From Smart Guesser to Smart Navigator: Changes in Collection Development for Research Libraries in a Network Environment

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ABSTRACT

NETWORK TECHNOLOGY, ELECTRONIC publishing, and Internet communication are changing the practice of collection development in research libraries. The proliferation of both commercialized electronic information products and the electronic resources available over the Internet require selectors to extend their traditional expertise to include knowledge of various electronic resources and acquisitions skills using computer-facilitated tools and procedures. The techniques will enhance both the selectors' capability in coping with changes and their performance in information selection, but the selectors must take the initiative to explore these possibilities.

A TECHNOLOGICAL ENVIRONMENT

The current trend of dramatic advances in computer network connections suggests that research libraries have been moving into a new technological environment. In this environment, computers are networked locally and connected to each other through "information highways." Many databases and other electronic resources previously available only locally are now accessible to anyone with network connections. Geographical distance, once a seemingly insurmountable barrier to the instantaneous demands of remote users, has become much less relevant in the quest for information. Institution-based differences between the "fortunate" and the "less fortunate" research communities regarding accessibility to information resources are starting to blur and will be redefined by increased connectivity.

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The changes occurring in this new environment for research libraries are both visible and profound. Reference service, once constrained to locally created databases, now extends to a host of electronic resources ranging from locally licensed or mounted commercial databases to online public access catalogs (OPACs) of distant collections available for searching through the Internet. This extension has enhanced both the quality of reference services and user satisfaction. The most visible beneficiaries of network connections within the library are perhaps interlibrary loans and document delivery services. For interlibrary loans, access to remote OPACs enables a borrowing institution to confirm holdings, ascertain circulation status, and check bibliographical information before registering a request with a potential lender. It may also aid in determining a preferred lender in cases where several institutions own the item in question. For document delivery services, networks are beginning to demonstrate their potential for instant delivery through the growing number of items stored in digital format. Electronic mail, listservs, and discussion forums on the Internet offer librarians an interactive channel through which they can communicate with colleagues on issues of mutual concern. Such a powerful communications system not only enables librarians to share their thoughts with colleagues across the country and throughout the world, but also significantly improves local organizational communications, particularly to those libraries with branch locations. Indeed, the potential benefits of network communications for professional development, problem solving, and organizational efficiency can hardly be overestimated.

Changes in Collection Development

Less visible, but by no means less important, are changes about to occur in collection development. Compared with other library functions—i.e., cataloging, circulation, reference, and interlibrary loans—collection development has hitherto experienced, in general, fewer changes through technology with the exception of acquisitions processing. While many librarians in other positions experienced increased need for computer skills, these skills were generally less important for bibliographers. Even after CD-ROM products became popular in libraries, their selection and acquisition tended to be handled by systems librarians or online coordinators (Beaubien, 1991, p. 43). Although many bibliographers have acquired high levels of computer proficiency, these skills still tend to be emphasized far less in position descriptions for bibliographers than for other librarians. However, this disparity will not last for long.
Once again, information technology acts as the agent of change. Networks have created new potentials for improving many aspects of collection development such as selection, acquisition, evaluation, and interinstitutional cooperation. Electronic publishing is another technological aspect that will help shape the future of collection development. Librarians have closely monitored the development of electronic publishing—from commercial bibliographic databases; full-text databases; and CD-ROM products to electronic journals and monographs; and full-image and multimedia resources. While rapid advances in computer storage capabilities, information storage and retrieval techniques (including image scanning), and audiovisual technology have surely provided the impetus for this progress, it is network technology and the Internet that have brought about the recent proliferation of formal and informal electronic resources. Without the Internet, many of the new electronic journals would not have been created, nor would a large body of literature from numerous online forums, listservs, and conferences. The informal online literature may be less rigorous, but it is widely consumed and seems likely to play a role in the future of scholarly communication, education, and lifelong learning. The convenience of delivering an electronic text via the Internet, the predictably explosive growth in network subscribers, and the significant improvements in traffic control and navigation to be brought by further development of the National Research and Education Network (NREN), have encouraged—if not actually provoked—electronic storage and preservation of esteemed texts. Those projects are being done by the Center for Electronic Texts in the Humanities (CETH), Project Enlighten, and Project Gutenberg. The advantages apparent in digital scanning over microfilming in preserving, reproducing, and disseminating paper-based images support the prediction that this new technology is well on its way to replacing microforms (Billings, 1991, p. 411).

