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From the Editor's Desk . . .

This issue brings you the “Best of the 1986 Conference” papers. A Listeners’ Jury of twenty-one selected two of the papers presented at the RTSD president’s thirtieth anniversary program “Here Today, (W)here Tomorrow?” and one of the papers given at the Serials Section program, “Serials and Standards: Why, How and What’s New?” The stars identify the conference papers the jurors considered to be of greatest potential interest and value to LRTS readers.

The volunteers and volunteer who served on the Listeners’ Jury were as follows: Daniel W. Barthell, Dora Biblarz, Linda G. Bills, David Block, Connie Brooks, Nancy Gwinn, Robert P. Holley, Judith Hopkins, Ming-ming S. Kuo, Joan Marshall, Margaret F. Maxwell, Edna McClellan, William J. Myrick, Rosanna O’Neil, Tom H. Ray, Marion T. Reid, John H. Reidelbach, Beth J. Shapiro, Suzanne Sweeney, Barbara Van Deventer, and Jean Wright. The editor thanks each of them for the time and expertise they have contributed. The editor also gratefully acknowledges the contribution of the conference program chairs and the LRTS’ assistant editors.

For those readers who have expressed a preference for articles with a practical slant, four empirical studies have been included in this issue. These four papers should invite technical services administrators or specialists in acquisitions, automation, or preservation to benefit from the experiences of their colleagues in the field.

Research has not been neglected, however. An interesting and informative report brings LRTS readers the results of a study of public library participation in bibliographic networks.—Elizabeth L. Tate
New Turns for a New Century: Library Services in the Information Era

Karen L. Horny

The turn of a century has always promised something exciting for civilization. When RTSD celebrates its fiftieth birthday, the twenty-first century will already be six years old, and today’s futurists will be either admiring or lamenting the accuracy of their predictions. When I was asked to take part in this program, I realized the fun would be a bit dangerous, since I am quite aware how difficult it is to forecast the nature of change correctly, especially in an era of accelerating technology. I thought, as I organized my remarks by inputting them at a computer terminal, that I now take for granted many kinds of support for my work that I could not have anticipated as a newly minted librarian twenty years ago.

Through the past two decades, I have been fortunate to be closely involved with the evolution of several significant technological developments of the period. The NOTIS-integrated computer system with which I have worked virtually since its inception provides a touchstone for my notions of the impact of technology on the major operations and services of libraries for today and tomorrow. Reflecting on difficulties of prediction, I remember vividly that when we implemented the technical services applications of NOTIS in 1971, my colleagues and I considered the online public access catalog as only a dream for some indefinite time far in the future. Frankly, we would have been very skeptical if anyone had said we would close the card catalog in less than ten years—and yet we did.

The acceleration of the availability of new technological applications is a factor we have come to accept, and it makes prediction especially complex and unreliable. Along with the greatly increased pace of change we also have to deal with the less tangible factor of our altering methods of...
conceptualizing. The “fixed landmarks” of our everyday activities, such as the book as an artifact, will no longer be limited to their traditional forms. Just as computer-supported word processing has eased the means by which many of us write, and both enabled and encouraged inclusion of “second thoughts” and revisions in our texts, we may find that, with the development of electronic publishing, there will be no limits to the rethinking that can be included in a publicly available document. There may be no such thing as a true or fixed edition, since the content of time-sensitive texts can be updated continuously. What will this do to our efforts to provide bibliographic control? How will it affect the validity of scholars’ citations, as well as copyright and plagiarism verification? What about the financial implications of continuing use and reuse of volatile databases not owned by our libraries? How will we arrange to maintain publisher-based electronic documents to serve future research needs after their commercial profitability has declined? In this paper I will attempt to highlight some of the major trends and speculate on their impact for library services and librarians’ positions.

I intend to look first at what the likely developments in applied technology will mean for bibliographic organization and access as we visualize the library of the future. I’ll start by making several assumptions, although some of them are almost certain to prove less than one hundred percent accurate.

In 2006, libraries will continue to hold substantial book-form collections, thanks not only to serious efforts at preservation and the impracticability of transforming all existing texts into such alternate formats as optical disk, but also to the likelihood that many standard monographic materials will continue to be published in the eminently convenient traditional book format. While shorter documents are likely to be maintained in electronic databases with on-demand printing of hard copy, more extensive texts may continue to appear in bound editions, at least when a significant amount of reader interest is anticipated. More esoteric texts are less likely to be issued in conventional book format if machine-readable copy can be maintained more economically than volumes could be printed and bound.

**BIBLIOGRAPHIC ACCESSIBILITY IN TOMORROW’S LIBRARIES**

The fruition of current efforts in retrospective conversion and initiatives to add materials not previously analyzed will allow online catalog access to the full range of library collections, nationwide and beyond, regardless of the format in which the text resides. If the shifting economics of telecommunication and centralized database maintenance costs in comparison with compact disk production, supply, and storage expenses permit, cooperatively created bibliographic files will be readily accessible either via electronic gateways from local area networks or by using CD-ROM types of equipment maintained in-house.

In terms of record retrievability, subject access will be improved by further rationalization of the structure of *Library of Congress Subject Headings* and the provision of additional access terms to machine-readable
records. Methods will be developed to link special schemes, such as MeSh, with LCSH by sophisticated mapping of the relationships among these subject heading lists. Online catalog approaches via classification number, either directly or through a linked subject term, will become increasingly common, bringing the U.S. approach to subject information closer to that often used in Europe. Keyword and Boolean search strategies, although extremely useful, will not be a panacea, since the number of matches found in the huge, linked bibliographic databases of the future will deter reliance on these comparatively unstructured and imprecise retrieval methods. Controlled vocabulary searching will be vitally important to successful identification of relevant resources in manageable quantities.

Cataloging will still be an intellectual process, but it may not take place entirely within libraries. Publishers of electronic manuscripts may have their own staffs provide standardized bibliographic records with a variety of subject access points. Computer-programmed "expert systems" may also assist in cataloging standardization.

**COLLECTIONS OF THE FUTURE**

Because not only catalog records and abstracts but also full texts will frequently be available electronically, many resources will be accessed but not owned by libraries.

Except for a limited number of general circulation titles and perhaps those most heavily used in major disciplines, the journal as we know it will cease to exist and be replaced by electronic article access. There may, however, be some organized means of approach, such as the publishing agency's identification, that will serve a similar function to the present journal title, and what may be termed access subscriptions could still be a major component in library budgets.

Given increasing reliance on documents in machine-readable form, indexing and abstracting services are likely to assume ever greater importance. Online access to such services is certain to be made available directly to users of a particular library's computer-based catalog, with some kind of standardized user-friendly interface.

Efficient methods of resource sharing will remain vital for older, printed materials, but are likely to be quite problematic where electronic media are concerned. How do you lend a database? What costs and rights are involved in sharing library investments in these resources? University computing centers are already wrestling with the issues of sharing, charging, use, and access to machine-readable files and most would probably admit that, although they have had to make decisions, they have not solved all the problems.

Working from the assumptions just identified, we can make some projections about library operations in the year 2006.

Collection development specialists will be assessing the options for purchase of, or nonownership access to, various resources. They will probably be assisted by individually tailored "SDI" programs as well as online text reviewing services. A bibliographer will be able to sit at a terminal and consult expert opinions on new information resources. Since
many resources will be maintained by centralized database services, it
will be necessary for libraries to set aside portions of their budgets for
payment for direct user access needs. We will be faced with a situation in
which, instead of paying for a reusable item to be added to our collec-
tions where numerous readers can borrow it, we will frequently be pro-
viding on-demand hard copy from an electronic database to fulfill a user’s individual one-time requirement. When another user comes along
with a similar need, we will pay again for another access and an addi-
tional print, or perhaps a download of machine-readable information
onto the user’s own floppy disk. Copying services in libraries will take on
entirely new forms, and reproduction of library materials will be com-
pletely altered in the context of new usage methods for new media.
Copyright issues will be transformed as well.

It is likely that present-day subject bibliographer positions will de-
velop a significant component of direct public service, especially as the
proliferation of databases makes knowledge of available resources ever
more crucial to effective and economical use of research materials. It may
be that the scenario envisioned by F. W. Lancaster, in which many li-
brarians become deinstitutionalized in terms of their relationship to the
resources providing the basis for their information services, will prove
ture for a substantial number of our profession. The physical location of
collections will become more and more immaterial. Working with
scholars or business people to facilitate customized packaging of infor-
mation resources available via their own workstations could become a
significant element of library services.

For items that are to be added to a library’s collections, hard-copy or-
ders will be a thing of the past. Online or batch transmission of order
requests to publishers or vendors will likely be the norm. Transfer of ap-
propriate funds for payment will undoubtedly take place electronically
as well. Hard-copy materials may be produced with bar-code versions of
their Standard Book Numbers that will allow a laser scanner to match
the newly received item with its bibliographic and order records in an
integrated library computer system. Experiments are already taking
place to develop efficient serials issue check-in using publisher-supplied
bar coding and a laser scanner.

For nontraditional media, librarians will face other kinds of physical
control problems. Will libraries mount machine-readable databases on
in-house computer equipment, or will facilities be shared with a comput-
ing center that serves the academic, industrial, or municipal commu-
nity? Some libraries, such as that at Columbia University, are already
administered jointly with the local computer facility, and others are in
the midst of forging new cooperative relationships. Will librarians be re-
ponsible for the staff that must actually operate the high-tech hardware
and develop the sophisticated software that supports their services?
What sort of bibliographic control will be expected for machine-readable
data files that are modified and receive additions? Providing cataloging
descriptions for “moving targets” will soon become a familiar problem.
Perhaps the librarian of the future will design computer programs for the
customized packaging of information for library users. Very likely a
smorgasbord of simple-to-use, easily modifiable, information management programs will be widely available.

**THE ROLE OF THE LIBRARIAN IN INFORMATION MANAGEMENT**

Considering information management brings us to another vital question: the role of librarians in providing preselected text, in whatever format, rather than supplying only the means to identify bibliographic citations. There are already numerous questions about the appropriate role of the librarian as a direct provider of materials versus a trainer of the information seeker. Will we define our service responsibilities differently as resource materials and access options continue to proliferate? Aspects of this question were discussed by Emily Fayen in *American Libraries* last April, and the topic is sure to be broadly debated in the next few decades, with arguments becoming more heated as speculation and reality begin to merge.

Questions of the value of the presentation in relationship to the content of texts will pose puzzling problems far beyond library circles. While it is evident for works of literature that style and sometimes the exact arrangement of the physical text are integral to the achievement, how much does the manner of theorizing affect meaning for other disciplines? Most nonfiction is not just a collection of facts. Perhaps style is frequently as significant as content.

As bibliographic and textual databases become ever more extensive, the librarian as some form of intermediary will become more and more vital to the person in search of relevant information in whatever subject area. While subject specialists are sure to be highly valued, it may be even more important to have capable generalists who understand database search strategies and have broad familiarity with accessible resources. An understanding of the organization of knowledge will be ever more crucial to library professionals in the expanding age of information.

The organization of access to textual resources has long been a cornerstone of librarianship. There will certainly continue to be a need for human decisions to create and maintain effective approaches to the already vast and swiftly growing quantities of raw materials of the information age. Collocation and authority control will continue to be essential to avoid bibliographic chaos. Librarians will give much thought to methods of eliminating losses in computer-retrieved data due to problems of access points. The challenge of devising new ways to more effectively communicate bibliographic information to the public will also occupy librarians’ attention and further blur the lines between traditional technical and public services. There will be excellent opportunities to develop truly friendly user access to online catalogs, replacing the sometimes hostile screens of today.

I predict it will be long after 2006 before there is complete uniformity in the formatting of documents, with the equivalent of descriptive and subject cataloging publisher-supplied for all new materials. It is likely, however, that major publishing operations that already computer type-
set hard copy and cooperate in the assignment of Standard Book Numbers and in the furnishing of CIP data will work toward standards for accessible conformity in the presentation of newer media. After all, it is to their commercial benefit to have their publications identified for use. For hard-copy materials, perhaps the bar code used in acquisitions will also serve as a link to cataloging copy.

Standardization is undoubtedly the key to maintaining control and accessibility for the wide variety of materials generated as information sources keep proliferating. And, as difficult as it is to establish appropriate standards in a timely fashion and to maintain them as formats and technologies evolve, it will be especially important for librarians to use their abilities to develop the best possible standards for organizing these knowledge resources. It will also be vital to provide library school training that conveys an adequate understanding of both the basic principles of information access and the constantly expanding technological options that can be applied to the field. One problem faced by both master’s degree programs and continuing education institutes is the wide range of slightly variant, constantly evolving applications of new technology that serve similar, and in some cases overlapping, purposes. Learning one application does not necessarily provide a suitable introduction to an alternate variety of equipment with its own specific programming.

As we wrestle with our wonderful new technological devices, a bit like Jacob and the proverbial angel, the future will often be less than clear. Some promising innovations will doubtless prove to be dead-end directions, and actual usages will depend upon human judgments and sometimes on seemingly irrelevant factors having to do with human comfort and preference. While it is a valuable caution to remember that, contrary to widespread expectation, microfilm did not revolutionize librarianship, it now seems safe to admit that computerization is the determining technology of our era. This certainty makes it imperative that we understand the essential nature of computers. We must remember that computers are literal, not literate, in their operation. We must not let technology become a limitation to our perspectives. The human factor will remain the most important element in the information services of the future, regardless of the form they may eventually take. As the new century arrives, it will also bring a new millenium. Whether it becomes a truly golden age of knowledge will be up to us.

REFERENCES

Text and Technology: Reading and Writing in the Electronic Age

Jay David Bolter

In Plato’s dialogue the *Phaedrus*, Socrates and his young interlocutor examine the nature of rhetoric and public speaking; at the end of their discussion, Socrates tells Phaedrus the fable of the Egyptian god Theuth, a great benefactor of mankind. Theuth was an avid inventor, who gave us arithmetic, geometry, astronomy, draughts and dice, and the alphabet. The king of Egypt at this mythical time was another god named Thamus, and so Theuth took his inventions to the king and explained the purpose and value of each. Of the alphabet, Theuth said, “this invention . . . will make the Egyptians wiser and will improve their memories, for it is an elixir of memory and wisdom that I have discovered.” But the king replied that writing would have just the opposite effect upon mankind. “This invention,” said Thamus, “will produce forgetfulness in the minds of those who learn to use it, because they will not practice their memory. Their trust in writing, produced by external characters which are no part of themselves, will discourage the use of their own memory within them. You have invented not an elixir of memory, but of reminding; and you offer your pupils the appearance of wisdom, not true wisdom.”

Socrates goes on to argue that written words on a page are dead things. They cannot, as he puts it, answer questions we pose of them; they cannot explain themselves or adjust themselves to various readers. On the other hand, the process of adjustment and explanation is possible in philosophical conversation—in the kind of questioning and answering that Socrates himself practices. The best writing, Socrates tells Phaedrus, is that of the living word, written in the mind of the student by a wise teacher, for this word is active: “It knows to whom it should speak and before whom to be silent.”

“Text and Technology” was presented on June 29, 1986, at the RTSD program “Here Today, (Where Tomorrow? Future Challenges for Resources and Technical Services in the Information Age.” The author of this “Best of the 1986 Conference” paper is an Assistant Professor, Classics Department, University of North Carolina at Chapel Hill and currently a Junior Fellow at the Society for the Humanities at Cornell University. Some of the material for this paper has been taken from the author’s essay on the impact of the computer on the humanities, delivered at the colloquium “The Humanities and the American People,” held throughout the academic year 1985/86 at the University of Virginia.
In thinking about the history of writing and the role that the computer may now play in that history, I find myself returning often to this passage and asking whether the allegory applies to us today. Are we in fact trusting an invention, the computer, to make us wise? Are we supplanting our own memories or our minds with the “external characters” of data processing? Are we in danger of confusing electronic information and human knowledge? I am also reminded that there is a tremendous irony in Plato’s claiming that philosophy cannot be written down. Plato himself was one of the most influential authors of the ancient world, yet he denied that writing was a key to wisdom. What I find prophetic about Plato’s myth is not its conclusion, but the fact that it vividly demonstrates the tensions inherent in all our technologies of literacy: the dichotomy between spoken and written language, between writing and memory, between technology and the human mind itself. Plato himself lived in a period of transition in the history of literacy. Alphabetic writing was not new, but literacy had taken centuries to work its way into the fabric of Greek culture. By Plato’s time, children were going to school principally to learn to read and write, and the law courts were beginning to rely on written documents rather than hearsay. Plato may have felt that a whole way of life was finally passing—a way of life based upon the spoken rather than the written word.

Today we live in an age of much more rapid change. The computer itself is hardly forty years old, interactive computing is only about twenty, and word processing is much younger than that. If the computer was conceived and first built as a specialized tool for scientists and engineers, it has quickly moved into other realms. Our society seems already to have decided that the computer is as useful for processing texts as for doing mathematics. We now find ourselves in the uneasy process of trying to assimilate the computer into our literate culture—to find a place for this new technology of writing among such contemporary technologies as printing, handwriting, and typewriting.

Because of its growing influence as a technology of writing, the computer suggests that we need to reassess the meaning of literacy: to ask again what writing is and what it may be good for. Indeed, this reassessment is already being carried out by cognitive psychologists and social scientists, and even by some humanists. The outcome is not yet clear. Will the introduction of the computer be as important as the invention of the printing press and define a new era in the history of literacy? Or will it rather be like the typewriter, an important but not epoch-making invention?

My own conviction is that the computer does mark a new era. But in any case, the question of the impact of the computer on reading and writing must now be addressed. And no one is in a better position to address that question than the members of this audience and organization. Librarians were among the first to exploit the power of the computer to organize and manipulate texts. In the coming decades librarians will have the task of remaking the library, of rethinking its organization and its service in the light of electronic technology. By the year 2006, when the Resources and Technical Services Division celebrates its fiftieth an-
niversary, our libraries will be profoundly changed. The outward appearance of the library, its often venerable architecture, will remain, but the library as an intellectual structure, as a collection of materials, as an expression of the current technology of literacy, will come to reflect the qualities of the electronic medium.

I. WRITING AS TECHNOLOGY

The art of writing has always been a technology, a means of extending human control over the world of nature. Writing is a technology for collective memory, for preserving human experience from one day to the next, or for passing that experience on from one generation to the next. The art of writing may be not as immediately practical as techniques of agriculture or textile manufacture, but it does enhance the human capacity for social organization—by providing a culture with fixed laws, with a history, with a literary heritage, and eventually with a technical literature. Writing is and has always been a sophisticated technology: skill is required to learn to read and write; penetrating intelligence is needed to invent or improve some aspect of the technology of literacy. The materials and techniques of writing have undergone many such changes. The ancient Greeks, for example, followed the Egyptians in writing on rolls of papyrus. For most needs, these rolls were a vast improvement over the clay tablets or stone often used earlier. The codex or paged book, which came into use in later Roman times, provided easier access to text and had a greater capacity. The Middle Ages perfected both the beauty and the utility of the handwritten codex, and the late medieval manuscript was often a work of great technical sophistication. The printing press of course was a technological breakthrough that revolutionized both the way text was produced and the way it was presented to the reader. Thus, in the history of the Western cultures, the computer is the fourth in a series of major technologies of writing.

Each of these technologies is unique: each defines the task of reading and writing in its own technological terms. The use of papyrus rolls, codices, and printed books helped to determine styles of writing and even genres of literature: each in subtle ways influenced the thinking of its users. For example, Elizabeth Eisenstein in her authoritative book *The Printing Press as an Agent of Change* has shown how printing made possible a new kind of scientific writing with an emphasis on exact and reproducible figures, diagrams, and equations. She has also shown how Renaissance scholars developed a new attitude toward classical literary texts and eventually even the Bible as they prepared editions for print. The computer is our newest means of recording, preserving, and presenting words and images, and as a new kind of book, it promises to influence our thinking and our expression in a similar fashion.

The electronic medium has certain defining characteristics that it brings to the art of writing. These characteristics are familiar to anyone who uses a word processor or bibliographic database: the computer makes reading and writing flexible, dynamic, and interactive to a degree never before possible. Words in the computer are ultimately embodied in the collective behavior of billions of electrons, which fly around in the
machine at speeds we can scarcely imagine. Change is the rule in the computer, stability the exception. Word processors are useful precisely because they allow us to change our image of the text with such ease, because we can copy, recopy, compare, and discard text with the touch of a few buttons. If anything, text is too unstable in the computer. We have all had the experience of losing hours of work by issuing, in all innocence, the wrong command at our keyboards—the thrill of victory and the agony of delete.

Word processing is probably the most important current use of the electronic medium: academics, secretaries, businessmen, journalists, and publishers of printed books all find the word processor of great value. And yet, word processing uses the computer merely as an aid for making perfect printed or typed results. The goal is still ink on paper, and the computer is treated as a means to that goal. Programmers and users are only beginning to realize that the computer may serve as a medium in its own right, not simply as temporary substitute for or simulation of a printed document. Indeed, as a medium in its own right, the computer can provide a new paradigm for reading and writing. A writer in the electronic medium can create a fluid text that can respond to the reader’s changing needs or requests. The reader of a true electronic text makes his way through a set of possibilities: what he sees on the screen is the product of an interaction between himself and the structure that the author has created. This is the vision of the electronic medium that I wish to explore in the following pages.

II. THE STRUCTURE OF ELECTRONIC TEXT

In the age of print both the individual book and the library (which is a great collective book) have developed fixed structures or principles of organization suited to the medium of ink on paper. Today, the challenge for writers and for librarians is to adapt those structures to the flexible medium of the videoscreen. The challenge is similar in dealing both with individual books and with the library as a whole, for in the electronic medium the distinction between individual volumes and larger collections tends to disappear. Books in the computer do not have bindings, any more than electronic libraries have shelves; an electronic library can and indeed must be organized in a way that a printed library is not. With the proper software and hardware, the electronic reader moves almost as easily across thousands of different books or articles as he moves from one page to the next.

Structures for electronic books and libraries can be both deeper and broader than for their printed counterparts. A printed book may only be divided into chapters or headings within chapters, but in the electronic medium the visible and useful structure may extend to the level of the paragraph, the sentence, or even the individual word. The computer can permit the reader to examine and manipulate his text at any of these levels: using database programs that already exist, the reader can search for a single word and display that word in the context of a sentence or a paragraph. He can pull sentences or paragraphs out of a source and insert them in his own text. In the computer, text is a continuous hierarchy
from words to volumes, and any level of that hierarchy can be made available to the reader.

More important, these hierarchies are not rigid: they can be changed to meet the changing needs of the reader. A text in the computer is not a frozen sequence of sentences or paragraphs. Instead the computer can treat each sentence or paragraph as a separate unit and present these units to the reader in a variety of orders. This is exactly how a textual database, such as the New York Times Information Service, functions. This database consists of all the articles that have appeared in the Times for the last several years; a reader poses a question by searching for keywords, and the computer displays only those articles that satisfy the keyword search. In fact, searching through such a database is a new form of reading, unlike anything possible with a printed book. By making a query, the reader is defining a set of articles he wants to examine. These articles constitute the text needed for the moment: the text is determined by the interaction between the reader and the database. It is this interaction that gives electronic text its uniquely fluid quality and serves to turn passive readers into active authors who take part in the ordering and presentation of what they read.

Consider how such interactive reading might be used in a library of the future. Imagine an electronic database of encyclopedic scope and detail, at least the size of the current Encyclopaedia Britannica, a database containing all kinds of information, including history, biography, science, and the arts. A printed encyclopedia can present all these materials in articles with one fixed order, normally alphabetic. But an electronic version is not limited to one order: it can present alternative outlines—different orders in which to read parts of each article. If the reader is interested in Austria in the eighteenth century, the computer could assemble a long essay out of units on history, art, literature, and biographies of important Austrians. Parts of these same articles might also figure in an essay on the Enlightenment, on the history of warfare, or on women in politics. Moreover, there is no reason to limit the reader to those structures that the editors have programmed in. We may allow the reader to make his own connections for his own purposes, for he may be interested in relating ideas in ways the original editors did not anticipate. If the reader is himself writing an essay, he may include his thoughts in separate note files and link these files into the encyclopedia. In other words, he may personalize his copy of the encyclopedia so that the structure of ideas and even the prose reflect his own interpretation of the events. It is thus a short step from electronic reading to electronic writing—from determining the order of texts to altering their structure and content.

