

# In to the Digital Age: A Complement or Displacement?\*

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Digital library systems are not a curiosity any longer. Libraries without any form of computerized system do not exist any more or are hard to find. Many times the so-called digital libraries are referred to as the library of the future. Lately many information professionals have made their efforts to define the concept of digital library, and to solve technological problems in developing real digital library. We have

heard many talks at every Digital Library Conferences about "paradigm shifts from the ownership to access", "the library without wall", "the library as electronic switching center", and "the library beyond the wall". " We also have seen different descriptions in defining the concept of digital library in library literature. Taken all in all, the digital library can be defined as the concept of remote access to the

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contents and services of libraries and other information resources with an electronic network which provides access to, and delivery from, external worldwide library and commercial information and knowledge sources.

The databases will consist of multimedia files including full text, digital images, audio, audio-visual, animation as well as ordinary files consisting of text and images. And users will stand in front of their televideo phone instead of going to the library, or calling the database service via computer modem. The primary input device for search requests will be the microphone. The terminals on both ends will be equipped with broadcast video camera, speech synthesizers and special modem interface software. (Eagle 1992) These dreamlike pictures of the future library have made today's librarians somewhat oversensitive about the digital library. Librarians talk about the death of printed books. They speak of electronic publications as inevitable replacements for printed books. Librarians feel some misgivings about the paradigm shift from ownership to access. They have come to accept that as long as they can access the materials user desires, they do not have to collect them. Some librarians predict that libraries will eventually cease to exist as physical entities at about the same time

print ceases to exist as a medium of publication and distribution.

Today, I would like to raise several questions about what some of librarians feel discomfort in creating the digital library.

### 1. Has the object of the library been displaced?

When speaking about libraries and their history, it is possible to identify three main periods: the traditional library from Alexandria up to the beginning of library automation; the automated library, where computers have been applied to basic library functions; and finally the digital library, where systems make information universally accessible online. Most recently, the term 'digital library' has been applied to a vision of the library of the future in which computer and telecommunication technologies make possible access to a wide range of information resources and make them available to users anytime and anywhere simultaneously.

My first question is this. Has the digital library displaced the object of the traditional library? To answer this question I ask you to go back what Shera wrote twenty five years ago. "The object of the library is to bring together human beings

and recorded knowledge in as fruitful a relationship as it is humanly possible to be.” (Shera 1970, 30) Shera continued that the role of the librarian in society is to maximize the utilization of graphic records for the benefit of society. In other words, his function is to serve as the mediator between man and graphic records: not only books, but sound recordings, pictures, audiotapes, charts, whatever contributes to the advance of human knowledge.

What then is the digital library? There are over a dozen of definitions of digital library appeared in library literature. Having reviewed definitions of digital library by different authors, Drabenstott (1993, 10-11) summarized commonalities in these definitions as follows:

- (1) The digital library is not a single entity.
- (2) The digital library requires technology to link the resources of many, many digital libraries and information services.
- (3) Transparent to end users are the linkages between the many digital libraries and information services.
- (4) Universal access to digital libraries and information services is a goal.
- (5) Digital library collections are not limited to document surrogates : they extend to digital artifacts that

cannot be represented or distributed in printed formats.

As we see, what many authors have advocated is inevitable applications of new technologies—new means of communication, linkages of resources, and universal access to digital libraries and information services – to enhance end-users’ satisfaction. It is true that new technologies have been a great help to carry out the purpose of the library. But digital library should not be seen as something completely new. I believe digital library is just a new phase of the library in these days of digital development. The object of the library stated by Shera will remain unchanged and will survive no matter what technology would newly developed in future.

