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The Roles of Libraries in Access to Networked Information: Cautionary Tales from the Era of Broadcasting*

THE DEVELOPMENT OF THE NREN: THE SEARCH FOR HISTORICAL PRECEDENT

The development of the Internet and the implementation of the National Research and Education Network (NREN) program are massive, intellectually inspiring enterprises. They represent a great adventure into a largely uncharted future. And, as we look beyond the NREN towards the National Information Infrastructure (NII) program now under discussion at the federal government level, we face the challenges, the promises, and the threats of networked communication and information access that is now reaching beyond the research and education communities to the broader population of the United States. Indeed, as we increasingly recognize that the Internet is a global rather than a national effort, we must consider the worldwide impact of these technologies. We have opportunities to create new industries and to change how we do business as a nation, how we educate children, and how we inform our citizenry.

In the absence of other guidance, it is natural to seek analogies with past technology shifts of an equally massive nature. The lessons of history can, we hope, guide our policy and planning and offer models and experiences that can inform our debates and our decisions.

I have several problems with the current search for analogies in the past. First, those seeking parallels almost always characterize the Internet and its future progeny as infrastructure. While there is an element of truth in this— certainly the Internet is an enabling infrastructure for communication and the formation of communities, for teaching and learning, for access to information,

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*This paper is loosely based on a talk given at the Clinic. After the humbling experience of reading the transcript of the actual presentation at the meeting so kindly obtained by Ann Bishop, the order of topics has been substantially revised, and parts of the talk have been expanded, while other topics already well-covered in the literature have been largely omitted. At the same time, I have endeavored to retain the informal style of a talk.

and for the conduct of commerce—I believe that this is a limiting view. The infrastructure perspective suggests parallels with the development of railroads, highways, the power grid, and the telephone system. True, the development of these infrastructures enabled massive social and cultural changes. But most of the changes happened *outside* of the infrastructure in social, commercial, political, and other realms. I don't know how to say this more clearly.

The viewpoint I want to present here is that the Internet forms a new medium for communication and the distribution of information. It is a new carrier of *content* in a way that highways, railroads, and power grids never carried content, and in which traditional person-to-person telephony has never, by its nature, been able to support directly the distribution of content. (Ironically, some of the early telephony pioneers did believe that the telephone would be a form of mass media, where people would use party lines to get news and entertainment. Obviously, with a few exceptions like the time and weather numbers and the developments in 900 number services over the past decade, this didn't develop.) None of the infrastructure systems discussed as possible models for the Internet served as actual carriers for media content. But I believe that there is a truly interesting parallel that can be drawn between the Internet and the development of radio and television as broadcast media earlier in this century. While these media brought along an infrastructure of radio and television receivers and broadcasting stations, the really central issues had to do with the development and control of content carried by the media and not the deployment and management of the infrastructure. Similarly, I think that it is useful to focus on networked information as *part* of the content of the new networked medium, as distinct from the network as simply infrastructure. What makes the distinction between medium and infrastructure particularly complex in the networked environment is that the Internet mixes media (information distribution channels) and communications in a novel way, giving rise to hybrid forms such as interactive media. It's difficult, and probably misleading, to try to separate the media elements from the interactive communications elements.

I can't possibly explore the full implications of this parallel here. The development of the mass broadcast media, and issues such as the role of government regulation and the private sector in this development, are enormously complex and have merited extensive study already. I recommend particularly the book *Technologies of Freedom* and other works of the late Ithiel de Sola Pool (1983) as a broad look at some of these issues.

