A Critical and Skeptical Overview of Electronic Publishing and Librarianship: Notes from the United States

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ABSTRACT

Electronic publishing presents the most fundamental challenges to the practice and the values of librarianship. If there is to be a meaningful partnership between electronic publishers and libraries in future, then librarians as professionals need to critically review our previous experiences with electronic resources. Such assessments however, have been in short supply because of the enormous hype of the 'Information Age' and pressure to bring libraries into this new era.

The United States is perhaps the best case study to highlight and review the issues raised by electronic publishing and libraries. It is the country which has invested both broadly and deeply in electronic resources in libraries. Research libraries in the United States are advancing the research on and projects of electronic publishing and document delivery, and smaller libraries are counting on these systems to expand access after years of constrained budgets. The United States is also the country which has promoted - through both the public and private sectors - the idea and image of an information revolution. In short, libraries and electronic publishing in the United States are seen to have the same future. In this environment, problematic issues concerning electronic resources on libraries are generally not raised or actively discussed by library professionals. Only in the last few years have a small minority of scholars and librarians begun to actively raise practical and theoretical questions concerning electronic resources in libraries.

A critical review of those issues concerning the nascent electronically-published products (e.g. e-journals, CD-ROMs, remote databases) currently in United States libraries includes:

1. Preservation. Libraries traditionally collect and preserve the scholarly and documentary record of publishing. Electronically-published materials required a new approach to document security since digitally-edited records are much more difficult to trace in their changes (unlike print). Further, individual libraries which purchase 'copies' of electronically published works will be required to convert those documents to new systems, or maintain old hardware to provide access to them.

2. Economic issues. Budgets are not swelling, yet information outlets (and the demand for those products) are. Price and fee structures of electronically-

published works are different for libraries. The end result of different collecting patterns and the imposition of fees have broad consequences for equity of access and the skewing of content in libraries.

3. Print resources. Electronically-published texts are intellectually different than printed sources, and those differences will critically affect how patrons approach information, how libraries organize it, and how it is packaged and promoted.

The paper concludes with recommendations for librarianship in approaching forthcoming initiatives in electronic publishing.

Introduction

A strong case can be made that electronically published products pose a strong challenge to the practices and values of librarianship, and the United States is perhaps the best place to review and establish this. As I have written elsewhere, the pattern of shifting toward electronically published resources 'is the one touted by the vast majority of our library leadership as the essential model if our institutions are to survive' and librarians are under considerable pressure to develop skills to accomodate them.[1] The challenges posed by these new resources are not 'the traditional barriers with which we have grappled, such as single usage of a single printed copy or the preservation problems of the codex. Rather, the essence of the shift in our profession is in redefining [it.]'[2] This process of redefinition - driven in large part by electronically published resources - is not without serious problems, especially considered in light of the basic mission of libraries. In order to demonstrate this, this paper will proceed from a brief overview of the current technological status of the United States to an assessment of the environment and level of technological development in US. libraries. This will establish the basis of the argument that the United States and its libraries are a good case study. The paper will then move on to review three important areas where electronically published resources in American libraries pose a direct challenge to some of the basic ideas and values upon which modern librarianship is based. Those areas are preservation, the new economics of information purchasing, and intellectual differences between print and electronic resources. The paper will conclude with a summary analysis of these trends in American libraries.

The Technological Status of the United States

Though assessing levels and leadership in technological development is nowhere close to an exact science, by a number of measures the United States is a world leader. For example:

- The most recent National Critical Technologies report rated the US. as leading or even with Japan and Europe in every major area of technological competitiveness, and well ahead in the areas of software and computing systems.[3]

- Wildly divergent estimates on Internet usage at least give some indication of American consumer dominance: nearly 6 million Americans were believed to have a direct Internet connection in 1995; a conservative estimate put the total of US. users at 9.5 million in early 1996; and another study

estimated 24 million users in North America, with perhaps over 37 million people who have access.[4] Given the approximately ten-to-one population ratio between the United States and Canada, it is not difficult to ascertain the dominant market.