## 2. Where are We: Modernization or Transformation?

Clifford Lynch (1993, 8) distinguishes the phases in the application of information technology to libraries, “modernization” and “transformation.” Modernization can be defined as the use of new technology to continue to do what we have been doing, but in a more efficient and/or cost-effective way. In the library context, one example is the use of computers to automate library

processes of circulation, cataloging, and stock organization. Transformation addresses the use of new technology to change to change process in a fundamental way. For example, a shift from a scholarly communication system that fixes results into print publications to one that relies on quality controlled distributed hypertext databases that are updated continuously, accessed and distributed through computer communications networks, and perhaps controlled by intelligent agent programs operating on behalf of end users, could be pictured as a potential transformation. He notes that current Digital Library Projects are still in the former phase, "the use of new technology to continue what we have been doing." The real revolution is what is needed to move libraries from Clifford Lynch's "modernization" to the "transformation" phase.

Buckland (1992, 18) identifies 3 phases, (1) paper library, (2) automated library, and (3) electronic library. "Automated library" means that collections of library materials are primarily on paper but in which the library's procedures have been computerized. "Electronic library" means that documents are stored in electronic form. According to Buckland's criteria, today's digital Library projects could be placed in his third stage in which

documents are stored in electronic forms.

### 3. New Technologies : a Replacement of Old?

The history of progress in librarianship has been a story of the successful integration of new technologies and new means of communication into existing programs and services. As librarians in the past did it, today's librarians should be interested in, and keep up with, new developments in technology and information. But what we should bear in mind is that some old ways have continued to make perfectly good sense. With relatively few exceptions, new technologies complement and change older ones. when they replace them, they do so over time and to the extent that the new technologies offer demonstrable advantages. For example, online catalogs are demonstrably superior to card and microform catalogs. Networked indexing and abstracting services are demonstrably superior to their print forerunners. Those libraries which have computerized circulation, acquisitions and serial control systems have functioned with a great efficiency. Information retrieval systems that provide access to the world of

digitized data and facts of all kinds (numeric, bibliographic, image-based, and textual) have offered demonstrable advantages.

Nowadays too many new technologies are being introduced without any proof of demonstrable advantages. Librarians of today should not be overeager in the embrace of the new technology. When we look at the history of communication technology, it could be easily understood that new technologies do not always abolish previous technologies. For instance, print did not destroy the oral tradition. Radio news did not destroy newspapers. Television did not destroy radio. Television and home video did not destroy the motion picture industry. Now CD-ROM is being overwhelmed as a new means of data storage media. But I believe CD-ROM or in virtual form such as the internet, will not destroy books, newspapers and magazines. We regard CD-ROM as a complement to the printed book, not an alternative. New technologies will do what they always do – supplementing and enhancing old technologies.

Looked at objectively, the relative roles of electronic communication and non-electronic communication (print, sound recording, film/video, etc.) become clear. Each of the other media has areas in which it is the best. I believe the elements

of traditional library will exist with the new: sometimes being overlaid, sometimes existing side by side. Technologies don't simply become blended, as each serves its own purpose.

#### 4. Balance between the Print and the Electronic

We agree that printed book has never been the best medium for many kinds of data and information. They have both desirable and undesirable features. Some desirable features of print-based technology are portability, no outside power source requirement, resolution, browsing, and familiarity. Some undesirable features are well addressed by Buckland (1992, 45). "Paper is best except (1) when documents are highly volatile, (2) when manipulation of the documents is desired, (3) when scanning for names or for particular words or phrases in a lengthy document, (4) when light use of remote material is needed, (5) when rapid communication is desired, especially within a dispersed group that is not conveniently available at the same time and place." But despite of these undesirable features of print-based technology, they have remained a key means of communication for a long period of time. Over the years, librarians have

built large print-based collections to support inquiry, teaching, scholarship, and advanced research. In recent years, however, librarians have come to realize that they cannot continue to strive for comprehensiveness in collection building for many reasons – the increasing cost of library materials, the production of scholarly information increases faster than the ability of publishers to print it, institutions to pay for it, librarians to collect it, administrators to build structures to house it, and scholars to read it. At this crucial period, librarians have realized that the availability and affordability of various enabling technologies may significantly reduce collection building efforts because they can rely on technologies to provide access to scholarly materials. Many texts and other sources of data and information make more sense when transmitted by means of CD-ROM or online access than they do as books. But despite of its many advantages for transmitting and giving access to data and some types of information, electronic publishing has inherent drawbacks. These may include finding too much material and/or too much mediocre material, locating the desired information, determining the appropriateness of what is found, and knowing whether what is found is authentic. what users need is “more information that is relevant, accurate,

authoritative and scientifically reliable, not just more information.”(King 1993, 167) Another drawback is that people are unlikely to read poetry, drama, fiction, history, philosophy from a computer screen. People still do appreciate such books for their workmanship, beauty, and entertainment value. Perhaps it is true that until the technical limitations of today’s computer screens such as resolution or contrast are resolved, people are unlikely to long periods of time reading text on computer screens.

