

From Librarian to Cybrarian: Evolving Role of the Information Professional*

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1 Introduction

There are at least two potential roles for the information professional in the next decade. There is a “best of all possible worlds” scenario, and then there is the “Oops! Wish we could start over...” outcome. Our present society is *technologically* capable of catapulting itself into the ‘better world’ for the coming century. *Financially*, our society is either unaware of this opportunity or is merely unwilling to pay for it. The information profession can help establish an enabling National Information Policy by awakening the public to its existing example of well-applied technology. The actions we take *today* as a professional group and as a society will determine the role of the information professional in the 2000’s.

2 History

What has been the historic role of the information profession?

The information profession is knowledge-based and service-oriented (Maack, 1992). In some form, the role of the information professional has always been to assist others with a quest for knowledge. Information and the knowledge to which it leads have evolved through many forms—speech, writing, print, telegraphy, broadcast media, and computer-based electronic media.

When the United States Constitution was written, it created a opportunities for the information profes-

sional. The postal service. The census. A legislative process that made provisions for freedom of speech, a free press, and intellectual property served to encourage openness and investigation (Hayes, 1992). After the Second World War, information professionals in military intelligence caused the development of the computer and application software specific to information-processing. The United States government contributed to its own National Library and to the establishment of library facilities in rural areas.

When the Soviet Union launched a satellite called Sputnik, America funded additional support for the information profession so that it could develop sophisticated networks of powerful computers—allowing scientific and technical researchers to communicate quickly and to share precious computing time without travel. During this time, the number of Americans employed in agriculture and industry dropped sharply, while those with jobs centered around information processing increased dramatically (Hayes, 1992). As a result, the role of the information professional in society has become more important.

3 Leadership

In what ways should professionals provide leadership on formulating a national information policy?

We should point out the potential of powerful and existing network technology to the public. The tax-paying, voting public. The special issue of *Scientific American* selected for GSLIS 200 is an excellent example. It gets the reader excited about how technology could improve all aspects of society in the future—

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from medicine to shopping to libraries—then lets the reader know that everything described in every article is *already* invented, already tested, and is merely waiting for some political policy to make it legal, safe, and affordable.

Typically, software development follows hardware development, and policy lags behind both. Yet it is policy that can determine whether we reap the benefits of this new technology. In too many cases, we have mastered the technology but failed to muster the political commitment and the appropriate policies (Gore, 110).

The technological hardware and software for the next generation of information professionals is already being mastered as we wait for a national information policy that would organize, legalize, and pay for its implementation. While conflicting interests in the ‘United’ States bicker, other nations are happy to construct their own national networks based on America’s unrealized information system specifications. Much of the bickering is among the owners of installed communications networks, who stand to lose some money in the installation of a system that might ultimately benefit them. According to Al Gore,

The most effective way to break the stalemate would be to show the American people what fiber-optic networks could offer them. Most Americans are only vaguely familiar with even existing networks, yet they rely on networks every day. Everyone, from shoppers at the checkout counter to consumers making a withdrawal at an automated teller machine, is dealing with a computer through a network (Gore, 111).

The information profession should invest its educational efforts in a young, less technophobic generation. A publicity or public outreach program in the elementary schools could encourage kids to value information and the technological tools that manipulate it. When this younger generation grows to vote, they will take an interest in the National Information Policy.

4 Improvements

How should the profession address the issue of improving service in culturally diverse communities and insuring equal access for all users?

There are many variations of ‘equal access’ and of ‘culturally diverse.’ This paper will attempt to address some of them by looking at the roles that two information professionals have adopted in preparation for the

coming decade.