- Approximately 50% of American schools are linked to the Internet as of early 1996, up from 35% the previous year. Although still a low percentage, the number of connected classrooms tripled during the same period. Some areas like the Northeastern US. had almost 60% of the schools linked to the Internet.[5] In contrast, German schools are estimated to have one-fifth of the number computers in school classrooms, and Canada only began plans to link all schools, libraries and higher education to the Internet in 1995.[6]

- A review of Japanese information services at the begining of the decade found that 'foreign databases have dominated' there and that 'much of the data produced in Japan in the sci/tech area is covered by the large-scale databases produced abroad,' much of it in North America. 'Among the online databases produced in Japan [at the time], only about 15 percent are produced there.'[7]

A 1996 summary of an international conference on electronic publishing noted that 'collectively [there is] a wide gap between European and US. experience, with the United States considerably ahead in electronic productivity and in the customer base to make use of it....'[8] Bill Gates, the billionaire founder of Microsoft, attempted an assessment of the relative technological strengths and weaknesses of countries around the world measured against the US. He concludes that 'advantages in the United States are the size of the market, the popularity of the PC in American homes, and the competition between the phone and cable companies. US-based companies are leaders in almost every technology that will be a part of building the broadband infrastructure....'[9] . There is another more prosaic explanation: the US federal government has consistently supported the development of such technologies through tax dollars for aerospace industries, ARPANET - the military precursor to the Internet, and developing national information infrastructures to promote research and economic competitiveness.[10]

There is one area where I would argue vigorously that US worldwide dominance is undisputed: hyping the information revolution. Indeed, there seems to be a convergence between academic, economic, and governmental rhetoric in order to thoroughly set the idea that, after 25 years of predictions, we are still rapidly moving into a knowledge-and-software-based economy, and that the technical bases of this exciting shift will solve longstanding problems. For instance, President Clinton marvels that his cat has a homepage and that a Ford Taurus has more computing power than the Apollo 11 mission to the moon.[11] Meanwhile a professor predicts in a national higher education magazine that we are inevitably moving towards 'interactive learning and non linear navigation through learning materials that reach [the] senses - seeing, hearing, touching, smelling.'[12]
 Bill Gates simply states that 'ability of technology to bring information to life is unprecedented [and] it creates the perfect learning environment....'[13] Perhaps most comprehensive of all, an economic theorist predicts that networked computers will convert American capitalism into 'a healing force in the present crisis of home and family, culture and community,' and a founder of an electronic civil-rights group simply states that 'we are in the middle of the most transforming technological event since the capture of fire. I used to think it was just the biggest thing since Gutenberg, but now I think you have to go back farther....'[14] To sum up the technological status of the United States, it would be fair to say that there is considerable economic, governmental, and social force behind the development of technological resources, made creditable by ample media coverage and scholarly commentary. As one observer put it, 'unlike cars in recent decades, computers have been a symbol of America's technical dynamism compared to the rest of the

world's.'[15] The result is not only leadership in developing technologies and the economic muscle for the government, corporations, and consumers to utilize the products, but also an environment which extols and anticipates the economic and social change which come with these products.

The Level and Environment of Technological Development in US Libraries

Before briefly reviewing the level and environment of technological development in US libraries, it is worth stopping to connect these with our primary focus: electronic publishing in libraries. Definitions of electronic publishing are surprisingly hard to find, and frequently over-long and discursive. The briefest recent definition I found stated simply that 'electronic publishing is the publishing of material in a computer-accessible medium, such as on a CD-ROM or on the Internet.'[16] Indeed, this is the implicit definition embedded in articles about and definitions of a 'virtual library.' For instance, a New York State library automation planning committee simply said that a virtual library is a 'library of any type, size, or location [which] uses computer and telecommunications technology to assist its users by means of information retrieval and resource sharing.'[17] One article was simply titled 'CD-Based Reference Tools Serve as Virtual Libraries.'[18] The definition and scope of electronic publishing is therefore *very* broad and, in hindsight, libraries have been involved with it for some time now. A brief review of the technical systems which have allowed for electronically published library catalogs, as well as more recent online, CD-ROM, and Web resources establishes the foundation for an analysis of previous experience with what we have come to define as electronically-published library resources.

