corps, and Navy libraries who index assigned periodicals and mail their work to Air University Library.

The editing staff selects "significant articles, news items, and editorials" to be indexed. Subject headings used in the *Index* are from a controlled list. They are neither Library of Congress nor Sears subjects, but were developed at the Library and are geared toward military material. Subject entry is as direct as possible; the entry for the United States Air Force Strategic Air Command is simply Strategic Air Command. Entries are also based on consistency; types of airplanes are entered as: Airplane Type—B-52; Airplane Type—F-16, etc.

Indexers may make suggestions for changes in subject headings. The editor and a committee of Reader Services librarians make the decisions on any subject changes. Another Reader Services committee helps the editor decide which magazines will be indexed. Subjects are continually evolving. Many subject headings on the space program, which were created in its heyday in the sixties, have been deleted in recent years. The *Index* is produced on a Zenith Z-248 computer and a Hewlett Packard LaserJet printer. The software used to create the *Index* is Microdex. It is the same software used to produce the *Canadian Periodical Index* and was purchased from InfoGlobe of Toronto, Canada. As each issue of a periodical is indexed, citations are typed into the system. At the end of a quarter, "compile and merge" programs are run, and camera-ready copy is printed and sent to the printing plant at Gunter Air Force Base for reproduction. The *Index* is returned from the printing plant in approximately one month and is mailed out from the library.

The *Index* is distributed free, mainly to military base and technical libraries, as well as to defense and aerospace companies and many academic libraries. Getting on the distribution list is based on justifying a need for the *Index*. The *Index* is also available through the Government Printing Office's Depository Library System.

Future Directions

Through automation, the Editing Section has cut the time it takes to produce the *Index* and increased the access points in it. Before automation, only name entries for prominent persons, e.g., admirals, generals, DOD officials, etc., were provided. Now, the *Index* includes separate name entries for all authors plus those for prominent people.

In addition to more access points, different gateways to the *Index* are currently being investigated. Two possibilities are producing it on CD-ROM, or providing a dial-in approach through the library's Integrated Library System. Since both of these methods have their advantages and disadvantages, a user survey was included with the 1990 annual issue to discover user preferences. Users were asked if they wanted the *Index* to change and, if so, to what format. Since increased access via some electronically-based means would also be more costly, AUL also raised the possibility

of charging for the *Index* if it were distributed in another format.

The clear winner in the survey has been "Don't change the format and don't charge for it!" Given the fact that a majority of the recipients are members of the federal/DOD library community and that DOD's budget is shrinking, most of our users don't feel they can afford a subscription fee. Many also indicated that they did not have CD-ROM equipment and little expectation of getting such equipment anytime soon. Some special libraries, particularly those in industry, expressed a willingness and ability to pay a subscription fee.

In the survey those making a choice voted for the CD-ROM option. CD-ROM technology is ideal for something like the *Index*—storing lots of information which will not change. The second choice in our survey responses was loading the *Index* onto AUL's Integrated Library System as a separate, searchable database.

Air University Library will not disappoint those librarians who can't afford a subscription fee; however, we are committed to some kind of electronic access for the *Index*. While the final decision on another format for the *Index* has not been taken, the *Air University Library Index to Military Periodicals* is a unique library activity and Air University Library will continue to make it better and easier to use. ■

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Resource Sharing in Sci-Tech and Business Libraries: Formal Networking Practices

by Sharyn J. Ladner

■ **This research describes differences and similarities in the resource-sharing behavior of sci-tech and business special librarians. Data gathered through a mail survey of sci-tech and business special libraries indicate that 65% of the sci-tech and 52% of the business libraries are members of formal resource-sharing networks. In general, special libraries which are members of resource-sharing networks are larger, more affluent, and more often managed by professionals than those which are not members. The main reason for non-participation in resource-sharing networks is lack of demand or need, mentioned by over half of the non-network members.**

This research is a descriptive study of the resource-sharing (networking) practices of librarians in two different types of special libraries—business and sci-tech—in corporations or other for-profit firms, not for-profit organizations, and government or public agencies in the United States. The study was undertaken because there is a lack of systematic, statistically reliable studies of resource sharing by special libraries.

Although special libraries have been included in some statewide surveys of multitype library networking activities,[1, 2, 3] only one comprehensive study of networking by special libraries has been published: the National Commission on Libraries and Information Science/Special Libraries Association (NCLIS/SLA) Task Force's 1984 report, "The Role of the Special Library in Networks and Cooperatives."[4]

The NCLIS/SLA study confirmed special library participation in resource-sharing networks and cooperatives: in a survey of SLA members, 50% reported that they participated in at least one formal cooperative program, with an average of 1.9 networks per library. The main reason for non-participation in resource-sharing networks was "lack of demand," mentioned by 35% of the non-participants. The NCLIS/SLA Task Force also found that membership in resource-sharing networks varied by type of library; libraries in businesses and financial institutions were least likely to join multi-type networks.[5] The Task Force surmised that this was because business and finance libraries are part of "highly competitive organizations which have little incentive to cooperate or to share their information sources with others."[6]

Although the SLA/NCLIS Task Force survey was the most comprehensive study of special library involvement in resource-sharing networks to date, its usefulness is limited by the methodology. Instead of using a probability sample of SLA members, the task force surveyed members through SLA Chapters. Members in 42 out of 50 Chapters responded to the survey, but response rates varied considerably and the largest SLA Chapter (New York City) did not participate in the survey at all. This resulted in a substantial geographic sampling bias and very likely

affected networking incidence rates reported in the survey.[7]

In 1983 Wiggins conducted a random mail survey of 200 sci-tech academic and special libraries to determine factors influencing their choice of document delivery mechanisms for serials.[8] Although Wiggins adhered to appropriate probability sampling methodology, the narrow scope of his research limits its usefulness. Unlike the NCLIS/SLA study which surveyed most types of special libraries, Wiggins' research was limited to sci-tech libraries in the for-profit sector and in academe, and network membership was examined only in the context of interlibrary loan (ILL) activities for articles in serial publications. Given these constraints, it is not surprising that he found that only 39% of the sci-tech special libraries in his sample were members of a network for document delivery. Wiggins also found that special librarians in for-profit companies are motivated most by the desire for speedy service and tend not to use a document delivery system if it has "bothersome procedures" like bibliographic verification, which slow down the requesting process.

Conceptual Framework and Rationale

Ten years after the NCLIS/SLA Task Force study, it is not known with any degree of certainty how many special libraries in the United States are members of resource sharing networks, what types of networks they join (or do not join), and what kinds of services they use. The intervening years have seen enormous growth in networking technology and applications; library networks had matured organizationally during the 1980s, and today some are developing new products and services and selling them to non-members as well, e.g., CARL Systems UnCover database and OCLC's EPIC system. Networks have also become more accessible to special libraries in recent years because of technological advances, such as the shift from expensive mainframes to microcomputers and advances in telecommunications, and the emergence of statewide, user-friendly multi-type networks.[9]

A comprehensive survey research project, therefore, was designed to answer the following research questions: What is the incidence of network membership among special libraries? Are there differences in the resource-sharing behavior among different types of special libraries? This paper addresses these questions through an analysis of formal networking practices of sci-tech and business special librarians. A separate report will examine informal networking and the role of professional associations in the same population.[10]

The research is limited to two types of special libraries to minimize problems inherent in analyzing data gathered from a diverse population. Because sci-tech and business libraries represent two very different types of special libraries and because they comprise the two largest subject categories of special libraries, findings common to both are likely to be characteristic of special libraries in general. In addition, although some limited studies have been published on resource sharing by sci-tech special libraries, there is no published research on formal resource sharing by business libraries.

The following null hypotheses are tested: (1) sci-tech and business special libraries will not differ in terms of formal network membership, as measured by number and types of networks joined, or frequency of network use; (2) sci-tech and business librarians will not differ in their patterns of network use, as measured by types of services used and problems encountered; and (3) sci-tech and business librarians who do not participate in resource-sharing networks will not differ in their reasons for non-participation.

The definition of a resource-sharing network used in this research is the one also used by the NCLIS/SLA Task Force: "A resource sharing network is a formal arrangement whereby several libraries or other organizations participate in exchange of information, materials, services or all three for some functional purpose." This definition does not include personal memberships in professional organizations such as ALA, SLA, ASIS, or MLA that librarians may use for informal exchange of information or materials. For the purpose of this research, the terms network and consortium are synonymous.[11]

Methodology

This research is a comparative mail survey of sci-tech and business special libraries sampled from the 1990 edition of the *Directory of Special Libraries and Information Centers*, published by Gale Research, Inc. The survey instrument was a self-administered, eight-page questionnaire. Respondents were promised a summary of the results and given a postage-paid return mail envelope as an incentive to complete the questionnaire. The questionnaire addressed formal membership in networks and consortia; informal resource sharing; attitudes toward the value of networking; and library organization and size (annual budget and number of employees, number of periodical subscriptions, geographic location, number of years in existence, etc.). Also included were checklists of services offered by resource-sharing networks, problems encountered in networks, and reasons for non-membership.

The questionnaire was pretested by 25 members of the Special Libraries Association at the SLA Annual Conference in June 1990. Based on the pretest evaluations, the questionnaire was revised during the Summer, and surveys were mailed in the Fall of 1990.

Data were analyzed using SPSS on the University of Miami VAX minicomputer.[12] Three statistical tests were used to test for differences between library type (sci-tech vs. business) and network membership status (members vs. non-members): (1) chi-square was used to test for differences in nominal variables with more than two categories; (2) because the chi-square statistic is affected by large sample sizes, difference of proportions in dichotomies were evaluated with z-scores; and (3) t-tests were used to test for differences in interval level variables. The difference of proportions test was also used to test for differences between sample and population data.[13]

Population and Sample Characteristics

The special library universe from which the sci-tech and business library samples were drawn consists of libraries in profit-making companies, not-for-profit organizations, and government or public agencies listed in the Gale *Directory*. The sci-tech library sample consists of libraries in eight science or technology-related subject categories used in the Gale *Directory* where at least 50% of the collection or subject emphasis is devoted to science or technology-related disciplines.[14] The business library sample consists of libraries in the Gale *Directory* business-finance category where at least 50% of the collection or subject emphasis is related to business disciplines. Academic libraries were excluded from the study.

Because the sci-tech special library population is three times the size of the business library population, and because the research was designed to be a comparative survey of about 300 special libraries in each subject area, the sampling protocols differed for the two groups. The sci-tech special library sample was systematically drawn from 50% of the libraries in the sci-tech special library population; the business library sample was drawn from all of the special libraries in the business category, and to achieve a sufficient number of responses, a reminder letter with a second copy of the questionnaire was sent to non-responding business libraries four weeks later. A total of 419 sci-tech special library respondents and 281 business special library respondents are included in the analysis.[15] Sample sizes are accurate to within ±4.8% for sci-tech libraries and ±5.8% for business libraries at the 95% confidence level. Response rate for the special library mailing was 33% and 39% for the business library mailing; these response rates are comparable to those found in other surveys of special libraries.[16, 17]

Comparison of returned questionnaires with three Gale *Directory* population parameters (subject category, number of employees, and geographic distribution) demonstrated that business library respondents showed under-representation from libraries with employee codes of zero (10% of the population vs. 5% of the respondents; $z = 4.65$).[18] The sci-tech library responses were also under-represented in the zero employee category (14% of the population vs. 8% of the respondents; $z = 3.91$), as well as in the East South Central Census Region (3% of the population vs. 1% of the respondents: $z =$

3.38). In addition, the sci-tech library respondents showed a higher than expected proportion of responses from libraries in the biological science subject category (12% of the population vs. 17% of the respondents; $z = -2.88$) but a lower than expected proportion from libraries in the science-engineering subject category (56% of the population vs. 47% of the respondents; $z = 3.69$).

The under-representation of libraries with employee codes of zero was not unexpected; persons in very small libraries, especially those being run by part-time personnel, would be more likely not to complete the questionnaire as they would be less likely to be members of resource-sharing networks. Since a preliminary analysis of the survey data indicated that employee size is a factor in network membership, the data are weighted statistically on employee size and sci-tech subject category to correct for potential response bias.

Differences Between Sci-Tech and Business Libraries

Table 1 shows the organizational differences between sci-tech and business special libraries, confirming the research assumption that sci-tech and business libraries represent two diverse types of special libraries. Basically, business libraries are larger than sci-tech libraries, measured by both annual budget and number of employees: 58% of the business libraries have budgets of $100,000 or more, compared to 47% of the sci-tech libraries ($x^2 = 13.07$, df 3, $p < .01$); business libraries have an average of 5.1 employees, compared to 3.3 employees for sci-tech libraries ($t = -3.10$, $p < .01$). Business libraries also employ more professionals, on the average, than do sci-tech libraries (2.5 vs. 1.7; $t = -2.71$, $p < .01$), and they have more periodical subscriptions than sci-tech libraries, but this difference is not significant ($t = -.80$).

