Distribution in an Electronic Environment, or Will there be Libraries as We Know Them in the Internet World?

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ABSTRACT
THE NEW TECHNOLOGY AND communication tools that are available today are much more powerful than those available even a few years ago. The channels for access and distribution of information and knowledge are much more diverse, they collapse the wait time, and provide more tools directly to the user. While libraries will not be replaced, they will need to adapt their methodologies to take advantage of the new tools. The library that successfully adapts its systems for collection, preservation, organization, and distribution of information and knowledge to the new technology will become a much more central institution in the community served.

INTRODUCTION
There are people, particularly those most enamored with high technology information and communication devices, who contend that the Internet world will displace libraries as we know them, and that there will be one gigantic computer chip in the sky, perhaps located at the Library of Congress. These people feel that we are in the midst of an electronic revolution that will engulf libraries. That is a simplistic and undesirable view of the future. Public opinion polls and public referenda consistently show that, in the United States, the communities want their libraries. In San Francisco, 77 percent of the voters approved a bond issue of $109.5 million for a new main library to open in 1996; the Library Foundation of San Francisco raised $30 million from private individuals, families, corporations,

and foundations to furnish and equip the new main library in two years; and 70 percent of the voters agreed on a June ballot initiative to increase the public library's budget by 50 percent and require the city to fund the library at that level for fifteen years. In June, all of the library referenda on the ballot in California passed. The public wants public libraries.

With that issue put to rest, the question is what will these libraries actually be doing in the future that is different from now? First, it must be recognized that successful libraries will change. There are significant social, economic, and marketing pressures that will push or pull the continued development of the electronic technology systems for the home and communities. The computer, telephone, and cable television companies, among others, all see the increasing market for electronic entertainment—and sometimes information and knowledge—as the next gold rush. The corporate world is now willing to make changes unheard of a few years ago, such as merging a telephone company and a cable television company, and the President and Congress of the United States are making major changes in laws and regulations that will not only permit changes in the limits on the corporate and public sector world but will stimulate the implementation of the wired nation. The electronic Inter-State Information Highway concept proposed by the President and the Vice President is a call to action for commercial and public sectors to create the system described in the President's National Information Initiative. The library that ignores national political, technology, and community pressures to use the evolving systems and tools will not only face a reduction in support but may miss an opportunity to continue as a major change agent in our society. The traditional library service that requires the person needing material or information to go to library facilities for service is less viable in a networked instant access world. This meant that the library needed to have multiple branches throughout the city or campus. In the past twenty-five years, the vision of neighborhood or academic department collections available to all was virtually accomplished. While viable in the 1960s and 1970s, the increase in labor and material costs makes this mode of operation untenable in tight fiscal times and less cost effective compared with the technological alternatives. So, the library of today must not only deal with the expectations of future services by the public, it must continue to capitalize on the fact that many library supporters are energized by their nostalgic memories of libraries sometime in the past. Many publicly supported libraries are in the "Mom and Pop Store" mode, while the competition is the large grocery store chains. Much of the future success for libraries rests with the library's ability to reconcile the two extremes. The

technology is here. The human organizations and institutions to use the technology effectively are not yet in existence.

THE INTERNET WORLD

The Internet has become a global cultural phenomenon. Tens of millions of people have access to the system. It is of the same magnitude as television was in its early years and is a most powerful current trend for societal change. Participation in the Internet collapses geography and time. The cost is independent of distance, and the information is accessed in real or virtual time with little delay. Since the response is immediate, the user accesses the system in an interactive mode. An individual can request something and, if what is requested is not what is wanted, try something else. Even though the number of access points in the world numbers in the millions, they are also very personal and are available to almost anyone with a computer, a modem, and a connection. With cellular telephones and laptop computers, the connection is now portable. The penetration level of the access points in the home, school, and office will continue to climb at an astonishing rate. Unfortunately, the Internet is a cloud of users; it is not well organized and it is difficult to find things.

One other significant attribute of the Internet is that the system requires the content to be digitized. Digitization, or computerization, then leads to other benefits to libraries. Acquisition of the content is done in real time and does not depend on mail or shipper delay. Since the time is collapsed so dramatically, it lessens the need for precision in the information used in seeking the content. The computer system used for storage and access is also a powerful tool for organizing the content and providing navigation tools for the user. The Online Public Access Catalogs (OPACs) of today are a tremendous improvement over the computerized storage systems in the early days of the computer. In the 1960s, it was necessary to tell the computer the physical location of the information being sought so it could retrieve it. The instructions were on punched cards. Today, not only do we not care but we do not know where the computer puts the information. The pioneering trend of storing and indexing the contents pages of journals is an exciting development. Someday soon someone will come up with a feasible program to use book indexes online for seeking the information.

Another benefit of digitizing content is for preservation purposes. It makes sense that a metallic format, such as CD-ROM, will last longer than paper and certainly longer than silver nitrate film or microforms even though the CD-ROM is such a new technology that we do not really know its longevity. We do know, however, that content

stored in digital form is easier to replicate or refresh than traditional library formats. Computer files can be backed up regularly and moved to new and longer lasting storage media much more easily than is true for paper formats. Thus, there is a symbiotic relationship between computers for storage and computers for access and delivery.