Following the country as a whole, US libraries have played a leading role in developing, adapting, purchasing, and accomodating to information technolgies and electronically published resources. For instance:

- The library automation market in the United States peaked at over a half billion dollars in 1994. Though sales of units increased 6% in 1995, revenue slipped to $450 million. To put this in perspective, between 1992 and 1994, library automation investments in the US nearly doubled, before slipping in 1995. This trend is not recent: an earlier report cited 25-30% growth in the American library automation market at the end of the 1980s.[19]

- President Clinton wants every classroom and library in the country connected to the information highway within the next three years, and is putting forth a $2 billion Technology Literacy Challenge Fund to help accomplish the task. This initiative follows up a 1993 funding program for computer and network technology in schools and libraries, and the earlier NREN (National Research and Education Network).[20]

- American libraries very early on developed automated systems on a large scale. For instance, the National Library of Medicine began the MEDLARS (Medical Literature Analysis and Retrieval System - now MEDLINE) in the early 1960's. MEDLARS was one of the first online databases for bibliographic retrieval. The MARC (Machine Readable Cataloging) project for Library of Congress cataloging records was begun in 1966. Retrospective conversion of old titles at Library of Congress was begun in 1969. The bibliographic utility OCLC began in 1967, and had over 300 libraries in 28 states contributing electronic catalog records by the early-to-middle 1970s.[21] Currently, the Library of Congress envisions digitizing five million unique items of Americana in the National Digital Library Program by the year 2000 to make them available over the Web.[22]

- Academic libraries have frequently led the way in automation and electronic publishing investments. In addition to OCLC, the RLIN bibliographic utility was founded by academic libraries, nearly all of which had online catalogs by the early-to-middle 1980s. Those catalogs were frequently the model for and centerpiece of the development of campus information networks.[23] By the early 1990s, one survey found that 97.5% of academic libraries in the US offered CD-ROM services.[24]

- A summary of recent surveys indicate that over half of all American adults use or used public library computers, two-thirds indicated their local public library had materials in computer format, and Americans are looking to public libraries for more Internet access. While just under 28% of public libraries provide access, 76% of people surveyed responded that it was "very" or "moderately" important to purchase computers and provide access to electronic resources. Perhaps most stunning - for the United States at least - a plurality consistently supports increased taxes to support public library services and resources.[25]

American librarianship has also fully participated in the hype surrounding information technologies and electronically published resources. 'Elite members of the library profession seem to have encountered, and fully assimilated, [Daniel] Bell's work [on information professionals] by the mid 1970s,' and as one author put it, post-industrialism became for librarianship, 'the object of desire, signifying the state of being 'with it' at any price.' The University of Illinois' F.W. Lancaster began predicting the 'paperless library' and describing existing libraries as 'irrelevant' and a 'crumbling institution' in the 1970s. Yet 25 years later library leaders were still beating the drum and warning professionals that 'libraries that persist in spending 65% of their budgets to keep aged wood pulp warm and cool will be irrelevant.'[26] Libraries were said to be becoming 'disembodied' and 'invisible, rendering them simultaneously nowhere and everywhere.' At the same time, according to another author, our lack of adaptation to electronic resources put American librarianship in danger of being 'swept away.'[27] The goal for at least one author is 'gathering a single comprehensive collection, including all extant current, past, and future scholarly publication,' and he declares that 'No substantial technical problem lies in the way of [this] accomplishment.'[28]

However, my favorite piece of sheer hype and silliness appeared in the 1992 Library and Information Technology Association's (LITA) *Yearbook*. LITA is a division of the American Library Association, and the LITA President's program included Hans Moravec, a futurist commenting on the future direction of technologies (presumably including library technologies). I will quote at some length from the report of this presentation:

> [Moravec] began by reviewing the present state of artificial intelligence, likening it to an insect's mentality. Ten years from now ... a computer's intelligence will be comparable to a dog's, and the computer will be able to recognize objects. Ten years after that ... a computer's intelligence will equal a monkey's. At this point the computer will not only be able to recognize objects but be able to adapt to its surroundings. Thirty years from now, computers will combine the previous abilities with superhuman reasoning. By this time, computers will be manufactured in outer space and will be created by themselves. It is at this point that they will become independent and begin to spread beyond Earth. Eventually, computers will fill known space. That space will be filled with computation, effectively becoming 'cyberspace,' a space many times larger than its physical size. Returning to Earth for natural resources, the computers will offer humans an 'increasingly irresistable simulated reality' where we will live in a better and more efficient world. Finally, we will become

absorbed by these computers and, possibly, ultimately become mere recollections of a great thinking machine.[29]

American librarianship, I believe, has more than held its own in pumping up the volume of calls for an information future.