There are more governmental and public agency libraries in the sci-tech sample, whereas the business library sample shows higher proportions of libraries in profit-making companies and non-for-profit organizations ($x^2 = 10.07$, df 2, $p < .01$).

There are geographical differences between business and sci-tech special libraries as well ($x^2 = 29.38$, df 8, $p < .001$). More sci-tech special libraries than business libraries are located in the South Atlantic Census Region, which is probably due to the large number of technical libraries in the Washington, DC area. Business libraries are more common in the Mid-Atlantic and East North Central Census Regions, probably due to the high concentrations of business libraries in New York City and Chicago. Significantly more business libraries are located in major metropolitan areas; 61% are located in the top 20 Metropolitan Statistical Areas (MSAs), compared to 42% of the sci-tech libraries ($z = -4.90$).

Networking Patterns and Frequency of Use

Table 2 lists the type of resource-sharing networks to which sci-tech and business special libraries belong and their frequency of use.[19] Significantly more sci-tech libraries are members of or have access to resource-sharing networks; 65% of the sci-tech libraries are members of one or more networks, compared to 52% of the business libraries ($z = 3.34$). Sci-tech libraries also access more networks than business libraries (2.4 vs. 1.9 networks; $t = 4.06$, $p < .001$) and use them more frequently; two-thirds of the sci-tech librarians access their networks twice a week or more, compared to one-half of the business librarians ($x^2 = 9.71$, df 2, $p < .01$).

There is little difference in membership rates between business and sci-tech special libraries for local, statewide, and regional networks. Significantly more sci-tech libraries, however, are members of OCLC than are business libraries (45% vs. 27%; $z = 3.77$).[20] OCLC membership may very well be the factor that accounts for the higher network membership rate and frequency of network use reported by sci-tech libraries.

Seventeen percent of both business and sci-tech special libraries reported membership in non-library subject networks, e.g., membership associations (Geoscience Information Society and American Management Association), information-providing membership

Table 1 Characteristics of Sci-Tech and Business Libraries

Characteristic (respondents)	Sci-Tech Libraries (419)	Business Libraries (281)
Kind of Library		
Corporate/for-profit	54%	59%
Not-for-profit	19	24
Governmental/agency	27	17
Library Budget		
Under $50,000	32%	30%
$50,000–$99,999	20	12
$100,000–$249,999	21	29
$250,000 and above	26	29
Geographic Distribution		
New England	9%	9%
Mid-Atlantic	14	23
South Atlantic	20	16
East South Central	1	1
West South Central	11	4
East North Central	18	24
West North Central	4	8
Mountain	6	2
Pacific	17	12
Percent in top 20 MSAs	42%	61%
Periodical Subscriptions (mean)	261	290
FTE Employees		
One or less	38%	29%
1.1–2.0	23	20
2.1–5.0	26	28
More than five	14	22
Number of employees (mean)	3.3	5.1
FTE Professionals		
Less than one	16%	14%
One	52	42
More than one	32	44
Number of professionals (mean)	1.7	2.5

groups (Engineering Societies Libraries and Conference Board), industry groups (Textile Information Users Council and the Edison Electric Institute), and other resource-sharing networks (International Association of Fire Information and Referral Exchange and De-

fense Technical Information Center).

Only one percent of the sci-tech special libraries and none of the business libraries have access to BITNET or the Internet. This may very well be an under-representation of BITNET/Internet use, since respondents were not specifically asked whether they accessed these electronic networks. If respondents did not conceptualize these networks as resource-sharing networks, or if they were unaware that their institutions provided access to them, they would not have listed these networks on the survey form.

Ten percent of the sci-tech librarians and three percent of the business librarians mentioned that they have access to a "corporate-

Table 2 Network Membership and Frequency of Use

Network[a] (respondents)	Sci-Tech Libraries (271)	Business Libraries (146)
Percent in Network	65%	52%
Library Networks		
Local	45%	52%
Statewide	39%	38%
Regional	21%	19%
OCLC	45%	27%
FEDLINK	14%	8%
RLG/RLIN	4%	3%
WLN	4%	1%
NLM/RMLS	5%	2%
Other library[b]	15%	9%
Other Networks		
Subject-based[c]	17%	17%
"Corporate-wide network"	10%	3%
Bitnet/Internet	1%	0%
Other/Unknown	5%	3%
Frequency of Network Use		
Twice a week or more	66%	50%
Several times a month	20	27
Once a month or less	15	23
Mean networks per library	2.4	1.9

[a] Multiple responses possible for network membership; percents may total more than 100%. Percentages are based on the number of libraries who are members of networks.

[b] A total of 16 other library networks were mentioned by sci-tech respondents and 10 by business library respondents; none was mentioned by more than 2%.

[c] A total of 25 subject-based networks were mentioned by sci-tech librarians and 16 were mentioned by business librarians.

wide network" within their organization. Although intra-organizational networks were not considered networks when this study was conceptualized, this category is included in the analysis because of the perception of these special library respondents who consider themselves to be members of a network within their own organization. Many of these respondents listed this type of network as international in scope, and for a multinational company with subsidiaries and divisions located throughout the world, a corporate-wide network truly is an international linking and sharing of resources.[21]

Network Services

Survey respondents were given a list of 19 services available through resource-sharing networks and were asked to indicate whether they currently used the service. If they did not currently use it, they were asked whether they would like to use it if it were available. Table 3 lists current and potential use of these services for sci-tech and business library network members.

The most heavily used services reported by both types of libraries are related to interlibrary loan. ILL for books is the most popular network service, used by 90% of the sci-tech and 82% of the business librarians ($z = 2.04$); ILL for photocopies is second, used by 88% of the sci-tech and 78% of the business librarians ($z = 2.65$). Citation or location services are used by 70% of the sci-tech and 57% of the business librarians ($z = 2.47$) and union lists are used by 62% and 53%, respectively ($z = 1.67$). These high usage rates are certainly not surprising, and serve to confirm reports by Murphy,[22] Van House,[23] and the NCLIS/SLA Task Force[24] that ILL is the number one reason special librarians join resource-sharing networks.

Sci-tech librarians are heavier users of all network services than business librarians. In addition to the ILL-related services discussed above, significantly more sci-tech than business librarians use shared cataloging (54% vs. 43%; $z = 2.03$); facsimile (50% vs. 39%; $z = 2.11$); electronic mail or bulletin boards (34% vs. 22%; $z = 2.81$); consultation (23% vs. 11%; $z = 3.31$); or joint equipment purchasing (20% vs 7%; $z = 4.12$) through their networks.

It is not surprising that business librarians would show a lower usage rate for shared cataloging, since fewer business librarians have access to OCLC. The low percentages of business librarians using facsimile or electronic mail services through their networks are, however, unexpected. Even though more sci-tech special librarians use these services than do the business librarians, their usage is still less than that of sci-tech academic librarians.[25] The lower use of fax and e-mail by both sci-tech and business special librarians, in comparison to academic librarians, supports Wiggins' observation that special librarians rely on commercial document delivery sources, rather than network resources, when they need information quickly.[26] It is not the case that special librarians do not have access to these technologies, as Brimsek found that 73% of special librarians use facsimile and 62% use e-mail within their own organizations.[27]

Although more sci-tech librarians than business librarians engage in reference assistance, reciprocal borrowing, and continuing education or staff training activities, these differences are not significant. Few sci-tech or business special librarians are involved in cooperative collection development (17% vs. 12%; $z = 1.41$) or coordinated acquisitions (14% vs. 9%; $z = 1.62$), activities which are more heavily engaged in by sci-tech academic librarians.

Potential or Desired Services

Special Library Network Members. Table 3 shows that there is low demand for additional network services by both sci-tech and business librarians. Most services are desired by less than 20% of both the sci-tech and business librarians whom do not currently have access to them through their networks. In fact, slightly more than one-third of each group does not desire any additional services from their networks.

Within this context, the most frequently requested network services are cataloging, volume discounts or gateway access to databases, and electronic mail. Nineteen percent of

Table 3 Current and Wanted Services by Network Members

Service[a]	Sci-Tech Libraries Use	Sci-Tech Libraries Want	Business Libraries Use	Business Libraries Want
Cataloging	54%	19%	43%	19%
Citation, location services	70%	11%	57%	10%
Consultation	23%	16%	11%	11%
Continuing education, staff training	44%	14%	37%	11%
Cooperative collection development	17%	17%	12%	21%
Coordinated acquisitions	14%	16%	9%	15%
Courier, document delivery	40%	18%	39%	14%
E-mail, bulletin boards	34%	16%	22%	22%
Facsimile service	50%	11%	39%	9%
ILL: AV, electronic media	51%	8%	30%	12%
ILL: books, microforms	90%	2%	82%	4%
ILL: photocopies	88%	2%	78%	5%
Procurement of equipment, joint purchasing	20%	12%	7%	12%
Reciprocal borrowing	48%	12%	46%	9%
Reference assistance	56%	14%	51%	12%
Shared storage facility	4%	15%	3%	13%
Shared equipment	4%	14%	2%	15%
Union lists	62%	13%	53%	12%
Volume discounts for database services, gateway access	30%	23%	26%	19%
No additional services mentioned	—	37%	—	38%
Total services (mean)	8.0	2.5	6.4	2.5

[a] Multiple responses possible; percents may total more than 100%. Base for network members is 271 sci-tech libraries and 146 business libraries.

both business and sci-tech librarians currently not using their networks for cataloging would like to do so, making a total of 73% of the sci-tech and 62% of the business library network members who would use or do use network-based cataloging. This desire for cataloging services by special librarians who currently do not have access supports the idea that OCLC would be used by more special librarians if they had more affordable or more convenient access.

Twenty-three percent of the sci-tech and 19% of the business librarians are interested in obtaining volume discounts and gateway access to remote databases through their networks. Electronic mail is desired by 16% of the sci-tech and 22% of the business librarians who currently do not have access to it. Although survey data cannot directly support the idea that special librarians would like access to e-mail networks such as Bitnet or the Internet, interest expressed by these respondents in network-based electronic mail and gateway access to remote databases may be an indirect indicator of potential use.

Non-Network Members. Table 4 lists the potential use of network services by special librarians who do not currently have access to resource-sharing networks. In general, both sci-tech and business special librarians that do

Table 4 Services Wanted by Non-Network Members

Network[a] (respondents)	Sci-Tech Libraries (147)	Business Libraries (133)
Cataloging	49%	31%
Citation, location services	58%	27%
Consultation	22%	20%
Continuing education, staff training	31%	26%
Cooperative collection development	18%	17%
Coordinated acquisitions	10%	11%
Courier, document delivery	29%	31%
E-mail, bulletin boards	22%	33%
Facsimile service	26%	24%
ILL: AV, electronic media	33%	23%
ILL: books, microforms	56%	43%
ILL: photocopies	51%	48%
Procurement of equipment, joint purchasing	7%	13%
Reciprocal borrowing	28%	28%
Reference assistance	46%	47%
Shared storage facility	7%	8%
Shared equipment	5%	12%
Union lists	43%	39%
Volume discounts for database services, gateway access	28%	35%
None mentioned	12%	19%
Total services (mean)	5.5	5.1

[a] Multiple responses possible; percents may total more than 100%.

not currently use resource-sharing networks exhibit a lower rate of interest in network services than the special librarians who use them, and business librarians appear to show even less interest than sci-tech librarians.

Three services, however, are desired by a majority of nonmember sci-tech special librarians: citation-location services, wanted by 58%; interlibrary lending of books and microforms, desired by 56%; and ILL of photocopies, desired by 51%. The top three desired services mentioned by nonmember business libraries are photocopies through ILL (mentioned by 48%), reference assistance (mentioned by 47%), and ILL for books (mentioned by 43%).

Problems with Resource-Sharing Networks

Survey respondents were given a list of 15 problems reported in the literature on library networks and were asked to circle "the five most important problems" they had experienced with resource-sharing networks. Table 5 ranks these problems by frequency of mention. In general, both groups appear to be satisfied with their resource-sharing networks; 48% of the business librarians and 38% of the sci-tech librarians reported that they have not experienced any problems with their networks ($z = 1.98$).