The capacity for change of the Internet, and the fact that it is now a global cultural phenomenon, means that one must view the technology as not just a networking tool but as a new medium.

CHANGES

While the change in libraries will not be revolutionary, it will be constantly evolving. This is why there is a window of opportunity for libraries to exercise a leadership role for our communities and institutions. The electronification of information and knowledge will require rethinking on the part of librarians. In many cases, our communities are ahead of the library and information services professionals. Our time today is analogous to the situation of the monastic librarian ten years after the invention of the printing press. He was used to receiving only handfuls of illuminated manuscripts per year from the other monks, chaining these manuscripts to the desk, and only allowing access to those who had special permission to use them. Suddenly, because of Gutenberg, hundreds, and soon thousands, of books were being published. If the masses got hold of this technology, who knew where it would lead?

The goal of the ad hoc steering committee for library networking for Region II in California (defined by the State Library as the San Francisco Bay area extended from Mendocino to Monterey) is to not only interconnect the online catalogs of the libraries in the region, but to facilitate and advocate access by the public to the Internet. The steering committee is leading the libraries in the area by putting into place a program to train 20,000 individuals on the Internet within the near future.

LIBRARY ISSUES

For libraries, the major issues that need to be addressed are: the roles of the different libraries, facilities, and staffing; the technology for providing access for location and delivery of electronic content; and the funding sources to support this new technology. The three broad themes for the library center around community, connectivity, and collaboration.

Community

Starting in 1960, the library's goal was a shared vision of librarians and supporters to provide reasonable access to public libraries. Access

was for all communities, libraries in all schools, and a dramatic expansion in academic library collections and resources. At the federal level, this vision was stimulated by the Library Services and Construction Act for public libraries; the Higher Education Act for universities and colleges; and the Elementary and Secondary Education Act for schools. With the funding of these acts, there was a dramatic increase in library resources in the United States. This program is an outstanding example of the Federal Government spending limited dollars to stimulate one sector of public service. It also stimulated the supporters of libraries to organize community support in cities, universities, and schools. Thus the library has become one of the most community connected institutions in history. This is important since John Gardner, former cabinet official for the President of the United States and an advocate for the average person, contends that the amount and rapidity of change in our societies are creating stresses that cause social turbulence in our communities. He asserts that, without the continuity of the shared values that community provides, freedom cannot survive. The key to the future of democracies rests with the ability of communities to regenerate or create a sense of community. Today the library is one of the most trusted community institutions and can play an even more important role in the future. The libraries will be called upon to negotiate access rights on behalf of their constituencies; to provide trained validated customers to the information providers; and to provide training in connectivity, documentation, and promotion of subsidized access. The technology for collecting, preserving, organizing, and distributing electronic content is a powerful tool for the building of community and enlisting those communities into supporting the library.

Connectivity
    As more and more libraries create OPACs and use the OPAC as a search engine and gateway for other databases, the local library will become a node in a much greater network. The OPAC will become one of the first points of contact with the Internet world for a large proportion of the population, particularly those in formal education programs. The interconnection of hundreds or thousands of libraries could lead to the Global Village Library Network where the resources are mostly decentralized and focused on the local community's needs but are linked for shared access and retrieval. The technology currently exists to allow this interconnection. However, attention must be focused on the creation of organizations that will facilitate the wider range of access possible today. Fortunately, the Internet is a tre-mendous tool for collaboration. Thousands of collaborations have

sprung up on the Internet. This technology could be focused on developing new solutions to old library problems and on creating new services and systems. Connectivity is also central for linking small geographic or special interest communities into larger communities, such as neighborhoods into large cities and diverse cultural groups into city-wide resources such as the library. This process must take place to avoid the ignorance, bigotry, and even elitism of isolated groups.

Collaboration

One of the most powerful attributes of the Internet is its ability to foster collaboration. Networking is a powerful tool for symbiotic collaborations. The electronic milieu is creating new communities all over the world, brought together by common interests. We are a nation drowning in information and unresponsive sources, yet thirsting for knowledge. Collaboration is one of the key elements in the creation of knowledge. Thus, the Internet could lead to the development of knowledge through this collaboration. Collaboration also is central to the development of community and important for connectivity. With the elements that need to be changed in the operations of libraries, collaboration also will be crucial for librarians.

Some of the changes that the successful library must navigate are:

● from singular processes to mass processes;
● graphic to neographic;
● retail to wholesale;
● monodimensional access to multidimensional access;
● singular to collaborative organizations; and
● ownership orientation to access orientation.

From Singular Processes to Mass Processes. Libraries must increase their ability to deal with masses of information. Not only is the published world continuing to expand, the incorporation of many languages and nonprint formats are expanding the needs for organizing and preserving content exponentially. At the San Francisco Public Library, even though it has over 2 million books, the book collection is only 16 percent of the total collection. Yet the books are the only format that is totally cataloged. The attainment of the goal of cataloging or indexing and inventorying all resources is a gargantuan task, complicated by the increased rate of collection acquisition experienced over the last two years. New methodologies must be developed.