In the library context, all forms of communication should be respected. The future library will use all kinds of carriers of knowledge and information. What is important is ‘balance’, playing to the strengths of each format, one supporting the other and complementing the other as needed and appropriate. Let print-based technology continue to do what it does best and develop the electronic products that need developing. The best approach to the future of the library lies in this utilitarianism.

## 5. More Access Tools for Network Resources

The technology-based forms of knowledge will produce new mode of communication

that cannot be represented or distributed by print media. When such new modes are added to digital library collections, library users will have access to network resources all over the world. In this network environment, what is more important is convenient access to appropriate information when it is needed, the ability of the user to discriminate among a variety of sources to decide what is most pertinent, and the capability to transfer that information to the scholar for display and processing when it is needed, where it is needed.

In print-based library collections, users call on their visual sense and physical capabilities to review library materials that they retrieve from bookshelves and to make intellectual connections between objects. In the electronic environment, users will need various access tools and will expect appropriate and standard software to be readily available because digital artifacts will not be physical objects. In principle, the digital library will have everything but the users still have to know what everything is before asking for it. Users need widely available access tools at hand. There also needs to be a mechanism like an OPAC allowing the user to find items by browsing and a mechanism for bringing items to the notice of users. Standards are also needed to facilitate electronic publishing and electronic scholarly communication. Standards would

make it possible for individuals and groups to exchange digital artifacts regardless of the platform on which their ideas were created or the nature of their message – text, foreign characters, color, video, scientific notation, statistical data, sound, stills, etc.

There is a need for the creation of an organized means of locating information, like an “index to digital resources” or “a network resource directory”, as is an effective means of evaluating the usefulness of resources on the network.

## 6. End-Users still need Librarian

The paradigm shift from ownership to access is a key impetus for the digital library. If today’s librarians fail to accept this paradigm shift, they will be stuck on continuing business as usual, that is, acquiring publications and warehousing them for some future unspecified purpose. This trend toward end-user access is being accelerated by the rise of powerful LANs, effective user interfaces, and other enabling technology. In addition, the so-called ‘information superhighway’ has created a high level of awareness of the purported power of interactive information services. The Internet is democratizing information, empowering the masses, and allowing end-users access to a vast array of resources.

But problem we are experiencing is that there is so much information out there! Surely users need trained intermediaries who have search skills, abilities to analyze and evaluate the information and match user's needs with sources. Users still need librarian who will be able to manage information flow. There's nobody better equipped to lead the way to new end-user systems than the librarian. Nobody can better understand the information needs of the different users, evaluate the content provided by vendors, assemble the often delicate alliances needed to implement systems, and finally, train and support end-users. There will be an increasing emphasis on information skills, aiding and guiding end-users. According to the Fisher Study(Miller 1995, 40), more than 60 percent of the librarians said that end-user search activity had actually increased library activity and produced more requests for complex searches and introduced new clients to the library. In reality, the advent of widespread end-user searching has expanded librarian's authority. It is due to the fact that people of the world are beginning to realize how crucial it is to have information and also how difficult it is to obtain it. Librarians should be proud of themselves fulfilling their eternal mission of libraries - to collect, preserve, organize, and disseminate the records of the knowledge and

information of humankind and to provide human services based on those records.

Now I would like to close my paper by quoting Crawford (1995, 183) "Future libraries will be open to any and all suggestions about how to do things better and will be flexible enough to adopt new ways and new technologies when they are appropriate. It takes insight to distinguish between the need to accept change in methods and the need to preserve constancy of purpose and mission."

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