Change in the research library environment is multidimensional. If the recent advances in information technology represent the high points of this change, the deterioration of funding and the rising costs of operation clearly represent the low points. It is this combination of positive and negative in the present climate of change that compels research libraries to study the challenges and opportunities presented by interior and exterior forces and to explore strategies to cope with them (Gardner, 1991, pp. 18-22). One philosophical change appearing repeatedly in the library literature is the shift in emphasis from ownership to access. Mitchell and Saunders (1991) pointed out that the concept of the "virtual library," which eliminates the distinction between local and remote users, created
a dilemma for libraries whose allocations were based on in-house services. Rooted in the conflict between ownership and access, this problem will intensify with the growth of networks (pp. 8-9). In an article entitled, "From Ownership to Access: A Dilemma for Library Managers," Shaughnessy (1991) claimed that: "The concept of a library as a warehouse of information, if it ever was entirely valid, is certainly losing validity today" (p. 1). He called for libraries to test potential combinations of traditional supply-oriented library philosophy with relatively new demand-driven ideas, predicting that libraries will discontinue ownership-based performance measures in the foreseeable future (pp. 4-6). When discussing the financial difficulties libraries face today, Johnson (1992) strongly advocated that research libraries should reevaluate some of their traditional assumptions, such as large collections equal better libraries, or that ownership is the cost-effective ideal and access to off-site resources is a poor second. She urged research libraries to put the concept of cooperative collection development into daily activities and to concentrate resources on providing "just in time" services and on materials that provide the maximum benefit to the greatest number of users (pp. 4-6). In a more recent article, Smith and Johnson (1993) further suggested that research libraries abandon the traditional practice of developing largely redundant comprehensive collections and "implement a genuine and substantial cooperative collection-development program at the national level" (pp. 391-92). They recommended that research libraries begin purchasing only those materials subject to intense use, those likely to be difficult to acquire or borrow later on, and those for local special collections, predicting that, as scholarly publications are increasingly created and distributed in electronic format, large local collections will become financial burdens in the future (pp. 391-92).

There seems to be little doubt that radical changes will take place in research libraries' collection-development activities if scholarly communication becomes largely electronic, as the consensus of visionaries seems to indicate. However, the migration of this literature from print format to largely electronic media will not occur overnight; rather, it may require several decades (Smith & Johnson, 1998, p. 389).

What should collection-development librarians do in the meantime? One thing seems clear. Changes in collection development will occur even as the migration of the literature proceeds. Thus, a realistic proactive approach may be to evolve with the environmental changes while remaining prepared to take larger and quicker steps as the process unfolds. This article posits a model of three interrelated phases to delineate this approach.
**Phase One: A Familiar Scene**

The basic scenario of phase one is that scholarly communications are created and distributed in traditional formats and acquired by libraries through traditional means. These traditional formats include paper-based and nonpaper-based resources. Paper-based resources include published materials such as books, periodicals, reports, patents, specifications, maps, and newspapers, as well as unpublished materials such as letters, diaries, and research notes. Nonpaper-based resources include films, slides, and sound and video recordings. In short, every medium currently collected by libraries, except for computer-based items, falls into this broad definition of traditional formats. The acquisition of these materials does not refer solely to their purchase but to the full range of collection-development activities—i.e., identification, evaluation, selection, and verification—that results in a library adding new material. Traditionally, these activities involve publishers, vendors, and librarians and have been based largely on paper files and manual processes.

In this phase, a well-developed research collection should strive to respond satisfactorily to both the present and future needs of the local user community. This duality requires the selectors to be well-educated guessers. By definition, the competent selector should possess solid knowledge of the publishing industry and book trade market, full comprehension of the institution's short- and long-term commitments, awareness of the core and peripheral user groups' profiles, skill with languages, and expertise in at least one subject area. In practice, selectors in American research libraries are required to hold a graduate degree in library studies and frequently an advanced degree in an academic discipline as well, with the addition of proficiency in foreign languages. Selectors examine lists and reviews regularly. They monitor approval plans, check catalogs and prospectuses from publishers and others, and search standard references and bibliographies. Additionally, selectors maintain close contact with schools, departments, and individual faculty and researchers. Of course, good selectors also require proficient social skills, but it is particularly the other skills mentioned earlier that enable them to make productive educated guesses.