Encyclopedias have always required special care in organization, and the organization of an encyclopedia has always been a reflection of contemporary technology of writing. This was so for the Roman encyclopedist Pliny the Elder, for the Medieval encyclopedists, and for the philosophers and their followers who produced the great printed encyclopedias of the eighteenth, nineteenth, and twentieth centuries. Pliny, for example, had to put his large encyclopedia on two or three dozen rolls of
papyrus—rolls without page numbers, headings, or punctuation. Under those conditions, the reader would have difficulty finding a subject within a particular roll, and so Pliny used a number of mnemonic devices to help organize his materials. What a contrast to a modern printed edition of the Britannica, with its tables of contents, indexes, headnotes, side notes, and various type styles—all designed to help structure the knowledge it presents to the reader. From one end to the other, the history of the encyclopedia is the history of changing attitudes toward and strategies for structuring and presenting knowledge.

So today textual databases and the current work on the so-called dynamic books and electronic encyclopedias embody a new attitude towards the structure and presentation of knowledge. The attitude is eclectic: all kinds of information are being put into data banks—certainly anything with economic value, but all sorts of bibliographic and scholarly information as well. The computer can hold so much information that there is little need to be selective. Moreover, the attitude is opportunistic, almost irreverent, because of the temporary character of electronic structures of information. The computer can search through vast amounts of text and establish connections with relative ease, and these connections can later be deleted and replaced with equal ease. This was not the case for an encyclopedia in manuscript or in print: writing and printing encouraged more or less permanent hierarchies of knowledge. But in our electronic world today, we cannot hope for permanence and for general agreement on the order of things—in encyclopedias any more than in politics, entertainment, or the marketplace. What we have instead is a view of knowledge as collections of ideas (both verbal and visual) that can arrange themselves into a kaleidoscope of hierarchical and associative patterns—each pattern meeting the needs of the moment.

III. Computer Symbols

So far I have been discussing new methods for structuring conventional text. A database or electronic encyclopedia still offers its reader the familiar symbols of the alphabet (together with diagrams and pictures). It may be, however, that the electronic medium is not limited to presenting old symbols in new ways. This new medium may in a subtle fashion alter the very nature of the written symbol.

For the last twenty-seven hundred years in the cultures of the West, words have been written out in alphabetic symbols. In about the eighth century B.C., the Greeks borrowed and improved the Semitic writing system of the Phoenicians. Their creation is the ancestor of the alphabets used throughout the Western world today. We have lived with this alphabet for so long that older forms of writing seem alien indeed—such forms as syllabic writing, in which each symbol stands for a pronounced syllable in the language, or word writing, in which each word has its own symbol. Yet all of these writing systems have in common a principle whose discovery was the key moment in the history of writing. All of these writing systems are phonetic: their symbols are visual representations of spoken elements in the language. Alphabetic, syllabic, and word
symbols are static images of living reality of spoken language, and they need to be revived by a human reader, translated back into speech. Indeed, there is evidence that even silent readers vocalize their texts mentally if not physically: the shadow of the spoken word remains.

However, the earliest form of writing, called picture writing, was not tied to language in this fashion. In picture writing stylized images represented ideas directly: a canoe represented a journey by water; a tepee, a village; an arrow, a battle. Picture writing—common among American Indians, for example—was a more direct, freer, and less exact form of communication. The message was itself fluid: that is, two readers could decipher the same message into different words. Indeed, speakers of different languages might share the same dialect of picture writing. The picture did not "mean" any particular set of words; rather, it was the visual structure of the picture, the spatial relationships among the images, that held the meaning. Perhaps picture writing seemed closer to the reader precisely because it did not depend upon the intermediary of spoken language. It offered instead a direct, visual reminder of places and events.

In some ways today's electronic writing is already like the ancient art of picture writing. Think of those little stylized images called icons that are now very popular on microcomputers. The Apple Macintosh, for example, is proud of its desktop metaphor, in which icons on the screen represent familiar objects you would find on or near your desk—file folders, sheets of paper, a wastebasket. Some find this graphic re-creation of the office intolerably cute; it is, however, a striking return to that form of writing that conveys ideas without the appeal to language. Now, the electronic medium is not going to eliminate the alphabet; indeed, the computer intensifies the analytic quality of alphabetic writing. If the alphabet breaks language into abstract phonetic units, the computer is even more abstract, for it breaks alphabetic and all other symbols into strings of simple binary units, the infamous 1s and 0s that every user has heard about and (I suspect) very few casual users have ever seen. At any rate, users will continue to see words on their video screens spelled in the traditional alphabetic way (with spelling checkers to help us). They will also see diagrams, pictures, mathematical equations. Computerized text is becoming more eclectic: it is combining visual symbols and images in more complex ways. Iconographic writing will be a part of this eclectic system.

Of course, if icons on the computer screen are instances of picture writing, then so are many restroom signs, road signs, and the whole host of icons set up in international airports to direct travelers who have no common language. Still, there is this important difference between restroom signs and computer icons: the computer’s icons are active symbols. They move around the screen and change shape or size to suit the user’s needs. Moreover, within a computer system, they may represent functions or programs the user can invoke. It is characteristic of all the computer’s varied sets of symbols—letters of the alphabet, numbers, the symbols of a programming language such as BASIC, as well as icons—that they are active in a way unlike any previous technology of writing. These symbols can reach out into the world: text may be piped out into a
printer or speech synthesizer; program statements may direct electric
signals to control a videodisc player, or an assembly line, or indeed, a
spacecraft. Symbols in a book or a written manuscript have never had
this direct effect upon the world. Rousseau’s writing may have fostered
the spirit of revolution in France, but Emile or the Social Contract could
never pull the lever on the guillotine. Human hands were required for
that work. However, even when the computer is not connected to the
outside world through a printer or a robot arm, electronic symbols are
busy interacting with each other. Indeed, all the computer does (even
when it appears quietly to be awaiting our commands) is to manipulate
symbols: it adds numeric symbols, compares verbal symbols, creates
and rearranges symbolic structures.

Remember Plato’s myth in the Phaedrus. The philosopher’s critique of
writing goes further than a dissatisfaction with a form of the book: he
objects to the very idea of the written symbol, because written words are
always the same for every reader. “You might think,” says Socrates,
“that [written words] spoke as if they had intelligence, but if you ques-
tion them, wishing to know about their sayings, they always say only one
and the same thing.” The words cannot adjust themselves to the occa-
sion or to the sophistication or simplicity of a particular reader; they can-
ot answer the reader’s questions. Plato objects to the idea of freezing
language in visual symbols. It would be fascinating, then, to know what
Plato would make of electronic writing systems, for the computer seems
to meet his objection. Symbols in the computer, moving under pro-
grammed control, do respond to different readers in different ways.

IV. WRITING SPACE

Let me summarize the argument: electronic technology will foster
change in both the structure and the symbolic character of writing. The
computer provides a flexible and impermanent medium. It replaces the
static recording of text on the printed page with the dynamic presenta-
tion of units of texts under the reader’s control; it replaces the single,
linear structure of ideas in a printed book with multiple and temporary
structures on the videoscreen. Moreover, the symbols of this new me-
dium are as flexible and dynamic as the structure: they may include
graphic icons as well as letters and numbers. An electronic text will often
be a mixture of text and iconographic images—a modern form of picture
writing. One way to characterize this whole complex of changes in struc-
ture and symbol is to say that the computer gives us a new space for read-
ing and writing.

All techniques of writing make human language or human thought
visible. The visible symbols are painted, inscribed, or drawn electroni-
cally on a writing surface, which may be clay or paper or a video screen.
The writing surface forms the visual space in which those symbols func-
tion, and each writing space has its own virtues and deficiencies. You do
not write a novel on stone or clay tablets, simply because most readers
will be unwilling to carry your new novel home in a pickup truck. On the
other hand, a stone tablet is a good place for recording an epitaph or (in
the ancient world) for a law code that should be both public and long-
lived. Many people say that they are not prepared to read a novel at a
computer terminal, and we would all agree that a computer screen
would be an odd place to put an epitaph, for the computer medium does not provide the appropriate air of dignity and monumentality. Both from a practical and aesthetic point of view, there are appropriate and inappropriate uses for each writing space. The computer’s writing space is suited to the display of rapidly changing texts. We can turn this around and say that any text placed in the electronic writing space becomes changeable and impermanent: the quality of the space defines the nature of text. If we choose to write and read novels or essays using the computer, then these novels and essays will lose the stability and sense of permanence given them by the medium of print.

This much is obvious. What is less obvious in the interaction between the way we organize our writing space and the symbols with which we write. I have already mentioned the earliest form of writing—picture writing that conveys ideas through stylized images. One characteristic of picture writing was its sophisticated use of the writing space. The picture writer deployed his images with almost as much freedom as a painter. For like the canvas of a painter, the writing space of a picture writer was two-dimensional, and the writer was free to position his images in a variety of ways. The visual structure of the images was itself meaningful; it was part of the message. That is, if you put the image of the river to the left of the tepee, you conveyed one message about the layout of the camp; if you put the river on the right, you conveyed a different message.

The situation changed with the introduction of phonetic writing. That principle gave writers much greater freedom of expression, but it severely limited their freedom in using the writing space. For when writing became a visual record of speaking, written symbols had to be put in one strict order—the order that corresponded to sounds within words and words in a sentence. The writing space became a sequence of lines. Although the lines might run from left to right, or right to left, or indeed vertically, there had to be a defined order for reading.

We now need to think about the electronic medium in these spatial terms, for the truly exciting and innovative quality of this new medium is its capacity to redefine the spatial character of writing. The computer provides a writing space that is plastic and malleable. Many computers today permit bit mapping: that is, they allow for the separate control of each individual patch of light (or pixel) on the screen. Such systems are no longer limited to digits and letters of the alphabet: they can also present icons, graphic images, windows, pull-down menus, and so on. Alphabetic symbols and graphic images can be combined to form a sophisticated textual space on the screen. Each alphabetic text on the screen will of course be linear, but texts can be presented in several windows at the same time. Icons and graphics can be arranged on the screen as well. As in picture writing, the spatial relationships of icons, text, and images in electronic space help to convey the meaning.

Moreover, the computer offers a textual space that is interactive, indeed tactile. Using a keyboard or better still a mouse, the reader can reach in and alter the text and images he sees. By contrast, the reader cannot touch the text and the images of a printed book in this fashion. The textual space of a printed book is simply not accessible: the reader can write over the text, but not in it. He can deface a printed book, but
he cannot change it. In confronting electronic text, even with the hum-
stle word processing program, the reader can easily become an author.

The further possibilities of electronic space can be illustrated with the
familiar example of the online card catalog. Many libraries now offer
such catalogs, yet most of them rely on simple ASCII terminals to dis-
play letters and digits to the user, and what the terminals present on the
screen is often only an image of the card in the physical catalog. Much
more is possible. A bit-mapped computer or terminal could give the user
a picture of the contents of the library, perhaps including floor plans and
bookshelves. In answer to a query, the reader might see before him
shelves of books with titles and names of authors on their spines. With
the help of a mouse, he could open the book and see a title page including
complete bibliographic information. The reader could zoom in immedi-
ately on the book he needs, or he could browse through the collection,
just as he can in the physical library. Moreover, in this simulated library
the shelves need not be static. Depending upon the reader’s request, the
computer could place together books on the same subject regardless of
their call numbers. The very structure and appearance of the collection
can alter itself for each patron. In part this electronic space would reflect
the physical space of the library; in part, it would be a new symbolic rep-
resentation of books and papers available. Here is a project in which li-
brarians would need to work closely with programmers. For all sorts of
representations schemes are possible: the fun and the work lie in discov-
ering what symbolic spaces best convey the intellectual structure of the
library to the reader.

There is an obvious and yet important historical parallel for this work.
Having invented the letterpress, Gutenberg and his colleagues in the fif-
teenth century still did not know what a printed book was supposed to
look like. Early printed books were made to resemble manuscripts—
with thick letters and many ligatures and abbreviations. Over a period of
several decades, printers came to realize that the new technology of book
production had different requirements and possibilities. Letters could
be thinner and more legible, letterforms could be standardized, and
there was less need for abbreviation. Today we are in a similar position:
we do not know what an electronic book should look like, and so our first
impulse has been to copy the printed page onto our terminal screens. We
need now to show the same creativity toward the spatial possibilities of
electronic writing that our ancestors showed to the creative possibilities
of print. We need to reconcile the linear character of the language with
the multidimensional capabilities of the computer.

V. WRITING AND SPEAKING

For the past four thousand years, human language has had two di-
ensions: the spoken and the written, the aural and the visual. Plato in
his myth in the Phaedrus asserts that there is an unbridgeable gulf be-
tween these two forms of language. Writing is a sequence of fixed and
lifeless words on a page; spoken language permits the active interplay of
two minds. So far, no technology of writing has completely destroyed the
aural experience of language; instead, each has defined a new relation-
ship between itself and the spoken word. Scholars have argued, for ex-
ample, that the ancient Greeks even in Plato’s day and beyond were still heavily dependent upon the spoken word and that they often, if not always, read aloud, bringing their ear as well as their eye into the act of understanding; that in the later Middle Ages, as writing became more visually sophisticated, silent reading became more common; and that the age of print encouraged fast, silent reading for many kinds of text. Today reading is largely a silent examination of visual symbols. There are all sort of texts that are read aloud only with difficulty: mathematical equations and computer programs, for example, are meant to be seen, not heard. Still, we sometimes read poetry or drama aloud, in an attempt to recapture the resonance and the mystery of the word as our ancestors heard it for thousands of years.

Electronic text means a new balance between the oral and visual dimensions of language: it may represent the final triumph of the visual over the oral, although not with the results that Plato imagined. I have tried to show that electronic writing promises to intensify the visual experience of text, indeed to include in the notion of text, icons and other symbols whose meaning is wholly visual. Now students of media since Marshall McLuhan have told us that electronic media will make us a more oral, less literate culture. However, they are thinking of television and video recorders, which present the viewer with simple pictures and sounds rather than texts and visual symbols. The television viewer is a passive recipient of images that have already been arranged and interpreted for him. His only choice is called zapping—changing the channel with a remote control unit—but this is a negative choice, a rejection of one program in the vain hope of finding something better. McLuhan may well have been right that television imposes on its viewers an oral frame of mind, a tendency to reject symbolic communication and symbolic reasoning. However, a computer is not a television set, and those millions who use computers in their work will have a different experience. They will become more and more practiced symbol manipulators, they will see language as a visual structure of ideas, and they will be drawn further away from the mysterious world of oral communication and into the world of visible text.

Finally, I would argue that Plato got it wrong when he claimed that the art of writing gives only the appearance of wisdom. Writing makes us wiser in the sense that it redefines the nature of human wisdom. Plato’s error was to underestimate the intimate relationship between the mind of a literate person and the technology of writing. The historian Walter Ong has shown the extent to which literacy affects our patterns of thought and expression. Literate people not only speak differently from illiterates, but they think differently as well: they analyze, they categorize, they reason abstractly with much greater facility. Good King Thamus was right in believing that the invention of literacy would destroy the kind of wisdom valued in an illiterate culture, but he did not recognize that a new wisdom would follow. And if writing itself redefines the human mind, then each new technology of writing makes its own peculiar contribution to the process of redefinition. The computer’s contribution is especially intriguing. In the electronic medium we build texts
out of fluid and dynamic networks of words and visual symbols. We are led to emphasize the ramifications and interconnection among words and images. The fluidity of our texts seems to reflect the fluidity of the human mind itself. In other words, the electronic symbols inside the computer become an almost effortless extension of the network of ideas in the mind itself.

This last claim may sound like a justification for the branch of computer science called artificial intelligence—a term that has as many definitions as there are critics and supporters. My own unorthodox view is that artificial intelligence should be regarded as a new way of reading and writing. The attempt by artificial intelligence specialists to understand the human mind is naive; it is certainly not a great contribution to culture or science. Artificial intelligence at its best is an attempt to exploit the computer as a symbolic medium, a new kind of text for human readers. Whenever we create a new medium of literacy, we give ourselves a new way of thinking: we make the human mind over with the aid of a new technology. In this sense, the continuing development of writing is the ultimate project for artificial intelligence, and library science is and has always been part of the project. The computer itself is merely a device for storing, retrieving, and presenting information. And in any case, information becomes knowledge only when it is assimilated and used by human agents. Our task is to show that the electronic book can provide human authors and readers with a new tool for the assimilation and use of information. This will be a central task for librarians, for humanists, for our whole culture in the coming two decades.

REFERENCES AND NOTES

1. Quotations from the Phaedrus are taken from the edition of Plato translated by H. N. Fowler (London: William Heinemann, 1919). This quotation is at 274E.
2. Ibid., 275A.
3. Ibid., 276A.
8. Plato, Phaedrus, 275D.
11. See Ong, Orality and Literacy, p.31-116.
The New! The Improved! Standard for Serial Holdings Statements

Marjorie E. Bloss

The Foreword to the American National Standard for Serial Holdings Statements at the Summary Level (ANSI Z39.42-1980) states that “it is not the purpose of this standard to define formats for detailed inventory control of serials.” Therefore, even after the publication of this standard, librarians wishing to record holdings at the issue-specific, or detailed, level still were left without a formalized mechanism to report those holdings. To remedy this situation, work was begun in 1982 on another standard, one that would standardize the display of serial holdings statements at the detailed level. The result, published by the American National Standards Institute in mid-1986, was somewhat different from what had originally been envisioned. Instead of two standards for serial holdings statements (one for summary holdings, one for detailed holdings), one standard encompassing both levels had been created.

This paper will trace some of the historical background of the resulting National Information Standards Organization (NISO) Z39 standard for serial holdings statements. Particular emphasis will be placed on comparing and contrasting the earlier standard with the new, and on anticipating some of the questions that may arise in the application of the new standard.

Historical Development of the Standards

Serials librarians do not need to be reminded about the numerous attempts to standardize serials bibliographic data over the years. The library profession has not been nearly so concerned with an equally important aspect of serials information—serial holdings statements. Anyone who has made an attempt to interpret and translate holdings statements from one union list of serials to another, or even from one library’s internal holdings list to another, would feel that decoding the Rosetta Stone was child’s play in comparison.

During the past ten years, there has been considerable activity on the part of two NISO Z39 standards committees toward the standardization of serial holdings statements. The first, Standards Committee (SC) 40, began working on a standard for serial holdings statements at the summary level in 1975. It completed its work in 1980 with the publication of the American National Standard for Serial Holdings Statements at the Summary Level (ANSI Z39.42-1980).

Even before this standard was published, another committee, SC E, began working on a standard for serial holdings statements at the detailed level. Its draft standard was distributed for a vote of the NISO membership in mid-1982. Because of the strong concern shown by the membership, SC E became increasingly aware of the inconsistencies between the standard for serial holdings statements at the summary level and their proposed detailed-level standard.

In order to reconcile these inconsistencies, NISO Z39 sponsored a meeting in May 1983 with funding provided by the Council on Library Resources. This meeting brought together members of the two NISO standards committees plus a number of observers representing such organizations as the Library of Congress; the committee from the Southern ARL Serials Project, which was working with LC on the development of a MARC format for locations and holdings; NISO SC W, which was developing a standard for nonserial holdings; and the IFLA Section on Serial Publications. At the conclusion of the meeting, members of both NISO Standards Committees and the observers unanimously recommended "that a single Z39 standard for serial holdings statements be developed, encompassing both the detailed and summary levels."

This recommendation was approved by the NISO membership. The charge to SC E was then modified to include serial holdings statements at both the summary and detailed levels. The result, the American National Standard Z39.44, Serial Holdings Statements, incorporates holdings at both the summary and detailed levels. Now that it has been published by ANSI, the new serial holdings standard will supersede the Standard for Serial Holdings Statements at the Summary Level.

Undoubtedly, users of the earlier standard are concerned about the possibility of having to recode all of the previously created holdings statements based on the Summary Holdings Standard.\* SC E anticipated their concern and built in several grandfather clauses to accommodate users of the earlier standard. Consequently, users of this standard will not have to make major revisions to work already done.

**COMPARING THE TWO STANDARDS**

Both standards deal only with serial holdings and only with the display of those holdings. Machine-readable coding of holdings is not included in either standard. Both identify the punctuation that is to be used in a holdings statement. Both state that a holdings statement must be linked

\*Both serial holdings standards are ANSI standards. However, for the sake of brevity the earlier standard will be called the Summary Holdings Standard and the new standard will be termed the NISO Holdings Standard.
to a serial identifier such as a bibliographic description, an ISSN, a CODEN, etc. Neither standard indicates what that identifier should be, however.

The obvious difference between the two standards is the degree of specificity covered in the representation of holdings data. The *Summary Holdings Standard* deals with holdings described at the summary level (volumes, not volumes and issues; years, not years and months). In addition to holdings at the summary level, the *NISO Holdings Standard* includes holdings at the detailed, or issue-specific, level. Both include different reporting levels that generally build on the previous ones. The *Summary Holdings Standard* has three such levels; the *NISO Holdings Standard*, four. These levels will now be described.

**Level 1 Holdings Statements**

Level 1 holdings statements in both standards include the serial identifier and the *institution identifier* (as it is termed in the *Summary Holdings Standard*) or the *location data area* (as it is called in the *NISO Holdings Standard*). The hypothetical examples in this paper use certain fields of the bibliographic description as the unique serial identifier. As with the serial identifier, no provisions are made in either standard regarding the representation of the holding institution. The full name may be used, as may a code such as an NUC symbol or a numeric representation or a code assigned by a bibliographic utility (see figure 1).

**Level 2 Holdings Statements**

Level 2 holdings statements in both standards include the information from the first level (the serial and institutional identifiers) and to them, add coded information that reflects the institution’s holdings. There are some differences between the two standards in Level 2 reporting, both in terms of the amount of information included and the order in which it appears.

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**Figure 1**

Level 1 Holdings in Both Standards

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Level 2 of the *Summary Holdings Standard* contains five coded elements (collectively termed the *general holdings data area*): the *date of report*; the *completeness code* (indicating how much of the published run of a serial is held at a particular institution); the *acquisition status code* (indicating whether or not the institution currently receives the serial); the *nonretention code* (indicating whether or not the institution retains what it receives); and, optionally, *local notes* (see figure 2).

Level 2 of the *NISO Holdings Standard* requires a separate data area for the representation of the *date of report*. Furthermore, eight digits are used to represent the date of report instead of the four used in the *Summary Holdings Standard*. Similarly, the *local notes* element is now contained in its own field. The *general holdings data area* of the *Summary Holdings Standard* is now the *status data area* in the *NISO Holdings Standard*. Two new data elements have been added: the *type of holdings designator* (indicating if the following holdings statement is summary, detailed, or subordinately reported supplement or index (see Level 4 holdings) or none of the above) and the *physical form designator* (indicating the physical format of the reported serial). The *completeness and acquisition status* designators remain the same in code values and in definition. The nonretention code is now called the *retention code*. Instead of a "blank" representing holdings that are retained, the coded value has been changed to an "8,” bringing it in line with the other numerically coded values (see figure 3).

**Level 3 Holdings Statements**

Level 3 holdings statements in both standards describe serial holdings statements at the summary level, that is, holdings recorded at the most inclusive levels of enumeration and chronology. These data elements are added to the information recorded in Levels 1 and 2. The recommended order of displaying enumeration and chronology data is one of the major differences between the two standards. The *Summary Holdings Standard* specifies that strings of enumeration data are to be followed by strings of corresponding chronology data (see figure 4). The *NISO Holdings Standard* includes two options for the display of these data at the summary level only. Option A shows the display of holdings as enumeration followed immediately by its corresponding chronology data (see figure 5). Option B of the *NISO Holdings Standard* follows the same order of enumeration and chronology data as was seen in the *Summary Holdings Standard* (see figure 6). A summary holdings statement in the *NISO Holdings Standard*, regardless of which option is used, will contain an “a” in the *type of holdings designator*, indicating that holdings are reported at the summary level.