Table 5 demonstrates that there is very little

Table 5 Problem with Networks Reported by Network Members

Problem[a] (respondents)	Sci-Tech Libraries (271)	Business Libraries (146)
1. Lack of or limited staff time for networking activities	28%	24%
2. Delivery problems, takes too long to get materials	22%	24%
3. Cost of membership is too high, difficult to get funding	16%	11%
4. Governance structure does not adequately include special libraries	9%	10%
5. Incompatible technologies between my system and the network	11%	4%
6. Cataloging and/or ILL standards too complicated or time-consuming	7%	10%
7. Copyright restrictions on photo-copying limit usefulness	9%	6%
8. Slow system response time or other telecommunications problems	9%	5%
9. Lack of support or understanding about networking from management	10%	2%
10. Too many requests for ILLs from my library, overuse of collection	5%	8%
11. Cataloging of confidential materials is available for all to see	6%	7%
12. Lack of cooperation from other member libraries	8%	2%
13. Lack of or poor training, continuing education by network	5%	6%
14. Loss of or damage to materials lent to others	4%	2%
15. Service to my users is restricted as a result of resource sharing	2%	1%
No problem mentioned	38%	48%
Number of problems (mean)	1.5	1.2

[a] Multiple responses possible for problems; percents may total more than 100%. Percentages are based on the number of respondents who mentioned at least one problem or who checked the "no problem" category.

difference between sci-tech and business libraries regarding problems with networks. Sci-tech librarians experienced, on the average, only 1.5 problems, and business librarians, only 1.2 problems (t = 1.78, n.s.). Only two problems were mentioned by 20% or more of the special librarians in each group: limited staff time for networking activities, experienced by 28% of the sci-tech librarians and 24% of the business librarians (z = 0.93); and delivery problems, experienced by 22% of the sci-tech librarians and 24% of the business librarians (z = -0.48).

These data also refute popular opinion about special librarians and resource-sharing networks. For example, the data do not support fears that special librarians will be inundated by requests for ILLs, or that service to their own clientele will be hindered if they join multi-type library networks. Only five percent of the sci-tech and eight percent of the business librarians reported that they have experienced too many requests for ILLs or collection overuse, and only two percent of the sci-tech and one percent of the business librarians reported restricted service as a result of resource sharing. These findings support observations made by Segal[28] and Ferguson and Mobley[29] that these barriers are perceived rather than real.

Another often-mentioned barrier to network participation is that special librarians are hesitant to join resource-sharing networks because of the confidential nature of their collections and their fear that their holdings will be available for review by competitors. The data do not support this contention; only six percent of the sci-tech librarians and seven percent of the business librarians mentioned confidentiality as a problem in this survey, supporting Ferguson and Mobley's[30] and Hill's[31] observations that the confidentiality issue may very well be a "red herring" for special librarians. Findings from non-network members also indicate that confidentiality is a non-issue for most special librarians; only seven percent of the sci-tech and eight percent of the business library respondents mentioned that proprietary or confidential material in their collections kept them from joining resource-sharing networks (see Table 6).

Only three out of the 15 problems listed on Table 5 show differences between the problems experienced by business and sci-tech libraries, and all three occur more often in sci-tech libraries. Eleven percent of the sci-tech librarians reported that there are incompatibilities between their systems and the network, compared to only 4% of the business librarians (z = 2.63); 10% reported lack of support or understanding about networking from management, compared to only 2% of the business librarians (z = 3.42). Eight percent reported lack of cooperation from other libraries, compared to only 2% of the business librarians (z = 3.05).

Reason for Nonmembership

Table 6 lists the reasons sci-tech and business special libraries are not members of resource-sharing networks.[32] The main reason for non-participation, mentioned by 55% of the sci-tech and 61% of the business librarians, is their perception that they do not need to join a network, or that there is lack of demand for network services in their libraries. The second major reason for nonmembership among sci-tech librarians, mentioned by 42%, is cost or lack of funds for membership. Business librarians, on the other hand, were more likely to state that they lacked knowledge or information about networks than concern with cost; 36% of the business librarians mentioned lack of knowledge compared to only 26% who mentioned cost. In comparison, only 22% of the sci-tech librarians mentioned lack of knowledge about networks as a reason for nonmembership.

The perceived lack of need for network membership was also the primary reason given by respondents in the NCLIS/SLA Task Force survey, and more recently by special librarians in California.[33] Non-participating special libraries may be using alternate sources for services commonly provided by networks; on the other hand, they may in fact have little need for these services. This latter explanation may be the reason for non-participation by the very small, poorly funded special libraries.

Both sci-tech and business librarians show a great deal of overlap between the perceived

Table 6 **Reason Not in Network**

Reason[a] (respondents)	Sci-Tech Libraries (147)	Business Libraries (133)
1. Lack of demand, have no need to join a network.	55%	61%
2. Cost is too high, lack of funds to join.	42%	26%
3. Lack of knowledge or information about networks	22%	36%
4. Restrictions imposed by my parent organization, my management won' t let me join	15%	8%
5. Only proprietary or confidential material in my library	7%	8%
6. Requirements imposed by network, special libraries are not eligible to join networks in my area	6%	4%
7. Other reasons	11%	11%

[a] Multiple responses possible; percents may total more than 100%.

lack of need and other reasons for nonmembership, such as cost and lack of knowledge about networks. Fifty percent of the sci-tech library respondents who listed cost as a reason for not joining a resource-sharing network also listed lack of demand or need as a reason. Conversely, 38% of those indicating they had no need to join a network indicated that cost was also a factor, and 19% said they lacked information about networks. What seems to be happening with the nonmember sci-tech libraries is the perception that benefits of network membership are not worth the cost because these respondents perceive less of a need for network services. For these librarians, network membership may simply not be seen as a desired option or alternative for access to information not available within their own organizations.

The negative cost-benefit relationship, however, is weaker for nonmember business libraries. Of the business librarians who mentioned they have no need to join a network, only 27% also mentioned that cost is a factor, whereas 30% mentioned lack of information about networks. Of the business librarians who mentioned cost, however, 65% mentioned lack of need. With business librarians there seem to be two modalities operating in their reasons for not joining networks. Like the sci-tech respondents, some feel that the benefits of network membership are not worth the cost; those who mention both lack of need and lack of information about networks as reasons for nonmembership may see resource-sharing networks as simply not relevant for their information needs. Unlike the sci-tech libraries, there appears to be no relationship between the presence of a professional and reasons for nonmembership for business libraries.

Special Library Profiles

Table 7 profiles sci-tech and business librar-

ies which are (and are not) members of resource-sharing networks. Special libraries which are members of resource-sharing networks are generally larger, more affluent, and more often managed by professionals than those which are not members. These differences are more pronounced among the sci-tech libraries than the business libraries.

Among sci-tech libraries which are not members of networks, 56% report annual budgets under $50,000, vs. 20% of the network members ($x^2 = 62.07$, df 3, $p < .001$). Similarly, 42% of the business libraries not in networks report annual budgets under $50,000 vs. 21% of network members ($x^2 = 13.35$, df 3, $p < .01$). Network members in both groups subscribe to more periodicals than nonmembers (sci-tech libraries: $t = 4.92$, $p < .001$; business libraries: $t = 3.81$, $p < .001$).

Thirty percent of the sci-tech libraries which are not members of networks have less than one full-time professional in the library, compared to only 8% of the network members ($x^2 = 41.54$, df 2, $p < .001$). This relationship is also present for business libraries; 20% of the nonmember libraries have less than one pro-

Table 7 Profile of Science and Business Libraries by Network Status

Characteristic (respondents)	Sci-Tech Libraries Member (271)	Sci-Tech Libraries Nonmember (147)	Business Libraries Member (146)	Business Libraries Nonmember (133)
Kind of Library				
Corporate/for-profit	55%	53%	59%	58%
Not-for-profit	13	28	18	32
Governmental/agency	32	18	23	10
Library Budget				
Under $50,000	20%	56%	21%	42%
$50,000–$99,999	23	16	13	10
$100,000–$249,999	22	18	32	25
$250,000 and above	35	10	33	24
Library in top 20 MSA's	41%	44%	55%	67%
Periodical Subscriptions (mean)	331	132	366	193
FTE Employees				
One or less	26%	59%	24%	35%
1.1–2.0	25	20	19	21
2.1–5.0	30	18	29	28
More than five	19	4	28	16
Number of employees (mean)	4.1	1.8	6.3	3.7
FTE Professionals				
Less than one	8%	30%	8%	20%
One	51	54	41	44
More than one	40	16	51	36
Number of professionals (mean)	2.0	1.0	3.2	1.7

fessional compared to eight percent of the network members ($x^2 = 10.20$, df 2, $p < .01$).

The NCLIS/SLA Task Force pointed out the realities of library size and funding in their statement that "some special libraries are too meagerly staffed or too poorly funded to participate in outside programs of any sort."[34] Hill also observed that many of the problems corporate librarians face when weighing the benefits of network membership are "small library" problems and are "shared by any library with a small staff," particularly in the case of cataloging through OCLC.[35] The data in this study corroborate these observations and, in addition, suggest that special libraries with budgets under $50,000 may be just too small to afford membership in formal resource-sharing networks.

The relationship between size of library and network membership, however, is more complex for business libraries than for sci-tech libraries. Business libraries are, in general, larger and more affluent than sci-tech libraries, yet almost half do not participate in any formal resource-sharing networks. One out of four of the non-participating business libraries are, in fact, quite well off financially, with annual budgets of at least $250,000. An analysis of special libraries located in major urban centers helps explain this finding.

More business libraries (61%) are located in the top 20 MSAs compared to sci-tech libraries (42%), and significantly more business library non-network members are located in these areas compared to network members (67% vs. 55%; $z = -1.99$). In comparison, sci-tech libraries located in the same MSAs exhibit no urban network membership effect (44% vs. 41%, $z = -0.43$). Three urban centers—New York City, Washington, DC, and Chicago—account for 54% of the urban business libraries. These three cities show strikingly dissimilar networking patterns, compared to other urban business libraries ($x^2 = 17.94$, df 3, $p < .001$): Washington, DC shows the highest percentage of network members (75%); New York shows the lowest (23%); and Chicago is in between (58%). New York City, in fact, accounts for fully 21% of the business libraries not participating in formal resource-sharing networks.

Although small sample sizes prohibit examining library budget or staff by MSA, it is very likely that the New York City business libraries are comparably more affluent and better staffed than business libraries located elsewhere. An analysis of the business library sample with New York City libraries excluded supports this assumption, since the percentage of non-network member libraries with annual budgets of $250,000 or more drops from 24% to 17%; it also demonstrates that business libraries in New York City are really an exception to the model relating library affluence and professional staffing to membership in formal resource-sharing networks.

Summary and Implications

This research describes differences and similarities in the resource-sharing behavior of sci-tech and business special librarians. This analysis demonstrates that there are differences between sci-tech and business libraries in two dimensions (rejection of hypotheses one and two): (1) more sci-tech librarians than business librarians are members of or have access to formal resource-sharing networks, and they access them more frequently and (2) sci-tech and business librarians differ in their patterns of network use, as measured by services used although not in problems experienced. In a third area, there are no differences (hypothesis three not rejected); sci-tech and business librarians who are not members of resource-sharing networks do not differ in their reasons for nonmembership. Reasons for and implications of these findings are discussed below.

Network membership. Overall, 65% of the sci-tech libraries and 52% of the business libraries are members of or have access to formal resource-sharing networks. Although more sci-tech libraries are network members than business libraries, both types of special librarians are active users of local and statewide library networks. Differences in overall network membership are probably due to membership in OCLC by significantly more sci-tech libraries, and the fact that sci-tech libraries are members of more networks, on the

average, than business libraries.

In general, special libraries which are members of resource sharing networks are larger, more affluent, and more often managed by professionals than those which are not members. Survey data indicate that special libraries with annual budgets under $50,000 may be too small to be members of resource-sharing networks.

Patterns of network use. Both sci-tech and business librarians participate in resource-sharing networks mainly for ILL-related services. Significantly more sci-tech librarians, however, use their networks for cataloging than do business librarians. The differential use of resource-sharing networks for cataloging is probably due to more sci-tech special librarians having access to OCLC. The fact that one out of five network members and one-half to one-third of the nonmembers would like to use resource-sharing networks for cataloging supports the idea that OCLC would be used by more special librarians if they had more affordable or more convenient access to it.

Network Satisfaction. Sci-tech and business librarians are generally satisfied with their resource-sharing networks. The most interesting finding here is that so few special librarians experience problems with their networks. The only problem areas mentioned by more than 20% of both groups are limited time for networking activities and the time it takes to get materials.

Non-participation. The main reason for non-participation in formal resource-sharing networks, mentioned by well over half of the sci-tech and business librarians, is the lack of demand or need. Half of the sci-tech librarians who mentioned lack of need or demand also mentioned cost of membership. Non-participants may simply feel that the cost of network membership is not worth the benefits received.

The research does not support several common beliefs about why special libraries do not participate in resource-sharing networks. Issues of confidentiality and restricted service were mentioned by less than 10% of the non-participants. In addition, less than 10% of the sci-tech and business library network members consider confidentiality, collection overuse, and restricted service through lending materials to network members to be problems.