This scene is extremely familiar—the phase one scenario has been the common practice of research libraries for many years and is still valid. Indeed, some portions of this scenario will remain valid for a long time, while others will be replaced as phase two and phase three emerge. In fact, some replacement has already occurred.

**Phase Two: A Better Way of Doing Old Business**

A major distinction between phase one and phase two lies in the different means of acquiring materials. In phase one, the entire
procedure may be based on paper files and manual processes, while in phase two the procedure is facilitated by computers. It is not surprising that automation first was applied to the last link of collection-development's procedural chain—identification, evaluation, selection, and acquisition. The repetitive, labor-intensive, and inventory-oriented nature of this work makes it ideal for the application of automated processes. During the last decade, libraries developed several strategies to automate this process including developing in-house acquisitions programs, purchasing acquisitions software or single-function acquisitions systems, subscribing to time-sharing acquisitions services from a bibliographic utility or vendor, or installing an acquisitions module in an integrated system (Saffady, 1989, p. 269). Before long, it became clear that an integrated system with an acquisitions module was the best solution available.

Automating collection-development procedures will not stop at merely computerizing the acquisitions process. Advances in information technology strongly indicate that solutions to facilitate other parts of collection development are at hand. In a 1989 article, Welsch presented a "selector's workstation" scenario, an idea similar to the concept of the "scholar's workstation." Welsch described such a workstation as "a microcomputer linked with a local computer center and external databases through telecommunications networks," that would provide "a resourceful means for coping with the challenges of new information needs" (p. 29). He listed all the components of this "resourceful means" that would help selectors work more effectively. These components included links with local, regional, national, and international online library catalogs and bibliographic databases, online access to selection tools, an interactive system for faculty consultation on selection decisions, and a sophisticated data analysis system that would provide information on collection use, course offerings, enrollment, and budget expenditures as well as basic information on the collections of the institution's cooperative partners (pp. 32-33). It is exciting to see that a large part of this concept has already been realized. In many research libraries the basic component of the selector's workstation—a microcomputer with network connections—is already on many selectors' desks. What remains to be done is to place the information and data files at selectors' fingertips to aid them in the processes of identification, evaluation, and selection.

Making publication information readily available to selectors' workstations requires active involvement and close cooperation with publishers and vendors. Vendors who maintain current publishing information drawn from a variety of publishers are in the best position to develop such databases. One early example was Faxon's INFOSERV
online service, an interactive purchasing system for serials. With current information on thousands of serial titles on the market, the system allowed librarians to search by publisher, subject, keyword, editor, affiliation, and date of first issue. In the event bibliographic records, order information, or other descriptions were not sufficient to facilitate a decision, the user could instantly request a sample copy, a publisher's catalog, or a visit from a representative. The system also allowed direct input of updated information from publishers, and direct order, inquiry, and confirmation from libraries (Brown, 1984). Similar systems were developed elsewhere. The Southwest Missouri State University Libraries reported their success in adding an online approval subsystem, developed cooperatively by Blackwell's and NOTIS, to their integrated library system. Newly available titles could be searched by author, title, LC class number, and departmental profile. Library liaisons from academic departments could accept or reject titles in their areas of responsibility without going to the library. The appropriate acquisitions process was carried out online once the selection decision was made (Cline, 1992, pp. 164-66). A more general approach has recently been seen in the release of version 2.0 of YBP Folio, Yankee Book Peddler's online approval service. Serving several dozen large academic libraries' approval plans, the system can be accessed through the Internet or direct dialing by customers and noncustomers alike. The system offers standard search capabilities on titles, acquisitions and shipping verification, and electronic ordering interfaces capable of converting orders generated by a number of standard turnkey library systems into the YBP Folio system (Yankee Book Peddler, 1993, pp. 2-4).

While publishing information can be supplied by publishers' or vendors' databases, standard selection tools can be loaded to a local or regional system with licensed linkage to each member location. The same is true for those bibliographies and other reference works which are often used by selectors. It seems likely that efforts in mounting publishing information and selection tools online will increase with time.