The order of displaying enumeration and chronology data was of great concern to SC E. An early draft of its standard recommended continuing the order found in the *Summary Holdings Standard* for displaying these data. Numerous comments from the field, proposing that enumeration and chronology data be recorded together, led Subcommittee E to modify this recommendation. Although this second recommendation was ultimately what SC E agreed upon, a grandfather clause was included in the new standard, accommodating the users of the *Summary*...
Holdings Standard. Hence, there are two options for reporting holdings at the summary level found in the NISO Holdings Standard. Users of that standard will need to determine which order of enumeration and chronology is preferable for their purposes.

Figure 2
Level 2 Holdings, Summary Holdings Standard

Figure 3
Level 2 Holdings, NISO Holdings Standard
Summary Holdings Standard Level 3 Holdings

NISO Holdings Standard Level 3 Holdings, Option A
Level 4 Holdings Statements

Level 4 holdings statements (holdings at the detailed or issue-specific level) are found only in the NISO Holdings Standard. A holdings statement at this level includes the library identifier of Level 1, the coded information of Level 2, plus holdings at the detailed level. The type of holdings designator is coded "b," indicating a detailed-level holdings statement. There is no option for the order of recording enumeration and chronology data at this level. Enumeration must be followed immediately by its corresponding chronology as in Option A of a summary holdings statement. Unlike a summary holdings statement, a detailed-level statement does not allow for an open-ended holdings statement (ending with a hyphen), since all holdings must be presented. Therefore, a hyphen must never be the last element when recording holdings at the detailed level (see figure 7).

The NISO Holdings Standard includes the concept of compression for holdings at the detailed level. A Level 4 holdings statement may be compressed if no gap exists at the lowest hierarchical level. The holdings statement may continue to be compressed so long as no gaps exist within the levels of enumeration and chronology. A detailed-level compressed holdings statement can begin to resemble a summary holdings statement. However, the NISO Holdings Standard states that "a Level 4 compressed holdings statement indicates that all bibliographic units covered by this range are held by the reporting institution—while a Level 3 (Option A) holdings statement does not carry the same guarantee of completeness" (see figures 8 and 9).

The NISO Holdings Standard includes specific instructions for handling
supplements and indexes. If a supplement or index is described independently from its parent title (i.e., a separate cataloging record is created), holdings will be appended to that unique serial identifier. Supplements and indexes described subordinately (i.e., in a note) are considered to be holdings below the detailed level. Holdings statements for them will appear under the serial identifier for the parent record. A separate holdings statement is required for each component of the publication: the title it-

![Figure 7](image_url)

**Figure 7**
**NISO Holdings Standard Level 4 Holdings**

![Figure 8](image_url)

**Figure 8**
**NISO Holdings Standard Compressed Holdings for Level 4**

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Journal of gory apparitions.—Vol. 1, no. 1 (1928)—
New York: Ghostbusters Press, 1928—
Issued three times a year.
Separately numbered supplements issued annually.
Indexes issued every ten years.

(A) Library C 19860630 (b,ta,3,4,8) v.57:no.1 (1984:Feb.)—v.59:no.2 (1986:May)

With the receipt of v.59:no.3, Library C’s holdings statement could be compressed even further if so desired:

(B) Library C 19860630 (b,ta,3,4,8) v.57 (1984)—v.59 (1986)
self, the subordinately described supplement, and the subordinately described index. The type of holdings designator will be coded as either an "a" or "b" for the parent title, a "c" for a subordinately described supplement, and a "d" for a subordinately described index (see figure 9).

| Journal of gory apparitions.—Vol. 1, no. 1 (1928)— |
| New York : Ghostbusters Press, 1928— |
| Issued three times a year. |
| Separately numbered supplements issued annually. |
| Indexes issued every ten years. |
| Library D 19860630 (a,ta,3,4,8) v.51 (1978)— |
| Library D 19860630 (c,ta,3,4,8) no.27 (1979)—no.33 (1985) |
| Library D 19860630 (d,ta,3,4,8) 1979 |

**Figure 9**

*NISO Holdings Standard Level 4, Recording of Subordinately Described Supplements and Indexes*

**APPLICATION OF THE TWO STANDARDS**

The *NISO Holdings Standard* has been published so recently that few institutions to date have implemented it. Areas which caused interpretive problems in the *Summary Holdings Standard*, however, can lead one to speculate on how the same issues will be treated in the *NISO Holdings Standard*. Some of those more problematic areas will now be examined.

**Gaps in Holdings**

Both holdings standards state that holdings shall be reported in a positive manner; in other words, report what is held, not what is lacking. In both standards, gaps in holdings are represented by a comma. The standards differ in their guidelines for determining when a gap should be reported at the summary level.

The *Summary Holdings Standard* states, "As a guideline, a gap should be reported when 50% or more of the bibliographic units are missing." This requirement created major problems for most reporting institutions that could not afford the luxury of inventoring each incomplete volume. Local decisions were usually made for the sake of expediency: either to report volumes designated as incomplete in a library's file or to omit them altogether.

The *NISO Holdings Standard* states that in a summary holdings statement, users should report the unit when any portion of that unit is held by the reporting library. SC E believed this procedure was appropriate for a summary holdings statement. For a detailed holdings statement, however, users are to report each issue held by the institution. Therefore, a gap will be represented by a comma whenever an issue is missing.

**Captions**

Both standards define a caption as "an alphabetic word or phrase at-
attached as a prefix to the enumeration data that describes the type of data (for example, volume, band, heft, part, number, or tome).”

The Summary Holdings Standard was very emphatic in its stand on captions: under no circumstance were they to be used. The NISO Holdings Standard, on the other hand, requires users to include captions, if they appear on the publication, for both summary and detailed holdings. As with the order of enumeration and chronology data, this is another area where the two standards are seemingly at odds. And as with the order of enumeration and chronology data, SC E introduced a grandfather clause for those who had used the Summary Holdings Standard.

The grandfather clause for captions is tied closely to the order of enumeration and chronology data. If Option A is used for a summary holdings statement (enumeration and chronology data are reported together), captions are required if they appear on the publication. If Option B is used for a summary holdings statement (strings of enumeration followed by their corresponding strings of chronology), captions are required only if available.

The use of captions in a detailed holdings statement again parallels the rules for the order of enumeration and chronology. The user is given no option. Captions are required if they appear on the publication. For both summary and detailed holdings statements, the NISO Holdings Standard refers the user to the shortest versions of the abbreviations found in appendix B of the second edition of the Anglo-American Cataloguing Rules (AACR2).

SERIALS HELD IN MORE THAN ONE PHYSICAL FORMAT

The issue of the representation of a serial in different physical formats has become the serials librarian’s version of “To be or not to be?”—namely, “To use separate bibliographic records for one title in different physical formats, or to use a single record for all physical formats?” Librarians who use AACR2 for the creation of cataloging records are required to use a separate bibliographic record for each physical manifestation of the title. Users of union lists of serials in particular found this requirement extremely cumbersome.

The Summary Holdings Standard was vague, if not somewhat contradictory, on the issue of separate or single records for the bibliographic representation of a title if that was to be the serial identifier. The standard indicated that holdings statements were independent of any cataloging code, yet it also stated that the summary holdings should reflect only that portion of the serial represented by the bibliographic information, and it also permitted the creation of a composite holdings statement.

For a summary holdings statement, the NISO Holdings Standard permits the user to select one of three ways for the representation of a title held in several different formats. The first option allows for the creation of a separate bibliographic record for each physical form of the title. The appropriate holdings would be appended to each record. Users might wish to create a local note indicating that other records must be consulted in order to obtain complete holdings information for that title.

The standard’s second option allows for the use of one bibliographic
record and the creation of a composite holdings statement for all physical formats held. In this case, the physical form designator would be represented by "mm" for multimedia. Again, users have the option for including a local note, this time to indicate which volumes are held in which physical format.

The third option permitted in the NISO Holdings Standard also allows for the use of one bibliographic record. This time, however, a separate holdings statement is created for each physical format held. The representation of holdings in this option is identical in concept to holdings at the detailed level for subordinately reported supplements and indexes.

The NISO Holdings Standard gives the user two options for the representation of detailed holdings held in different physical formats. The first permits the use of separate bibliographic records for each physical format as it did for a summary holdings statement. The second option allows for the use of one bibliographic record for all physical formats held; however, each physical format must have its own holdings statement. A composite holdings statement is not permitted for detailed holdings.

As with the Summary Holdings Standard, users will need to decide for themselves, according to their needs, which is the most appropriate representation for serials held in different physical formats. Without a doubt, the NISO Holdings Standard provides considerably more guidance in this area than did the Summary Holdings Standard before it.

CONCLUSION

Standards should be organic in nature, changing with new developments, permitting their users and creators to modify them when the need arises, continually setting obtainable and practical goals for which users can strive, while at the same time not compromising on principles. The development of the NISO Holdings Standard was an evolutionary process. During this process, members of both NISO standards committees proved they could be flexible when discussing the issues at hand. They also listened to the comments and concerns of those using the Summary Holdings Standard. The result is a serial holdings standard that builds on the good work of SC 40, incorporates additional concepts from SC E and suggestions from the field, and comes away a much stronger standard for it.

REFERENCES

4. Ibid., p.38.
6. Ibid., p.9; American National Standards Institute, National Information Standards Organization (Z39), Serial Holdings, p.5.
An Investigation of Public Library Participation in Bibliographic Networks: Perceptions, Reactions, and Recommendations

Betty J. Turock and David L. Turock

In the third phase of research sponsored by the Public Library Association’s Task Force on Network Relations, a survey of 552 randomly selected network participants and nonparticipants in the United States compiled information on the status of the public library in bibliographic networks. The aspects identified and measured were perceptions of participation, reasons for not participating, reactions to services, and suggestions for increasing participation. Recommendations are made for future actions on the part of the Public Library Association and the networks to ensure the design of services beneficial to public libraries.

In 1982 the ALA Public Library Association (PLA) established several task forces “to open some new doors on tangible problems facing the American public library.” The Task Force on Network Relations was charged with reviewing the current status of public library participation in online bibliographic networks and developing recommendations for future actions beneficial to their operation. Since only 412 public libraries, or less than five percent of the total universe, were members, PLA President Donald J. Sager expressed concern that they had limited influence upon the goals and services of the major bibliographic utilities. The PLA Board of Directors concurred that, “unless public libraries took a greater role in the networks, they would be left out of the mainstream.”

PREVIOUS RESEARCH

Although Bill’s research on the Illinois Valley Library System and

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the Peat, Marwick, Mitchell consulting report for the Western Library Network (WLN) represent comprehensive recent documentation, both were case studies. There had been no investigations with a national focus. As a result, to meet their charge, the task force established a three-pronged investigatory process: (1) holding an open hearing; (2) commissioning a series of case studies; and (3) conducting a survey of network participation.

Phase I, the open hearing, was held June 23, 1983, at the American Library Association’s Annual Conference. More than 100 persons attended. Five speakers offered case studies and 25 others gave testimony; an additional 28 written statements were received by mail. Following the open hearing, the task force identified, for Phase II, libraries and authors who prepared six case studies detailing decision-making about joining bibliographic utilities.

PARAMETERS OF THE RESEARCH

The objectives of Phase III, reported on here, were to:

1. Compile information on the participation in bibliographic networks of United States public libraries of all sizes; and
2. Identify and measure variables important in determining participation, uncover problems and make recommendations.

Definitions of a network and a bibliographic utility were adapted to delineate the meaning of the bibliographic network as: an organization which maintains a system of physically separate computers or terminals and provides to libraries bibliographic records for such activities as cataloging and resource sharing.

Status of participation was the independent variable for this study. It was defined broadly and denoted by two different states, that is, those who receive services directly from the network based on library membership, or those who receive services indirectly through a library system or other cooperative that is a member. Data were collected from the local community library or from the main library where there were multiple locations.

To develop an instrument for measurement, a factors matrix was created. An analysis of the information gathered in Phases I and II and from the literature review, amplified by input from the task force, served to identify the five major foci considered productive directions for further inquiry. The foci—Library Background, Perceptions of Participation, Reasons for Not Participating, Reactions to Services, and Suggestions for Increasing Participation—became the dependent variables for the study. Statements related to these variables were listed together with the sources in which they appeared and weighted by the frequency with which they were cited. The factors receiving the highest scores became the items in the survey instrument. The majority were composed of brief statements with which the respondents were asked to strongly agree, agree, disagree or strongly disagree; they were scored either 4, 3, 2, or 1, depending on the body of the question. The format modified the usual Likert Scale by eliminating the undecided option to force respondents to state a choice (see appendix A).
Two pilot tests were undertaken. The first was conducted on members of the task force, which included top administrators from the three major bibliographic networks and librarians with backgrounds in technical services, resource sharing, and management. For the second, 50 libraries in New York State were mailed the preliminary survey. As a result of both rehearsals, the instrument was modified for greater clarity and reduced in size.

**CONDUCTING THE STUDY**

One of the major assumptions which guided this work was that rather than asking members of bibliographic networks to recall information concerning conditions before and after their participation, a more accurate reflection would arise from data collected from current participants (P) and nonparticipants (N). It was determined that a random sample of approximately 540 libraries, divided into P and N subgroups, would yield results with a confidence level of 90 percent and a tolerance of plus or minus 5 percent.12 As a result, the mailed survey was selected for data gathering because the sample size favored a relatively inexpensive technique that could administer a large number of questions to many respondents simultaneously. To overcome the possibility of a low return rate, a common occurrence in mailed surveys, the task force opted for a larger sample size. While network members could be located from the records of the bibliographic utilities, a source was sought which would permit the selection of members, participants who may not be members, and nonmembers. Mailing labels, based on the most recent edition of the *American Library Directory* were the source chosen.13

**DATA COLLECTION**

Out of a total of approximately 8,500 public libraries, a systematic sample of one of every seven, or 1,213, was drawn to which a letter was sent soliciting participation in the survey along with a stamped, self-addressed return postcard. Ultimately 977, or 81 percent, responded. As shown in table 1, more participants than nonparticipants returned the postcard.

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postcards Returned</td>
<td></td>
<td></td>
</tr>
<tr>
<td>By Network Participants</td>
<td>498</td>
<td>41</td>
</tr>
<tr>
<td>By Network Nonparticipants</td>
<td>479</td>
<td>40</td>
</tr>
<tr>
<td>Postcards Not Returned</td>
<td>236</td>
<td>19</td>
</tr>
<tr>
<td>Total</td>
<td>1,213</td>
<td>100</td>
</tr>
</tbody>
</table>

Recipients were asked to check responses to two items: (1) whether their library was currently a participant in a bibliographic network, and (2) whether their library would be willing to complete a mailed survey. A follow-up letter and the questionnaire were forwarded to those who
agreed to take part. After six weeks, a second letter, questionnaire, and return mailing essentials were sent to those who had not responded.

Calls were made to 10 percent of the 236 libraries that did not respond to determine why they had opted not to take part in the study. In five cases the libraries were participants in bibliographic networks, but indicated that either they did not have time to complete surveys or they did not choose to do so. The remaining nineteen, however, were nonparticipants. They responded that they returned no information because they had either no knowledge of, or interest in, bibliographic networks. From this poll, it was estimated that possibly 186, or 79 percent of the 236 who did not respond to the postcard mailing, were nonparticipants, and 50, or 21 percent, were participants. When the results of the solicitation responses and the phone poll were projected to the total population of public libraries, the judgment was that approximately 55 percent, or the majority are not participants in the nation’s bibliographic networks, but about 45 percent are.

To determine whether a nonresponse bias might have been introduced, selected questions were asked from the survey instrument as part of the data collected by telephone. The results were scored and compared to tallies based on the respondent replies. Using the Student’s t-test, at the 95 percent confidence level, no significant differences were revealed between the two pairs of scores for the P and N groups.

Of the 977 who did reply to the solicitation, 634, again representing more participants than nonparticipants, were willing to take part in the survey. After two mailings 564 had responded. Of the questionnaires returned, 552 were usable, representing 87 percent of the 634 who agreed to take part; 56 percent of the 977 who responded to the solicitation; and 46 percent of the 1,213 in the original sample. The 552 were divided into 315 network participants and 237 nonparticipants, or 57 percent and 43 percent, respectively.

The large sample size had produced a sufficient number of replies to draw some conclusions about public library participation in bibliographic networks. However, in all three opportunities to respond, i.e., by returning the postcard, by agreeing to participate in the study, and by returning the completed survey, more participants than nonparticipants replied. Since no attempt was made to weight the data to reflect the proportion of the two subgroups estimated to exist in the population, it would be inappropriate to aggregate the responses. Therefore, the results are presented and should be interpreted for the participant and nonparticipant subgroups only.

DATA ANALYSIS

Data were analyzed using the SAS statistical package. A description of the P and N subsamples was drawn from the section in the questionnaire captioned Library Background. Figures compiled for resources were compared to two sample surveys of American public libraries, undertaken by the U.S. Department of Education, and reported in Statistics of Public Libraries 1977–78 and 1981–82.14,15 The latest data available were employed in all cases.
It can be argued that Likert scale data are ordinal, but the assumption here is the usual one, that is, that the data meet the propositions necessary for interval level hypotheses testing. In the interpretation of the results of the hypotheses testing it is recognized that the underlying assumption in $t$-tests is that the sampling distribution is normal. With a sample size of over 400, such as the one in this study, it is reasonable to assume that the sample distribution is normal.

Following the measurement of the dependent variables, an hypothesis was tested to determine whether there existed significant differences in the dependent variables, Perceptions and Suggestions, as a result of the independent variable, status of participation in bibliographic networks. Remarks added following the questions on the dependent variables were analyzed by subgroup in two ways: First, to determine the percentage of respondents who commented; and, second, to determine whether they simply reinforced what they expressed in their selection of levels of agreement or added a new dimension to the topic.

**RESULTS**

Survey respondents represented a good cross-section of public libraries throughout the United States. There was at least one participant and one nonparticipant from each state, except for a single case in which no bibliographic network supplied service. Regionally, the highest number of participants were located in the Northeast, when totals were combined from the New England and Middle Atlantic states, and in the Midwest. At least in part this distribution is likely due to the greater concentration of public libraries east of the Mississippi. While the same two regions once again led the list with the highest number of nonparticipants, the Northeast polled a full 13 percent higher than the Midwest. Systems, a major source of encouragement for participation in networks, have proliferated in the Midwest, whereas the history of strong home rule in some parts of the Northeast has tended to inhibit their growth.

**Findings: Library Background**

To develop profiles of resources for both the P and N groups, first, intervals developed for the earlier *Statistics of Public Libraries* were divided into low, medium, and high ranges; then, study data on resources tabulated in percentages were compared to their distribution in the general population. In the main, when the high and medium ranges were aggregated, the resulting profiles revealed the respondents to be richer in population, budget, and volumes held than might have been expected, as table 2 illustrates.

While the nonparticipants included a higher number of respondents in the lowest ranges for librarians on staff than did libraries in the general population, the P subgroup consistently had more respondents in the upper ranges than either the general population or the N subgroup. When compared to each other, the N respondents, which more closely approximated the general population, had a larger percentage in the lower ranges in all cases than their P counterparts.
### TABLE 2
**Library Backgrounds Compared to Data from Statistics of Public Libraries**

<table>
<thead>
<tr>
<th>Public Libraries in the USA</th>
<th>Participants</th>
<th>Nonparticipants</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 8,456; N = 8,597</td>
<td>N = 315</td>
<td>N = 237</td>
</tr>
<tr>
<td><strong>Population of Communities Served</strong>*</td>
<td><strong>Range Intervals</strong></td>
<td><strong>%</strong></td>
</tr>
<tr>
<td>Low</td>
<td>Less than 10,000</td>
<td>65.0</td>
</tr>
<tr>
<td></td>
<td>10,000-49,999</td>
<td>25.7</td>
</tr>
<tr>
<td></td>
<td>Med. 50,000-99,999</td>
<td>5.2</td>
</tr>
<tr>
<td></td>
<td>100,000-249,999</td>
<td>2.6</td>
</tr>
<tr>
<td></td>
<td>High 250,000-499,999</td>
<td>0.7</td>
</tr>
<tr>
<td></td>
<td>500,000 or more</td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>Other No Response</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>99.8</td>
</tr>
<tr>
<td><strong>Budget†</strong></td>
<td><strong>Low</strong></td>
<td><strong>Less than $10,000</strong></td>
</tr>
<tr>
<td></td>
<td><strong>$10,000-$99,999</strong></td>
<td>45.8</td>
</tr>
<tr>
<td></td>
<td><strong>Med. $100,000-$399,999</strong></td>
<td>19.2</td>
</tr>
<tr>
<td></td>
<td><strong>$400,000-$999,999</strong></td>
<td>6.5</td>
</tr>
<tr>
<td></td>
<td><strong>High $1,000,000 or more</strong></td>
<td>4.4</td>
</tr>
<tr>
<td></td>
<td>Other No Response</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Volumes Held</strong>*</td>
<td><strong>Low</strong></td>
<td><strong>Less than 20,000</strong></td>
</tr>
<tr>
<td></td>
<td><strong>20,000-39,999</strong></td>
<td>18.6</td>
</tr>
<tr>
<td></td>
<td><strong>Med. 40,000-69,999</strong></td>
<td>11.1</td>
</tr>
<tr>
<td></td>
<td><strong>70,000-99,999</strong></td>
<td>5.7</td>
</tr>
<tr>
<td></td>
<td><strong>100,000-299,999</strong></td>
<td>6.7</td>
</tr>
<tr>
<td></td>
<td><strong>High 300,000-599,999</strong></td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td><strong>600,000-999,999</strong></td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td><strong>1,000,000 or more</strong></td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td>Other No Response</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Professional Librarians‡</strong></td>
<td><strong>Low</strong></td>
<td><strong>0.0-0.9</strong></td>
</tr>
<tr>
<td></td>
<td><strong>1.0-1.9</strong></td>
<td>28.9</td>
</tr>
<tr>
<td></td>
<td><strong>Med. 2.0-9.9</strong></td>
<td>36.0</td>
</tr>
<tr>
<td></td>
<td><strong>10.0-24.9</strong></td>
<td>5.8</td>
</tr>
<tr>
<td></td>
<td><strong>25.0-49.9</strong></td>
<td>1.3</td>
</tr>
<tr>
<td></td>
<td><strong>High 50.0-99.9</strong></td>
<td>0.6</td>
</tr>
<tr>
<td></td>
<td><strong>100 or more</strong></td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>Other No Response</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>99.5</td>
</tr>
</tbody>
</table>

‡Ibid., p.94.

Library backgrounds were reviewed to determine what might be learned about the current market for bibliographic network services. Even optimistic predictions would have to conclude that there are limited new opportunities among large size libraries, where the efforts of the
utilities have been concentrated in the past. The majority of the respondents were in the low and middle resource ranges. The fact that there are already participants in these two groups indicates that they represent a viable market.

The remaining questions in that section collected information about the participants only. In 80 percent of the cases, they declared affiliation with OCLC, in 5 percent with the Western Library Network (WLN), and in 3 percent with the Research Libraries Information Network (RLIN). Under Other, 10 percent named a variety of online systems developed on a statewide or regional basis, and 2 percent listed GEAC and UTLAS, Canadian bibliographic utilities. Sixty-six percent reported that they receive services directly from the networks, while 34 percent receive them indirectly through a library system or other cooperative.