This research reports findings that are similar to many of the observations about special libraries and resource-sharing networks made by the NCLIS/SLA Task Force, especially in the area of network services and reasons given for non-participation. Network incidence rates, however, differ from those found by the Task Force. There are several reasons for this: (1) this research used probability sampling techniques to avoid geographic sampling bias and corrected for under-responding by smaller libraries; (2) this research compared independent samples of two different types of special libraries whereas the NCLIS/SLA Task Force included all types of special libraries; and (3) there are more local and statewide resource-sharing networks today, providing more opportunities for special library participation than there were in 1981 when the NCLIS/SLA survey was done.

Special libraries comprise a wide range of subject disciplines and organizational structures, ranging from art museums to military installations, investment banks to social service agencies, computer manufacturers to botanic gardens. Common features are sometimes difficult to identify in this diverse group, and for this reason caution should be used when applying findings from a study such as this one to other types of special libraries. The model correlating library affluence and level of professional staffing to membership in formal resource-sharing networks, however, seems to be applicable to other types of special libraries, as long as external factors, such as geographic location, are taken into consideration.

This research demonstrates that membership in formal resource-sharing networks is important to special libraries. The finding that no demand or need is the main reason for non-participation also implies that library networks are only one of many ways that special librarians use to obtain information not available in their libraries. Although the use of commercial sources for document delivery by special librarians is well documented, research on other forms of information exchange by special librarians is sparse. For this reason, data were

also gathered on informal networking practices and the role of professional associations in informal networking. These findings will be examined in a follow-up report on resource sharing by sci-tech and business libraries. ■

Acknowledgements

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[14] These subject categories are agriculture, biological sciences, computer science, energy, environment and conservation, food and beverage, science and engineering, and transportation. Medical libraries are included only if they are also assigned to these categories. The science-engineering group is the largest category, accounting for 46% of the total.

[15] Nine business and three sci-tech libraries were excluded from the analysis because less than 50% of their collection or subject emphasis was devoted to their respective subject disciplines.

[16] Van House, *op cit.*, p. 192.

[17] *Survey of Wisconsin Interlibrary Loan Patterns*, op cit., p. 4.

[18] A zero code was assigned to directory entries which lacked employee figures. Libraries in this category are smaller and often staffed by part-time personnel or not staffed at all.

[19] Respondents could list up to six resource-sharing networks in which their libraries or library systems were members. The following kinds of organizations, mentioned by several respondents, are not considered networks and are not included in the analysis: CompuServe or other similar commercial online e-mail systems or database gateways; commercial library vendor or online information services such as Faxon, Dialog, BRS, etc.; and generic terms such as "E-mail," "OPAC," or "Ethernet."

[20] While some would not consider OCLC a network but a "bibliographic utility," the decision was made to include OCLC as a network because it is commonly perceived by many librarians as a network. This procedure was also followed in the NCLIS/SLA study.

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Community Access Bulletin Boards: Cincinnati Librarians Become Involved

by Anne K. Abate and Rosemary Young

■ **TriState Online (TSOL) is a Cincinnati area community access computer system designed as an "electronic city." This article reports the latest developments in the "library building" database of TSOL. The new areas in the "library building" were sponsored by the Cincinnati Chapter of the Special Libraries Association. These changes were designed by the authors of this article to meet the needs of the community and area librarians, and to attempt to build a higher profile for the special libraries of the Cincinnati area.**

The use of the electronic bulletin board began more than a decade ago among the sophisticated computer users. The popularity of this fast form of communication has now grown to a larger segment of the population. Many communities have been making use of bulletin boards to disseminate local information. These community access computer systems have many names and variations in content and presentation. All of these services share the same spirit of public service. TriState Online sponsored by Cincinnati Bell Directory, Inc., is one of these free, open-access, telecomputing systems.

TriState Online

TriState Online began in January 1990.[1] Databases accessible in TriState Online are named after public buildings in an "electronic city" such as the "post office" to access electronic mail, or the "school house" to find general information on the local school system.[2] Cincinnati's TSOL is, at the time of writing, completely financed by Cincinnati Bell Directory, Inc. Public access is provided via promotional terminals at all Cincinnati Bell Phone Center Stores. Access is free 24 hours per day to callers from home terminals with modems. There are more than 9,000 registered users of TSOL.[3] The number of visitors or casual users brings this total even higher.

Through their Executive Board, SLA's Cincinnati Chapter made the decision to no longer be a bystander to the community access bulletin board revolution. The decision was made to become an active contributor and to support a dynamic dialogue with the TSOL users on area libraries. Before forging ahead, the Board requested official endorsement from the Special Libraries Association office. David Bender, Executive Director of SLA, approved the decision and the work began.

TriState Online is organized to resemble an electronic city. All of the information available online is divided into individual buildings to help the user locate the appropriate material. For example, information provided by local hospitals and health care institutions is located in the "Medical Arts" building. There are now 13 buildings in the TSOL electronic city: Administration Center, Business Center, Community Center, Government Center, Post Office, Learning Center, Media Center, Medical Arts Center, Recreation Center, Science and Technology Center, Teleport Terminal, TSO's

New Software, and What's Hot. Each of the buildings is further divided into separate areas or groups of areas which are directed by individual system operators. The Recreation Center thus can contain information on the area symphony, local museums, and other fine arts events. Each of these areas is input or provided by the organization.

A novice user can "walk" around the city, in and out of buildings, and through areas to discover all of the information available. An experienced user is provided with shortcuts to hop back and forth between areas. There is also the capacity to send private electronic mail to individual registered users of the system.

There are several types of information which may be found within the areas. Text files provide full text material for users to read with no interaction. Bulletin boards provide for multi-directional communication between the users. Menu files allow the user to select further choices from a menu. Question and Answer areas (Q&A) provide a place for the users to communicate with the information providers. Directory areas include a searchable online directory of all registered users.

Each information provider may design their area to best meet the needs of the potential users. All areas must include at least one Q&A module somewhere so that the users have a way to communicate with the providers. Some sub-areas contain only text files. This type of file would be provided by system operators who have no need to communicate with the users or who do not have the time to operate an active file. Information can be "dumped" onto the system and revised periodically. This arrangement is ideal for museums or others who would only like to provide information about their facilities to the public. Interactive files are necessary in areas such as the community center or recreation building where users require active, current information and would like responses to their needs. This type of interaction seemed ideal for the service-oriented library areas.

Design of the "Library Building"

The library areas were designed to meet several needs within the library community and the community at large: 1) area librarians need a better means to communicate quickly with one another; 2) the community needs assistance accessing the area's library collections; and 3) the community always needs more information about the services provided by the public library.

The new area which was created by the librarians and for the librarians is the "Librarians' Roundtable." Librarians use this area to communicate with one another. When entering this area a warning banner describes it as for the use of the library professional. Users are welcome to browse the area, but are asked not to leave messages. The area includes a directory of registered librarian users and a capacity to search the directory by name, institution, or association affiliation. There is a question and answer area through which the librarian user can communicate with the system operators, and there is a bulletin board which can be used by librarians to post announcements, ask questions of other librarians, or offer duplicate materials to other libraries. There are more than 500 library professionals in the Cincinnati area. Some belong to consortia, local library associations, or local chapters of national or regional associations. TriState Online provides the facility for all of the librarians to communicate with one another.

"Tri-State Area Library Information" was developed to assist users in gaining access to the many library collections in the community. There was a need in the community for better access to information, as well as for a better awareness of the area's libraries. While providing a service, a library public relations activity is also taking place. Tri-State Area Library Information provides information about all participating libraries, feature articles on area libraries, a directory of libraries, a bulletin board, and question and answer area. All public, academic, and special libraries were asked if they wanted to be listed within this service. The bulletin board area allows users to express their feelings about libraries, give helpful hints, or complain about the services they are receiving.

The question and answer area is pretty unique. This area is used as a "reference referral" service for the community. Although there was an outcry from the community for library reference services which would be available online, none of the libraries in the area had the staff or facilities to provide this type of service. Furthermore, the consensus among the organizers of the project was that reference service must involve a dialogue between the librarian and the patron. The reference interview is necessary in order to determine the user's needs. Online communication cannot replace this interaction.

Therefore, several librarians grouped together to offer a service which would not *answer* the questions, but which would refer the users to the best possible library and librarian to assist the user. Because of the vast resources of the Public Library of Cincinnati and Hamilton County, the users are often referred to the appropriate reference department at the public library but often there are special libraries or academic libraries with special subject collections which would be more useful. If there is a clear understanding of the user's information needs, they may be given assistance in addressing their questions so that the reference librarian at the library they are referred to will be able to quickly focus on the problem.

The "Public Library" is a read only or text file area which provides information on the Public Library of Cincinnati and Hamilton County including general information, library branch locations and hours, and special events information. One file presents general background on the public library and its services; this area is not frequently updated. A second file contains the list of branches with addresses, telephone numbers, and hours of service. The area only needs to be updated when this information changes. The third file is updated frequently with current information on events and displays in the main public library and its branches. The "Public Library" areas were redesigned from existing files with the input of the Public Relations Department of the Public Library of Cincinnati and Hamilton County.

The Cincinnati Chapter of SLA also sponsors the operation of these newly-designed library areas. This sponsorship involves coordinating several "system operators" to control the area. TSOL system operators are information providers who design the buildings, moderate the Q&A areas, and input the online information. There are currently more than 65 volunteer system operators providing the various information services. The librarians involved in this project as system operators input articles and upcoming events on local libraries, maintain the online directory of local libraries, moderate the communication between the librarians and with the community, and provide the expertise in the online reference referral service.

Future Aspirations

The experience has been a positive one for all of the librarians working on this project. The design of the areas was a creative and ambitious enterprise. It can be difficult to plan a service without knowing how it will be accepted by the users. Public acceptance of the library areas has been slow. Users are not yet aware that the service has been improved although it was featured in the newsletter for TSOL users.[4]

There has been a light yet steady flow of questions in the public access Q&A area. These users have been referred by the librarian system operators to area library collections. Librarians have begun to use the system as a means of communication. Several items have been offered for exchange and there have been appeals for help in fields such as automation and collection development which have been answered by other librarian users. The administrators of TSOL are thrilled to have another active area in their system and have been extremely supportive of all efforts by the librarians.

Those involved with the design and implementation of this project have several hopes for the future. Increased participation by librarians and the community will improve the effectiveness of the service. It is hoped that all Cincinnati librarians with access to a personal

computer and modem will become registered users of TSOL. Once this goal has been reached, TSOL can be used as an information exchange between all of the libraries in the area. The electronic mail function of the system has become the approved electronic mail system for the Greater Cincinnati Library Consortium as a means for their members to communicate quickly with one another. There are also plans to load the full directory of Greater Cincinnati Library Consortium member libraries into TSOL.

The Cincinnati Chapter of SLA hopes to expand the services it can offer on TSOL to include an online Association newsletter, directory of Chapter officers and Committee chairs, a listing of Chapter and Association services, and online application information. Although these services would be aimed specifically at the 120 members of the Cincinnati Chapter of SLA, the public relations and awareness created will benefit the entire library community.

TriState Online is currently a free service to the users. Unfortunately, its sponsor, Cincinnati Bell Directory, Inc., is a for-profit company. Although the system and its services will remain free to the users, there has been discussion of adding advertising to the system in order to cover the cost of providing the service. This is a very small concession to accept in return for the benefit of the effort.

Conclusion

The library areas of TSOL are functioning well, although usage is slow. In order to increase usage and promote the service, the Cincinnati Chapter of SLA has carried on a publicity campaign for TSOL. Articles have been written for local and regional library publications. There have been presentations to area library groups and also the local library school classes. Librarians are encouraged to become registered users and utilize all of the information provided by TSOL.

Librarians are the information providers for society. Computer bulletin boards are one of the communication methods of the future. The services provided through the library areas on TSOL are a way for the librarians to continue their task into the computer age. Only through such interactive and proactive means can librarians continue their charge and serve library users and the entire community.

Summary

Community access bulletin boards are widely accepted as online information providers. TriState Online provides Cincinnati with an "electronic city" bulletin board. The involvement of the Cincinnati Chapter of SLA has strengthened the image and services of libraries in the area. The Cincinnati Chapter has had success with the introduction of two new areas to the "Library Building" and the reorganization of one existing area. Plans to introduce a new area specifically featuring the Special Libraries Association are underway. The union of library professionals and community access bulletin boards is a logical progression of the information provider's responsibility to the community at large. ■

For a hands-on look at community access bulletin boards, the authors recommend that you dial into the service. TriState Online can be reached by modem by dialing (513)579-1990 (300/1200/2400 Baud). You can access the service as a visitor. The system is free. You pay regular long distance charges for the telephone call.

Acknowledgements

The authors wish to thank Christine Main of Cincinnati Bell Directories, Inc. for her help in designing and publicizing the library areas on TSOL.