In sum, the United States and its libraries can be successfully argued to be a good case to review problematic issues posed by electronically published resources in libraries. It is a country which has invested both broadly and deeply in electronic resources, and where the public and private sectors - and many of the professions - have promoted the idea and image of an information revolution. This has meant that libraries and electronic publishing in the United States are seen to have a linked future. American libraries look to future developments in electronic publishing to solve current space and budgetary problems.[30] In this environment, problematic issues concerning these resources in libraries are generally not actively discussed by library professionals, but rather we have 'focus[ed] almost exclusively on how best to implement the new resources and make sure that [we] are not left out of funding, planning, and policy decisions for them.'[31] As I have written elsewhere,

> if the profession as a whole ... is to make responsible decisions about libraries, if we seek to fill a central role in debate about information policy, and if we are to control ... the agendas of our institutions, then we must account for [the] serious ... question[s about] the role that technology has come to play.... [O]ur intellectual and professional responses to these phenomena have been inadequate, and uncritically accepting [of broad assertions about electronic resources in libraries].[32]

If electronic publishing and libraries are to have a meaningful partnership, then librarians need to look at what I have called the 'underside' issues. Electronically published resources pose fundamental challenges to some of the basic values built into modern librarianship as expressed in basic policies like the *Library Bill of Rights*, and *Freedom to Read*.[33] The remainder of this paper will review this underside in three areas, preservation, the new economics of information purchasing, and intellectual differences between print and electronic resources, and a summary conclusion of these trends will be offered.

Preservation

American Library Association (ALA) policy 'affirms that ... preservation is central to libraries and librarianship. In particular, ALA affirms that the preservation of library resources is essential to protect the public's right to the free flow of information as embodied in the First Amendment to the Constitution and the Library Bill of Rights.' This policy goes on to note that it includes both print and electronic resources, and specifically the 'threat to information posed by technical obsolescence, the long-term retention of information resident in commercial databases, and the security of library and commercial databases.'[34] While it is good to see ALA articulating the policy issue, I believe that electronic publishing poses a more fundamental challenge than this somewhat mild language would indicate.

Clifford Stoll has accurately described one of the problems: 'electronic media aren't archival [and] the physical medium isn't the problem. It's the reading mechanism.' He goes on to give many examples of the now-extinct formats: 78-rpm records, 8-track tapes, DECTape, 80 and 100-column punch cards, and 5-inch glass lantern slides. Further, there is an equally impressive list of soon-to-disappear formats: vinyl records (45 and 33 rpm), 5 1/4 inch floppy disks, Betamax tapes,

and single-side, single density diskettes. As Stoll notes, the information contained in these formats may be perfectly good and workable, 'but they become increasingly expensive to read, as equipment becomes expensive to maintain or simply cannot be repaired.'[35]

Libraries all over the United States are slipping and sliding toward exactly this problem. My own institution faced a crisis because of exactly this problem. In 1995, we had a complete collapse of our online library system, including the catalog. The company from which we purchased the system in the early 1980s was in some financial trouble by the middle 1990s, and the processor which ran our database was eleven years old. There was no means of repairing it further and the database itself - our library catalog on magnetic tape - was in an obscure, obsolete program language and record format. As a result, we were an academic library without a book catalog for one entire semester. The conversion of our old database, and its successful loading into a new library system simply took that long.[36] As Stoll has said, the replication of the information into a more current format is very expensive itself (it was for my institution). If libraries rely on even more on electronically published formats, there will have to be a complete conversion of hardware, software, records (or some combination of these) every decade or so, and this promises to break library budgets.[37]

These are not idle worries. One writer noted that, if Bill Gates had written *The Road Ahead* for publication in late 1994 (instead of 1995), 'its 'vision' of the future might already have seemed seriously out of date.... Through 1993 and 1994, computer industry analysts were deeply interested in the likely convergence of the video-game, computer, and cable-TV industries.... Very few people put much emphasis on this possibility any more. [T]he technical and financial excitement of computing has all concerned 'the Net' and 'the Web'.'[38] In other words, Stoll's concerns for libraries have not been superceded by the permanence of new technological standards and formats - and they have not superseded the legitimate preservation, access, and cost concerns of libraries.