Sandra Reuben, Director of the Los Angeles County Libraries, is in a predicament. Branch libraries, with collections, services, and community connections established to meet the needs of a particular neighborhood are an excellent way of improving service in culturally diverse communities (Stern 90 @ 429). Due to financial constraints, Ms Reuben was forced to close many of these branch libraries. In a personal conversation, she told me that these closings severely limit user access in a number of ways—Library clients who are able to commute to another branch library are faced with the challenge of traffic and of parking at an overcrowded library facility. Library clients who are unable to commute—the kids—are worse off. Ms Reuben described trying to explain to a heart broken fourth-grader why her local library was closed. Reuben’s plan for coping with this situation in the next decade is to promote the concept that *The Library is a Service, Not a Building*. She is fine-tuning services at remaining libraries by conducting telephone surveys of their respective community members. She is working with an advertising firm to help promote the *Service* concept. By cooperating with tele-commuting in North Los Angeles and participating with other electronic networks and bulletin boards, the Los Angeles County Library *Service* is now accessible to some users on a 24 hours-a-day basis (Reuben, 1992).

In lecture, Peter Lyman presented a fascinating look at the development of computer operating systems, and how they are culturally biased towards white males with a military background. The engineers who created computers and their essential operating software were (with the exception of one woman) male engineers employed by the military. Lyman pointed out that military jargon forms the basis for many computer related terms, including *execute*, *command*, *break*, *control*, *boot*, and *escape*. These terms are unfamiliar to millions of people being introduced to computers today. Some people have an especially hard time issuing a *command* to a delicate piece of machinery, or pressing a key which might *break* the whole thing. Another cultural bias built into today’s advanced user interfaces is the ‘Desktop’ metaphor, which assumes that a new computer user has worked in a traditional manual office—one that includes file cabinets, file folders, a wastebasket, etc. In my own personal experience, I learned to use a computer interface two years *before* I acquired a file cabinet and hanging file folders. Perhaps

I should say that I relate to my conventional desk, trash-can, and file cabinet through a 'Computer' metaphor!

To help provide equal access to information systems for people of all cultural backgrounds, Lyman is experimenting with alternative, customizable interface metaphors—such as sewing. His goal for the coming decade is to empower the information seeker with a common computer instruction language and an easy to understand and customizable user interface (Lyman, 1992).

A final aspect of information access is literacy—one must be literate to read a book. One must be computer literate to participate effectively in a computer network. While researchers such as Lyman are working to simplify the definition of 'computer literacy,' others are advocating full-scale computer training for the public:

For reasons of social equity and economic efficiency, it will become more important than ever to educate all people so that they can benefit equally from the information resources that are about to become available. Should the benefits of networks become general, democracy might well be enhanced. (Tesler 1991, p 61).

I believe that the information profession should approach the challenge of providing equal access to diverse clients from *every* angle described above. We should emphasize that the Library is a Service more than anything else. This will ease our transition into the next decade when the library user may *virtually* visit the local library (or a library thousands of miles away) from a networked terminal within their home, school, or workplace. We should also make efforts to simplify user interfaces and to educate all citizens to help them become computer-literate.

5 Changes

Will the development of electronic media and networks significantly alter the way in which professionals work?

These networks form the key infrastructure of the 21st century, as critical to business success and national economic development as the railroads were in [Samuel] Morse's era.

(Karraker, 4 @ 343)

Yes, access to a high speed, national or international computer network will significantly alter the way in which professionals will work in the coming decade. Tomorrow's *CYBERARIAN* might respond to a user query by sending out *knowbots* (Dertouzos, 1991, p 35) and gophers along the NREN and along what remains of older networks. When the National Network connects every household by optical fiber, there will be no mechanical advantage in having an information professional conduct an information search. The role of the information professional will shift to emphasize information-hunting *strategy*. There are already too many ways to search for information. The user of the future will be technologically literate and may merely need the strategic advice of a professional such as an cyberarian who is familiar with this multitude of information databases and services which can be searched, as well as the third-party utilities such as knowbots and gophers that can be used to search them.