**Findings: Dependent Variables**

Means and standard deviations were tabulated on the four remaining dependent variables—Perceptions, Reasons, Reactions, and Suggestions, as depicted in table 3.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions</td>
<td></td>
<td>311</td>
<td>3.04</td>
<td>.41</td>
<td>237</td>
<td>2.88</td>
<td>.43</td>
</tr>
<tr>
<td>Reasons</td>
<td></td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>237</td>
<td>2.19</td>
<td>.34</td>
</tr>
<tr>
<td>Reactions</td>
<td></td>
<td>285</td>
<td>2.56</td>
<td>.37</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Suggestions</td>
<td></td>
<td>302</td>
<td>3.25</td>
<td>.40</td>
<td>230</td>
<td>3.24</td>
<td>.39</td>
</tr>
<tr>
<td>Nonparticipants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where the highest possible score was 4.00, the following criteria were applied to provide a comparative scale for determining the level at which the variables were operating:

1. Means of 3.50 to 4.00 were considered high;
2. Means of 2.50 to 3.49 were considered moderate;
3. Means of 1.50 to 2.49 were considered low;
4. Means of 1.49 and below were considered minimal.

If the mean for any item was computed at less than 2.50, a barrier to network participation was considered operating that the network needed to attend to in marketing.

In the case of Reactions, where the highest possible tally was 3.00, the criteria were truncated so that:

1. Means of 2.50 to 3.00 were designated as high;
2. Means of 1.80 to 2.49 were designated as moderate;
3. Means of 1.00 to 1.79 were designated as low.

If the mean for any item was computed at less than 1.80, a barrier was considered operating that warranted attention.

According to the criteria, Reasons, scored low; justifications advanced
for not joining bibliographic networks were, in the main, strongly held by nonparticipants. *Reactions* scored in the high range; experience led to positive appraisals by participants of network performance in the majority of cases. The means for *Perceptions* fell in the middle range for participants and nonparticipants; both had moderate performance expectations. For *Suggestions*, where means for the two also fell in the middle range, there was general agreement that, if implemented, the recommendations would be moderately successful in encouraging participation.

To test the hypothesis that there were significant differences in *Perceptions* and *Suggestions* based on network status, two-tailed *t*-tests for independent samples were performed at the .05 level. The analyses produced the following results:

\[
H_0: M_p = M_n \\
R: t \leq 1.96 \text{ or } t \geq 1.96
\]

- Perceptions -4.05(546) = \(p < 0.00\)
- Suggestions -0.15(532) = \(p < 0.88\)

The null hypothesis was rejected for *Perceptions* and retained for *Suggestions*, i.e., of the two variables, *Perceptions* revealed significant differences related to the status of bibliographic network participation; *Suggestions* did not.

**Findings: Perceptions.** To focus more clearly on where differences between the P and N respondents might reside, once again, *t*-tests for independent samples were tabulated. As table 4 demonstrates, in 7 of the 14 items significant differences were found. In addition to determining whether participation altered perceptions of the results produced by belonging to a network, means and standard deviations were computed for items with significant differences and ranked from high to low, as table 4 further depicts, to help discover which, if any, of the factors measured represented a barrier.

Participants and nonparticipants alike contended that the networks made it easier to find books owned by other libraries. Based on the criteria, the mean of 3.62 (s.54) for the P group made it the only score recorded in the high range. At the other extreme, the bottom score for both groups indicated that the costs of operating the library increased with participation in bibliographic networks. With means of 2.21 (s.70) for the P subgroup, and 2.05 (s.73) for the N subgroup, this was the only item operating at a low level; it represented a barrier. Since the scoring was inverted, more members of the N than the P group agreed strongly with the statement.

In four of the five remaining cases, a higher percentage of positive responses was found for the P group, i.e., they held stronger perceptions that as a result of network membership, more books were borrowed from their libraries; users' access to unique resources was increased; cataloging workflow was improved; and users got the materials they sought more rapidly. There was one reversal, however. Although only 13 percent of the P subgroup agreed with the perception that money allocated for network participation would be better spent on buying more materi-
### TABLE 4

**Results of t-Tests and Ranked Means for Perceptions**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variance Estimate</th>
<th>Participants</th>
<th>Network Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$t$ Value</td>
<td>$df$</td>
<td>2-tail $p$</td>
</tr>
<tr>
<td><strong>Significant Differences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Find Books Owned by Others</td>
<td>-4.48</td>
<td>539</td>
<td>0.00</td>
</tr>
<tr>
<td>Costs Increase</td>
<td>-2.35</td>
<td>519</td>
<td>0.02</td>
</tr>
<tr>
<td>Lending Increases</td>
<td>-2.41</td>
<td>514</td>
<td>0.02</td>
</tr>
<tr>
<td>Access to Unique Materials</td>
<td>-2.83</td>
<td>537</td>
<td>0.01</td>
</tr>
<tr>
<td>Cataloging Workflow Improved</td>
<td>-3.06</td>
<td>511</td>
<td>0.00</td>
</tr>
<tr>
<td>Improved Response Time</td>
<td>-3.55</td>
<td>534</td>
<td>0.00</td>
</tr>
<tr>
<td>Money Better Spent on Books</td>
<td>-5.15</td>
<td>506</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>No Significant Differences</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Find Books Owned</td>
<td>-0.42</td>
<td>524</td>
<td>0.67</td>
</tr>
<tr>
<td>User-oriented Catalog</td>
<td>-1.69</td>
<td>497</td>
<td>0.09</td>
</tr>
<tr>
<td>Borrowing Increases</td>
<td>-0.95</td>
<td>525</td>
<td>0.34</td>
</tr>
<tr>
<td>New Services Available</td>
<td>-1.69</td>
<td>525</td>
<td>0.91</td>
</tr>
<tr>
<td>Up-to-date Catalog</td>
<td>-1.28</td>
<td>529</td>
<td>0.20</td>
</tr>
<tr>
<td>Expert Cataloging</td>
<td>-1.29</td>
<td>514</td>
<td>0.20</td>
</tr>
<tr>
<td>Improved Reference Ability</td>
<td>-0.45</td>
<td>519</td>
<td>0.66</td>
</tr>
</tbody>
</table>
als, 37 percent of the N group held that position. Since the scale for scoring was inverted here also, the P group had the higher score; a barrier was operating for nonparticipants.

While there were no further significant differences in Perceptions based on network status, means were calculated for the remaining items and ranked from high to low, as table 4 also shows, to determine if other perceptions had resulted in barriers. All of the scores for both subgroups fell within the moderate range. Once again the means for the P subgroup were higher throughout, although to a lesser degree. When ranked, the scores occupied the same position on the P and N scales, except for those fifth and sixth, which were inverted.

Both P and N respondents agreed most frequently that their libraries increased borrowing from other libraries as a result of network participation. Next they placed the fact that new services were made available to participants. Items ranked three and four pertained to cataloging—the catalog is more up-to-date as a result of membership, and it becomes easier to find books the library owns.

The statements reversed in order were that a library gets expert cataloging without an expert staff, and that the ability to answer reference questions is increased. Participants had only a slightly higher value for the reference enhancement and, nonparticipants more than participants, questioned whether networks provided expert cataloging without experts on staff. Both P and N groups had the greatest doubts over whether participation provided a more user-oriented catalog than libraries had before joining.

Overall, the four top mean scores for Perceptions for both the P and N groups were earned by statements related to resource sharing. The results accruing from such service were recorded positively by both groups, but experience with the networks reinforced that positive attribution. Under the present mode of network operation, then, the principal means of enlarging the proportion of public libraries participating in bibliographic utilities would be through marketing resource sharing.

Findings: Suggestions. Although no significant differences relating to network status were discovered for Suggestions as a whole, to determine whether there were any effects on individual items, for the final time, t-tests for independent samples were calculated. Experience with the networks had little influence on recommendations to increase participation. As table 5 demonstrates, there were no significant differences.

To discover which suggestions would be most useful in encouraging greater public library involvement in bibliographic networks, means and standard deviations computed for the 13 items were ranked from high to low, as table 5 also illustrates. With the criteria proposed, only one suggestion, if implemented, would be considered highly helpful. The rest had scores in the moderate range; none were recorded below 3.00. Although means for the N subgroup were higher than those of the P subgroup, the two had tightly woven rankings.

Equating network costs with level of use, computed from the responses of the N subgroup, topped the list; it ranked second with participants, as well. The fact that all four of the remaining suggestions per-
<table>
<thead>
<tr>
<th>Variable</th>
<th>Variance Estimate</th>
<th>Network Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>t Value</td>
<td>Participants</td>
</tr>
<tr>
<td></td>
<td>2-tail</td>
<td>Standard</td>
</tr>
<tr>
<td></td>
<td>df</td>
<td>Deviations</td>
</tr>
<tr>
<td></td>
<td>p</td>
<td>Observations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Means</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mean Rank</td>
</tr>
<tr>
<td>Spread Initial Costs</td>
<td>-0.51</td>
<td>293</td>
</tr>
<tr>
<td>Provide Checklists of Services</td>
<td>0.96</td>
<td>292</td>
</tr>
<tr>
<td>Increase Educational Opportunities</td>
<td>0.50</td>
<td>290</td>
</tr>
<tr>
<td>Simplify Documentation</td>
<td>0.88</td>
<td>287</td>
</tr>
<tr>
<td>Disseminate Information on Models</td>
<td>1.66</td>
<td>284</td>
</tr>
<tr>
<td>Assist Librarians in Presenting the Case for Support</td>
<td>-0.42</td>
<td>293</td>
</tr>
<tr>
<td>Open User Group Sessions</td>
<td>0.56</td>
<td>277</td>
</tr>
<tr>
<td>Publicize Ways to Participate</td>
<td>-0.26</td>
<td>284</td>
</tr>
<tr>
<td>Cancel without Financial Loss</td>
<td>1.11</td>
<td>271</td>
</tr>
<tr>
<td>Equate Cost with Level of Use</td>
<td>0.82</td>
<td>284</td>
</tr>
<tr>
<td>Link Local Systems with the Network</td>
<td>0.14</td>
<td>284</td>
</tr>
<tr>
<td>Encourage Cost Sharing</td>
<td>0.16</td>
<td>284</td>
</tr>
<tr>
<td>Unbundle Costs</td>
<td>-0.76</td>
<td>284</td>
</tr>
</tbody>
</table>
taining to costs were ranked in the highest positions reaffirms the
primacy of the cost factor uncovered in the data gathered on Perceptions
for both the P and N groups. They included: 1) unbundling costs by clar-
ifying in detail what services are purchased at what price; (2) ensuring
that network participation can be cancelled without loss of large invest-
ment; (3) encouraging shared computer costs, including those for sys-
tem services, first time use and terminals; and (4) publicizing alternate
ways to participate in networks and their relative costs. The final item
with fiscal impact, which recommended spreading out initial costs in-
stead of requiring payment up front, was ranked sixth by the partici-
pants and was tied for the same spot by the nonparticipants. Rounding
out the highest rated suggestions, both groups advised linking local on-
line operating systems with the network and making guides or checklists
widely available describing the services networks provide.

The same three suggestions occupied the bottom slots for both the P
and N subgroups as well. Increasing educational opportunities and
training updates through library schools, state libraries, regional library
systems, and state and national library associations; disseminating in-
formation on models and successful experiences in network participa-
tion; and having open sessions of user groups where potential network
members can learn what participation means operationally were voted
among the least useful strategies.

Finally, although not among the highest or lowest on either group’s
list, over 80 percent of both agreed that making information available to
assist librarians in presenting the case for support to governing authori-
ties and simplifying documentation and manuals on how to use the net-
work would be worthwhile.

In finding most of the suggestions useful, a genuine desire to encour-
age participation appeared to be stymied by an inability to select from
among concrete courses of action; any recommendation that offered
promise was seized upon. It is clear that public librarians need leader-
ship not only in influencing the networks to implement recommenda-
tions given priority status, but also in determining the most appropriate
recommendations to bring more of their number into networks. That
leadership should be provided by PLA.

Findings: Reasons. Nonparticipants indicated the extent to which they
agreed with frequently advanced reasons for lack of greater public li-
brary participation. To discover which might be barriers, means and
standard deviations were calculated for the 19 possibilities. In this case,
since a low score was associated with a negative effect, the means were
ranked from low to high, as shown in table 6. Using the criteria pro-
posed, only two of the reasons were operating at a moderate level; none
scored high. The seventeen with means of less than 2.50 were operating
at such a low level that they represented barriers.

Those placing in the moderate range, and not considered a basis for
lack of participation, were: (1) insufficient attention to bibliographic
networks in MLS programs, and (2) response time on network com-
puters which decreases staff productivity. Two further reasons relating
to staff efficiency scored low, however. Ranked eleventh, over 56 per-
cent believed that down time on network computers decreased the effec-
TABLE 6
RANKED MEANS IN REASONS FOR NOT JOINING

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Means</th>
<th>Mean Rank</th>
<th>Standard Deviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costly initial investment</td>
<td>234</td>
<td>1.72</td>
<td>1</td>
<td>.68</td>
</tr>
<tr>
<td>High ongoing costs</td>
<td>229</td>
<td>1.88</td>
<td>3</td>
<td>.67</td>
</tr>
<tr>
<td>Card vendors serve local needs</td>
<td>216</td>
<td>2.26</td>
<td>10</td>
<td>.74</td>
</tr>
<tr>
<td>Terminals not cost effective</td>
<td>216</td>
<td>2.23</td>
<td>8</td>
<td>.76</td>
</tr>
<tr>
<td>Low cost microcomputing</td>
<td>210</td>
<td>2.11</td>
<td>5</td>
<td>.61</td>
</tr>
<tr>
<td>No decline in workload</td>
<td>208</td>
<td>2.41</td>
<td>14</td>
<td>.70</td>
</tr>
<tr>
<td>Unresponsive to needs of small and medium-sized libraries</td>
<td>214</td>
<td>1.97</td>
<td>4</td>
<td>.66</td>
</tr>
<tr>
<td>Less expensive ways to receive machine-readable cataloging</td>
<td>202</td>
<td>2.23</td>
<td>8</td>
<td>.63</td>
</tr>
<tr>
<td>Insufficient attention in M.L.S. programs</td>
<td>192</td>
<td>2.57</td>
<td>15</td>
<td>.72</td>
</tr>
<tr>
<td>Efficiency decreased by down time</td>
<td>208</td>
<td>2.28</td>
<td>11</td>
<td>.67</td>
</tr>
<tr>
<td>Fear of new technology</td>
<td>229</td>
<td>2.25</td>
<td>9</td>
<td>.73</td>
</tr>
<tr>
<td>Overwhelming network documentation</td>
<td>179</td>
<td>2.41</td>
<td>14</td>
<td>.62</td>
</tr>
<tr>
<td>Inadequate documentation for the novice</td>
<td>192</td>
<td>2.36</td>
<td>13</td>
<td>.68</td>
</tr>
<tr>
<td>Staff productivity decreased by response time</td>
<td>178</td>
<td>2.66</td>
<td>16</td>
<td>.64</td>
</tr>
<tr>
<td>Inadequate cost projections</td>
<td>198</td>
<td>2.18</td>
<td>6</td>
<td>.65</td>
</tr>
<tr>
<td>Multiple conversions to integrate online systems</td>
<td>207</td>
<td>1.87</td>
<td>2</td>
<td>.63</td>
</tr>
<tr>
<td>Lack of space</td>
<td>223</td>
<td>2.30</td>
<td>12</td>
<td>.68</td>
</tr>
<tr>
<td>Lack of support from governing authority</td>
<td>215</td>
<td>2.19</td>
<td>7</td>
<td>.72</td>
</tr>
<tr>
<td>Other priorities</td>
<td>208</td>
<td>2.19</td>
<td>7</td>
<td>.66</td>
</tr>
</tbody>
</table>

The most significant barrier was the contention that the required initial investment was too costly. Over 88 percent of the respondents agreed this was the case. More than 75 percent of the nonparticipants also regarded negatively the multiple conversions of bibliographic records into machine-readable form required to integrate library operations even with network participation. In third and fourth place respondents maintained that ongoing costs were too high, and that bibliographic networks were more responsive to large research libraries than to small or medium size public libraries.

Eight items rounded out the 10 most problematic reasons. Five of them forcefully highlighted the need to make available lower cost service. Approximately 60 percent contended that: the ability to distribute computing power was making more expensive centralized services obsolete; the networks provide inadequate cost projections for ongoing participation; terminals primarily useful for one purpose were not cost effective; there were less expensive ways to take advantage of shared machine readable cataloging; and low cost cataloging from card vendors served local needs.

Only three reasons in the bottom 10 spots did not pertain to finances.
Two of them, tied for seventh place, were documented earlier in *Perceptions* and *Suggestions*. Respondents noted that public libraries have other priorities, alluding to the prior perception that money allocated for networking would be better spent on books. Lack of support for joining a network, on the part of the library's governing authority, earned a low score, substantiating findings from *Suggestions*, where providing information to assist in presenting the case for support was recommended as a way to encourage increased participation. The fear of dealing with new technology and acquiring new skills, a reason frequently advanced in the early days of automation for lack of involvement with computing, was in the ninth place. Clearly that fear was still having negative impact in 1986.

Although three further reasons constituted barriers, at least in two a low rate of response was a mitigating factor. For the first time nonparticipants were asked for information about the availability of accommodations for network equipment. Close to 58 percent replied that it was difficult to find the necessary space. Forty-six percent agreed that adequate manuals and documentation explaining procedures and equipment were not available for the novice, and 41 percent maintained that paperwork and information received from the network were overwhelming. However, the difference between those agreeing with the two statements and those disagreeing was less than 12 percent for the former and under 7 percent for the latter with no clear-cut majority in either case. Since 90 percent of the nonparticipants concurred with the earlier suggestion that providing simplified documentation and manuals on how to use the network would help to increase participation, the high numbers who did not respond here, i.e., 19 and ca. 25 percent respectively, may have influenced the results.

Although costs were repeatedly underscored in *Reasons* as the basis for lack of participation, new factors emerged from the data. It was clear that nonparticipants labeled bibliographic networks as unresponsive to all but the large public libraries. It was also clear that they saw the availability of the microcomputer at the local level as their avenue to reaping the benefits of computing. Once accepted by many without hesitation, the lack of an integrated approach to system development was portrayed as no longer tolerable.

**Findings: Reactions.** Participants expressed their reactions to services before and after the network experience. To determine where satisfactions and dissatisfactions might lie, means and standard deviations were computed for the 11 reactions, then scores were ranked from high to low, as table 7 indicates. Once again, by applying the criteria to the scale, which in this case had a top score of 3.00, eight reactions were recorded in the high range and three in the moderate. None scored low; no barriers were recorded.

At the top of the list respondents placed the public relations value of network participation. An improved image with staff, users, and the board ranked in the first three spots. Only the public relations value with the community, in the seventh position, fell in the lower half of the scores. The comparison of network benefits to costs ranked fourth in sat-
TABLE 7
RANKED MEANS IN REACTIONS TO PARTICIPATION

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Means</th>
<th>Mean Rank</th>
<th>Standard Deviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better quality cataloging</td>
<td>246</td>
<td>2.59</td>
<td>5</td>
<td>.60</td>
</tr>
<tr>
<td>Useful additional cataloging information</td>
<td>248</td>
<td>2.11</td>
<td>10</td>
<td>.61</td>
</tr>
<tr>
<td>Decreased staff time for cataloging</td>
<td>248</td>
<td>2.48</td>
<td>8</td>
<td>.67</td>
</tr>
<tr>
<td>Decreased response time for interlibrary loan</td>
<td>240</td>
<td>2.58</td>
<td>6</td>
<td>.65</td>
</tr>
<tr>
<td>Decreased staff time for interlibrary loan</td>
<td>238</td>
<td>2.12</td>
<td>9</td>
<td>.74</td>
</tr>
<tr>
<td>Increased job satisfaction</td>
<td>251</td>
<td>2.59</td>
<td>5</td>
<td>.53</td>
</tr>
<tr>
<td>Improved library image with:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff</td>
<td>257</td>
<td>2.77</td>
<td>1</td>
<td>.43</td>
</tr>
<tr>
<td>Board</td>
<td>253</td>
<td>2.71</td>
<td>3</td>
<td>.46</td>
</tr>
<tr>
<td>Users</td>
<td>259</td>
<td>2.75</td>
<td>2</td>
<td>.44</td>
</tr>
<tr>
<td>Community</td>
<td>249</td>
<td>2.53</td>
<td>7</td>
<td>.50</td>
</tr>
<tr>
<td>Network benefits worth the costs</td>
<td>273</td>
<td>2.67</td>
<td>4</td>
<td>.85</td>
</tr>
</tbody>
</table>

...satisfaction. Close to 40 percent maintained that the benefits either outweighed the costs or far outweighed them; another 43 percent called benefits worth the cost. Job satisfaction, tied for the fifth spot, was reported as improved by approximately 50 percent.

In a comparison of cataloging quality from the network for accuracy, completeness, and depth with cataloging prior to participation, about 57 percent reported better quality from the network, close to 23 percent called it about the same; only five percent labeled it not as good. Also appearing fifth in the evaluation, this data supported an earlier finding from Perceptions where over 70 percent of the participants replied that belonging to a network resulted in expert cataloging without an expert staff. In a related perception, the respondents had greater doubts that the catalog was more user-oriented. Reaction to the usefulness of additional cataloging information indicated that placing more in the record was not the answer. Ranked in last place with a moderate score, about one-fifth replied that added information was extremely helpful, while nearly 50 percent found it only somewhat helpful and close to 11 percent characterized it as not needed.

In sixth place, 57 percent agreed that response time for users' interlibrary loan requests decreased. Earlier there was a significant difference discovered in Perceptions. When participants and nonparticipants were asked whether users got the materials they sought more rapidly, participants agreed far more frequently that was the case.

Reactions to staff time taken by cataloging and interlibrary loans before and after participation fell into the eighth and ninth places. Network cataloging was reported as reducing time by more than 45 percent; close to 26 percent said it required about the same amount, and nearly eight percent found that it took more. For interlibrary loan, close to 26 percent reported a decrease in staff time used, approximately 33 percent said
that it remained the same, and about 17 percent called it increased. Whether the report of increased time is due to the fact that more transactions were generated by local users or other libraries rather than by network performance is not clear.

While scores for Reactions were high, an evaluation of one network service did not appear in the hierarchy of satisfactions until the fifth place. It is not encouraging that, in general, opinion-based questions about the benefits of networking ranked higher than those detailing the advantages of specific services. Nor was it encouraging that improved image was the top benefit, since Bills, in on-site measurements, had demonstrated that the early boon to library image fades as novelty decreases. It is highly unlikely that improved image can become the centerpiece for a marketing campaign to attract financially prudent small and medium size libraries to bibliographic networks.

**Comments from Participants and Nonparticipants**

Although the questionnaire invited comments after sections gathering data on the dependent variables, most respondents did not reply to all four. Some comments were received for each; however, only those that added new information are reviewed. Quotes are cited where they reflect a number of comments.

In the case of Perceptions, 64 members of the P subgroup, or 20 percent, and 50 from the N subgroup, or 21 percent, replied. Most amplified what they had expressed in selecting responses. More than one-half of the participants and nonparticipants alike noted that cataloging was not always reliable, blaming their network's lack of quality control mechanisms. Nonparticipants also commented that belonging to a network sometimes decreased access to local materials. One maintained that his member neighbors, "Do not catalog anything that is not on the network, so materials, like local history, gather dust in storage."

Only 35 members of the P subgroup and 26 of the N subgroup, or 11 percent in both cases, added remarks about Suggestions, making this the smallest percentage of responses to any of the sections. No recommendations were added. Members of the P subgroup did indicate why they believed some suggestions would not be useful. One pointed out that, "Simplifying documentation won't bring libraries into networks. It helps once they are members, before that they don’t realize there's a problem."

Another contended that, "Spreading out costs instead of requiring payment up front wouldn’t help those who can't afford the costs, regardless of how they become due.'"

Following Reasons, 54 of the responding nonparticipants, or 22.7 percent, added comments. A number of them expanded on items in the survey. One respondent wrote, "Although we have seen a lot of benefits since we joined the network, there have also been major developments in technology. There is a need to distribute data for local use in new ways. CD-ROM should have tremendous impact."