Again, my own institution provides an example. We subscribe to a product from UMI called *Business Periodicals Research.* It is an index with links to approximately 450 journals contained on compact discs, to which we subscribe. We rely on UMI-provided equipment and software for access to read and copy these journals. Three years after cancelling approximately $9,000 worth of print subscriptions which overlap this CD journal collection, we are now faced with some problems. UMI willy-nilly drops and adds journals to the list provided on CD. Effectively, this drops and adds journals to our library collection without any selection input from us. It may be a valuable addition, or worthless. It may result in a significant subject gap, or insignificant. The point is that we have ceded selection and preservation control to UMI. Should we chose to drop this product and resubscribe to the journals we deem necessary, I am unsure that our former subscription carries with it subsequent rights to the software to search for, view, and make a copy from the back issues of journals we now own on UMI compact discs. As a recent article indicated, online journals pose exactly the same issue: the contracts electronic publishers demand 'place the powers of access and preservation to the journals in the hands of a commercial publisher,' who frequently has no clue as to the long-term needs of libraries, and how to effectively price such new products to gain business and meet those needs.[39]

Again Stoll highlights another fundamental issue for libraries and digitized archives. A true archive 'shouldn't depend on duplication for preservation.'[40] There are two inherent problems. The first is noted by the Modern Language Association (MLA). While expressing gratitude to libraries for digital and microfilming preservation efforts, the MLA states that 'the advantages of the new forms

... cannot fully substitute for the actual physical objects in which those earlier texts were embodied at particular times in the past.... All objects purporting to present the same text ... all carry different information, even if the words and punctuation are identical....'[41] The second problem has been highlighted by Eugene Provenzo. He writes that 'Anyone who has used a word-processing system ... knows how easy it is to transform information in a digital context. One word can be automatically substituted for another, a name changed, a date altered, an idea corrupted without any record of what the original source said.... [This] represents a major problem in terms of the integrity of historical documents, and the extent to which we can trust the information from such sources in the future.'[42] Indeed, such were the precise concerns in the series of legal wrangles over control and archiving of President Bush's e-mail tape archives, and this seems to be a low-priority issue for electronic publishers.[43] The exact same issues of electronic corruption, erasure, and verification exist between libraries and electronic journal and database publishers.

It would be comforting to say that American librarianship has always been on the right side of this issue, but there was a chilling report from a division of the American Library Association in 1977 which stated that:

> As a consequence of ... information overload, the role of libraries for several thousand years, which emphasizes the preservation of the human record, has now become more complex, requiring hard decisions not only about what is to be preserved but also about what is to be discarded. Decisions are, and must, be made to erase portions of the record deemed to be insignificant, irrelevant, and unrepresentative, in order that the useful and pertinent be accessible.[44]

Clearly, such a statement - from a public library planning task force - flies in the face of professional policies on preservation. Perhaps more importantly, it contradicts the spirit - if not the letter - of the Library Bill of Rights' call for 'materials [to] not be excluded because of the origin, background, or views of those contributing to their creation [and for] provid[ing] materials and information presenting all points of view on current and historical issues.'[45] In sum, electronically published resources present a major problem to the professional mission of libraries in the area of preservation, and libraries and electronic publishers have only scratched the surface of these issues.