If Mark Weiser's vision of ubiquitous computing is realized in the next decade, it will solve a problem with the 'superhighway' analogy of networking: the emphasis is on the data path and the data cargo, rather than the receiving human being who will ultimately use this information. "By pushing computers into the background, embodied virtuality will make individuals more aware of the people on the other ends of their computer links" (Weiser, 1991 p.75). It will also change the way everyone—including information professionals—*live*. Earlier this quarter, we learned that Plato objected to the invention of writing because it would ruin people's memories. Imagine Plato's opinion of this example of ubiquitous computing at work:

...obtaining information will be almost trivial: 'Who made that dress? Are there any more in the store? What was the name of the designer of that suit I liked last week?' The computing environment knows the suit you looked at for a long time last week because it knows both of your locations, and it can retroactively find the designer's name even though that information did not interest you at the time (Weiser, 1991 p75).

Plato must be turning in his grave over this... but we *need* a way to deal with today's information overload, and the *greater* avalanche we can expect in the coming decade. In the Renaissance of the 1990's, one strives

to learn methods of learning and information gathering and processing. It is understood that it is no longer possible for one person to know everything. In the Library of the Weiser's future, each item will contain a small computer that can broadcast its location over the network— "Tabs in library catalogues can make active maps to any book and guide searchers to it, even if it is off the shelf, left on a table by the last reader" (Weiser, 1991 p.66). Although such measures might seem like overkill in the Twentieth Century, they will become a necessary tool in the kit of tomorrow's information professional. Professionals will be expected to keep track of the information explosion, even though "the amount of information continues to explode, doubling every six months in some disciplines" (Gore, 1991 p110).

6 Ethics

What ethical issues will be most critical?

Tomorrow's information professionals who administer our National Network will have to be aware of "... political as well as legal issues about the ease with which voice, data, and images can be downloaded and manipulated ..." (Branscomb, 1991 p.115) Even after a National Information Policy is established, and after laws concerning electronic ethics are clarified—a delicate balance must be maintained between providing security for network users while allowing hackers to explore the system and possibly discover new uses for it. Issues such as privacy, censorship, and security will be of critical import to the network based cyberarian of the next decade.

The qualities that make the ideal network valuable—its popularity, its uniform commands, its ability to handle financial transactions and its international access—also make it vulnerable to a variety of abuses and accidents. It is certainly proper to hold hackers accountable for their offenses, but that accountability should never entail denying defendants the safeguards of the bill of rights, including the rights to free expression and association and to freedom from unreasonable searches and seizures. (Kapor, 1991 p118)

Commenting on the privacy issue, Peter Lyman told our lecture that over 7.5 million people who work on computer terminals have their performance or behavior monitored electronically, without their knowledge. This situation conflicts with the *Electronic Bill of Rights*. Information professionals will have to sup-

port this *Bill* if their users are to feel comfortable using a National Network. This might mean saying 'NO.' to the FBI, as Lyman recently did when they requested certain user information from his library at USC.

A final ethical issue of critical importance is that of intellectual property. While existing networks of academic researchers operate on a 'gift' basis (sharing their work, writings, and data free of charge), tomorrow's National Network will seek participation of commercial publishers, who have traditionally profited from a 'property' based system of exchange: charging money. The information professional of the 00's will have to help arrange a compromise between these conflicting means of sharing information (Lyman, 1992).

7 Associations

How might the role of professional associations change?

I do not believe that the *role* of professional associations will change greatly in the coming decade. Just as the professional will still be concerned with a client's quest for knowledge, the professional association will still be occupied with maintaining schools for the profession and providing a support network for its members. While academic requirements for professional certification may change frequently (isn't GSLIS redoing its core curriculum again this year?), the *role* of the school and of the association which accredits it will remain essentially the same.

Information professionals enjoy a role of growing importance in society. We should use our position to share new technologies with the public, and lobby together to have these improvements implemented. The role of the information professional of the future will be determined by the actions we take and examples we set today. In the interest of giving them a challenging role to inherit, "We must embrace change, and embrace it as we never have before" (Reuben, 1992).