A second commented that, "Systems closer to the local units will be more attractive and easier for members to manage." Finally, over a dozen respondents indicated that unanswered questions such as who owns a library's bibliographic
database and whether the records will afford easy conversion to an automated catalog make libraries leery of investing in participation.

Fourteen percent, or 45 of the participants, supplied Reactions. Some added new information instead of amplifying replies to questionnaire statements. Fifteen agreed that this section should have included more detailed questioning on costs. One put it succinctly by saying, "There are many facets to the cost issue and information is needed on more than our general impression of whether network benefits are worth the costs." Several called attention to the fact that the survey did not include any reference to the use of network databases for retrospective conversion of local holdings. As in Reasons, respondents hit a chord that has unsettled current as well as potential participants. One summed it up by commanding, "Don't claim a copyright on records. Recognize the ownership rights of libraries, their right to use records in machine readable form and their right to share them with other libraries." Other participants voiced their concern for the effect of rapidly changing technology on the networks; one observed, "I'm not at all convinced that the utilities we now have shouldn't be totally replaced by small local networks."

**DISCUSSION**

The results of this study probably tend to reflect the opinions of those librarians most actively involved in networks and/or most interested in networking issues. The high marks frequently given networks by their participants are undoubtedly at least in part a reflection of the librarians' vested interest in the long-range health of the utilities. What conclusions and recommendations could be made from the evidence, however, that would be useful not only to the libraries, but also to the networks?

Initially it became clear that more public libraries depend upon the services of the bibliographic utilities than might be immediately apparent, when participation, not membership, is the denominator explored. The continued viability of the networks is important to the public library.

The association of the network with the library system became visible from the Background Information. Systems and their multitype surrogates have created interest in networks among librarians within their territories. Their value in encouraging participation is more situational, however. Even where innovation has been part of the system profile, network success has been spotty. When systems have joined networks to supply their members with services, some have created a one-way stream of advantage. The members can access others' collections, but their collections are not made accessible. Where systems have offered first year funding at reduced or no cost, some have not been successful in maintaining participation when the subsidy ceases. One of the key issues remains: To develop effective alternative ways to participate in networks through regional cooperatives, since research has shown that is the most rapid and effective means of sharing resources. To date there has been no clear analysis of the future role of the system vis-a-vis the network; it is needed.

It was in the data collection on Perceptions that the dialog surfaced
about whether money spent for network participation might be better allocated to buying books. Although assertions have been made in the literature, once again no systematic studies have identified the issues and discovered the facts. Does buying more books necessarily lead to buying the books most needed, or might it result in more books on the shelf? Where is the trade-off between buying books and expanding access? How many of those who leave the library without what they were seeking might be satisfied with timely, cost-effective resource sharing? It's time we found out some of the answers from the perspective of the users rather than imparting motives to them as a means of promulgating a philosophy of service.

It was in Suggestions that costs were verified as the fundamental issue concerning who participates and who does not; they were pointed up as the primary limiting factor and the only real stumbling block. The need to generate statistics on usage and cost for libraries of varying sizes, operating at varying levels of efficiency was made apparent as well. What is cost efficient for one library may not be for another. A good deal depends on the operation before network participation and the willingness of the library to exploit network service to the fullest.

But costs for computer technology are down. It was in the survey of Reasons that the microcomputer challenge emerged, together with the uncertainty on the part of the untapped public library market for network services that the networks are, or ever intend to be, responsive to them. Whereas this study began with the premise that the public library was being left out of the mainstream because of lack of participation in the networks, it ended with a question concerning who was being left out of the mainstream. The ubiquity of the high-powered, low-cost microcomputer is not part of the problem; it is part of the solution for both the networks and public library nonparticipants, but its role has been underplayed by the networks to their disadvantage, as has that of other breakthrough technology. Only recently have they begun to move out of research and development into implementing services that integrate local operations into network programs, mixing and matching product packages to meet the individual situation. A marketing strategy for these new service configurations is needed for participants as well as nonparticipants, since in Reactions, through the participants' input, it became clear that even stakeholders are questioning the future of the utilities. It will continue to be important for networks to show that they are responsive by supplying what is needed, rather than trying to convince public librarians that what they are supplying is what is needed. For example, since rapidly rising telecommunications rates are a major factor in costs, the networks should differentiate between what is essential online and what might be supplied just as well in other modes, like CD-ROM, and make it available.

Helping public libraries prepare for the future is another product networks can market by advising on what sort of equipment should be purchased now, what staff should be receiving what training, and what ways there are to ease public libraries into greater acceptance of technology—in short, by helping to prepare the market for the coming products. Cer-
tainly it is to the networks' advantage to take steps to facilitate local software development compatible with their own.

In data collected on each of the variables, the need for more information about networking became clear, although it was not accorded a top score in the suggestion box. It was apparent from the number of respondents who indicated that, even in this exploratory survey with its general questions, they did not "know enough about the issues to guess at the answers." It was equally apparent from the differences between what nonparticipants perceived as results of networking and what participants report as results based on their experience. Most important, it was apparent from the lack of information both groups exhibited about new network products.

In addition to information, the survey pointed out another market, that is, for a more user-oriented catalog. The networks have shown their regard for standards; now it's time to do more than automate the card catalog; it is time to make available, as one more product, simple formats with user-oriented content to inspire greater independence on the part of the library's public.

Finally, the unresolved conflict over database copyright surfaced. It is understandable from both sides. Libraries want access to their own records for their own uses; networks see ownership of the records as a key to their future. It is ALA and PLA's role in all of this that has been most unclear. At the 1985 Annual Conference the ALA Task Force on Bibliographic Data Bases presented a report that was accepted by the Council. It defined the issues which the task force believed related to its specific charge, offered definitions, described some principles that applied to the issues, and concluded with a set of recommendations. But what were the recommendations and what did the report encourage?

It encouraged the bibliographic networks to embark upon a series of unspecified activities to resolve the conflict, shifting the responsibility for action to the utilities, actions that will undoubtedly take the network perspective. On the other hand, the bibliographic utility serving the majority of public libraries has broadly broadcast that it intends to seek markets outside of libraries, which is not necessarily a bad decision. But utilities can't have it both ways. Either they are of the library community or they are not; if they are not, then they become one more vendor to that community. With networks in the latter role, the American Library Association cannot fail to be the voice for libraries in the issue of copyright or in any library-network conflict. Calling upon the utilities to develop strategies for sharing machine-readable bibliographic records throughout the library community in a manner which will not economically disadvantage the utility doesn't fulfill the role of a library advocate. The major issue for ALA is to develop the options libraries have and determine the negotiating power they supply. Within PLA there is room for a standing committee on technology that would provide a forum for developing those options for U.S. public libraries.*

*Since this study was completed, PLA has established the Technology in Public Libraries Committee.
It is going to take renewed dedication on the part of networks to provide the most cost-effective possible service for libraries. It will take public librarians dedicated to working with the networks to continue a relationship that has been productive for both. This is not the time for either to lose sight of their logical roles.

REFERENCES

2. Ibid., p.2.
17. ______, Interlibrary Loan, p.32.

APPENDIX A: SURVEY OF PARTICIPATION IN BIBLIOGRAPHIC NETWORKS

Task Force on Network Relations; the Public Library Association, a Division of the American Library Association.

A. BACKGROUND INFORMATION

Questions 1-8

To complete the remainder of the survey:

- If your library is a participant in a bibliographic network, please complete all sections, except Section C.
- If your library is not a participant in a bibliographic network, please complete all sections, except Section D.

B. PERCEPTIONS OF NETWORK PARTICIPATION

Whether or not you are a bibliographic network participant, you undoubtedly have perceptions of the results of participation. Please check [✓] the appropriate answer to indicate the extent to which you agree with each statement.
### APPENDIX A: Continued

<table>
<thead>
<tr>
<th>9.</th>
<th>It is easier to find books the library owns.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>27.9</td>
<td>37.5</td>
<td>24.7</td>
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<td>6.4</td>
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<tr>
<td>N</td>
<td>21.1</td>
<td>50.5</td>
<td>22.1</td>
<td>3.2</td>
<td>3.2</td>
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<table>
<thead>
<tr>
<th>10.</th>
<th>It is easier to find books owned by other libraries.</th>
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<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
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<tbody>
<tr>
<td>P</td>
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<td>32.7</td>
<td>1.6</td>
<td>0.4</td>
<td>2.0</td>
</tr>
<tr>
<td>N</td>
<td>42.6</td>
<td>50.0</td>
<td>4.2</td>
<td>1.1</td>
<td>2.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11.</th>
<th>A library has a more user-oriented catalog than it did before joining.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
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<tbody>
<tr>
<td>P</td>
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<td>27.9</td>
<td>3.2</td>
<td>9.6</td>
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<tr>
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<td>11.6</td>
<td>44.2</td>
<td>32.1</td>
<td>3.2</td>
<td>8.9</td>
</tr>
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<table>
<thead>
<tr>
<th>12.</th>
<th>The costs of operating the library increase.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
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<td>50.6</td>
<td>27.5</td>
<td>2.4</td>
<td>7.2</td>
</tr>
<tr>
<td>N</td>
<td>20.0</td>
<td>54.7</td>
<td>18.4</td>
<td>3.2</td>
<td>3.7</td>
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<table>
<thead>
<tr>
<th>13.</th>
<th>More books are borrowed from the library.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
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<td>46.6</td>
<td>23.5</td>
<td>0.8</td>
<td>7.2</td>
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<td>27.4</td>
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<td>6.3</td>
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<th>14.</th>
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<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
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</thead>
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<td>13.1</td>
<td>0.4</td>
<td>4.0</td>
</tr>
<tr>
<td>N</td>
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<td>60.5</td>
<td>10.0</td>
<td>2.1</td>
<td>4.7</td>
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</table>

<table>
<thead>
<tr>
<th>15.</th>
<th>New services are available to library users.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>28.7</td>
<td>46.6</td>
<td>19.9</td>
<td>0.8</td>
<td>4.0</td>
</tr>
<tr>
<td>N</td>
<td>18.4</td>
<td>56.3</td>
<td>18.4</td>
<td>2.1</td>
<td>4.8</td>
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</table>

<table>
<thead>
<tr>
<th>16.</th>
<th>The catalog is more up-to-date.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
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<td>17.9</td>
<td>2.0</td>
<td>5.6</td>
</tr>
<tr>
<td>N</td>
<td>22.1</td>
<td>52.1</td>
<td>22.1</td>
<td>3.2</td>
<td>0.5</td>
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<table>
<thead>
<tr>
<th>17.</th>
<th>Users’ access to unique resources increases.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
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<td>0.4</td>
<td>2.0</td>
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<tr>
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<td>26.3</td>
<td>57.9</td>
<td>12.1</td>
<td>1.1</td>
<td>2.6</td>
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</table>

<table>
<thead>
<tr>
<th>18.</th>
<th>Cataloging workflow is improved.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
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<td>14.3</td>
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<td>6.8</td>
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<td>N</td>
<td>15.8</td>
<td>51.1</td>
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<td>3.2</td>
<td>6.8</td>
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</table>

<table>
<thead>
<tr>
<th>19.</th>
<th>A library gets expert cataloging results without an expert staff.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
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<td>50.6</td>
<td>20.3</td>
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<td>6.8</td>
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<tr>
<td>N</td>
<td>14.7</td>
<td>52.6</td>
<td>22.6</td>
<td>3.7</td>
<td>6.3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>20.</th>
<th>Users get the materials they seek more rapidly.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
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</thead>
<tbody>
<tr>
<td>P</td>
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<td>54.6</td>
<td>5.2</td>
<td>0.4</td>
<td>2.8</td>
</tr>
<tr>
<td>N</td>
<td>22.1</td>
<td>65.8</td>
<td>7.9</td>
<td>1.6</td>
<td>2.6</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>21.</th>
<th>The ability to answer reference questions is increased.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
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<td>48.6</td>
<td>27.5</td>
<td>0.8</td>
<td>5.6</td>
</tr>
<tr>
<td>N</td>
<td>20.0</td>
<td>42.6</td>
<td>30.5</td>
<td>2.1</td>
<td>4.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>22.</th>
<th>Money spent for network participation would be better spent on buying more materials.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
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<td>10.4</td>
<td>61.0</td>
<td>18.7</td>
<td>7.6</td>
</tr>
<tr>
<td>N</td>
<td>13.1</td>
<td>23.7</td>
<td>51.6</td>
<td>3.1</td>
<td>8.5</td>
</tr>
</tbody>
</table>

| 23. | If you have any other comments about your perceptions of bibliographic network participation, please record them here. |

#### C. REASONS FOR NOT PARTICIPATING IN BIBLIOGRAPHIC NETWORKS

Many public libraries do not participate in bibliographic networks. Please check [ ] the appropriate answer to indicate the extent to which you agree with each statement about why that is the case.

<table>
<thead>
<tr>
<th>24.</th>
<th>The initial investment required is too costly.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>38.4</td>
<td>50.5</td>
<td>7.9</td>
<td>1.6</td>
<td>1.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>25.</th>
<th>Ongoing operating costs are too high.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>27.4</td>
<td>54.2</td>
<td>14.7</td>
<td>0.5</td>
<td>3.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>26.</th>
<th>It is cheaper to use a card vendor for cataloging.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>11.6</td>
<td>48.9</td>
<td>25.8</td>
<td>4.7</td>
<td>8.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>27.</th>
<th>Terminals useful for one primary purpose are not cost effective investments.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>14.7</td>
<td>44.2</td>
<td>28.9</td>
<td>3.2</td>
<td>8.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>28.</th>
<th>The ability to distribute computing power at low cost is making centralized services obsolete.</th>
<th>Strongly Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>11.1</td>
<td>57.9</td>
<td>18.9</td>
<td>1.1</td>
<td>11.1</td>
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</table>
APPENDIX A: Continued

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.</td>
<td>Even when libraries are members, workload does not decline.</td>
<td>N</td>
<td>6.8</td>
<td>41.6</td>
<td>35.3</td>
</tr>
<tr>
<td>30.</td>
<td>Bibliographic networks are more responsive to the opinions of large research libraries than they are to the opinions of small or medium-size public libraries.</td>
<td>N</td>
<td>20.5</td>
<td>51.6</td>
<td>16.8</td>
</tr>
<tr>
<td>31.</td>
<td>There are less expensive ways to take advantage of shared machine readable cataloging.</td>
<td>N</td>
<td>8.9</td>
<td>48.4</td>
<td>27.4</td>
</tr>
<tr>
<td>32.</td>
<td>Lack of attention to bibliographic networks in MLS degree programs means there are few staff members who advocate participation.</td>
<td>N</td>
<td>5.8</td>
<td>28.4</td>
<td>41.6</td>
</tr>
<tr>
<td>33.</td>
<td>Down time on network computers decreases the effective use of staff time.</td>
<td>N</td>
<td>8.4</td>
<td>47.9</td>
<td>28.9</td>
</tr>
<tr>
<td>34.</td>
<td>Fear of dealing with new technology and acquiring new skills is prevalent among staff members.</td>
<td>N</td>
<td>14.2</td>
<td>47.4</td>
<td>32.1</td>
</tr>
<tr>
<td>35.</td>
<td>Paperwork and information received from the network are overwhelming.</td>
<td>N</td>
<td>4.2</td>
<td>36.8</td>
<td>33.2</td>
</tr>
<tr>
<td>36.</td>
<td>Adequate manuals and documentation explaining procedures and equipment are not available for the novice.</td>
<td>N</td>
<td>7.4</td>
<td>38.9</td>
<td>32.6</td>
</tr>
<tr>
<td>37.</td>
<td>Response time on network computers decreases the productivity of staff.</td>
<td>N</td>
<td>3.7</td>
<td>21.1</td>
<td>47.4</td>
</tr>
<tr>
<td>38.</td>
<td>Adequate cost projections for ongoing participation are not available.</td>
<td>N</td>
<td>11.1</td>
<td>47.4</td>
<td>24.7</td>
</tr>
<tr>
<td>39.</td>
<td>Multiple conversions of bibliographic records into machine readable form are required to integrate library operations.</td>
<td>N</td>
<td>23.2</td>
<td>52.1</td>
<td>11.1</td>
</tr>
<tr>
<td>40.</td>
<td>It is difficult to accommodate the required equipment because of space limitations.</td>
<td>N</td>
<td>10.0</td>
<td>47.9</td>
<td>34.7</td>
</tr>
<tr>
<td>41.</td>
<td>There is a lack of support for joining a network on the part of the library's governing authority and/or users.</td>
<td>N</td>
<td>14.2</td>
<td>46.8</td>
<td>27.4</td>
</tr>
</tbody>
</table>
APPENDIX A: Continued

<table>
<thead>
<tr>
<th>Strongly</th>
<th>Disagree</th>
<th>Strongly</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>Agree</td>
<td>disagree</td>
<td>Disagree</td>
</tr>
</tbody>
</table>

42. Public libraries have other priorities.
43. If you have other comments on why public libraries may not participate in networks, please record them here.

D. REACTIONS TO BIBLIOGRAPHIC NETWORK SERVICES

Many public libraries do participate in bibliographic networks. Please check [✓] the box which indicates what your experience has been as a network participant.

44. In comparing the quality, e.g., accuracy, completeness, depth of network cataloging with cataloging prior to network participation, network cataloging is:
   [23.1] b. About the same [21.9] d. No response

45. If network records contain more information than previous cataloging, the additional information is:

46. In comparing staff time used for cataloging operations as a member of a network with staff time using previous methods, the network requires:

47. Using the network to send interlibrary loan requests causes the turnaround time between the user’s request and the receipt of the item in your library to:
   [51.0] a. Decrease [6.8] c. Increase
   [18.3] b. Remain about the same [23.9] d. No response

48. In comparing staff time taken for interlibrary loan operations as a member of a network with staff time taken prior to network membership, using the network requires:
   [33.1] b. About the same [33.3] d. No response

49. As a result of network participation, job satisfaction of staff is:

50-53. How does using a bibliographic network affect the library’s image among the following groups:

<table>
<thead>
<tr>
<th></th>
<th>Improved</th>
<th>No</th>
<th>Lowered</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Image</td>
<td>Effect</td>
<td>Image</td>
<td></td>
</tr>
<tr>
<td>Staff</td>
<td>[63.3]</td>
<td>[17.9]</td>
<td>[0.4]</td>
<td>[18.5]</td>
</tr>
<tr>
<td>Board</td>
<td>[37.0]</td>
<td>[23.5]</td>
<td>[0.0]</td>
<td>[19.3]</td>
</tr>
<tr>
<td>User</td>
<td>[61.4]</td>
<td>[20.7]</td>
<td>[0.0]</td>
<td>[17.9]</td>
</tr>
<tr>
<td>Community as a whole</td>
<td>[41.8]</td>
<td>[37.5]</td>
<td>[0.0]</td>
<td>[20.7]</td>
</tr>
</tbody>
</table>

54. The benefits received from membership in a bibliographic network:
   [43.4] c. Are worth the cost

55. As a bibliographic network member, how do you justify the costs of participation to your governing authority? Please briefly recap arguments and techniques used and recommended.

56. If you have other comments on reactions to participation, please record them here.
APPENDIX A: Continued

E. Suggestions for Increasing Participation

Check [ ] the appropriate box to indicate the extent to which you agree that, if implemented, the suggestions would encourage greater public library participation in bibliographic networks.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>57. Spread out initial costs instead of requiring total payment up front.</td>
<td>P 28.3</td>
<td>59.0</td>
<td>4.8</td>
<td>1.2</td>
<td>6.8</td>
</tr>
<tr>
<td></td>
<td>N 28.9</td>
<td>55.8</td>
<td>8.4</td>
<td>1.1</td>
<td>5.8</td>
</tr>
<tr>
<td>58. Make guides or checklists widely available that describe the services provided by bibliographic networks.</td>
<td>P 29.9</td>
<td>59.8</td>
<td>2.4</td>
<td>0.8</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td>N 34.7</td>
<td>57.9</td>
<td>2.1</td>
<td>0.5</td>
<td>4.7</td>
</tr>
<tr>
<td>59. Offer continuing education opportunities and training updates through library schools, state libraries, regional library systems, and state and national library associations.</td>
<td>P 25.9</td>
<td>56.6</td>
<td>8.4</td>
<td>1.6</td>
<td>7.6</td>
</tr>
<tr>
<td></td>
<td>N 28.9</td>
<td>56.3</td>
<td>10.0</td>
<td>0.5</td>
<td>4.2</td>
</tr>
<tr>
<td>60. Provide simplified documentation and manuals on how to use the network.</td>
<td>P 27.1</td>
<td>55.0</td>
<td>8.0</td>
<td>0.8</td>
<td>9.2</td>
</tr>
<tr>
<td></td>
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<td>62.6</td>
<td>3.7</td>
<td>0.5</td>
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<tr>
<td>61. Disseminate information on models and successful experiences in network participation.</td>
<td>P 20.3</td>
<td>53.0</td>
<td>14.7</td>
<td>1.6</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>N 24.2</td>
<td>57.9</td>
<td>11.6</td>
<td>0.0</td>
<td>6.3</td>
</tr>
<tr>
<td>62. Make information available to assist librarians in presenting the case for support to governing authorities.</td>
<td>P 27.5</td>
<td>59.8</td>
<td>5.2</td>
<td>0.8</td>
<td>6.8</td>
</tr>
<tr>
<td></td>
<td>N 26.8</td>
<td>57.9</td>
<td>8.4</td>
<td>0.0</td>
<td>6.8</td>
</tr>
<tr>
<td>63. Have open sessions of user groups where potential network members can learn what participation means operationally.</td>
<td>P 15.1</td>
<td>61.4</td>
<td>10.8</td>
<td>0.4</td>
<td>12.4</td>
</tr>
<tr>
<td></td>
<td>N 16.3</td>
<td>60.5</td>
<td>10.0</td>
<td>0.0</td>
<td>13.1</td>
</tr>
<tr>
<td>64. Publicize alternative ways to participate in networks and their costs.</td>
<td>P 33.5</td>
<td>46.2</td>
<td>9.6</td>
<td>0.4</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>N 30.5</td>
<td>55.3</td>
<td>7.9</td>
<td>0.0</td>
<td>6.3</td>
</tr>
<tr>
<td>65. Ensure that participation in networks can be cancelled without loss of large investments.</td>
<td>P 31.5</td>
<td>48.6</td>
<td>6.0</td>
<td>0.4</td>
<td>13.6</td>
</tr>
<tr>
<td></td>
<td>N 37.4</td>
<td>52.6</td>
<td>4.2</td>
<td>0.0</td>
<td>5.8</td>
</tr>
<tr>
<td>66. Equate cost with level of use.</td>
<td>P 36.7</td>
<td>47.4</td>
<td>5.6</td>
<td>0.0</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>N 41.1</td>
<td>50.9</td>
<td>3.7</td>
<td>0.0</td>
<td>5.3</td>
</tr>
<tr>
<td>67. Provide links between local online operating systems and the network.</td>
<td>P 34.7</td>
<td>47.8</td>
<td>5.6</td>
<td>1.6</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>N 30.5</td>
<td>53.7</td>
<td>4.2</td>
<td>0.0</td>
<td>11.6</td>
</tr>
<tr>
<td>68. Encourage sharing computer costs, including those for systems services, first time use and terminals.</td>
<td>P 28.7</td>
<td>58.2</td>
<td>2.8</td>
<td>0.0</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>N 32.6</td>
<td>56.3</td>
<td>4.7</td>
<td>0.0</td>
<td>6.3</td>
</tr>
</tbody>
</table>
## APPENDIX A: Continued

<table>
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<th>Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>69. Unbundle costs by clarifying in detail what services are purchased at what price.</td>
<td>P 36.3</td>
<td>50.6</td>
<td>2.8</td>
<td>0.0</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>N 33.7</td>
<td>55.8</td>
<td>2.1</td>
<td>0.5</td>
<td>7.9</td>
</tr>
<tr>
<td>70. If you have any other suggestions for encouraging network services beneficial to public libraries, please record them here.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71. Responses to this questionnaire: [ ] May be quoted.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

On behalf of the Public Library Association and the Task Force, thank you for your help.—Betty J. Turock, Rutgers School of Communication, Information and Library Studies, Principal Investigator, ALA-PLA Task Force on Network Relations.
Vendor Performance: A Study of Two Libraries

Ruth H. Miller and Martha W. Niemeier

Acquisitions librarians at two different universities conducted a study of the performance of four vendors by ordering the same titles at the same time. Both libraries are introducing automation for which reassessment of vendors is needed. The study was designed to show which vendor performed best in areas of delivery time, discount, fulfillment, and service, in order to provide supportive data for management decisions in acquisitions.