References

[1] "Birthday Party Celebrates Success, Reinforces Commitment To Innovation," *The Link: A Newsletter for the TriState Online Community* 1 (no. 2): 1 (Winter 1991).

[2] The roots of TriState Online are based in Cleveland's Free-Net which began in July, 1986. Dr. Thomas Grundner of the Department of Family Medicine at Case Western Reserve University's School of Medicine began Free-Net as a means of disseminating health information to the community. The experiment worked so well that it was expanded to include all major aspects of community life, thus developing the concept of the "electronic city" The Free-Net concept was so well received in the Cleveland area that Free-Net began offering the operating system software for starting community online systems based on Free-Net for a $1.00 per year annual lease. Many cities have begun using this software system including Youngstown, OH, Cincinnati, OH, Medina County, OH, and Peoria, IL. Ohio Bell Telephone Company and AT&T funded the initial efforts of Cleveland Free-Net. Regional Bell operating companies operate numerous community online systems for both profit and nonprofit.

[3] "Birthday Party...," Loc. cit.

[4] "Sysop Base Grows In All Directions," *The Link: Newsletter for the TriState Online Community* 1 (no. 2): 2 (Winter 1991).

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Indoor Air Pollution Resources

by Paula G. Raimondo

■ **Many factors contribute to pollution inside homes, schools, and offices. As more about these pollutants and their adverse effects on health becomes known, concern for prevention and efforts to find corrective measures increase. This article discusses resources which may prove valuable in locating indoor air pollution information**

Introduction

Recent scientific research has shown that the air inside homes, schools, and office buildings may be more seriously polluted than outdoor (ambient) air, even in large and heavily industrialized cities. This evidence has a greater impact when considered with other studies which indicate that most people spend a large majority of their time indoors.[1]

Indoor air pollution is a relatively recent phenomenon. The energy crisis of the 1970s necessitated the design of well-insulated homes and buildings. These "tight buildings," designed to prevent outside air from coming in, also resulted in preventing inside air from getting out. Any pollutants which would have escaped outside are now trapped indoors, and recirculated.

Sources of indoor air pollution are diverse. They include: wood-burning stoves and fireplaces; household cleaning and personal products; humidifiers, heating, and cooling systems; drinking water; dust mites; wall panelling, cabinetry, and furniture made from certain pressed wood products; tobacco smoke; house pets; pesticides; carpeting; and insulation containing deteriorating asbestos. Humans contribute by exhaling carbon dioxide and shedding skin. Outside pollutants such as radon, automobile exhaust, and ambient air pollution also contribute. Indoor air may contain high levels of dust, pollen, or microbes—all potential allergens.

Adverse health effects from indoor air pollution are manifested both acutely and chronically. Acute effects include eye, ear, nose, and throat irritation, headaches, and dizziness. Repeated or long exposure may produce chronic respiratory, cardiovascular and nervous system diseases, including cancer.

Indoor air pollution has many ramifications. Besides medical and public health, there are chemical, engineering, architectural, environmental, psychological, and legal issues. Law information resources will not be addressed in this paper.

The complex array of sources and effects of indoor air pollution makes it difficult to collect comprehensively for all but the largest libraries. Yet, in spite of its multidisciplinary nature, indoor air pollution is narrow in scope, and occupies a small space in the vast area of environmental science. General collections of environmental resources typically devote relatively minor attention to indoor air materials. This paper will attempt to assist information professionals in collecting indoor air pollution materials, choosing appropriate online databases, and developing search strategies. It will be limited to resources of primarily U.S. origin.

Government Agencies and Professional Associations

A substantial amount of materials on indoor air pollution is produced by federal, state, and private organizations, as well as professional

associations. The leading federal agency is the Environmental Protection Agency (EPA). A number of EPA divisions produce relevant documents, including the offices of Air and Radiation, Research and Development, Pesticides and Toxic Substances, Environmental Criteria and Assessment, and Atmospheric and Indoor Air programs, Indoor Air Division (which plans to have an indoor air quality clearinghouse ready in 1992); the Environmental Monitoring Systems Laboratory; and the Air Risk Information Support Center. Many of these publications are available from the National Technical Information Service (NTIS); others may be obtained directly from EPA.

The EPA headquarters library, 401 M St., SW, Washington, DC 20460, provides telephone reference service (202/382-5922) and houses the Public Information Center (PIC). The PIC (202/475-7751) distributes environmental materials, written in nontechnical language for the general public, at no cost. The library also lends materials via interlibrary loan.

The EPA Center for Environmental Research, 26 Martin Luther King Drive, Cincinnati, OH 45268, also distributes documents, frequently at no cost. The phone number is (513)569-7562.

The National Institutes of Health (NIH) publish indoor air related materials as well. Many of these come from the National Institute for Occupational Safety and Health (NIOSH). NIOSH documents are available from the Government Printing Office or NTIS.

Other federal agencies which fund research are the departments of Defense, Energy, Housing and Urban Development, and the Consumer Product Safety Commission.[2]

On the state level, documents are produced by the environmental, natural resources, health and other departments.[3] Many of these state agencies have libraries which collect indoor pollution materials.[4]

Associations in the United States which organize indoor air conferences, publish proceedings, standards, books, or serials include:

Air and Waste Management Association, PO Box 2861, Pittsburgh, PA 15230 (412)232-3444.

American Academy of Environmental Engineers, 130 Holiday Ct., No. 100, Annapolis, MD 21401 (301)266-3311.

American Association for Aerosol Research, c/o Dr. John Seinfeld, 5530 Wisconsin Ave., NW, Suite 1149, Washington, DC 20815 (301)907-9873.

American College of Toxicology, 9650 Rockville Pike, Bethesda, MD 20814 (301)571-1840.

American Conference of Governmental Industrial Hygienists, 6500 Glenway, Bldg, D-7, Cincinnati, OH 45211 (513)661-7881.

American Industrial Hygienists Association, PO Box 8390, Akron, OH 44320 (216)873-2442.

American Lung Association, 1740 Broadway, New York, NY 10019 (212)315-8700.

American Public Health Association, 1015 15th St., NW, Washington, DC 20005 (202)789-5600.

American Society of Civil Engineers, 345 East 47th St., New York, NY 10017 (212)705-7496.

American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103 (215)299-5400.

American Society of Heating, Refrigerating & Air-Conditioning Engineers, 1791 Tullie Circle, NE Atlanta, GA 30329 (404)636-8400.

American Thoracic Society, 1740 Broadway, New York, NY 10019 (212)315-8700

Electric Power Research Institute, 3412 Hillview Ave., Palo Alto, CA 94304 (415)855-2000

Institute of Environmental Sciences, 940 E. Northwest Highway, Mt. Prospect, IL 60056 (708)255-1561

National Energy Management Institute, 601 N. Fairfax St., Ste. 160, Alexandria, VA 22314 (703)739-7100

National Institute of Building Sciences, 1201 L St., NW, Washington, DC 20005 (202)289-7800

Databases

The nature of the information needed should, of course, determine the databases to be searched. Following is a list of databases which have proven to be beneficial. The descriptions relate to their specific usefulness in locating indoor air material.

BIOSIS

Covers the life sciences literature. Useful in finding conference proceedings, meeting abstracts and books, as well as journal articles. Covers the toxicological aspects of indoor air pollution. Available online through: BRS, BRS After Dark, Dialog, DIMDI, and STN International, among others.

Chemical Abstracts Service

Provides international coverage in all fields of chemistry. Includes journal literature, patents, and meeting abstracts. Useful for information on the determination and measurement of individual indoor air pollutants, as well as their toxic effects. Available online through BRS, BRS After Dark, BRS/COLLEAGUE, Data-Star, Dialog, ESA/IRS, ORBIT, Questel, and STN International, among others. Also produces *CA Selects* on indoor air pollution. *CA Selects*, an update service, are searches of the Chemical Abstracts database which cover a variety of subjects and include abstracts (not available through most of the online systems). The search strategy is determined by the producers of the database. Results are mailed to the subscriber.

Compendex Plus

Covers engineering literature on a worldwide basis. Besides journal literature, proceedings, dissertations, and monographs are included. Very useful for information on the design and maintenance of heating, ventilation, and air-conditioning (HVAC) systems, which play an important part in determining the "sickness" or "wellness" of a building. Available online through Data-Star, Dialog, Knowledge Index, and ORBIT, among others.

Conference Papers Index

Covers approximately 50,000 papers presented at about 150 scientific and technical meetings worldwide each year, including those on indoor air. Inclusion of unpublished proceedings make this database unique. Many of the meetings covered are those of the major professional associations listed above. Available online through Dialog and ESA/IRS.

CRISP (Computer Retrieval of Information on Scientific Projects)

Provides descriptions and indexing of biomedical research projects funded or supported by the U.S. Public Health Service. Useful for finding out who in non-federal institutions is currently doing research on health effects of indoor air pollution. Provides abstracts of the research; updated monthly. Available online through BRS. Also available as part of *Federal Research in Progress* and *Toxline* (see below).

Enviroline

Provides broad coverage of environmental issues, drawing from scientific, technical, professional, trade and general periodicals, conferences, reports, newspaper articles, congressional hearings, and private and governmental agencies. Tends to provide the most comprehensive coverage of the primary literature resources listed in this paper. Available online through Dialog, DIMDI, ESA/IRS, and ORBIT, among others.

MEDLINE

Covers biomedicine on an international basis. Limited to journal literature. Useful for

locating articles on the medical, toxicologic, epidemiologic, and public health issues of indoor air pollution. Available online through: BRS, BRS/After Dark, BRS/COLLEAGUE, Data-Star, Dialog, DIMDI, Knowledge Index, MEDLARS, PaperChase, STN International, and Questel, among others.

NTIS (National Technical Information Service)

This is the primary database for finding indoor air-related documents published by the EPA, NIOSH, and other federal agencies. Covers technology, engineering, chemistry, health sciences, and other disciplines. Available online through BRS, BRS/After Dark, BRS/COLLEAGUE, COSTI, Data-Star, Dialog, Knowledge Index, ORBIT, and STN International, among others. NTIS also produces *Published Searches* on indoor air pollution, a bibliographic service which provides coverage of 23 U.S. and international databases. *Published Searches* is available on a wide variety of topics, includes abstracts, and costs about $60 each.

Scisearch

Provides broad coverage of the scientific literature, and includes articles, review papers, meeting abstracts, editorials, letters, and book reviews. While a literature search of this database yields many of the same citations which can be found in the other databases discussed, it yields them *first.* Even with the addition of abstracts and other useful features made in early 1991, the gap of time between the publication of an article and its appearance in **Scisearch** is shorter than with the other databases listed. Available online through Data-Star, Dialog, DIMDI, and ORBIT, among others.

Also consider: **EMBASE** (BRS, BRS/After Dark, BRS/COLLEAGUE, Data-Star, Dialog, DIMDI, etc.); **Federal Research in Progress** (Dialog, etc.); **NIOSHTIC** (Dialog, ORBIT, etc.); **Pollution Abstracts** (Data-Star, Dialog, ESA/IRS, Knowledge Index, etc.); **Social Scisearch** (BRS, BRS/After Dark, BRS/COLLEAGUE, Data-Star, Dialog, DIMDI, etc.); and **Toxline** (BRS, BRS/After Dark, BRS/COLLEAGUE, Data-Star, DIMDI, MEDLARS, etc.)

Search Strategy

Terminology used when searching the bibliographic databases naturally depends upon the individual situation. The use of controlled vocabulary, established by individual database producers, and uncontrolled vocabulary (i.e., terminology which is not a part of the official list of subject headings) produces the most comprehensive results. Following is a list of suggested terminology to use. Some of the terms will appear on the official list of subject headings of some databases, others will not. Consult the individual database thesauri when devising search strategies:

Aeroallergen(s)
Aerosol(s) or Bioaerosol(s)
Air Conditioning
Air Microbiology
Air Pollution, Indoor
Aldehyde(s) or Formaldehyde
Asbestos
Benzene
Biological Agent(s)
Building-related Illness(es)
Carbon Dioxide
Carbon Monoxide
Cotinine
Dust Mites
Electromagnetic Fields
Environmental Tobacco Smoke or Sidestream Smoke or Passive Smoking or Tobacco Smoke Pollution
Fungi
Heating
Humidifier(s)
HVAC
Indoor Air
Indoor(s)
Lead
Microenvironment
Office(s)
Ozone
Pesticide(s)
Polycyclic Aromatic Hydrocarbon(s)
Radon

Respirable Particle(s) or Respirable Particulate(s)
Risk Assessment
School(s)
Sick Building(s)
Sick Building Syndrome
Sulfur Dioxide
Tight Building(s)
Ventilation
Volatile Organic Compound(s)
Workplace

(Note: Although the area of occupational/industrial/manufacturing health and safety includes indoor air pollution, these materials may be considered tangential to home and office air pollution, and a decision to omit or include them should be made.)