New Economics of Information Purchasing

The values of American librarianship concerning the economics of our profession are crystal clear. There is :

> a bedrock of professional policy and principle which guides us - indeed instructs us - to make our services and collections accessible, equitably distributed, and responsive to the needs of 'all of the people of the community' as the Library Bill of Rights puts it. American Library Association policy is quite blunt: 'all individuals [should] have equal access to libraries and information services.' Specifically, there is policy which calls for ... 'equity in funding adequate library services...' and 'the removal of all barriers to library and information services, particularly fees' which are elsewhere described as 'discriminatory'.... There is very little room to finesse [our] responsibility ... as a profession.[46]

In other words, American libraries should budget and spend in such a way as to provide free access to a variety of sources with the fewest barriers - and no economic ones - as practicable. However, electronic publishing is ushering in a new kind of economics of information purchasing for American libraries, and this new economic imperative is driving libraries away from these values. This can be illustrated by reviewing several trends. For instance:

- The Reagan-era privatization of public information was driven by both the ideology of movement toward private sector, market-driven information distribution and the technologies which made it possible to profitably remarket and sell the information. Thus a fundamental shift has taken place where once-free information is coming at not only a cost, but a much higher cost to libraries in these remarketed electronic forms.[47]

- Publishers are moving rapidly toward making their standard reference works or journals available in electronic forms. As numerous authors have noted, 'the biggest challenge that is facing electronic publishers is how to best protect their data, and therefore their investment' when recopying and redistributing those products over networks is so easy.[48] There is a structuring of access - licensing, subscriptions, etc. - which is designed to maximize income for the publisher, resulting in what is generally estimated to be one-third higher costs to libraries for these resources. In the mean time as one author put it, many such agreements make libraries renters of information without 'permanent retention rights [forcing libraries to] pay for the same source several times over, only to relinquish everything' if the lease is terminated. Such licenses and subscriptions for electronically published resources sometimes firmly regulate the library's institutional access policies for them.[49]

- American libraries have been altering their pattern of investment in content. For instance, there has been a twenty-year decline in the sales of scholarly monographs. Why? 'Total spending in real terms by academic libraries [in the United States] dropped by 4.5 percent between January 1995 and December 1996 and a total of ten percent since the beginning of 1994.... Spending for books has been particularly hard hit while spending for online services and CD-ROM has increased an average of 12.5 percent in 1995-96.' Journal subscriptions have followed the same pattern in academic libraries as well. This economic shift is typical of other kinds of US libraries.[50] As one commentator put it, the new resources 'should overlap the old and they should be mutually enhancing. It is only when you don't really examine the long term costs that the technology and other unexamined expenses will squeeze out the book budget, as is apparently happening now.' Further, the economic investment required to make electronically published materials available has resulted in some conservatism as to what content to make available.[51] It does not take a mathemetician to figure out that, if electronically published resources cost libraries more, and library budgets are not growing at a robust rate to keep up, then those budgets are purchasing a lesser variety and depth of content.

- American libraries have reacted to these trends by jumping on the bandwagon. Library patrons are now primarily conceptualized as consumers and library leaders are worried about 'how libraries can find a competitive niche in the rapidly changing information environment.'[52] As I have written elsewhere,

> The Reagan era privatization of public information was a harbinger of culture change in librarianship. Essentially ... librarians were introduced to the notion that they were sitting on a form of 'wealth' [they] were not fully exploiting. From this has grown the concept of "entrepreneurial" librarianship whe[re] librarians expect their resources (especially the electronic ones) to 'produce income, or create a more favorable budgeting and fundraising environment.' The range of such strategies [in American libraries] has been considerable. From ... fee-for-information centers to proposed cost-sharing for national cataloging data, this ethic is now part of the landscape of librarianship.[53]

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- Most singularly, there have been elaborate justifications for libraries to 'rethink' the national policies against the charging of fees. The National Commission on Libraries and Information Science issued a report in 1985 justifying fees for the sake of resource efficiency, the implicit recognition of the value of libraries, and basing services on needs and demands 'depend[ing] on the library's operating environment and perceptions of its role in the marketplace.'[54]

In sum, the trend toward privatization of government information resources in electronic forms and the high cost structures of those and other electronically published resources has elicited responses from American libraries ranging from a shift in resources away from print to an entrepreneurial effort to generate revenue from library users. These shifts have left the longstanding values of economically structuring free access to a variety of library resources in doubt.