The decision to study vendor performance for the University of Southern Indiana and the University of Evansville developed from each library’s need to have information for management decisions relating to vendor speed and discounts. For these libraries, as for most others, the spiraling inflation of the late seventies and early eighties necessitated shifting funds from books to serials at a time when new programs were being added and older programs were being expanded or revised. With the easing of inflation both teaching faculty and librarians have increased their expectations of the purchasing power of the libraries’ budgets; expectations have also risen because one school recently became independent, while the other has just built a new library building. The reality, of course, is that the budgets have not increased sufficiently to accommodate the increasing demand. Although inflation has eased, prices have not declined, and needs have increased.

The Two Libraries

The University of Evansville is an independent, church-related school established in 1854; the University of Southern Indiana is a public-supported, state school which was established in Evansville in 1965 as a branch campus of Indiana State University and became independent in 1985. Currently each school enrolls about 4,000 full- and part-time students. While most University of Southern Indiana students commute from the immediate and five surrounding counties, the building of apartments on campus has allowed more students from greater distances to enroll. Most University of Evansville students come from the region bounded by Chicago, Cincinnati, Nashville, and St. Louis. Both schools

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serve local adult students who enroll in evening classes.

While each undergraduate curriculum is distinct, both schools offer enough similar programs to make cooperative efforts possible. On the graduate level, however, the University of Southern Indiana is just beginning its programs, whereas the University of Evansville has well established ones. The University of Evansville’s book collection exceeds 200,000 volumes, with an average growth rate of approximately 6,000 volumes per year for the past five years. The University of Southern Indiana’s library collection exceeds 135,000 volumes, with an average growth rate of approximately 3,000 volumes per year for the past five years. Both have annual book budgets that cover funds for faculty requests as well as for library-initiated orders for reference materials, retrospective materials, standing orders, and general and interdisciplinary purchases.

The changes involved in implementing automated systems make reassessment of all procedures necessary, including those for dealing with vendors. During 1986-87 the University of Southern Indiana library introduced an automated online checkout system (GEAC) with the expectation of eventually including an online catalog and an integrated acquisitions system. At the University of Evansville during 1985 and 1986, an integrated online system (NOTIS) was introduced for cataloging, acquisitions, and serials, with circulation to be added in 1987.

**Origin of the Study**

Both libraries have a policy of not duplicating materials, since neither has a budget permitting multiple orders of the same title for more than an occasional, extraordinary classroom need. Both, however, do order many of the same titles for their respective core collections. In 1984 we considered the possibility of using the same major vendor and negotiating a discount based on the combined budgets, possibly resulting in increased discounts for both libraries. Due to the new automation projects, we decided that a test of the vendors’ quality of service and costs would be useful for several reasons. Therefore, we decided to test vendors by ordering the same titles at the same time and comparing the results.

We chose to study four vendors specializing in serving academic libraries and providing university press titles: Emery-Pratt, Blackwell North America, Scholarly Book Center, and Midwest Library Service. All titles ordered were current imprints (1984–85), primarily from university presses (about 47%) and well established publishers (41%); almost 12% of the titles were from small presses, associations, foreign or specialty publishers. The test was not meant for extraordinary orders, but for the typical order from these two libraries—current imprint and standard academic titles which should be easily acquired. Books were chosen from standard reviewing sources, mainly from *Library Journal, Choice, Directions*, and lists of titles selected for inclusion in *Essay and General Literature Index*. These are sources on which both libraries have relied in the past, so such orders would have been sent anyway but at different times by each library. They were coordinated, however, as to date sent, specific titles ordered, and vendor chosen. Seventeen batches of orders were sent between January and October 1985, all titles having been veri-
fied in *Books in Print* and/or OCLC. Batches averaged forty-nine titles, but each batch contained a different number, the lowest being twenty-two (eleven per library) and the highest, seventy-six (thirty-eight per library).

The first orders were sent out in January 1985 to the same vendor to see if the University of Southern Indiana’s use of an automated system would invalidate the study. It used the OCLC acquisitions subsystem for all of its orders, while the University of Evansville used a manual ordering system. The major difficulty envisioned was that the time difference might be too great for accurate comparison. After checking with OCLC on its procedures, we found that we could time our transmissions/mailings to avoid any advantage one system might have over the other. Evansville mailed orders on the same day Southern Indiana’s orders were mailed from OCLC. Having determined that this need not be a problem, we went to the next step, sending the same titles to different vendors on the same day.

Each vendor received all types of subjects, prices, and publishers. In each order titles were balanced for type of publisher (university presses, major trade publishers, small and specialty presses); general subject matter (science, social sciences, arts, humanities, general reference); and cost. Total batch costs were between $400 and $800. For this study we sent 836 orders (418 titles from each library), almost 10% of our combined annual acquisitions—209 orders’ each to Midwest, BNA, Scholarly, and Emery-Pratt (not listed in this order on the tables and figures). We kept records of each title; order number; fund (subject); publisher; date ordered; date received (or canceled); price placed (list price); price paid; discount; and back-order or other status-report information.

### The Results

An examination of fulfillment rates shows that vendor 3 provided the highest percentage of ordered titles and vendor 1 provided the lowest percentage. The receipt rate shown in table 1 and figure 1 demonstrates that most orders (85.8%) were received within 120 days. Our combined average time from order to receipt was 65 days, but when the data are analyzed, it can be seen that vendor 1 averaged 71 days; vendor 2, 64 days; vendor 3, 58 days; and vendor 4, 67 days. Lincoln’s 1978 study found delivery time averaging 70 days, but that is based on four years of records and 53 vendors and publishers. Uden states an expectation of a 55% fulfillment rate from domestic jobbers in 60 days; we had received only 47.4% at 60 days and at 90 days, 78.1%. Bell found 41 working days (57-58 days) was the average time from order date to receipt. Vendor 3 met Bell’s standard and surpassed Uden’s, but from the other three vendors we did not find delivery time improved over those studies. Thus vendor 3 provided the greatest number of titles and provided them in the shortest period of time (see table 1 and figure 1).

Of the 836 orders only 10, or 1.2%, required more than six months for receipt. In the recent past, two of these four vendors requested that the order period be extended from six months to a year. Our study does not support so long an allowance as an efficient policy. In fact, we see the six-month period as possibly too long rather than too short, since only forty-
TABLE 1

<table>
<thead>
<tr>
<th>Number of Days</th>
<th>Vendor 1 No. (%)</th>
<th>Vendor 2 No. (%)</th>
<th>Vendor 3 No. (%)</th>
<th>Vendor 4 No. (%)</th>
<th>Total No. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-30</td>
<td>18 8.6</td>
<td>10 4.8</td>
<td>15 7.2</td>
<td>4 1.9</td>
<td>47 5.6</td>
</tr>
<tr>
<td>31-60</td>
<td>46 22.0</td>
<td>75 35.9</td>
<td>136 65.1</td>
<td>92 44.0</td>
<td>349 41.7</td>
</tr>
<tr>
<td>61-90</td>
<td>72 34.4</td>
<td>86 41.1</td>
<td>24 11.5</td>
<td>75 35.9</td>
<td>257 30.7</td>
</tr>
<tr>
<td>91-120</td>
<td>23 11.0</td>
<td>11 5.3</td>
<td>14 6.7</td>
<td>16 7.6</td>
<td>64 7.6</td>
</tr>
<tr>
<td>121-150</td>
<td>5 2.4</td>
<td>1 0.5</td>
<td>7 3.3</td>
<td>10 4.8</td>
<td>23 2.7</td>
</tr>
<tr>
<td>151-180</td>
<td>1 0.5</td>
<td>7 3.3</td>
<td>3 1.4</td>
<td>0 0</td>
<td>11 1.3</td>
</tr>
<tr>
<td>Over 181</td>
<td>4 1.9</td>
<td>0 0</td>
<td>5 2.4</td>
<td>1 0.5</td>
<td>10 1.2</td>
</tr>
<tr>
<td>Not Received</td>
<td>40 19.1</td>
<td>19 9.1</td>
<td>5 2.4</td>
<td>11 5.3</td>
<td>75 9.0</td>
</tr>
<tr>
<td>Totals</td>
<td>209</td>
<td>209</td>
<td>209</td>
<td>209</td>
<td>836</td>
</tr>
</tbody>
</table>

Each category signifies a range of time, e.g., 1-30 days, 31-60 days, etc.

```
= Vendor No. 1  = Vendor No. 2  = Vendor No. 3  = Vendor No. 4
```

![Vendor Speed: Column Graph](image)

Figure 1
Vendor Speed: Column Graph

four titles, or 5.3%, were received after 120 days. This performance suggests to us the advisability of canceling after six months, or even sooner, and reordering those few individual titles still needed from another vendor. Our experience with one category further supports this. Of the twenty British titles not received by at least one library, only four were not received by both. The fact that sixteen were received by one library, indicated that the titles were available if vendors had made sufficient effort to acquire them.
Slight advantages may be achieved by such factors as knowing which day of the week is the best day for each vendor to receive orders. Also it is important to check the library profile regularly with the vendor, as both library and vendor procedures may have changed; this possibility may partially account for the high number of titles not received from vendor 1. A vendor's timetable for ordering from publishers and the method of shipping orders to the library make a difference in receipt periods. Our biggest days for receipt of books were as follows: fifty-eight books received on day 61, forty-eight on day 53, forty-three on day 60, thirty-seven on day 56, thirty-six on day 63, thirty-five on day 32, and thirty on day 46. Days 60 and 61 are the ones to notice, since they fall into separate categories. Some title pairs ordered from two vendors were received within a few days of each other—one of each pair falling into the 31–60-day delivery period, while the other fell into the 61–90-day period. We believe one likely reason for this is the ordering and shipping differences among the vendors.

The discount charts (see table 2 and figure 2) indicate differences for each vendor. The most typical discount fell into the 6–10% category (29.4% of titles), with net and 5% next. Only 10.9% of orders were discounted at 12% or higher. We found that the vendors are giving the discounts previously negotiated, but that the discounts vary significantly between libraries: the same title nearly always appeared in its appropriate category for each vendor and for each library, but the discount rate in paired titles varied by as much as 5%. For example, on thirty-six title pairs both vendors charged net, which is itself a highly variable amount, but typically there was significant variation in vendor pricing. In a few instances when the same title was ordered by both libraries from the same vendor, there was some variation in price, possibly due to one copy being in a vendor's stock and another being ordered at a higher price. In a comparison of title pairs, vendor 1 charged the higher price 8.5% of the time; vendor 2 charged more 15.8% of the time; vendor 3, 29.3% of the time; and vendor 4, 36.7% of the time. The higher percentages for

<table>
<thead>
<tr>
<th>Discount</th>
<th>Vendor 1</th>
<th>Vendor 2</th>
<th>Vendor 3</th>
<th>Vendor 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
</tr>
<tr>
<td>Net</td>
<td>3 1.4</td>
<td>96 43.9</td>
<td>39 18.6</td>
<td>40 19.1</td>
<td>178 21.3</td>
</tr>
<tr>
<td>1-5%</td>
<td>63 30.1</td>
<td>0 0</td>
<td>20 9.6</td>
<td>91 43.5</td>
<td>174 20.8</td>
</tr>
<tr>
<td>6-10%</td>
<td>73 34.9</td>
<td>23 11.0</td>
<td>134 64.1</td>
<td>16 7.6</td>
<td>246 29.4</td>
</tr>
<tr>
<td>11-15%</td>
<td>0 0</td>
<td>24 11.5</td>
<td>0 0</td>
<td>51 24.4</td>
<td>75 9.0</td>
</tr>
<tr>
<td>16-20%</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
</tr>
<tr>
<td>21-25%</td>
<td>28 13.4</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>28 3.3</td>
</tr>
<tr>
<td>26-30%</td>
<td>1 0.5</td>
<td>0 0</td>
<td>11 5.3</td>
<td>0 0</td>
<td>12 1.4</td>
</tr>
<tr>
<td>31-35%</td>
<td>0 0</td>
<td>12 5.7</td>
<td>0 0</td>
<td>0 0</td>
<td>12 1.4</td>
</tr>
<tr>
<td>Over 35%</td>
<td>1 0.5</td>
<td>35 16.7</td>
<td>0 0</td>
<td>0 0</td>
<td>36 4.3</td>
</tr>
<tr>
<td>Not Received</td>
<td>40 19.1</td>
<td>19 9.1</td>
<td>5 2.4</td>
<td>11 5.3</td>
<td>75 9.0</td>
</tr>
<tr>
<td>Totals</td>
<td>209</td>
<td>209</td>
<td>209</td>
<td>209</td>
<td>836</td>
</tr>
</tbody>
</table>
Each category signifies a range of discounts, e.g., 0 - 4%, 5 - 9%, etc.

■ = Vendor No. 1  ■■ = Vendor No. 2  ■■■ = Vendor No. 3  ■■■■ = Vendor No. 4

Figure 2
Vendor Discounts: Column Graph

the latter two are due in part to shipping and handling charges.

Such considerations as shipping and handling charges and net charges make quite a difference in a vendor comparison. Vendor 4, offering some of the most attractive discounts, adds shipping and handling charges of an amount that effectively reduces its discounts to some of the least attractive. Vendor 2 offers the highest discounts but also by far the highest number of nets. Of titles sent to vendor 2 some 45.9% were received at net, versus 1.4% for vendor 1 and 18.6% and 19.1% for vendors 3 and 4. University press titles—supposedly strengths of these vendors—also proved interesting. Of these 198 titles, vendor 1 supplied only 1 title at net (but failed to provide 26 university press titles at all); vendor 2 supplied 42 at net; vendor 3, 6 at net; and vendor 4, 2 at net. However, the same vendor (2), with the greatest number of nets, gave discounts of over 30% on 22.5% of the books received. Only 4.8% of all books from the other three vendors received discounts of over 30%. Thus, vendor 1 rates high marks for the fewest nets and usually lowest prices; while vendor 2 gives the highest discounts and the greatest number of high discounts (over 30%); and vendors 3 and 4 significantly undercut their discount structures by adding shipping and handling charges.

While primarily concerned with vendor service in the main areas of
fulfillment, delivery time, and discounts, we also were interested in such service elements as receipt of a paperback, when available, rather than the more expensive hardback (according to our profiles registered with the vendors); communication when problems arise, reports on the status of hard-to-acquire titles; and arrangements for returns and refunds. Other areas of concern were such matters as surcharges for inexpensive or difficult-to-locate books. One of the four vendors adds surcharges, which the others absorb into their overall costs. While this practice is undoubtedly fair, in that it causes libraries ordering materials which are difficult or expensive to acquire to pay for a service other libraries do not require, it is an item to consider when evaluating a vendor’s overall performance for an individual library.

The evaluation of vendor service, aside from fulfillment, delivery time, and cost, is difficult to address because so much of it is subjective. What is viewed as friendliness and helpfulness by one library may be seen by another as intrusiveness. One library may want frequent visits by its vendor representative, while another may prefer telephone contact with a customer service representative. Some libraries like having credit memos on hand to be filled in as needed; others cannot use this service because of internal auditing procedures or a belief that the completion of

![Vendor Speed: Line Graph](image)

Each category signifies a range of time, e.g., 1 - 30 days, 31 - 60 days, etc.

- ■ = University of Southern Indiana
- ■ = University of Evansville
- ◆ = Combined

**Figure 3**
Vendor Speed: Line Graph
credit memos is the vendor’s responsibility.

One area of service which can be studied is reports. We found that vendor 3 consistently made more reports (phone calls were also counted here) to both libraries than the other three. However, vendor 1 sent more reports to the University of Southern Indiana than to the University of Evansville, while vendor 2 sent more reports to Evansville. We are not sure if this is due to the random selection of titles sent to vendors 1 and 2, some elusive item in the libraries’ profiles, or possibly some correlation between the reports and the rate of vendor speed and fulfillment. Overall, vendor 3 consistently ranked highest in all areas of service to both libraries.

CONCLUSION

This was a limited study designed to provide local data. We found no other study which combined unrelated libraries, an area that may need further attention. We validated the study for ourselves by checking our results against previous years’ records, but the differences between the University of Evansville and the University of Southern Indiana are large enough to cause us to caution others in the use of our data for other than comparative purposes (see figures 3 and 4). The nature of the study

![DISCOUNTS](image)

Each category signifies a range of discounts, e.g., 0 - 4%, 5% - 9%, etc.

- ◆ = University of Southern Indiana
- ■ = University of Evansville
- ◊ = Combined

Figure 4
Vendor Discounts: Line Graph
made it impossible for us to compare an entire year’s orders. Even though we may duplicate other titles throughout a year, individual library needs dictate different ordering dates for them. But we have been able through this study to identify certain vendor characteristics that should enable us to make better choices in the future.

This study reinforced some obvious but frequently overlooked details about vendors. They are not the enemy; they provide an essential service, usually in a friendly, helpful manner. But they must make a profit in order to survive in a very competitive and relatively small market with many variables over which they have little or no control. They do not work for the library, but they do serve libraries if librarians work with them. Librarians need to be aware of vendor strengths and weaknesses in order to make appropriate decisions. We strongly recommend a vendor study to librarians in need of revised procedures, in anticipation of automation, or in need of tighter financial control. As helpful as others’ studies may be, there is no substitute for local data on which to base decisions on vendor selection. We plan to use the results of this study as a measure for future data. The results are well worth the effort, and the findings provide strong supportive data for management decisions in acquisitions.

REFERENCES AND NOTES

1. Davis suggests 100 titles per vendor as a minimum; we considered that should be doubled in a comparative study. See Mary Byrd Davis, “Model for a Vendor Study in a Manual or Semi-Automated Acquisitions System,” Library Acquisitions: Practice and Theory 3:53-60 (1979).


5. Bracken and Calhoun suggest shortening this period from five or six to three or four months, based on a study in which they reordered unfilled orders and received them from the second vendor. James K. Bracken and John C. Calhoun, “Profiling Vendor Performance,” Library Resources & Technical Services 28:120-28 (Apr./June 1984).

Fifteen Years of Automation: Evolution of Technical Services Staffing

Karen L. Horny

How does automation affect staffing? Does it save money? Northwestern University Library's decade and a half of experience with computer support for processing operations provides an unusually long-term view for analyzing the impact of automation upon staffing. Technical services staff reallocations and reductions, the resulting improvements in services, and the savings in salaries are discussed.

In any discussion of library automation one question is sure to arise: does automating save money? Where technical services operations are concerned, this question must be viewed primarily in terms of staffing. It is commonly accepted that automation allows efficient and accurate sharing of bibliographic information, but the extent to which it leads to savings in staff time or enables a less expensive staffing configuration has been a matter of some debate. In part because of the natural tendency not to relinquish budgeted staff positions, but to try instead to do additional tasks with existing personnel, the number of staff is often not reduced after introducing automation, although assignments may be substantially altered. It has also been observed that new automation-related tasks often occupy time saved by elimination of other steps that were necessary in the previous manual system. For example, catalogers must now understand and apply the MARC format, including use of tags and fixed fields, and acquisitions staff must be concerned about the display of provisional records in the public online catalog.

Because automation often costs significant amounts for equipment and operations, considerable savings in salaries may be needed to balance the new expenses. Given the complexity of the issues and the time required to observe the extended effects of automation, few libraries have had an opportunity to assess the direct results of relying upon computer support for local operations. Northwestern's decade and a half of experience provides an unusually long-term view.

Although Northwestern University's use of an integrated automation

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system has effected changes in all areas of library service, this discussion focuses specifically on staffing alterations in the "classic" technical services areas of acquisitions, serials control, and cataloging. Over the span of fifteen years of computer-supported operations, Northwestern has taken actions that have led to significant positive results for both the library’s budget and services. We have been able to make moderate reductions in the size of the technical services staff, more than offsetting an associated rise in a number of position-classification levels. Several professional positions have been relinquished, as well as some half-dozen support-staff slots. At the same time, we have been able to process somewhat more material and provide more rapid and higher-quality bibliographic control.

**REORGANIZATION FOR AUTOMATION**

The library implemented NOTIS (Northwestern Online Total Integrated System) technical services applications on October 4, 1971. For several years prior to implementation and during the subsequent time that automated support for processing has been fully operational, technical services operations have been closely and almost continually analyzed. In 1967 the library hired a systems analyst to begin a thorough review of manual procedures and to develop a plan for automation applications. The Technical Services Division at that time consisted of the Order Department, Catalog Department, and Bindery and General Services Department. Serials were processed along with monographic materials. "General Services" encompassed marking and physical "end processing" of items as well as receiving and mail services for the entire library. Mail handling shifted to a newly formed Administrative Services Division in 1970, leaving a Bindery and Marking Department in Technical Services (see figure 1).

**THE SERIALS DEPARTMENT**

In anticipation of both a new building and a new computer support system, the library administration planned an initial reorganization of various operations. In Technical Services this led to the formation of two new departments: Serials and Search. The Serials Department received responsibility for acquisitions but not cataloging functions for periodicals. Formation of the department was at least partially a result of a planned serials record-conversion project (begun in 1970, following the move into the library’s new main building) and in anticipation of online serials control operations. Identifying staffing responsibility for this significant alteration in operations was an important factor in the administrative decision to form a separate department.

**THE SEARCH DEPARTMENT**

Creation of the Search Department was even more clearly related to automation planning, since from the beginning NOTIS was intended to operate as a fully integrated acquisition and processing support system. During previous manual operations, there were two separate groups of searchers, one doing pre-order work in the Order Department and the
other providing pre-cataloging data in the Catalog Department. We determined not only that many of the searching steps were partly redundant but also that when a single online record would be used, first for acquisition of an item and later for cataloging, it was important to have the most accurate and complete descriptive data available as early in the process as possible. Given that assumption, it made sense to gather all the searchers together into one unit. To ensure that appropriate balance would be maintained between pre-order and pre-cataloging search services, this unit was established as an independent department. The importance of earliest and fullest access to accurate bibliographic information was reinforced yet again when public use of the online catalog was implemented and all library users were able to benefit from technical services work from the beginning of the actual order processing. Because maintaining consistency of entries is the only way to ensure effective access to the data, searching has continued to require significant amounts of staff attention in order to provide the best user service.

As years passed and experience resulted in clear understanding and acceptance of the search unit’s multiple responsibilities, it became possible to reconsider justification for the decision to maintain a separate department. In 1978 the Search and Order departments were merged to form the Acquisitions Department, the two former departments retaining their identity as sections.

AN AUTOMATION COORDINATOR AND A DATA CENTER

Just prior to the implementation of NOTIS there had been a total of five professional librarians and 19.17 support staff working in the Search
and Order departments. While planning occurred for the introduction of automation, one librarian was assigned responsibility for training staff and developing documentation. She was soon asked to coordinate all automation procedures for Technical Services and, eventually, to assume responsibility for more extensive procedural and training assistance as public services personnel, including bibliographers and branch library staff, became dependent on the computer system. Her position moved out of the Search Section when she was asked to include among her duties overall supervision of operations for the library’s Data Center, a newly formed department in Technical Services. At that time, 1972, NOTIS was operating on a computer shared with the university’s Administrative Data Processing. The room in the new main library building that had been designed to house a dedicated computer was instead occupied by the first cluster of terminals—six IBM 2740 units much like teletype machines—on which all of Technical Services’ monograph acquisition and cataloging automation-supported activities were performed. Three staff members from the former typing unit of the Catalog Department received full-time assignments in the Data Center, while others from the Order and Catalog departments were assigned in shifts as terminal operators, and evening schedules, primarily for student assistants, were arranged.