Indoor Air Journals

There are a number of scientific journals which routinely publish articles relevant to indoor air issues. Many are official publications of the professional associations listed above. Recently, two new journals have been published which are devoted exclusively to the subject.

Indoor Air: International Journal of Indoor Air Quality and Climate (Vol. 1, 1991), Munksgaard International Publishers, 35 Norre Sogade, Postbox 2148, DK-1016 Copenhagen K, Denmark. 45-33-12-70-30.

Indoor Environment: The Journal of Indoor Air International (Volume 1: 1992–). S. Karger Publishers, 26 West Avon Rd., PO Box 529, Farmington, CT 06085 (203)675-7834.

Other titles include:

Aerosol Science and Technology. Elsevier Science Publishing Co., 655 Avenue of the Americas, New York, NY 10010 (212)989-5800.

American Review of Respiratory Disease. American Lung Association, 1740 Broadway, New York, NY 10019 (212)315-8700.

Archives of Environmental Health. Heldref Publications, 4000 Albemarle St., NW Washington, DC 20016 (202)362-6445.

ASHRAE Journal. American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. 1791 Tullie Circle NE, Atlanta, GA 30329 (404)636-8400.

Atmospheric Environment. Pergamon Press, Maxwell House, Fairview Park, Elmsford, NY 10523 (914)592-7700

Environment International. Pergamon Press, Maxwell House, Fairview Park, Elmsford, NY 10523 (914)592-7700

Environmental Health Perspectives, Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 (202)783-3238.

Environmental Research. Academic Press, One East First St., Duluth, MN 55802 (800)543-9534.

Environmental Science and Technology. American Chemical Society, 1155 16th St., NW, Washington, DC 20036 (202)872-4600.

Environmental Technology. Selper, Ltd., 79 Rutshall Ave., Chiswick, London W4 1BN, United Kingdom. 011-44-1-998-4157

Journal of Exposure Analysis and Environmental Epidemiology. Princeton Scientific Publishing, Co. PO Box 2155, Princeton, NJ 08543 (609)683-4750

Risk Analysis. Plenum Publishing Corp., 233 Spring St., New York, NY 10013 (212)620-8000

Toxicology and Industrial Health.

Princeton Scientific Publishing Co., PO Box 2155, Princeton, NJ 08543 (609)683-4750

Newsletters

Newsletters provide a number of time-saving services. They may track legislation, litigation, policy, list meeting announcements, or contain news of people and industries that are influential in shaping indoor air issues. They include:

Environmental Health Letter. Business Publishers, 951 Pershing Dr., Silver Spring, MD 20910 (301)587-6300

Indoor Air Bulletin. PO Box 8446, Santa Cruz, CA 95061 (408)426-6624

Indoor Air Quality Update. Cutter Information, 37 Broadway, Arlington, MA 02174 (617)648-8700

Indoor Air Review. IAQ Publications, 5335 Wisconsin Ave., NW, Suite 440 Washington, DC 20015 (202)686-2626

Indoor Pollution News. Buraff Publications, 1350 Connecticut Ave., NW, Suite 1000, Washington, DC 20036 (202)862-0990

Newsletters will be especially useful as Congress considers passage of legislation on indoor air quality and the Environmental Protection Agency releases indoor air guidelines for schools, industry, and the public.

Books

The control, risk, exposure, and measurement of indoor air pollutants have been the subject of many recently published books, monographs, and conference proceedings. Following is a very selective list which may be useful in beginning a collection in the area:

American Conference of Governmental Industrial Hygienists. *Guidelines for the Assessment of Bioaerosols in the Indoor Environment.* Cincinnati: American Conference of Governmental Industrial Hygienists, 1989.

American Society of Heating, Refrigerating, and Air-conditioning Engineers, Inc. *The Human Equation: Health and Comfort. Proceedings of ASHRAE/SOEH Conference IAQ '89, April 17–20, 1989, San Diego, California.* Atlanta: ASHRAE, 1989.

Bureau of National Affairs. *Indoor Air Pollution: The Complete Resource Guide.* Washington, DC: The Bureau of National Affairs, 1988. In two volumes.

Calabrese, Edward J. and Elaina M. Kenyon. *Air Toxics and Risk Assessment.* Chelsea, MI: Lewis Publishers, 1991.

Cohrssen, John J. and Vincent T. Covello. *Risk Analysis: A Guide to Principles and Methods for Analyzing Health and Environmental Risks.* Washington, DC: Executive Office of the President of the U.S., Council on Environmental Quality, 1989.

Godish, Thad. *Indoor Air Pollution Control.* Chelsea, MI: Lewis Publishers, 1989.

Guerin, Michael R. *The Chemistry of Environmental Tobacco Smoke.* Chelsea, MI: Lewis Publishers, 1992. (Indoor Air Research Series, volume 1).

Hansen, Shirley J. *Managing Indoor Air Quality.* Liburn, GA: Fairmont Press, 1991.

Hering, Susanne V. *Air Sampling Instruments for Evaluation of Atmospheric Contaminants,* 7th edition. Cincinnati: American Conference of Government Industrial Hygienists, 1989.

Jokl, Miloslav V. *Microenvironment: The Theory and Practice of Indoor Climate.* Springfield, IL: C.C. Thomas, 1988.

Kay, Jack G. *Indoor Air Pollution: Radon, Bioaerosols, and VOC's.* Chelsea, MI: Lewis Publishers, 1991.

Kundsin, Ruth B. *Architectural Design and Indoor Microbial Pollution.* New York: Oxford University Press, 1988.

Lodge, James P. *Methods of Air Sampling and Analysis,* 3rd edition. Chelsea, MI: Lewis Publishers, 1989.

Meckler, Milton. *Indoor Air Quality Design Guidebook.* Fairmont Press, 1990.

Morey, P.R. and J.C. Feeley. *Biological Contaminants in Indoor Environments. #STP 1071.* Philadelphia: American Society for Testing and Materials, 1990.

National Research Council Committee on Advances in Assessing Human Exposure to Airborne Pollutants. *Human Exposure Assessment for Airborne Pollutants: Advances and Opportunities.* Washington, DC: National Academy Press, 1991.

Rappaport, S.M. and T.J. Smith. *Exposure Assessment for Epidemiology and Hazard Control.* Chelsea, MI: Lewis Publishers, 1991.

U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory; Air and Waste Management Association. *The Total Exposure Assessment Methodology (TEAM): Proceedings of the EPA/A&WMA Specialty Conference, November, 1989: Las, Vegas, Nevada.* Pittsburgh: Air and Waste Management Association, 1990.

Vincent, James H. *Aerosol Sampling: Science and Practice.* Chichester: Wiley, 1989.

Winberry, William T., Linda Forehand, and Norma T. Murphy, *et. al. Compendium of Methods for the Determination of Air Pollutants in Indoor Air.* Research Triangle Park, NC: U.S. Environmental Protection Agency, 1990.

Library of Congress headings (i.e., controlled vocabulary) to use when searching for books include:

Aerosols
Air - Microbiology
Air Quality Management
Aircraft Cabins - Health Aspects
Asbestos in Building
Buildings - Air Pollution
Buildings - Environmental Engineering
Drinking Water
Dwellings - Heating and Ventilation
Health Risk Assessment
Housing and Health
Indoor Air Pollution
Indoor-Outdoor Air Exchange
Lead
Radon
Smoking - Environmental Aspects
Tobacco - Environmental Aspects
Ventilation
Work Environment

Bibliographies

Following is a list of relatively recent indoor air pollution bibliographies which may provide assistance with devising search strategies, developing collections, or gaining some insight on the kinds of research being done in the area:

- U.S. Environmental Protection Agency. Environmental Criteria and Assessment Office. *Indoor Air: Reference Bibliography.* Research Triangle Park, NC: Environmental Protection Agency, 1989. NTIS order number PB90-145772.

  Compiled as part of an effort by EPA to disseminate information on indoor air quality to the public. Covers books, journals, and conferences. Over 4,500 citations are listed. Abstracts are not included. Arrangement is by document number. Includes a list of key words

used, and a separate author index. Covers through 1988.

- U.S. Environmental Protection Agency. Office of Acid Deposition, Environmental Monitoring, and Quality Assurance; Office Research and Development. *Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts.* Washington, DC: Environmental Protection Agency, 1988. NTIS order number PB88-250360.

  Covers 1962–1986, with a few documents from early 1987. Includes unpublished draft reports, final reports of U.S. government and other countries, reports by governmental research contractors, and journal articles. Contains over 800 citations, all with abstracts. Includes a brief discussion of how human exposure to pollutants is measured, synopses on some major pollutants, a keyword glossary, and an acronyms and abbreviations list. Arranged alphabetically by author's last name.

- U.S. Environmental Protection Agency. Office of Acid Deposition, Environmental Monitoring, and Quality Assurance; Office Research and Development. *Total Human Exposure and Indoor Air Quality: An Automated Bibliography (BLIS) with Summary Abstracts. Volume 2.* Washington, DC: Environmental Protection Agency, 1990. NTIS order number PB91-137281.

  Covers January 1987–December 1989, with a few entries from 1986 which were not included in Volume 1. Includes unpublished draft reports, final reports of U.S. government and other countries, reports by governmental research contractors, and journal articles. Contains almost 400 citations, all with abstracts. Covers the entire field of human exposure methodology, with emphasis on field studies which measure all the concentrations to which people may be exposed, including indoors, outdoors, or in transit. A keyword glossary is included. Arranged alphabetically by author's last name.

- van de Kamp, Jacqueline. *Indoor Air Pollution. Part I: Radon.* Washington, DC: Government Printing Office, 1988. Current Bibliographies in Medicine series, No. 88-10. G.P.O. stock number 817-004-00010-5.

  Covers January 1984–July 1988. Contains over 350 citations, none with abstracts. Arranged alphabetically by author's last name. Includes books, journal articles, and meetings proceedings. To prepare this bibliography, a number of online databases, including those in the National Library of Medicine's MEDLARS system, were searched. Search strategy is included.

- van de Kamp, Jacqueline. *Indoor Air Pollution. Part II: Household and Occupational Pollutants, Excluding Radon.* Washington, DC: Government Printing Office, 1988. Current Bibliographies in Medicine series, No. 88-11. G.P.O. stock number 817-004-00011-3.

  Covers January 1984–July 1988. Contains over 1,800 citations, none with abstracts. Arranged alphabetically by author's last name. Includes books, journal articles, and meetings proceedings. To prepare this bibliography, a number of online databases, including those in the National Library of Medicine's MEDLARS system, were searched. Search strategy is included. Note: See also the entry on NTIS in the databases section of this paper.

Summary

Along with the ever-expanding professional literature discussed in this paper, there are a variety of booklets and pamphlets published by the EPA, the American Lung Association, and other groups for the general public. (See the "Government Agencies and Professional Associations" section of this paper for addresses and phone numbers of these organiza-

tions.) Articles concerning indoor air issues appear in newspapers and magazines almost daily. Demand for information on indoor air pollution will increase as Congress considers indoor air quality legislation, and as new data about pollution in the home and workplace come to light. Information professionals can anticipate this demand by taking advantage of the indoor air resources currently available. ■

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On the Scene

Special Librarians and the INTERNET

by Hope N. Tillman and Sharyn J. Ladner

It is time for special librarians to join the world of electronic networking via the INTERNET. Communication via INTERNET, BITNET, or other external networks must be viewed as more than just another of the many new technologies to be learned. While communication may be easier for the librarian in an institution with ready access to an INTERNET node, there are a growing number of methods to gain access, and they are worth pursuing.

Special librarians are using INTERNET. Well over 100 special librarians responded to our call to participate in a survey describing special librarians' use of INTERNET/BITNET. We followed our initial survey with a longer questionnaire. From this, we received detailed responses from 54 special librarians, the majority (35) from academic libraries. The majority (32) were also from sci-tech subject areas. Half have accessed BITNET/INTERNET for two years or less, 30% for one year or less. The survey was for the most part conducted on the INTERNET. The survey confirmed that special librarians are among the librarian "early adopters" using the INTERNET. Their responses illustrate the benefits INTERNET access can provide to special librarians.

Of the innovations made possible by new technological developments, electronic networking and communication are key to productive functioning in the future world of work. The Special Libraries Association Strategic Plan 1990–2005 states that "the information environment is influenced by demographics, economic conditions, and technology. Evaluation of the environment is fundamental to planning for SLA." This evaluation must include the impact of electronic networking.

The INTERNET has special value for special librarians. A number of special librarians are isolated from one another, as they work in one-person libraries, decentralized branches, or small groups. Special librarians interact with one another to benchmark and to learn. Year after year, connecting with other professionals ranks with content of programming in SLA Chapter and Annual Conference program evaluations. As it becomes feasible to interact with fellow professionals without the boundaries of geography and time zones, the "networking" that has been the hallmark of SLA is moving into a new phase. Here is where the multiple meanings of the term "networking" converge: networking as personal interaction and networking as system connectivity.