Intellectual Differences Between Print and Electronic Resources

Libraries in the United States are inextricably linked to print literacy and the values of free and protected inquiry. Again, American Library Association policy asserts that 'lifelong literacy is a basic right for all individuals in our society and is essential to the welfare of the nation.'[55] Support for literacy lies behind the fundamental policy of *Freedom to Read*, which opposes the suppression of printed materials by any agent (government, publisher, or library, for example) for any reason, and notes that 'they are essential to the extended discussion which serious thought requires, and to the accumulation of knowledge and ideas into organized collections.'[56] Finally, the circulation of materials and the 'information sought or received and resources consulted, borrowed, acquired or transmitted' are to be kept private and confidential.[57] Together, these policies form a strong statement linking libraries to organized, inclusive collections of printed works in which users have an inherent right to free and unmonitored inquiry. Each of these faces a serious challenge as libraries move from printed to electronically published materials.

First, it is clear that electronically published materials are not simply digitized text. They are often multimedia blends of sound-and-image-with-text. On the positive side, these products are seen to be 'dynamic, changing in real time, because it is given context by the actions of a reader.... Electronic journals, for example, are an experimental literature that ... combine text with new modes of visualizing information, or use interactive discussions to simulate the research process itself.'[58] At worst, they can be market-driven products whose content is skewed to capture a market of users. As one of the founders of the Electronic Frontier Foundation put it, 'we could wind up with ... glitzy, interactive multimedia successors to Nintendo and MTV; ... their uses and content determined by mega-corporations pushing mindless consumption.'[59]

In some ways, it does not particularly matter which analysis one choses, because the essence of the difference is in the *medium* which libraries are purchasing. As Neil Postman has pointed out for a long time, each medium has its own curriculum: 'a specially constructed information system whose purpose, in its totality, is to influence, teach, train, or cultivate the mind.' Television, classrooms, courts, and computers all have their own curriculum. By moving toward a confluence of text and sound and visual images in our electronically published resources, we shift the curriculum of libraries from 'all of the assumptions on which the slowly disseminated, logically ordered, and cognitively processed word is based' toward a 'non-linguistic bias.' There is, in short, less need for the rationality-based old skill of literacy in a media-dominated electronic society. Our new multimedia library resources play to the bias toward the visual and, as Postman notes, 'pictures ask

to be recognized; words ask to be understood.' The symbolic arena of persuasion - like advertising - is the dominant discourse, not the literacy based assumptions of truth, falsehood, and factual verification.[60] Librarians have grappled very little with the *meaning* and effects of electronically published resources in relationship to our commitment to literacy.

Secondly, the move toward electronically published resources endangers the privacy of intellectual inquiry. With printed resources, privacy was a relatively simple matter: the records were kept only temporarily while material circulated, no record existed concerning in-house use of, for instance, a journal, and the ethical instruction to librarians was to keep patron inquiries confidential. That circumstance now changes. It has been noted that electronic publishers plan 'to enforce their copyrights and collect royalty fees by using reader-identification and metering devices that will keep track of what a user reads or prints.'[61] In other words, where no record formerly existed and in order to economically accomodate electronic resources, one will be created. There is a real threat to the privacy of inquiry when there are huge economic incentives to use this information for marketing purposes, or even for larger social purposes such as combatting terrorism. As one report put it, 'the chief culprit is not so much Big Brother as lots of little brothers, all gossiping with each other over computer networks.'[62]

> This represents a radical departure from the past because, while much of this type of information has been available, it was in the hands of libraries and librarians.... The new data collectors will not be libraries, but rather private information vend[ors]. They might be required to keep reading records confidential, but it is probable that they would be able to use them for marketing purposes ... [to] construct an information-seeking profile to be sold to other marketers of information products.[63]

The monitoring of Internet and network use - if only for scholars to gather data to study its use - is raising similar and serious questions about privacy in academia.[64] Finally, the entrepreneurial environment of libraries is causing some to question whether librarians should continue to protect the privacy of users. '[I]n the name of one good - keeping patron records confidential - we are sacrificing another: targeted and tailored services to library users. We are sacrificing the ability to compete effectively in an increasingly complex system of information services.... We should rethink our current policies and practice....'[65] Perhaps this proposal to abandon principle was inevitable given the recent tradition of technological bandwagonism in American librarianship.