One of the concerns of this meeting is the changing roles of libraries in the networked information environment. Recast in the context we are discussing, we might restate this as the role of libraries in managing and providing access to the content of the new medium represented by the Internet and the new world of networked information. I want to focus on the relationship of libraries to content in this new medium, but I do want to view this question broadly, in the context of public libraries as well as academic research libraries. I believe that in discussing library roles in the networked information environment, we are often too parochial in our almost exclusive focus on academic research libraries. Given that the Internet was initially created to serve the academic

and research communities, it is natural that this group of libraries would be the first to explore the question of library roles and services in a networked environment, and natural that they would be a primary focus of our interest. Thus, our thinking and experience is most mature in the research library context. To my mind, the issues are simplest for research libraries (although this view may simply reflect how immature my thinking is outside of the research community). Research libraries are relatively well-funded; they serve fairly well-defined user communities; and they have fairly well-defined missions. Perhaps most importantly, they have a close mission connection with the research and education communities that are today embracing information technology, networking, and networked information on a large scale. Indeed, aggressive adoption of these technologies is part of the strategic plan for most of the organizations that support research libraries. But few of these factors are valid for a typical public library. As we look beyond the NREN towards the proposed NII, we must include the realities of the public and the public libraries.

One of our collective obsessions in our examination of historical analogs to the Internet is the allocation of operating (access) costs and the support of investment in infrastructure. In the broadcast media, the infrastructure investment was almost entirely private. (Except that in some philosophical sense the government did enable and subsidize the development of this infrastructure by making available and licensing parts of the electromagnetic spectrum—a public resource—for broadcasting; and it did set up the Federal Communications Commission (FCC) to manage use of this resource. Today, the proposals to auction spectrum are making this public sector investment more tangible.)

You may not like the results—the "vast wasteland" as former FCC commissioner Newton Minnow has characterized it—but the fact remains that few public funds were invested in developing this broadcast infrastructure. Corporations and the consumers paid for the infrastructure. Consumers invested in infrastructure—purchasing TVs and radios—because they wanted access to the content of the new media. Who created this content? To some extent, corporations that wanted the public to invest in infrastructure created the content. In many cases, the same corporations sold receivers and ran networks, particularly in the early days. But other forces played a role as well. Interestingly, advertisers played, and continue to play, a pivotal role in making the content of the broadcast media (and indeed, even the mass market print media) available to the public on acceptable financial (access cost) terms. I believe that advertisers or, to use a broader, yet more accurate term, "sponsors," may play an unexpectedly large role in enabling the networked information environment for the general public.

Libraries exploring and evaluating possible roles in this new environment can draw insight from the history of the relationship between sponsors and advertising agencies on one side and broadcasters (media operators) on the other. Within the context of the networked environment as a *medium,* I will stress the potential role of content sponsors. I believe that in the new networked environment we will see bizarre organizational role shifts. As existing organizations try to survive and to define viable new roles in this environment, some libraries will assume some of the characteristics of broadcasters and commercial service providers; at the same time, new commercial or quasi-commercial interests will compete intensely with traditional libraries for patrons.

DILEMMAS FACING LIBRARIES IN AN
ELECTRONIC INFORMATION ENVIRONMENT

Let us assume that users will finance their connections to the developing networked environment: they will purchase the necessary computers and network connections, most probably at a flat monthly rate under the Internet model. Current experience supports this assumption. And the parallels here to services such as cable television are interesting: one invests in equipment (a television, a radio receiver) and obtains content for free or perhaps at a rather nominal monthly charge (for cable connection or premium services such as HBO). All evidence suggests that most users do not want to pay for information transactionally, or they don't want to pay much (i.e., they will pay for small amounts transactionally, "pay-per-view," or by subscription for a newspaper or popular magazine; but they will not pay $1,000 a year for a journal subscription or $200 an hour to search online databases).