Graphic to Neographic. In many cases, the majority of the library's staffing and facilities have traditionally been devoted to the book

as the primary vehicle for the preservation and distribution of knowledge even though other media have been in libraries for a long time. Periodicals, microforms, videotapes, audio CDs, and now databases and network gateways are all part of the library's options for content access. The traditional catalog needs to be expanded to incorporate all formats in the collection, and the delivery systems must be adapted for all formats. The digitalization of content and the online catalog does present the opportunity to provide a seamless access tool for the public and a navigation and inventory tool for collection management. The methodology and standards for a "meta-catalog" (meaning all-encompassing) that would include all current technologies and allow for the incorporation of future technologies such as multimedia and even, perhaps, virtual reality, need to be developed. It is time to consider the library not just as a graphic-based institution but one that is neographic (a term coined by the author).

Retail to Wholesale. In most instances, libraries have viewed their main function as that of providing the information, knowledge, or content to the ultimate consumer—the user. With the ability to extend access through other institutions and agencies, libraries need to incorporate the concept of also being in the wholesale business. Other agencies can expand the library's abilities to reach currently unserved populations and communities. For example, local departments of social services can extend the library's services to the disadvantaged citizen. Literacy programs can extend the service to new populations. Libraries may even want to consider commercial partners such as cable television and the telephone company to extend services.

Monodimensional Access to Multidimensional Access. The meta-catalog technology will increase the diversity of access technologies for the user. When books, government documents, magazine indexes, online databases, and multimedia are all accessible through the same electronic device, users will have options related to preference for learning, such as audio, video, print, or images, and can also overcome significant physical barriers such as blindness and deafness or distance. The library has traditionally been a leader in communities in increasing the diversity of access to information and knowledge. To reach the maximum population, the library may need to think in terms of service similar to banking institutions such as automated teller machines (automated information machines for the library) for self service, tellers (library technical staff for the library) for assisted service, customer representatives (librarians) for mediated service, and a new level of service for libraries—collaborative.

Singular to Collaborative Organizations. The library that has the online communications systems can be an important leader in fostering collaborative groups. Librarians are leaders in networking. Interlibrary loan protocols were developed in libraries before most other interagency protocols were developed. It is only natural that the early organizational skills of librarians be extended into other agencies and organizations.

Storage Centered to Communications Centered. The technology available today provides the opportunity for the library to become communications oriented—i.e., to treat access to the information with the same level of effort that has gone into collection building. Cable television and online communications, such as freenets, provide new channels for community communication. It is important for the existence of community that the library seriously undertake the responsibility for community communications. The changes in the normal news and entertainment media are ignoring the needs of communities. Broadcast television and daily newspapers, among others, have consistently reduced the community content in their products. It is far more efficient for them to use wire feeds and syndicated articles than to employ local reporters. This trend is creating a huge vacuum in community communications.

Ownership Orientation to Access Orientation. While most libraries have had interlibrary loan programs for many decades, the level of activity has generally been less than one or two percent of the business. With enhanced capabilities of online access, the proportion of library services devoted to networking will increase. The increase could be significant depending on the library's willingness to lead. Negotiation of access rights is a different set of skills than buying books, periodicals, and microforms. The library staff involved will have to learn a new set of skills.

CONCLUSION

One of the greatest challenges facing librarians and other staff of libraries will be replacing the traditional skills learned in traditional library schools, such as book acquisition, cataloging, and reference work in graphic records, with a whole new set of skills. Skills that will be needed will be content selection as well as format selection, involving all formats, not just print on paper, and dealing with distribution as well as collection. Learning these new skills as well as the new technologies will place a premium on our ability to collaborate. Librarians must not only learn new skills but also learn to incorporate people who know those new skills into the library. The new environment will require dealing with copyright issues,

access rights, and navigation tools, and providing technical support to the user community.

The technology, and the collaboration facilitated by the technology, can lead to exciting new programs for libraries. Libraries can create multimedia encyclopedias on their communities. It is doubtful that the commercial market will support such community-specific activity. Libraries can lead in providing the community with online access to institutional or government information. Specific programs within a library, such as those related to Afro/American or Gay/Lesbian cultures, can be linked among libraries. Special interest programs, such as the environment or employment information, can be linked among libraries and agencies. The San Francisco Public Library will have twelve specific interest centers in the library, and the intent is to network each of them with resources of other libraries and institutions and agencies.

While electronic information technology may bring significant change to the methodology of the library, in many cases it only reinforces the basic mission of the library. At SFPL, the mission is to provide public access to information, and knowledge, and the joy of reading to the diverse population of San Francisco. The technology does not change that mission. It does increase the institution's ability to fulfill the mission. Being in the forefront of the development of delivery and navigation tools, the creation of community content, and leading the community for access means that the library will change. At SFPL, assumptions for planning include the fact that the library will be a regional online resource for libraries in Region II by 1995; will have a fully interactive multimedia network among all library facilities by 1996; and that this network will extend to the home, office, and classroom by the year 2000. These assumptions provide for a context in which planning is taking place.

The library is not on the descendance. The library has the potential to be the pre-eminent public institution in the twenty-first century.