To facilitate evaluation, selectors also need access to reviews at their workstations. With the intent of facilitating member libraries' collection-development activities, the Colorado Alliance of Research Libraries (CARL), one of the nation's most successful wide-area library computer networks, loaded CHOICE, a popular book review journal, on their system four years ago. A database or databases containing full-text book reviews in every academic field should be developed and be easily accessible to selectors and to library patrons.

As research libraries' collections become increasingly interdependent within the network environment, information on other
libraries—particularly those of cooperative partners—becomes more important to selectors. The online catalogs of regional library networks, such as MELVYL in California, the State University System (SUS) in Florida, Ohiolink, and CARL, function as union catalogs for all members of the network. These catalogs could be powerful tools in cooperative collection development. For example, an online union catalog containing serials holding records of each member library could aid participating libraries in making critical canceling decisions cooperatively (Lenzini & Koppel, 1990, pp. 15-16). However, unless a system is also equipped with sophisticated data analysis functions so that information such as collection distribution; use; fund allocation; and average price by subject, language, or publisher can be easily obtained and compared with data from other libraries where applicable, the usefulness of the network catalog for cooperative collection development is quite limited. Thus, system upgrading and timely data input and maintenance from each member library are the key issues that need to be addressed. The Internet offers selectors access to the OPACs of many other research collections, which may help them compare the strengths and weaknesses of their collection with others. However, such obstacles as system drops, slow response time, and differences in indexing structures, interfaces, search protocols, level of on-screen instruction, display limitations, and so forth can seriously restrict the usefulness of these resources. As open systems and standardized interfaces become more common, some of these obstacles will be overcome.

Network environments create the potential for useful interactive systems to involve patrons in the selection process. A locally controlled online bulletin board with forms for patron requests linked to the databases of selection tools and reviews could benefit libraries and their users in many ways, including improvements in user relations. Such a system could also help subject specialists develop interactive relationships with a broad patron base while also enhancing their role as academic liaisons.

It is not difficult to realize that no matter how powerful the selector’s workstation may become, the ultimate power for change resides in human beings. The real challenge in migrating from traditional modes of acquisition to computer-facilitated modes lies in training the work force to develop its skills as information technology develops. The time has come to automate many collection-development procedures. Thus, this is the time for selectors to add computer skills to their knowledge base and to learn new computer functions as they are developing. The rationale is not that traditional methods will be completely replaced soon, but that integrated components of the selector’s workstation will offer a better way of
accomplishing the task. Moreover, developing skills in keeping with the changes in the environment are the best ways to position oneself to accommodate potential radical change in the future.

**Phase Three: A Radical Change?**

The major difference between phase two and phase three are the formats of the resources libraries will acquire. In phase three, the formats are electronic, and the acquisitions process is facilitated by computers. In this case, electronic formats mean materials that can be viewed at a computer terminal—such as software, CD-ROM products, online bibliographical databases, full-text databases, electronic journals and monographs, and some multimedia products. No doubt this list will grow as the market itself grows. For convenience, these products may be classified into three groups: off-line products, such as software and CD-ROMs; online products, such as those available through DIALOG and BRS; and in-between products, such as locally mounted commercial databases. Libraries actually own the off-line products they acquire, while they purchase only certain rights to online products. The third group includes products that may license copyright to a library, a consortium, or a regional network, products that libraries may acquire online and then store for later use, and products acquired intermittently on demand from a central service without local ownership or retention.

Rapid expansion of electronic resources is an accepted fact, yet some figures drawn from Chemical Abstracts Services (CAS) provide some sense of magnitude and impact. In 1980, 99 percent of CAS's annual income came from printed sources. A decade later, in 1990, a little more than 40 percent was derived from electronic services. Between 1985 and 1990, CAS lost one-third of its printed format subscribers (Kaser, 1990, p. 38). At the same time, more than thirty primary chemistry journals developed electronic full-text access (p. 41). While CAS may represent something of a special case because of its primary indexing and abstracting functions, indications are that widespread full-text full-image electronic publication of primary resources is well underway. Elsevier, one of the world's largest purveyors of scholarly publications, recently announced its "University Licensing Project." This experiment will distribute about forty engineering and materials sciences journals over the Internet to a number of university networks where faculty and students will have electronic access to them in full-image (Messmer, 1993, p. 29).