In 1974 video display terminals (VDTs) were installed and, as additional equipment was acquired, the units were distributed into the Order and Catalog departments. The library obtained its own computer in 1979 and a library assistant at a high position-classification level, working in the Data Center, developed an interest in programming and was reassigned outside Technical Services to the library’s Information Systems Development Office (ISDO) in 1981. Subsequently, the remaining two nonprofessional positions in the Data Center assumed more hardware-related responsibilities and left the division in 1982 to report to ISDO. With that redefinition of responsibilities, Data Center ceased its existence as a Technical Services department. As automation activities became ever more pervasive throughout all divisions of the library and the procedures coordinator’s responsibilities expanded, it became less and less appropriate to have this position continue to reside in Technical Services. In 1985 a formal proposal was developed to recognize officially the broader services already being provided and to move the position to a newly formed general automation support group.

**Changes in Staffing Patterns**

**Staff Reductions and Reassignments**

Primarily as a result of automation-related economies, it became possible by 1982 to eliminate a second professional position from the Acquisitions Department in a reallocation of resources beyond the Technical Services Division. Early in 1985 it also became feasible to convert one professional slot into a high-level library assistant position. Although there are currently 18.17 support staff in Acquisitions, only one less than worked in this area prior to automation, a substantial cost savings in this processing activity has resulted from the relocation, reclassification, and elimination of three professional positions.
With the passage of time, considerable evolution has also taken place in the other Technical Services departments. The Bindery and Marking Department went out of existence when its functions were divided between units of the Catalog Department. The “marking” portion (labels, bookplates, security pieces, and ownership stamps) came under the supervision of the librarian who also headed the Catalog Management Section of the Catalog Department. Bindery was attached to the Serials Cataloging Section until a new Conservation Department was created in the Collection Management Division in 1982. At that time all bindery operations except the preparation of serials were transferred out of Technical Services. In the meantime (1980), Serials Cataloging, historically a separate unit within the Catalog Department, became part of an expanded Serials Department. The rationale for this decision was strongly influenced by the way in which the integrated system is based on use of the same record for order, check-in, and cataloging procedures. The ability to use the serials expertise of the staff efficiently was the most significant factor in merging the units.

Excluding the bindery staff from consideration, the 1970–71 count of serials acquisitions, serials cataloging, and marking staff was 4.5 professionals and 13 support staff (including two serials clerks located in the science branch libraries). In 1985–86 the total was 3.33 librarians and 10 support staff. Part of the savings resulted from the elimination of the two positions in the branches by providing direct access to the central database records. Serials Department personnel in the main library could then check in issues of science journals, and there was no longer a need for keeping serials records at the branch library. It should be noted that this move was not a case of economy outweighing service considerations, as the action was not taken until it was demonstrated (contrary to what might have been expected) that speed of serials availability was actually improved by the realignment, which operated on a guaranteed delivery arrangement. Service has always been the primary focus of attention at Northwestern. Economies have generally been achieved from efforts to make the most efficient and extensive use of the potentials of automation. Many savings were of the type that resulted when the availability of computer-produced products allowed the Marking Room to eliminate a position.

Prior to automation, the section of the Catalog Department responsible for cataloging monographs, which also encompassed card catalog maintenance operations, consisted of 10 librarians and 20.97 support staff (including two transferred from the Management Library after it became an administrative part of the central library system). At the time public access to the online catalog was introduced, a new professional position for database management and online authority control activities was established by redefining a support slot. The duties of the support position had been limited to physical, card-catalog maintenance and were eliminated with the closing of that file in 1981.

Automation-related savings in acquisitions activities were identified in a divisionwide reassessment that resulted in the ability to shift staffing resources and establish an additional professional cataloging position for Africana, an area of special and growing interest at Northwestern. Of
course, the addition of another Africana cataloger does not reflect any need created by use of automation but rather serves as a good example of our ability to move funding freed by automation-related economies to meet special service needs. There are currently 11.67 professionals and 17.27 library assistants assigned to monographic cataloging activities (excluding "marking").

The variety of staffing reallocations described above provides some explanation for the changes in numbers of both professional and support personnel from the pre-automation benchmark year, 1970-71, to the present. There are currently 17 librarians and 45.44 support staff carrying out the technical services activities previously handled by 19.5 professionals and 50.97 support staff. Although the collection development budget has increased substantially, inflation has taken its toll and there have been only moderate increases in amounts of material being processed. Because there have been significant staff reductions during the years since automation was implemented, however, productivity per staff member has increased notably (see figure 2).

**Position Reclassification**

An important pattern that appears in the automated technical services environment at Northwestern is the upward reclassification of jobs. Because NOTIS has eliminated much of the work previously done at lower levels, many positions in the library clerk category have disappeared. Work has also shifted as tasks have been revised to best utilize the automated system. Some work previously done by professionals has moved to support staff, and some of the assistants’ tasks are now performed by students. As support position responsibilities have changed, review has placed many jobs in higher grades within the university’s classification scheme. An array of jobs with more responsibility and better financial

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**Figure 2**

Organization Chart II
compensation has helped us to hire a particularly fine caliber of staff, who have contributed especially well to the fullest utilization of automation and the improved efficiency of library service.

**ASSESSING SAVINGS**

To assess the monetary impact of the changes that have occurred in technical services staffing, two methods were applied. Annual savings for the reduction in professional positions were estimated by determining the mean salary of a technical services librarian (omitting department heads from the calculation) for the 1985–86 fiscal year. This figure, $23,961, was multiplied by the 2.5 positions eliminated since the 1970–71 pre-automation benchmark to determine a savings of $59,903 for the current fiscal year. This method was used because professional positions at Northwestern are not categorized with base salaries determined by a classification scheme that would rank individual positions. The minimum actual savings resulting from the elimination of support slots were calculated by arraying the positions as they existed in 1970–71 and 1985–86 according to the university’s classification categories. Fortunately for the greatest degree of validity in this approach, all positions in the library had been reviewed for proper classification just prior to the implementation of automation in Technical Services. For each position category, the 1985–86 entry-level salary was used to determine a basic payout equivalent for the 1970–71 and 1985–86 arrays. Since this calculation makes no attempt to allow for the higher pay levels of longer-term employees, it identifies only savings that would result at the entry level.

As can be seen from table 1, despite the migration of positions into higher classifications, the elimination of 5.53 support staff slots has resulted in a minimum savings of $26,490 for the current year. Adding this amount to the $59,903 savings from the reduction in professional posi-

**TABLE 1**

**Northwestern University Library Technical Services Division Support Staff Positions**

<table>
<thead>
<tr>
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<th></th>
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<tbody>
<tr>
<td>LC I</td>
<td>$10,316</td>
<td>3</td>
<td>$30,948</td>
<td>1</td>
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<tr>
<td>LC II</td>
<td>10,982</td>
<td>2</td>
<td>21,964</td>
<td>1</td>
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<tr>
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<td>12.5</td>
<td>155,375</td>
<td>1.17</td>
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<tr>
<td>AC I</td>
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<td>12,430</td>
<td>1</td>
<td>12,430</td>
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<tr>
<td>AC II</td>
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<td>1</td>
<td>14,192</td>
<td>.67</td>
<td>9,509</td>
</tr>
<tr>
<td>Sec I</td>
<td>14,192</td>
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<td>1</td>
<td>14,192</td>
</tr>
<tr>
<td>LA I</td>
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<td>24.47</td>
<td>347,278</td>
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<td>347,278</td>
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<tr>
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<td>76,050</td>
<td>11.6</td>
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</tr>
<tr>
<td>DA I</td>
<td>15,210</td>
<td>1</td>
<td>15,210</td>
<td>1</td>
<td>15,210</td>
</tr>
<tr>
<td>LA III</td>
<td>18,635</td>
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<td>4</td>
<td>74,540</td>
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<tr>
<td></td>
<td><strong>50.97</strong></td>
<td><strong>$691,064</strong></td>
<td><strong>45.44</strong></td>
<td><strong>$664,574</strong></td>
<td></td>
</tr>
</tbody>
</table>

*L = Library Clerk; AC = Accounting Clerk; Sec = Secretary; LA = Library Assistant; DA = Department Assistant*
tions brings the total annual savings to $86,393.

It is quite true that other budget lines, outside of Technical Services, have increased substantially in order to support automation hardware and operations. This support is, however, by no means limited to acquisitions and cataloging functions but is a major component of the library’s public services. The online public catalog display and circulation system share computer facilities with the processing operations in our integrated environment. Division of costs among functions is extraordinarily difficult and will not be attempted here.

Perhaps even more notable than the economies resulting from staffing reductions in technical services are the significant increase in the quality of work and the improvement in both public and staff access to bibliographic information, and to the materials themselves that have resulted from the application of automation during the past fifteen years. Immediate access to on-order and in-process data, more access points, more thorough editing (resulting in a more consistent catalog), and rapid and extensive catalog database revisions are among the significant advantages of automation-supported technical services operations. The combination of monetary savings and enhanced service has made automation a most effective asset for Northwestern University Library.

REFERENCES

Planning a COM Catalog for the St. Paul Campus Libraries

Peggy Johnson

This paper describes the process used at the University of Minnesota-St. Paul Campus Libraries to provide a public COM catalog, including discussion of the planning and problem solving that resulted in its successful introduction.

The long-term goal of the University of Minnesota Libraries is to install an online catalog. Until it is in place, individual administrative units within the university libraries have been free to choose alternative interim catalogs. Book catalogs were one option, while some units elected to continue filing cards. One of the administrative units, the St. Paul Campus Libraries, selected the COM catalog for its interim format. This paper describes the process of successfully implementing this catalog.

The St. Paul Campus Libraries, an administrative unit of the University of Minnesota Libraries, serve the College of Agriculture, Forestry, and Home Economics and the College of Biological Sciences. In addition to a central library which houses a technical services unit, there are six special subject libraries: Biochemistry; Entomology, Fisheries, and Wildlife; Forestry; Plant Pathology; Veterinary Medicine; and the Andersen Horticultural Library. The collection consists of approximately 250,000 volumes, of which half are held in the central library. Approximately 7,500 volumes are added to the collections each year. There is a union catalog in the central library, while the card catalogs in each subject library include only the records for that location.

From 1977 through 1981, St. Paul Campus Libraries (SPCL) used the OCLC database for current cataloging; in January 1982 the unit began using RLIN. A major reason for this change was the greater ease of reviewing, revising, and updating local records in the RLIN environment. By the spring of 1983, the number of titles cataloged totaled approximately 126,500 of which 66,168 or 52.3% were in machine-readable form. Most of the machine-readable records were OCLC (56,925 or 86%), with only 9,243 or 14% being RLIN records. Sixty percent or 39,901 entries were retrospective conversion records. All

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monograph entries with imprints of 1960 or later were in the machine-readable database.

The COM catalog was the logical interim format for SPCL for four reasons. First, it would serve as an interim catalog between the current card catalogs and a planned libraries-wide online catalog. Secondly, it would provide a union catalog in locations that previously had only local catalogs. Third, it would eventually serve as a backup catalog after the installation of the online catalog, as recommended by Boss and Marcus. And lastly, it would provide an opportunity to review records in the machine-readable files, especially the retrospective conversion records that had never been visually checked.

There were four phases in reaching the goal: (a) planning; (b) producing the COM; (c) problem solving with a "pilot" COM catalog for staff use; and (d) providing a COM catalog for public use.

PLANNING THE SPCL COM CATALOG

The appointment of a project manager was the crucial first step. Ideally, this person would be in charge from the earliest possible moment until the product was accepted for full use and might be involved in ongoing maintenance as well. The head of the project would need technical expertise, managerial skill, and the ability to conceptualize problem solutions. Management literature suggests there are three possible choices: a functional manager, a special project manager, or a general manager, with specific responsibilities assigned to experienced staff members. Each approach has its advantages and disadvantages. The functional manager may be expert in specifying the objectives to be met by the product, since it will be used by his or her staff, but additional responsibilities may be a burden. If a special project manager is available within the organization, this person can often bring needed objectivity and the ability to see beyond current applications and procedures to the project as a whole, but cannot be expected to have as great a stake in the outcome as the functional manager. In the case of a general manager, dividing responsibility among several individuals will allow different kinds of expertise to be brought to bear, but coordinating these efforts can be a real problem, especially if the general manager is already overburdened.

Any of these approaches might have been adopted for the project. Possible project managers included the director of SPCL Technical Services (a functional manager); the University Libraries’ RLIN liaison (serves as manager of a number of projects related to automated records); and the director of SPCL (a general manager). The head of Technical Services was chosen as the project manager because she had the technical expertise and historical experience with SPCL needs and because her unit would have ongoing responsibility for the maintenance of the COM catalog.

With a project manager chosen, the next step was the appointment of an advisory committee. Its members were chosen to represent a variety of potential users and to provide technical expertise. Members were the head of Public Services, the head of the Central Reference unit, a branch
librarian, the COM manager of the university’s Biomedical Library, and the University Libraries RLIN liaison, with the SPCL project manager serving as chair.

The SPCL director charged the advisory committee with reporting its recommendations on five facets of the project: timetable for implementation; physical description of the COM; description of the SPCL machine-readable bibliographic data files; education of staff and patrons; planning of the service areas (staff and patron). Subsequently, five subcommittees were created to examine these issues.

The three objectives identified by the advisory committee represented individual and service unit viewpoints but were not mutually exclusive. A COM was desirable because it would improve physical access to the catalog by locating union catalogs at all SPCL service points; provide records in an easily reviewed format for subsequent quality control; facilitate redirection of labor associated with maintaining a card catalog to other tasks in Technical Services and in the special subject libraries.

Boss and Marcum point out that a library does not necessarily save money by switching from cards to an alternative format. Maintaining a card catalog is labor intensive and, thus, expensive. Establishing and maintaining a new catalog is also costly. However, the advantage is that SPCL would be getting greater return on their investment. Branch library staff would be completely freed from all catalog maintenance. Technical Services staff would spend the time previously devoted to manipulating cards to enlarging and improving the quality of a machine-readable data file. The immediate result would be a quality COM, the ultimate aim a quality local online catalog.

To prepare the final report in a timely fashion and to share responsibility for its content, each of the five subcommittees prepared a preliminary report on one facet of the project on which the director wished to have recommendations. The preliminary reports were to include, where applicable, information and definitions, options with pros and cons, and recommendations.

The committee chair compiled a bibliography of twenty-two informative publications and maintained a master file of published articles. Relevant reports from earlier University Libraries planning committees were also collected and made available. Subcommittees explored their assigned topics with other staff, both to gather and to share information. Philip Schwarz has stressed such interaction as important in developing and maintaining librarywide support.

A timetable served as an outline of the methodology the library would follow. It provided a step-by-step description of what needed to be done to accomplish the project objective—installing a COM catalog for public use. This detailed description was initially assigned a time frame covering eighteen months. Several parts of the planning process could occur simultaneously as long as preceding steps had been accomplished in sequence. The time line was designed early in the planning process; as the project moved toward completion, the committee modified it. Figure 1 presents the revised timetable, which was expanded from eighteen to twenty-four months. The advisory committee inserted a six-month pe-
## TIMETABLE

### I. PLANNING

**A. Project Planning**
1. Identify project manager.
2. Identify advisory committee.
3. List objectives to be met by product.
4. Describe product use by public and technical services, and relationship to products currently used.
5. Specify product budget and identify budgetary limitations.

**B. Product Description**
1. Determine products needed and proposed production schedule.
2. Determine physical characteristics of microform.
3. Describe content and layout of microform catalog.
4. Prepare examples of record layout with display of local data.

**C. Education for Staff**
1. Present objectives of the project.
2. Present product description.
3. Plan a program of staff participation in user education.

**D. Staff Area Preparation**
1. Determine equipment, supplies and furniture required.
2. Determine number, type, and location of work areas.
3. Evaluate sites for electrical and communication requirements.

**E. Service Area Preparation**
1. Determine equipment, supplies, and furniture required.
2. Determine number, type, and location of service areas.
3. Evaluate sites for electrical and communication requirements.

### II. PRODUCTION

**A. File Conversion**
1. Describe existing files to be used in COM generation.
2. Identify additional files to be converted and/or future record categories for COM (e.g. acquisitions records, cross references).
3. Generate consolidated database of records; convert to homogeneous format.
4. Set up procedure for storage and update of master database tape.
5. Identify manipulations and/or special treatment vendor should provide.

**B. Written specifications**
1. Assemble request for proposal.
2. Solicit vendor bids.
3. Evaluate bids comparing alternatives.
4. Choose vendor and negotiate contract.
5. Send specifications to vendor.

**C. Pilot COM**
1. Send sample tape to vendor.
2. Review test printout.
3. Revise specifications; request changes.
4. Request and review subsequent test printouts.
5. Send all tapes to vendor.
6. Order pilot COM.
7. Complete staff site preparation and equipment setup.
8. Install pilot COM and begin staff education.
9. Check pilot COM for production problems and bibliographic errors; request vendor production changes and online record updating.

### III. IMPLEMENTATION

**A. Final Preparation**
1. Complete public service site preparation and equipment setup.
2. Assign responsibilities for service area upkeep.
3. Develop alternatives for use during equipment downtime.
4. Prepare news releases and public relations information.

**B. Installation**
1. Order COM for public use.
2. Install COM.
3. Begin patron education program.

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Figure 1
period during which the COM would be available for staff use and the card
catalog would also be maintained. Management literature recommends
such a transitional period as a beneficial way to ease conversion to a new
application.6

The preliminary report addressing the physical characteristics of the
COM was prepared early in the planning process. This report made rec-
ommendations for records to be included, COM format, record content,
frequency of production, filing conventions, supplements, fiche versus
film, film type, polarity, filing ratio, and frame progression.7 The advis-
ory committee recommended a COM which would best satisfy SPCL
needs.

The description of machine-readable files drew on internal docu-
ments produced while using OCLC and RLIN cataloging subsystems
and data compiled during the local retrospective conversion project. In
addition, the library had detailed information on both files as a result of
specifications written to load the OCLC-generated tapes into RLIN.
The machine-readable records were in two sets: tapes containing rec-
dords converted from OCLC to RLIN format and a set of monthly trans-
action tapes produced by RLIN. The subcommittee decided that the
COM should initially consist of the machine-readable cataloging rec-
ords available on tapes from the bibliographic utilities at the time of pro-
duction. The subcommittee also strongly recommended further retro-
spective conversion.

The education subcommittee addressed two broad areas: staff and pa-
tron education. The preface to its report stressed that the type and con-
tent of instructional materials would depend on the physical characteris-
tics of the COM, its relationship to the card catalog, and the types of
microform readers to be used. They recommended that staff be initially
educated in a series of meetings, then on an ongoing basis. The training
meetings would take the form of presentations followed by ques-
tion/answer sessions. Topics to be addressed included coverage of the
COM (inclusions and exclusions), filing conventions, effect of closing
the card catalog, frequency and content of COM supplements, provi-
sion of current collection data between COM supplements, and use of
microform readers. The advisory committee wished to address staff con-
cerns as quickly and thoroughly as possible. Joseph Rosenthal suggests
that staff involvement strengthens the quality of library services and is,
in fact, instrumental in gaining patron acceptance.8 The committee also
attempted to distribute all preliminary reports widely for staff
discussion—staff were thus briefed on the objectives of the planning pro-
cess and the ultimate objectives for the COM. Finally, the SPCL "Fri-
day Announcements," an internal newsletter, provided further infor-

mation on an ongoing basis.

In addressing patron education, the subcommittee believed the most
important component was a positive staff attitude. Staff needed to know
success stories of other COM installations. The subcommittee routed
articles by Dwyer, Rosenthal, Butler, and O’Connor that recounted
good things about COM catalogs and patron acceptance.9 In addition,
direct patron education was recommended in three categories: initial in-
roduction of the COM into the university community, information to be presented repeatedly, and directional signs.

To make implementation easier, the committee presented the concept of a “pilot” COM for staff use only. Once in place, the pilot would be maintained parallel to the card catalog for a period of six months. This trial period would allow staff to become acquainted with the new catalog format, to consider educational materials and programs based on an actual example of the new format, to identify content and format errors, and to reverse decisions at a time when changes would cause minimal disruption.

This recommendation made site planning easier. The committee chose fiche format for the pilot COM. All staff locations to receive a COM were surveyed for equipment and wiring needs, and necessary items were ordered. The committee delayed site planning for public installations until the pilot COM was in place and being tested: decisions on location and type of microform readers were contingent on the test results.

At this point, the advisory committee’s reports and recommendations were compiled and presented to the director, who accepted them and discharged the committee.

**PRODUCING THE COM CATALOG**

The advisory committee chair now assumed the role of project manager and began to address file conversion and specification preparation. SPCL already had approximately 66,000 machine-readable records; the remaining 48% of the collection was accessible only via cards. Further retrospective conversion was desirable but unlikely before COM production. Staff were able, however, to convert a small file of name authority cross-references made since fall 1982. These were coded and sent to the COM vendor. Cataloging staff made provisions to include new cross-references in each COM edition.

Using the recommendations made by the advisory committee and the file descriptions previously prepared, the project manager was able to begin work on the specifications. Following the advice given by Schwarz, the committee had identified services the COM vendor should provide, appearance of the product, and content of the data SPCL would supply.

After the specifications were written and reviewed, vendor bids were solicited. MARCIVE, a COM vendor in San Antonio, was selected. SPCL and MARCIVE agreed on the specifications, and in May 1983 SPCL shipped the vendor a single RLIN tape for the month of April. MARCIVE was to mount this tape and create a mini-database against which to test the specifications. The vendor produced a test COM in paper printout. The project manager studied this carefully, noted some errors for the vendor to correct, and revised the specifications slightly. The vendor then incorporated the changes in a second paper test COM, which appeared acceptable.

In July SPCL sent the vendor three OCLC archival tapes (54,235 logical records) that had been converted to RLIN format and eighteen
monthly RLIN tapes covering the period January 1982 through May 1983. In August SPCL sent another RLIN-formatted OCLC tape of 2,690 serial records, plus monthly tapes for June and July. The vendor loaded all these tapes to reproduce the SPCL database and ran the pilot COM. Multiple copies were received in November and distributed to all staff sites on December 2.

**PROBLEM SOLVING WITH A PILOT COM FOR THE STAFF**

Once the pilot fiche COM was available, several problems became obvious. The test file had been too narrow to provide examples of every possible type of record. Extensive review identified three levels of problems. Those which affected the user’s ability to find a record were of primary importance and required immediate correction; of secondary importance were problems with holdings information and local notes; least important were cosmetic problems such as number of blank fill characters between location and call number. SPCL immediately began working with the vendor to eliminate these problems. The project leader produced a detailed review of the pilot COM which was distributed to all staff as part of their ongoing education. A summary of the review formed the basis of communication with the vendor.

The most significant problem in the pilot COM was its failure to print filing elements. Because of the mysterious appearance this gave to the COM—added entries filed by invisible titles—SPCL ordered another staff edition, moving the implementation of the first public COM to July 1984. It was essential that this problem be resolved before the COM was presented to the public. In addition to being confusing to the COM user, clearing up the somewhat magical filing was perplexing. The project manager spent considerable time pondering printouts, fiche, online records, and SPCL’s specifications, which stated that no added title-index entry point should appear in the COM if the 245 (title) field had a first indicator of 0. In the first COM, the content of these index points was being suppressed and not printing, but the record was still appearing in the filing sequence as if the added title-index point were visible. Once SPCL made clear that full records as well as appropriately tagged index points were to be suppressed, the problem was eliminated.

Another puzzling problem was the absence of diacritics. Their absence in the paper test files had been attributed to an incomplete character set in the vendor’s print capability. Unfortunately, the diacritics were missing in the pilot COM as well—they were represented by blank fill characters. The project manager spent considerable time exploring this issue with the vendor, only to discover that there were no diacritics on the tapes received. The university’s local data processing unit had stripped them in the process of reproducing the tapes, a development that merely confirms Boss and Marcum’s observation that, despite the best planning, each library will still face unexpected problems. The diacritics problem was not resolved until RLIN sent a snapshot tape which MARCIVIE used to rebuild the database.