The popularity of the "Introduction to the INTERNET" program at the Annual Conference in San Antonio, TX in June 1991, has been followed by a number of Chapter programs in 1991–92. The SLA Board has recognized the importance of electronic communication by committing to obtaining an Association INTERNET address by January 1993 for electronic mail communication with the membership.

Briefly, the INTERNET can be defined as a worldwide network of computer networks connecting hundreds of thousands of computers. More to the point is its definition as, "the sum of all the computers to exchange e-mail with."[1] While the history of the INTERNET goes back to the 1960s, its popularity for libraries has grown exponentially during the

past two years, as larger libraries have begun connecting their library catalogs and looking at other ways to make best use of the connectivity.

1991 was an eventful year for INTERNET developments. For libraries, 1991 saw the proliferation of library-related electronic discussion groups and the growing involvement of library vendors and database producers on the INTERNET. On December 9, 1991, President Bush signed the High-Performance Computing Act into law as PL 102-194. This legislation has often been referred to as the National Research and Education Network (NREN) bill. Library associations, including the Special Libraries Association, vocally supported passage of this bill. Over the next five years, NREN is expected to develop into a high-capacity, high-quality fiber optic cable network that will link computer users in government, industry, academic, publishing, research facilities, and libraries. Since funding must be authorized by the Congress for this to happen, the timetable may be longer.

Electronic mail and discussion groups, or one-to-one and one-to-many modes of communication, are the new technological extensions of the personal networking which has been crucial for librarians in keeping abreast with new developments and carrying out their responsibilities for their customers. Electronic networking has brought about an expanded community for librarians to share their expertise through electronic outlets.

Electronic Mail and Computer Conferencing

Electronic mail accounts for substantial traffic on the INTERNET.[2] Often but not always within special libraries, electronic mail communications happen with colleagues and patrons within an organization; thus, external e-mail over the INTERNET fits within an institutional communication e-mail framework. One of the survey respondents, who works in a high-technology library, stated, "I use e-mail for everything from contacting patrons to receiving search requests, to delivering information, to setting up meetings, to making lunch plans. My company has recently switched to making mass notifications (like of corporate events or meetings) via e-mail rather than in paper copy." According to Sandra Raymond, Librarian, Thinking Machines, Corp., "Ninety percent of my user request/replies travel this way."

Survey responses certainly affirmed e-mail as the principal use of INTERNET both within an organization and externally. Consistently, the most common response from special librarians was communicating with colleagues and friends, frequently bypassing telephone or "snail mail" (postal service delivery) and eliminating telephone tag. According to Beverly Pope, Librarian Specialist, Florida Department of Agriculture & Consumer Services, "INTERNET offers a convenient, quick, and inexpensive way to communicate which combines the advantages of mail and telephone especially helpful when colleagues are not in close geographic proximity."

David Raitt, Head, Library & Information Services, European Space Agency-ESTEC, The Netherlands, "uses the INTERNET for exchanging news and information... with users throughout the USA, Europe, and Australia."

The value of extra-organizational e-mail was stressed over and over again by survey respondents. Reasons for use include:

- getting quick copy permission;
- providing and receiving electronic reference and technical assistance;
- requesting and providing ILLs;
- requesting library materials, missing issues, duplicate exchanges;
- identifying document sources; and
- submitting applications for employment.

E-mail facilitates professional association business, committee work, and program planning. Ellen Chu, Librarian, National Institutes of Health, Division of Computer Research and Technology, used e-mail to communicate with the proctor and members in Montreal, Los Angeles, and Albuquerque when she chaired SLA's Scholarship Committee (1990/91). According to Jayashri Nagaraja, Head, Chemistry Library, Princeton University, "Many special librarians are one-person libraries or very small units. BITNET/INTERNET will

help them keep in touch with the outside world. It will also aid them to be active and aware professionally. If SLA also uses the network, there is a possibility to handle membership issues and matters more quickly and efficiently."

Currently, there are over 700 active BITNET or INTERNET lists (also referred to as listservs, computer conferences, or electronic discussion groups). These electronic group conversations provide focus for electronic discussion of specific topics of interest to those who subscribe or participate. Once registered, subscribers automatically receive all messages sent to the listserv. There are over 50 computer conferencing groups already targeted at librarians, including three for SLA Divisions:

- ITE-TECH, Information Technology Division, Technical Services Section
- MAPS-L, Geography and Map Division
- PAMnet, Physics-Astronomy-Map Division

SLA's News Division has found its home on the JOURNALISM FORUM on the popular commercial network, CompuServe.

Special librarians do not limit themselves to library-related lists, but also monitor and join relevant sci-tech and business discussions. The 54 special librarians who completed the detailed survey listed 68 different discussion groups. Benefits of these groups include:

- They provide a focused forum for topics of interest to a specific audience.

- They provide an excellent, swift communications vehicle where questions can be raised and answers provided to all the participants. Rumors can be defused. Reasons for actions can be explained once and transmitted easily to the entire audience.

- Cost to distribute information is the same to send to one person as to send to a large group. When using listserv as a communications vehicle instead of U.S. mail, it can save postage for those who have the networked communications capability and be delivered instantly. In groups such as PAMnet, which transacts Division business using the listserv, it is supplemented by other modes of communication, such as telephone and U.S. mail, to inform non-networked members.

- There is no national border to this connectivity; international members can subscribe, tying in with the Special Libraries Association's growing international emphasis.

- As alternative methods of connecting to the INTERNET proliferate, more members will gain access. Besides institutional access through INTERNET, BITNET, and USENET, electronic mail and discussion group access are becoming available through commercial services, such as CompuServe, WELL, and WORLD.

Remote Login ("telnet")

Remote login expands the resources available to special librarians in their libraries by enabling them to log into other libraries' catalogs and information resources on the INTERNET and use them as if they were on site. "Telnet," the remote login command, is only available to INTERNET subscribers and not to those who use other networks which route electronic mail over the INTERNET. While electronic mail is used much more frequently than remote login or file transfer by those who have joined the INTERNET, remote login and file transfer are essential for librarians to fulfill their roles as information providers.

There is a wealth of material to be accessed via the INTERNET, both published and "unpublished," and directories are being developed to facilitate learning the location of this information. Types of material available via telnet or remote login include:

- bibliographic holdings of libraries' collections;

- full text of information—archival and other;
- indexes to periodical literature, sometimes enhanced with abstracts;
- full text of articles or ability to order full text directly; and
- campus and freenet bulletin boards.

Special librarians from the survey described their use of this interactive function to access specialized tools worldwide. Marlene Cummins, Librarian, Astronomy Library, University of Toronto, used "telnet" "primarily to log onto external databases and download and save the data for patron's use." Ellen Bouton, National Radio Astronomy Observatory, connects for "remote access to several astronomy databases (NED, SIMBAD, ADS)." Sandra Raymond, "...uses MIT, Berkeley, Boston University, and pac.carl at least a dozen times/week. I find concrete references when I only have a sketchy topic, find libraries to contact for article ILL, peruse book reviews, keep up with interesting new articles in my area of interest, etc..."

For libraries, 1991 saw the growing involvement of library vendors and database producers on the INTERNET. For instance, OCLC, EPIC, and STN were available. EBSCO began to provide document delivery for articles found on Uncover, the table of contents indexing service on CARL, Colorado Alliance of Research Libraries. UMI announced plans for a document delivery service on RLIN. DIALOG and Mead Data signed contracts to provide access to their databases via the INTERNET.

File Transfer Protocol (FTP)

The command "ftp," which stands for *file transfer protocol*, allows the user to logon to a remote host to transfer files. Like "telnet," this feature is only available to INTERNET subscribers. Also, the "ftp" program must be running on both the home computer and the host computer to transfer files, and password identification may be needed to log in. Software and graphics may be downloaded, as well as documentation. Anonymous "ftp" is a special command that can be used to download information that a host computer wants to make available to any 'guest' users. Most special librarians that have used "ftp" have downloaded guides to using the INTERNET or directories of resources available via the INTERNET.

For instance, an SLA member working as a systems librarian in a U.S. government organization library, "...FTPed library-related files such as the St. George and Larron directories, list of E-journals, and INTERNET instruction files. Have also FTPed articles from PACS-L Review. Identified most files I FTPed through messages on the LISTSERV forums." Mary Brandt Jensen, Director, Law Library, University of South Dakota, uses "ftp" to send and receive files for Project Gutenberg and specific individuals. "Common items are electronic texts for proofing, preprints of articles in progress for comment, and submission of articles for publication. "

When she was Assistant Director for Editorial Services in the Information Services Division of Petroleum Abstracts, Linda Hill sent and received "both text and program files, sometimes with anonymous login but also from the other systems that I have access to." Dorothy Smith, Engineering Computer-Based Services Librarian/INTERNET Resources Librarian, University of Washington, Seattle, also describes practical uses: "Transfer list of catalogs to make available for patrons, transfer other lists of lists, transfer programs written for INTERNET access to evaluate or use—such as HYTELNET or LILTEL [software], transfer files from my machine to public machine, transfer a word processing file which I am working on with someone else." John Saylor, Engineering Library, Cornell University, uses "ftp" for downloading applications from remote servers, such as the WAIS application from Thinking Machines.

The special librarians surveyed on their use of the INTERNET make the best arguments for special librarians to learn about the INTERNET and find a way to get on it. According to Ellen Chu, "Special librarians who do not use BITNET/INTERNET are missing a vital resource at this stage of the information

age. Librarians serving education, research, and sci-tech clientele cannot ignore this revolutionary development in communications and information flow for two reasons. First, library staff and user reference questions very often can only be answered via information services established only on the networks, or by appealing to discussion group participants. Second, as information professionals, the image of the special librarian's expertise will be affected by participation/non-participation in this global networking. If the clientele is using BITNET/INTERNET and the librarian is not, the librarian will quickly lose credibility as an information professional. The user will fulfill information needs directly, omitting the librarian from the loop."

Sandra Raymond urges librarians to embrace this technology. Like Ellen Chu, she considers it a necessity. "Librarians are some of the pioneer professional networkers. To not get involved with this early on will tarnish our public image. Professionals who balk at getting involved may find themselves in a position similar to that of businesses who refused to acquire phone service when that industry began to proliferate—left in the backwater to stagnate."

Special librarians have a special need to be proactive because of the many changes in the world of libraries and the workplace. While special librarians would be quick to agree that our role as gatekeeper of books has long since gone away, it is difficult to see how to shift our role for the coming decade. We propose that special librarians must master electronic networking skills to meet the challenges of change. ■

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How Many Times Have *You* Been to San Francisco?

First Timers, There are Wonderful Places to Explore...

- Fisherman's Wharf, Telegraph Hill, Lombard Street, Coit Tower, the cable cars, Ghirardelli Square. Walking is one of the best ways to explore San Francisco. Although quite steep, the hills are wonderful. While you are walking take note of the *electric* buses. Why electric and not gasoline powered? Simple, electric has more torque to pull the buses along and up the hills. More efficient. Ride one and enjoy the *silence* of a trip!

- **The Golden Gate Bridge.** A marvel of construction. A long but interesting walk over the bridge...for the more adventurous.

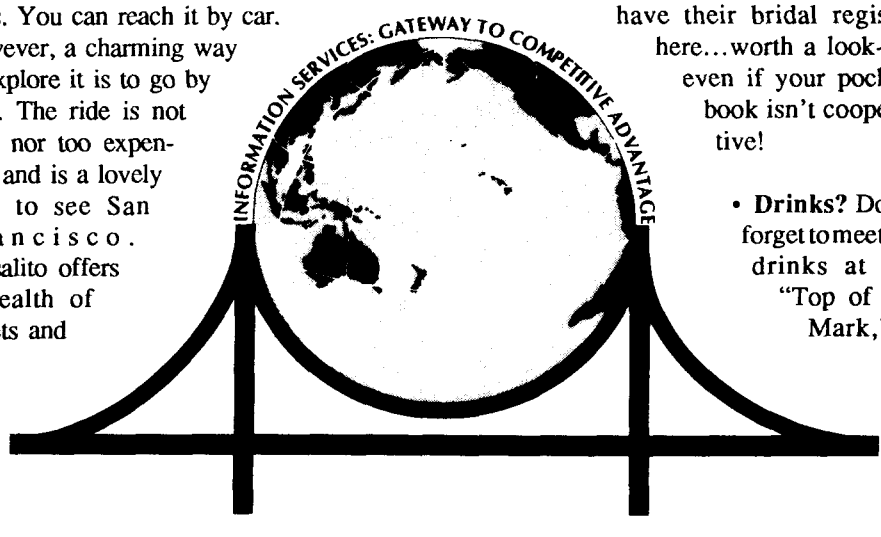
- **Sausalito,** an artist's colony town of sorts. You can reach it by car. However, a charming way to explore it is to go by boat. The ride is not long nor too expensive and is a lovely way to see San Francisco. Sausalito offers a wealth of streets and unique shops to explore...or spend money if your pocketbook allows. If not, the trip is worth it for a walk and a bite to eat.