In sum, there is good reason to question whether library investments in electronically published resources serve to move our institutions away from traditional print literacy and the privacy of inquiry which it embodies. Electronically published resources do not merely mimic the attributes of print. Indeed, that is one of the major arguments in favor of them. However, it is these differences which are posing strong challenges to libraries' traditional support of literacy and private research and inquiry. Neil Postman wonders whether the entire tradition of intellectual freedom is not a print-based, nineteenth century issue, irrelevant to our new resources. He writes that "if the inclination, preparation, opportunity, and motivation to read are swept away, then it makes no difference what books are on the shelves of libraries."[66]

Conclusion

In conclusion, I believe that a convincing argument has been made that the United States and its library system is a good case to review the issues raised by the introduction of electronically published resources. Further, the three areas examined do show that these resources pose

significant problems to the mission and the values of modern US librarianship. Where does this leave libraries? Unfortunately, I do not have a comforting answer. My colleague and I have argued that the social, economic, work, and institutional patterns of accomodating technological information resources in libraries are essentially technocratic in nature.[67] American librarianship seems to have fully accepted the post-industrial thesis, particularly 'Bell's ascendent vision of codified theoretical knowledge as the next economic engine [and] the rise of a technocratic 'knowledge elite'.... Since [this] is the new economic capital, social processes and institutions (such as schools and libraries) which produce, reproduce and transmit such knowledge must become predictable through planning and rationalized control just like any other economically important raw material.'[68] As we have argued, this now characterizes the nature of technocracy in institutions like universities and libraries, not to mention commercial broadcasting, publishing, and data-gathering enterprises.

Many of the tell-tale signs of this are evident. There has been a constant drumbeat for librarians to professionally situate themselves and their institutions to capture information markets, offer better 'customer' service, and to keep libraries economically 'viable.' There is a recurring theme in the literature to justify libraries by the economic good they do for the community, like business research services and facilities and helping neighborhood property values. Meanwhile, the President includes digital libraries in plans to keep the United States economically competitive in the world while the budget situation of most American libraries, combined with the higher cost of even more information outlets, is leading to a culture of cost-benefit librarianship in content and services. Finally, digitized texts and images, the model of information storage which libraries are rapidly moving toward, are a fundamentally instrumental conceptualization and format for knowledge.[69] Taken together, these trends bear more than a casual resemblance to previous periods of technocratic planning and control of social and human resources - at least as this has been historically manifested in the United States.

Librarians and electronic publishers are not enemies, nor are they Siamese twins. Librarianship will not serve its historical and public role in preservation, literacy, and equality of educational opportunity if we assent to the technocratic redefinition of our profession and our institutions. The problems raised in this paper are not insurmountable. There is a role - even in the traditional missions of libraries - for electronically published resources. But we must play our rightful role: protector of the integrity of information, preserver of archives, equalizer of access, facilitator of unmonitored and unfettered intellectual inquiry, and yes, collectors and sponsors of printed materials. This means, for instance, that libraries should be in the vanguard - using our economic muscle - of the effort to standardize CD-ROM database formats and software. Libraries should be in the vanguard of challenging and negotiating licenses which do not economically or by contract allow us to make electronic publications available to our publics, and allow us to retain what we have purchased. Both of these would go a long way towards reestablishing the role of libraries in making information available to the public, and not incidentally, they would free up monies to purchase other electronic resources for our patrons.

What is most discouraging to me is the quick abandonment of historical principles on the part of librarianship in our attempts to find some niche for ourselves in a presumed info-future. As I have written elsewhere, if we persist in our current path, 'there is no particular reason for all of these [electronic] resources to be offered through libraries.... We will have become just another competitor in the information marketplace, not logically, socially, economically, or morally better or more desirable than other information providers.'[70] The historian Perry Miller prescribed what we

need when we survey new technologies and what he called the 'panorama of huckstering.' He said we need to 'keep in [our] eye the glint of disapproval.'[71] Libraries must not continue on the technocratic path toward convergence with information vendors. Only then will there be something like a true partnership with electronic publishers.

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