The second pilot COM was much improved. All filing elements were visible, and several problems with local notes were resolved.
The pilot COM approach was a success. By implementing an internal COM first, staff had the opportunity to become familiar and comfortable with the format. They were able to plan directional signs and patron educational materials with sufficient lead time. Content and format errors were spotted and corrected. The special subject libraries found the COM so useful as a union catalog that, despite its test status, they quickly made the pilot edition available for patron use.

PROVIDING A COM FOR PUBLIC USE

SPCL staff spent the spring of 1984 preparing for public implementation of the COM on July 1—this was an ideal time because library use is lowest in the summer. Staff would have flexibility in sorting out educational and directional needs. In addition, July is the beginning of the fiscal year and would allow reallocation of resources in Technical Services on an annual basis.

Detailed planning was necessary to coordinate presentation of the public COM. Microfiche reader stands were ordered or identified for relocation, and orders were placed for additional fiche readers and holders, wiring, signs, and handouts. Announcements were sent to department deans. Responsibility for equipment maintenance and fiche filing and refiling was assigned. The staff received information regarding closing the card catalog, record maintenance, and reporting COM errors.

To address the reference staff’s concerns about lack of access to items cataloged between COM editions, monthly RLIN-generated “new holdings lists” were ordered. Though the COM was scheduled for quarterly cumulations, SPCL could expect a four- to five-month production interval due to lags in tape receipt from RLIN and time required for actual reproduction at MARCIVE. The monthly printed lists would be filed sequentially (uncumulated) in reference notebooks and removed as each three months’ worth of cataloging was incorporated in the COM.

In practice, the notebooks have come to function as browsing tools. Patrons seeking a specific title not found in the COM will usually ask a reference librarian to search RLIN.

Activity increased as the July 1984 installation approached. In late May and early June the central union card catalog was compacted and moved to clear an exterior wall for wiring. Wiring and fiche-reader stations were ready by late June, and the first public COM catalog was in place at the beginning of July 1984.

Patrons began using the COM from the very moment readers and fiche were in place. Incredibly, there were no complaints. Directional signs identifying old and new catalogs did not arrive until mid-August. Nevertheless, patrons invariably consulted the COM first. Most public libraries in the Twin Cities metro area have had COM catalogs for a number of years; SPCL staff realized that COM catalogs were not seen by patrons as either innovative or troublesome.

Though there were no complaints, one point of confusion was quickly apparent. The COM specifications called for embedding RLIN record identification numbers as the first note in the bibliographic record. The purpose was to move this number as far from the call number as possi-
ble, but some patrons still managed to take down the ID number instead of the call number. Staff requested that the next COM edition place the RLIN ID number as the last data element, following all local holdings information, separated by a blank line, and left-justified; the call number was right-justified. This change solved most of the patron confusion.

**SUMMARY**

The project began with a clear goal—implementing a COM catalog in the St. Paul Campus Libraries. The goal was achieved in a timely and orderly manner, resulting in a product that met the objectives outlined at the beginning. Technical Services staff were able to redirect resources from maintaining the card catalog to cataloging backlogs and cleaning up the database. The completion of more than 15,000 catalog maintenance transactions in an eighteen-month period significantly improved the quality of the database. Staff in the special subject libraries no longer had to file catalog cards and could provide other services. Union catalogs were provided at all SPCL service points and in other University of Minnesota libraries and were made available for purchase. The catalog was readily accepted by staff and patrons.

The SPCL director, COM advisory committee, and project manager were pleased with the success of the project. The steps followed in planning, producing, and introducing the COM catalog went a long way toward ensuring its success:

- State the goal clearly;
- Develop shared objectives in reaching that goal;
- Develop a time line;
- Involve all levels of staff in the process;
- Share information widely;
- Be flexible.

They are worth remembering when considering other library projects.

**REFERENCES**

4. These included papers produced in June 1980 by a Task Force on the Future of the University Libraries’ Bibliographic File, data and analysis generated during participation in a King Research study called "The Library Catalog Cost Model Project" (Fall 1979), and a report prepared by the Task Force on Retrospective Reclassification of the University Libraries Collections (June 1978).


Sorting a Mountain of Books

Fred W. Matthews

A library depends on an orderly arrangement; if this order is lost, the library is lost. Following a library disaster, what had been a library became a jumble of 100,000 volumes. Discouraged by the thought of manually sorting this mountain of books, we devised a system using computers that enormously simplified the task.

Much has been learned from major disasters on how to handle wet and soiled books. The excellent critical studies and research following the Florence flood (1966) and the Corning Museum disaster (1972) have laid the basis for manuals which give good technical advice. The Law Library fire at Dalhousie University, Halifax, Nova Scotia on August 16, 1985, made good use of the recommendations for moving wet books, for freezing, and for air and vacuum drying. The details of the fire and the recovery of the books are described in an article published by the Canadian Library Journal. The present article describes an innovative sorting method which provided a very efficient procedure for reshelving a collection of books that had lost all semblance of order.

The intense fire completely destroyed the top floor of the library, which housed the reading room and the reference collection, including statutes, reserved items, and newly received material. All volumes on this floor, approximately 56,000, were lost.

The prompt action of the firefighters soon controlled the flames. The concrete construction of the floor prevented penetration of the flames to the floor below, which housed the main stacks containing about 100,000 volumes. However, water streamed through the ceiling, and heavy black smoke penetrated everywhere, leaving most books wet and dirty. Removal of the books was a demanding task carried out by more than 100 volunteers, who, in arduous circumstances, boxed the books, which were then lowered to the ground by cranes (see photograph). The very wet books were sent to a commercial freezer warehouse, and the boxes of damp books were sent to a nearby gymnasium where they were set out in fan-like fashion to remove the strong smoke odour by drying and airing.

The contract to dry the frozen books and clean and sort all of the vol-

Fred W. Matthews is a consultant in paper conservation and a retired professor, School of Library Service, Dalhousie University, Halifax, N.S.
volumes was let to the San Francisco firm Document Reprocessors, owned and managed by Eric and Muriel Lundquist. This firm has developed a mobile vacuum-drying unit which was brought to Halifax to dry the 15,000 books from the freezers. Cleaning was done using a type of "raw rubber" sponge developed for cleaning walls and furniture after fires. Analysis of these sponges at the laboratories of the Canadian Conservation Institute in Ottawa, Ontario, showed that they contained residues of rubber curing and plasticizing agents and some calcium carbonate (limestone) to act as a mild abrasive but no deleterious cleaning solvents. The laboratory concluded that there was a minimum risk of damage to the books by use of these sponges.

Initial attempts to maintain order in the collection during these operations were soon abandoned as impractical. The repeated moving and drying and cleaning operations had thoroughly mixed the collection. As the cleaning proceeded, the preliminary sort separated items having a Library of Congress (LC) classification label from those that did not. The latter were for the most part volumes of bound journals. This step left about 65,000 labeled items to be sorted into shelflist order.

No reasonable method of sorting this number of books could be envisaged. All seemed to be very labour-intensive and time-consuming. The use of computers was suggested by Eric Lundquist and as their use was considered, enthusiasm grew for this approach to the problem. All concerned contributed ideas, but the main systems programming was undertaken by Leslie Foster, the systems librarian in the Law Library. Programs were written in BASIC and tested for the input of data and for the sorting and printing of lists. Within a day or two the system was ready to receive data.

Crane-load of boxes to be filled with books.
Trucks awaiting boxes from the library floor.

For the journals, the file of the computer-compiled union list of serials for the university libraries of the Halifax area was available. From this file the journal titles for the Law Library were selected, sorted into alphabetic sequence by title and assigned a sequential number. This number served as the identification for the title, to be used as the sorting proceeded, first by colour of binding, then by title. As enough books of one title accumulated to fill a box, it was closed and numbered with large, bold letters. In this way work could proceed on several titles at once as the newly trained workers went to work on the mountain of books. When the boxes were transferred to their new library location and sorted by number, they were then ready for final sorting by volume number as they were shelved. This step was started eight weeks after the fire and finished two months later.

The classified items presented a more complex sorting problem. About two-thirds of the 65,000 volumes had LC book tags attached to the spine, while the remaining thin items had LC tags on the lower left corner of the front cover. The spine-labeled items were stacked in piles about eighteen inches high on tables and the cover-marked items laid flat, shingle-fashion, with the labels showing. Table and floor space was used up rapidly, necessitating the stacking of tables on tables to provide a second level on which to stack books. An aisle plan was developed to provide a location "address" for the stacks and allow a wide center aisle for the final sorting and boxing of the books. Space ran out on the tables for the shingled items and as an alternative, these were placed in numbered boxes on edge, file-fashion. This method of handling thin items proved easier to use and, in retrospect, should have been used for all cover-labeled items.

The classification scheme used by the Law Library was the Los Angeles County Library law schedules, as modified by Dalhousie Law Li-
library for Canadian use. The format is compatible with the LC system and uses two alpha class designations and a main subject classification number followed by author Cutter designations, volume number, and year where applicable. Consideration had to be given to the format of each of the possible five lines of the tag to ensure that the resulting record would be machine-sortable. In addition to the aisle, stack, and classification numbers, the estimated thickness, to the nearest half-inch, was entered in the record. All cover-labeled items were arbitrarily assigned a thickness of 0.5 inch to simplify the input process.

For the computer operations, a small portable unit was needed for gathering data and a large general-purpose machine for sorting and printing the large files involved. The main computer system of the university, a CDC Cyber 170, was available for sorting and printing, but direct input to this unit would have required the installation of multiple input lines, an expensive and time-consuming project.

As we looked about for a small portable computer for data entry, the local Radio Shack Computer Center was approached. They showed immediate interest in this innovative process and readily agreed to loan twelve Tandy 100 portable computers for the input operation. These 24K battery-operated units, each with a built-in modem and a serial port for the transfer of data, proved very satisfactory. In addition to the input program, each unit could retain about 400 records, at which time they were transferred to the CDC Cyber.

A typical record was as follows, where A stands for an alphabetic character, 9 for a numeric digit, and Z for an alphabetic or numeric character:

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>.</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>.9</td>
</tr>
<tr>
<td>Thickness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>Aisle number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>999</td>
<td>Stack number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AA</td>
<td>Alpha class number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9999.99</td>
<td>Subject number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZZZZZ</td>
<td>Free form field</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZZZZZ</td>
<td>Free form field</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZZZZZ</td>
<td>Free form field</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As a source of temporary help, the contractor, Document Reprocessors, used the international firm, Kelley Services, which has workers available in a number of categories. For the cleaning and sorting operations, its category of workers designated "light industrial" proved most suitable; but for data recording with portable microcomputers, the "data processors" category was tried first. Preliminary trials had indicated that an input rate of about 1,000 records per operator per day could be expected. Productivity checks were built into the input program. These checks first showed a disappointing rate of only about half the estimate. The worker category "word processors" was then tried and, in general, these employees proved more flexible and better suited for the job. With careful selection, and growing familiarity with the task, eight operators were found who could achieve a rate of about 1,200 records per day (see photograph). Data input was completed in eight working days.
As the data accumulated in the portable units, the records were transferred to the CDC Cyber and the units cleared for reuse. Each new set of records was printed, inspected, and edited before merging with the main file. In this way quality control was maintained on the data input. The input program called for data line by line, with a visual check before acceptance of the completed record by the operator. A satisfactory uniformity of format and accuracy of data were maintained.

Trial sorts of the main file showed that a good shelf-order listing could be achieved, but it was not until all the data were in the file that a complete shelflisting could be run. The books from the freezer presented a special problem in that they would not be available for sorting until after the seventeen-day drying cycle. Fortunately there were only 500 of these, and they were entered in the file, before drying, under a separate aisle number. This allowed identification, in the future, of the books which had been through the vacuum-drying process.

Using the thickness data, the program accumulated items to fill 30 inches of a bookshelf, leaving 6 inches on the 36-inch shelf for expansion. These shelf-by-shelf listings showing aisle and stack number became the "pick lists" for sorting the books into shelf order. On the individual shelfists the items were shown twice, on the left in aisle and stack order number for the picking operation and on the right, in classification order for sorting (see figure 1). On one pass through the aisles, the books could be selected, accumulated in a book trough in the center aisle for sorting, and transferred to a box lid for final inspection. As picking started before the books from the dryer were available, any list showing one of these items was segregated by the computer, printed last, and held for later processing.

The boxes used (31 x 10 x 10 inches) were custom-designed to hold the books which would occupy 30 inches of shelf space. Made of heavy card-
## Sorting a Mountain of Books

### Typical “Pick List” for the Selection of Books in Shelflist Order

<table>
<thead>
<tr>
<th>SHELF</th>
<th>300 SHELF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Books from dryer in this list</strong></td>
<td><strong>Books from dryer in this list</strong></td>
</tr>
<tr>
<td>19 300 1166JX 4281. C85</td>
<td>1 300 2392 JX 4263. P6 W93 C.2</td>
</tr>
<tr>
<td>20 300 1166JX 4281. D23</td>
<td>2 300 2026 JX 4263. P7 B72 C.1</td>
</tr>
<tr>
<td>23 300 1166JX 4281. G79</td>
<td>3 300 2392 JX 4263. P7 B72 C.2</td>
</tr>
<tr>
<td>12 300 1442 JX 4263. P7 R45</td>
<td>4 300 1136 JX 4263. P7 C46</td>
</tr>
<tr>
<td>8 300 1442 JX 4263. P7 F85 1970 C.2</td>
<td>5 300 9023 JX 4263. P7 D92</td>
</tr>
<tr>
<td>9 300 1442 JX 4263. P7 J83</td>
<td>6 300 1101 JX 4263. P7 D92 C.1</td>
</tr>
<tr>
<td>11 300 1442 JX 4263. P7 O32 C.2</td>
<td>7 300 9048 JX 4263. P7 D92 C.2</td>
</tr>
<tr>
<td>14 300 1442 JX 4270. G73 G39</td>
<td>8 300 1442 JX 4263. P7 F85 1970 C.2</td>
</tr>
<tr>
<td>2 300 2026 JX 4263. P7 B72 C.1</td>
<td>9 300 1442 JX 4263. P7 J83</td>
</tr>
<tr>
<td>10 300 2034 JX 4263. P7 O32 C.1</td>
<td>10 300 2034 JX 4263. P7 O32 C.1</td>
</tr>
<tr>
<td>17 300 2034 JX 4281. B32</td>
<td>11 300 1442 JX 4263. P7 O32 C.2</td>
</tr>
<tr>
<td>21 300 2034 JX 4281. G21</td>
<td>12 300 1440 JX 4263. P7 R45</td>
</tr>
<tr>
<td>22 300 2034 JX 4281. G74</td>
<td>13 300 8065 JX 4263. L2 V97</td>
</tr>
<tr>
<td>15 300 2036 JX 4270. G73 N76</td>
<td>14 300 1442 JX 4270. G73 G39</td>
</tr>
<tr>
<td>18 300 2323 JX 4281. B41 C.2</td>
<td>15 300 2036 JX 4270. G73 N76</td>
</tr>
<tr>
<td>1 300 2392 JX 4263. P6 W93 C.2</td>
<td>16 300 4428 JX 4270. G7 F84</td>
</tr>
<tr>
<td>3 300 2392 JX 4263. P7 B72 C.2</td>
<td>17 300 2034 JX 4281. B32</td>
</tr>
<tr>
<td>16 300 4428 JX 4270. G7 F84</td>
<td>18 300 2323 JX 4281. B41 C.2</td>
</tr>
<tr>
<td>13 300 8065 JX 4268. L2 V97</td>
<td>19 300 1106 JX 4281. C85</td>
</tr>
<tr>
<td>5 300 9023 JX 4263. P7 D92</td>
<td>20 300 1106 JX 4281. D23</td>
</tr>
<tr>
<td>7 300 9048 JX 4263. P7 D92 C.2</td>
<td>21 300 2034 JX 4281. G21</td>
</tr>
<tr>
<td>6 300 1101 JX 4263. P7 D92 C.1</td>
<td>22 300 2034 JX 4281. G74</td>
</tr>
<tr>
<td>4 300 1130 JX 4263. P7 C46</td>
<td>23 300 1106 JX 4281. G79</td>
</tr>
<tr>
<td>99 300 SHELF LENGTH 27.2 INCHES</td>
<td>99 300 SHELF LENGTH 27.2 INCHES</td>
</tr>
</tbody>
</table>

---

Fig. 1

Typical “Pick List” for the Selection of Books in Shelflist Order

board, with double walls, the boxes were assembled without staples or tape and thus could be reused. The 3-inch-deep box lid, of similar construction, had sufficient strength to serve as a tray for sorting and inspection. The 10-inch width was sufficient to allow about 80% of the books to stand on edge in the box, but if this had been 11 inches, an estimated 95% of the books could have been accommodated. The numbered box was then inserted into the lid and the whole inverted, leaving the books standing spine-down for storage.

At the end of the “pick lists”, about 2,000 books remained on the tables, representing accumulated errors in input and picking. These were manually sorted by LC alpha-class designations and boxed to be merged later with the ordered items when shelving. The number of books in a box varied from 8 to 50 with an average of about 30. There were 2,414 boxes, numbered and stacked 6-high, awaiting the next step.

It would be several months before shelves were available to receive the
books, but in the meantime the books were retrievable, because there was a computer listing showing the box number of any item in the collection. The books were finally back on the shelves in April 1986, eight months after the fire.

REFERENCES

Dear Editor:

From: Richard Heinzkill, Reference Department, University of Oregon Library. — I want to thank Bonita Bryant for focusing in on the collector segment of collection development in the April/June issue of LRTS ("Allocation of Human Resources for Collection Development"). More needs to be said about determining the workload for the rank and file librarians engaged in collection development no matter what the organizational pattern of that activity within the library. To set workload only by size of budget, number of faculty members in the department, or size of graduate program is too simplistic and to develop a quantitative model as Ms. Bryant suggests seems too complicated. She does discuss other methods. One of them is the list of tasks in priority order at Brigham Young University. In the interest of furthering discussion along those lines, I'd like to suggest some factors that cause workload to vary between selectors. Perhaps by melding my list with BYU's and then weighting the items a work profile of each fund that comprises collection development in a particular library could be drawn up. Variable factors:

1. Size of budget.
2. Use of approval plans and percentage of budget spent on them.
3. Pattern of publishing in the subject, e.g. university presses, research institutes, societies, foreign presses, etc.
4. Types of book reviewing media, e.g. are there one or two major reviewing sources or must many sources be used.
5. Extent the program is involved in non-book material.
6. Faculty contact person is interested and cooperative.
7. Faculty contact person is aware of research methodologies in the subject.
8. Selector works with a departmental library committee.
9. The department is an umbrella for several disciplines, e.g. the speech department includes theater and film, the physical education department includes leisure studies and dance, the social work department includes drug abuse counseling and gerontology.
10. Expensive sets are regularly published in the subject area and grant proposals are written to acquire, or other groups are contacted to acquire, e.g. The Friends of the Library.

Response from: Bonita Bryant, Head, Collection Development Department, University Libraries, State University of New York at Albany. — I am pleased that my article has stimulated Mr. Heinzkill’s deliberations and alternative proposal. How-
ever, it is difficult for me to envision quantification of factors 3–10. I would be very interested in further development of this list of variables into an equation and description of the method used for enumerating each factor.

We must remember that we are working with hours of work-time. We need examples of methods used to apportion workload and responses from practitioners whose efforts are governed by those methods.

I look forward to communications in this vein from as many sources as possible to help us address this important issue.

From: Sanford Berman, Head Cataloger, Hennepin County Library, Minnetonka, Minn. [Abridged]—... responses to the July/Sept. 1986 LRTS: A citation for the multi-part, grassroots DDC survey—a truly unique and exciting achievement—that somehow didn’t get listed by Dale and Wilson under “Classification”: [The editor specifically requested the contributors to compile selective, not exhaustive, bibliographies for the July/Sept. 1986 issue.]


And a few addenda to Dale/Wilson’s useful list of 1984–85 thesauri:


“This structured vocabulary reflects the scope of DOE’s research, development, and technological programs.


A trilingual vocabulary in 2 parts. “Part 1 contains 3 separate English, French, and Spanish alphabetical KWOC ... indexes. ... Part 2 is a systematic display of all descriptors grouped in ... 19 major subject areas. ...”


... Especially rich in scope notes and definitions. ...

Plus two dictionaries that should prove helpful to catalogers as sources of both specialized terms and cross-references to standard descriptors:


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Please follow these procedures for manuscripts to be submitted to Library Resources & Technical Services:

1. Submit original, unpublished articles only. Do not submit manuscripts being considered for publication elsewhere. Articles of four to six thousand words on subjects of interest to technical services librarians are preferred.

2. Write the article in a grammatically correct, simple, readable style. Remember that the author is responsible for the accuracy of all statements in the article.

3. Give the article a brief title; if the title is not descriptive of the content, add a brief subtitle. On a separate page give the title, the name(s) of the author(s), and the title and affiliation of each. If the paper has been presented at a conference (the proceedings of which will not be published), identify the conference by name and date on the cover page.

4. On a separate page, type the title and subtitle, followed by a brief abstract, typed double-spaced. Do not identify the author(s) here or elsewhere in the manuscript.

5. Type the manuscript, double-spaced, on 8½-by-11-inch nonerasable paper. Use fresh, bright typewriter or computer printer ribbons. Please TYPE ALL QUOTED TEXT DOUBLE-SPACED.

6. Consult Webster’s Ninth New Collegiate Dictionary, supplemented by Webster’s Third International, for spelling and usage; prefer the first spelling. Verify the spelling and accuracy of names in an appropriate reference; don’t rely solely on your memory.

7. Consult The Chicago Manual of Style, 13th ed., revised and expanded (Chicago: Univ. of Chicago Pr., 1982) for capitalization, abbreviations, etc.

8. Follow the examples and suggestions in chapter 12 of The Chicago Manual in designing tables. Submit each table on a separate page at the end of the paper. Indicate the preferred placement in the text with an instruction in brackets. Use tables sparingly and provide each with a brief, meaningful caption. TYPE TABLES DOUBLE-SPACED THROUGHOUT.

9. Be prepared to supply camera-ready copy for each illustration, if your paper is accepted. Accompany the manuscript with a photocopy of each and a brief, meaningful caption noted on the verso.

10. Submit all bibliographic citations on separate pages at the end of the article. PLEASE TYPE ALL “REFERENCES” DOUBLE-SPACED. Use superscript numbers throughout the text, but do not type the numbers as superscripts in the “References,” and do not indent the first line. Use “References” to document the text, not to amplify it. Note that a shortened form (not op. cit. or loc. cit.) is used for subsequent references to a previously cited work. If no other reference intervenes, use “Ibid.” to take the place of the elements of the previous reference that apply. Do not underline “Ibid.” A reference to another article from a previously cited collection can be shortened by means of a cross-reference. VERIFY EACH CITATION CAREFULLY.

The fictitious examples below illustrate the preferred style.


2. Neville A. Fisher and others, Publishing Patterns of the Next Decade, Li-
3. Ibid., p.194.
11. Send three complete copies of your manuscript, including copies of the illustrative material (see also instruction #9) to: Dr. Sheila S. Intner, Editor, LRTS, Simmons College Graduate School of Library & Information Science, 300 The Fenway, Boston, MA 02115. Overseas contributors may send one copy only. Allow approximately ten weeks for the referees’ and editor’s review. Manuscripts will be returned only if accompanied by a self-addressed envelope, large enough and with sufficient postage for the return of all copies.

The LRTS editorial office in general follows the Guidelines for Authors, Editors and Publishers of Literature in the Library and Information Field, adopted by the American Library Association Council in 1983 and available from the ALA Executive Offices. Information about copyright policies also is available at ALA Headquarters.

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