- **The Presidio.** Have you seen the movie? Well, if not, you still have time. Better yet, take a walk and enjoy the wonderful scenery and the people. Sunset is always an enjoyable time, with or without fog!

- **Alcatraz.** Yes, as in the "Bird Man from Alcatraz." Many have the impression that this isn't much fun. In reality, this trip to the island for "the unlawful" includes a fascinating tour of the place that is full of stories and intrigue.

- **Shopping?** Don't forget a visit to Gumps. This is a world-famous store that has an excellent Far East collection of china, sculpture, etc. The rich and famous have their bridal registry here...worth a look-see even if your pocketbook isn't cooperative!

- **Drinks?** Don't forget to meet for drinks at the "Top of the Mark," a



hotel with a different flair. A "classic" in San Francisco.

For Those Who Have Been a Few Times, Did You Know...

There are exciting places to investigate that you might have missed during previous visits to the Golden City. There is no doubt that San Francisco has something for everyone...no matter how many times you have visited. You may want to consider a visit to these different places:

- **Club Fugazi**—This is a wonderful "theater-like" establishment with a twist. The club has a long-running musical "Beach Blanket Babylon" spoofing beach movies that include wild costumes and songs! Subject of the plots change; while beach movie spoofs are the most popular, Fugazi has also done productions on political issues and love. The programs may change, but the fun and frolic that audience and performers alike enjoy stays the same *and* is beyond compare. Consider a visit.

- **Fort Point**—Directly under the Golden Gate Bridge. This is a restored Spanish fort that offers a unique perspective on the development in the area.

- **The Carousel Museum**—There is really such a place...the only one in the country. Located just behind Ghirardelli Square (up a few streets), this is a fascinating museum for those young at heart. The museum has a wonderful collection of carousel horses and animals and traces the development of this wonderful ride that pleases young and old. The museum also has a unique gift shop for those looking to purchase something out-of-the-ordinary.

- **The Exploratorium**—Near the Golden Gate Bridge, this hands-on science museum is a *fascinating* place for all...even (especially) those who "hate" science. It is a fun place to visit.

- **Eateries you may have missed**—Domain Chandon—an excellent restaurant for true San Francisco dining. This is an expensive restaurant, but worth every penny. Many known faces can be seen here. A quiet spot where everyone is treated like royalty. Foneau's Oven—dining downtown with a flair. Another spot that is worth a visit. (Keep in mind that dinner in San Francisco is *dining*—not for the fast-food lovers!)

- **Cooks anyone?** Yes, for all you gourmet cooks who prefer to create your own delicacies...your visit should include a stop at the William Sonoma store. Like the gourmet cook catalog only bigger and better. You'll find everything from widgets to pasta servers to tea caddies.

Beyond San Francisco...Yet Still Apart

There is much to do and see just beyond the city proper. Easily reached by public transportation (New Yorkers, you'll be in shock... people wait in lines to board the subways. And, subways are *safe!*) is Oakland and Berkeley. This is the same Berkeley of the '60s, and in some places you should make sure you bring your love beads and nehru jackets. In other places you will find wonderful shops not found elsewhere...

- Gourmet Ghetto, located in North Berkeley (upper Shattuck Avenue), has a variety of restaurants and bakeries "to die for."

- Telegraph Avenue—shops and street vendors selling arts and crafts that only Berkeley can offer. These shops offer "cool" stuff reminiscent of the '60s. A time-warp trip!

- Rockridge BART Station—North Oakland houses a super place for shopping: Market Hall–International Marketplace. Here you will find items of interest from around the world—gifts, trinkets, and "goodies" not found anywhere else.

And For Those With Cars...

- Napa Valley and the winery tours. Even if you don't partake of the wine, a car ride through this area is beyond compare. While touring, be sure to stop for a bite to eat at Mustard's. This is a wonderful eatery located near Modavi.

- Mount Tamalpais. Excellent views and there is wonderful hiking and bicycling for those who wish to raise the heart rate a bit.

- For nature lovers and those who want to experience Mother Nature first hand... don't forget these places of wonder:

  Stinson Beach
  Point Reyes
  Bolinas
  Beaches and wetlands...all excellent for great birdwatching!

No matter what you do in and about San Francisco, enjoy this friendly city. Bring a pair of walking shoes and see where your feet take you! ■

Call for 1993 Conference Papers

You are invited to submit papers for SLA's 1993 Annual Conference on topics relating to the theme, "Looking to the Year 2000: Information Professionals Chart the Course." The 1993 Conference will highlight the world of new and expanding technology, and emphasis will be placed on greater cooperation between information professionals worldwide. The focus is on librarians and information professionals in their roles as:

- planners for the future in terms of new and existing technology, as well as effective strategic planners;

- marketers of information services who are continuing the quest for higher quality information services; and

- managers of information systems and library services using specific skills such as financial planning, database expertise, and strong communication skills to enhance information services.

Possible topics include new and future technology, worldwide information systems, value-added information services, and strategic planning. Multimedia presentations and poster sessions related to the Conference theme will be considered for inclusion. Papers accepted will be presented at the professional papers sessions. Very specific submissions will be referred to appropriate Divisions.

Guidelines for Professional Papers

- Abstract—a 250–500 word abstract, accurately conveying the subject of the paper, its scope, conclusions, and relevance to the Conference theme, must be submitted by **September 25, 1992,** to Jeanne Bohlen, US Institute of Peace, 1550 M Street, NW, Suite 700, Washington, DC 20005 (202)429-3850.

- Text—the complete text of the paper is due at Association Headquarters by **April 2, 1993.**

- Originality—papers must be original work and not previously presented or submitted to any national or international group.

- Length—paper presentation should take approximately 20 minutes.

- Acceptance—papers will be accepted only if the abstract has been submitted and evaluated, and if the author plans to present the paper at the 84th Annual Conference. The Conference Program Committee will notify authors of accepted papers by November 14, 1992.

Letter to the Editor

November 1991

Maria C. Barry, Editor
Special Libraries
1700 Eighteenth Street, NW
Washington, DC 20009-2508

Dear Ms. Barry:

The International Relations Committee of SLA is currently looking at ways of expanding SLA's international membership base and of reaching out to librarians in other countries.

Therefore, we were both pleased and discomforted by the articles you published by Flower L. Hund ("Sources for Information on Foreign Companies," Summer 1991, and "Sources for Information on Foreign Companies: An Update," Fall 1991).

The first source in the update is for a Canadian directory. We doubt if our Canadian members think of themselves as *foreign*.

We would like to ask you and our members to be more sensitive to the word "foreign" and suggest that "international" be used in its place. One person's "foreign" is another person's "native." As we look beyond the U.S. borders for both sources and members, we should use terms to reflect the new global information environment.

Sincerely,

SLA International Relations Committee

"You found it. The missing link in our strategy."

"We couldn't find it anywhere."

"Just about gave up."

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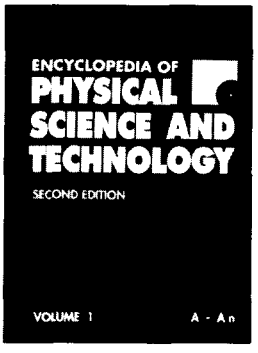

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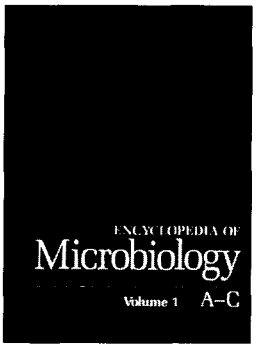

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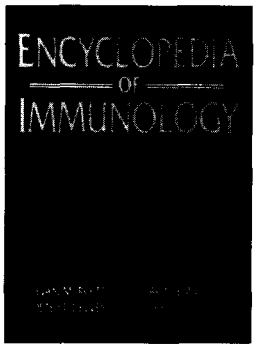

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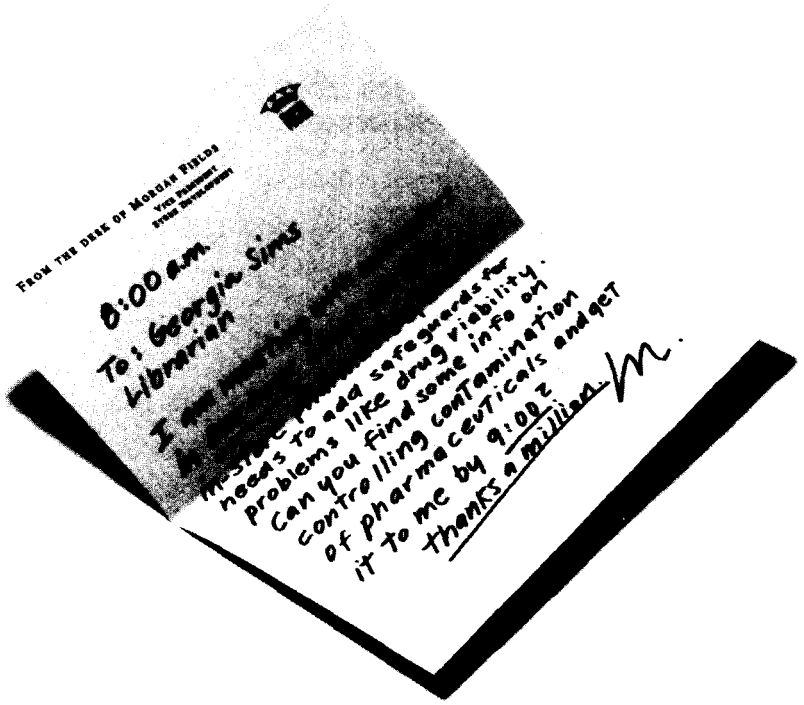

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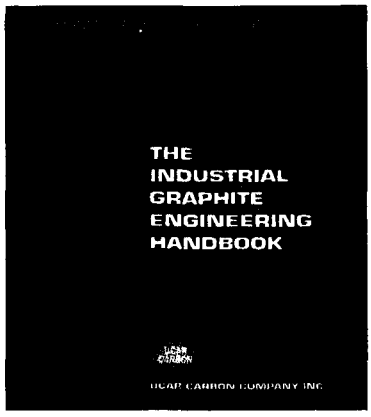

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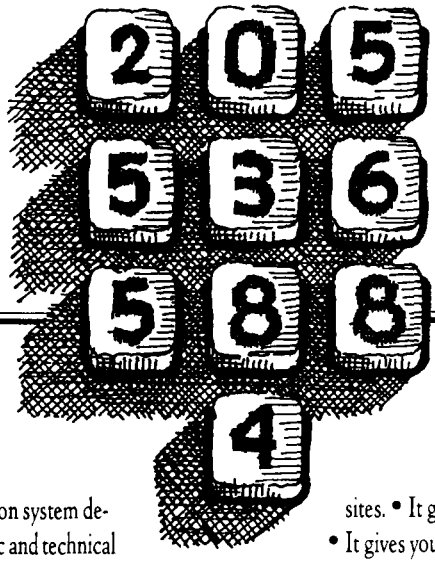

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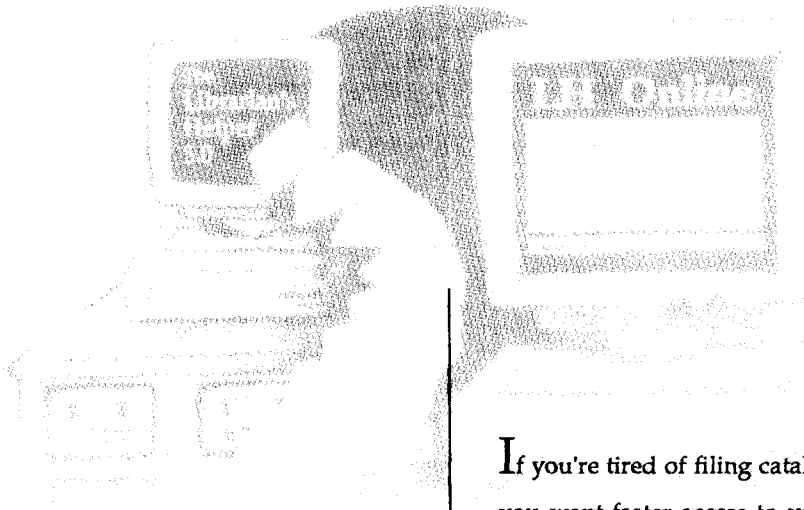

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