Acquiring electronic resources will become an increasingly complex task as the number and variety of these publications increase. Each product may carry a hardware capability aspect, a technical support consideration, and a public services and user training
commitment. Moreover, overlap will become a greater concern as many products already exist simultaneously in online, offline, and print formats. It is not uncommon today to find the same title—especially a reference work—duplicated in two or more formats within the same library. Some overlap may be unavoidable or even desirable, but, as electronic publications proliferate and competition among producers escalates, excessive overlap may become a financial burden.

It is in this area that selectors should start to accumulate their new expertise in selecting various commercialized electronic resources. As stated earlier, the decision to acquire these resources has more often been the responsibility of systems librarians, committees, or task forces than the responsibility of selectors. The committee or task force approach that is currently employed in many research libraries draws expertise and interested parties together to cope with the complexity of the task. Selectors should empower themselves with the knowledge of acquiring electronic resources by actively participating in these committees and through other means of learning, because a predicted significant growth in commercialized electronic resources will require them to play a more active and important role in assisting libraries to make intelligent selection decisions. This requirement naturally brings up the issue of integrating selectors' traditional expertise in information resources with new knowledge of electronic resources, particularly those related to their subject specialties.

The network connection also creates a favorable climate for the proliferation of electronic resources on the Internet. It was estimated that in 1993 there were approximately 50,000 databases available through the Internet (Pool, 1993, p. 841). While the richness of these resources is astounding, so is the difficulty of keeping track of them. Though navigation aids like Gopher, Wide Area Information Servers, World Wide Web, and Archie offer some traveling guidance and searching tools, knowing what resources are available on the Internet and how to locate them remain formidable tasks. Subject specialists with collection-development responsibilities need to learn how to operate within the Internet environment in order to extend their expertise to include relevant resources located there. As great as this challenge is, so will its reward be, as expert selectors will become increasingly vital to the academic research community.

CONCLUSION

The developments of computer technology, networks, and electronic publishing are changing the mode of scholarly communication. These changes will in turn affect the future of collection development in research libraries. The traditional paper-based
manual selection and acquisition processes will largely be replaced by selectors' workstations and automated procedures. Computer applications will continue to improve and thus become increasingly sophisticated. At the same time, scholarly communication will migrate from mainly print-based systems to a system integrating print and electronic formats. As a result, selectors in research libraries will be responsible for acquiring materials in both formats.

The model proposed in this article (see Figure) suggests that none of these three phases will entirely replace the other two. Rather, they will co-exist for a long time, each in turn serving as the principal pattern at a given period. For instance, when phase three becomes the dominant pattern in collection development, paper catalogs and related material may continue to be used in certain areas, such as foreign language publications. Phase one will be largely pushed off the stage by the impetus of phase two and phase three. Likewise, phase two will be forced toward the current position of phase one, and phase one toward phase three. Eventually, phase three will move to center stage, and phase one and two will be largely off the stage. When this occurs, all phases will cease moving because a particular phase's impetus serves as the force to place it at center stage. Once this placement is attained, the phase's impetus is spent and it is moved thereafter only by newly introduced forces coming from behind. Will the phase three pattern remain unmoved forever? Probably not, nor will collection-development activities remain static as they are currently defined. If the information base becomes largely electronic in format, acquisitions and collection-development activities will decline substantially as Lancaster (1982) predicted. Selection will occur at the moment the decision is made to access a particular resource in response to a particular demand (p. 67). Librarians may become information brokers or consultants, and selecting what to access will become only a portion of their extended responsibilities.

The shift from phase one to phase three as the dominant practice is not merely a matter of technological progress. It also represents a long journey undertaken by research libraries to move from the traditions of ownership to a philosophy of access. In the course of this migration, changes in organizational structure, budget and staff allocations, and individual librarians' roles and responsibilities will undoubtedly occur as well. Librarians currently working in collection development must acquire new skills in the electronic environment and integrate them with their traditional strengths of subject expertise and their ability to function as user liaisons. They must understand that this change will not eliminate their role as information selectors but rather empower them to navigate an ocean of information.
Figure. The three stages of collection development

REFERENCES