So what is the information content that these new network citizens will enjoy? What is the library's role in providing this content? One attractive and comforting (but, unfortunately, probably totally wrong) picture of the future has libraries continuing to act as purchasing collectives which acquire riches of the new era (scholarly, electronic information; new electronic resources for education and reference; and information in captivating, vivid new multimedia formats) and make them freely available to the public. Looking to the current Internet and the roles that libraries are assuming in this environment will show just how unlikely this picture of the future is. Consider these barriers (which will be examined in more detail):

- As major publishers go electronic, the electronic information is usually priced higher than the original print information—sometimes by one to two orders of magnitude. The new multimedia information resources that we anticipate will be enabled by the networked environment are enormously costly to produce. Their economics are akin to producing feature films or television shows. Most libraries simply cannot afford to acquire much of this material.
- Because of the changing legal framework for acquisition of electronic materials, libraries that can afford to purchase such materials often cannot share them with other libraries. Each library's collection is increasingly limited to what it can afford to purchase directly.
- As a matter of principle, most libraries remain unwilling to pass even part of the charges for use of electronic materials directly to patrons, and most patrons are probably unwilling to pay very much, at least outside of corporate special library settings.

On the Internet, there are strong cultural biases against paying for information, and their roots are complex. There has always been information on the network that has been restricted to specific user communities; but until recently the Acceptable Use Policies (AUPs) that governed much of the Internet and its predecessor networks largely forbade general fee-based information.

Most network users don't view themselves as paying for use of the network; their costs are absorbed in overhead of the institution in which they work. If access is free, information should also be free. And because there was no

fee-based information on the network until recently, network users never needed to consider whether they might be willing to pay for information of value— in terms of timeliness, accuracy, or distillation—rather than simply sifting through masses of free information of questionable quality.

These biases convinced people to use primarily "public" information that has been made available by libraries, universities, and government agencies, or has simply been placed on the network for general access by individuals (for example, archives of free or shareware computer software). New types of information are appearing, such as Michael Hart's Project Gutenberg, an initiative which is providing electronic access to old, out-of-copyright information. The quality and utility of such information will be covered later in this discussion; but it should be noted that this is a heavily used class of information on the Internet. Many publishers do not regard the network as an attractive vehicle for marketing access to their high-value information because they fear that the perception of the quality of their information will be degraded. And many well-established publishers (in the broadest sense of content providers) are doing well enough financially with their existing marketing channels that they have little incentive to venture into new, untested marketplaces that don't promise large profits but do threaten these providers with a loss of control over distribution channels. (We should recognize that as a group, large, well-established content providers are generally rather conservative; their economic basis affords them that philosophy. Consider, for example, the very negative reaction from major music rights holders to the recent proposal by the IBM/Blockbuster Video consortium for digital distribution of musical material with creation of audio CDs on demand at point of sale.)

Libraries have done quite well as purchasing collectives and access providers to printed information. Operating under the copyright law and the doctrine of first sale, they have built a national and international interlibrary loan system that allows a patron at any library extraordinary access to the print literature. They have pushed the copyright envelope by delivering copies of journal articles through this system, to the growing discomfort of publishers, and now are even using new technologies such as facsimile and Ariel (network fax) to expedite delivery of copies of this material to patrons. But libraries have largely abdicated any meaningful role in providing access to existing broadcast electronic media, even though broadcast media content often has a much higher general public impact than print publications.

The evolution to electronic information foretells the demise of the interlibrary loan system. Information providers are not selling electronic information to libraries; they are licensing it. And licenses permit the library to make the information available only to specific, limited user communities, for specific purposes and in specific ways, for limited periods of time. Provision for use of electronic materials via interlibrary loan, for example, does not appear in a typical license agreement.

I believe that content providers view the transition to electronic information as an opportunity to restructure their relationships with libraries. Now they are even attempting to apply the license model to printed materials and traditional audiovisual materials, not just to electronic materials. Some information providers are unwilling to sell (or sometimes even license under any type of

acceptable terms) materials of all types to libraries. Outside of the scholarly publishing marketplace, where libraries pay almost all the bills, and sales to individuals are a relatively small, secondary marketplace (even with highly discounted individual rates for journals subscriptions), information providers apparently do not regard libraries as an important marketplace and would prefer to deal exclusively with the end-user marketplace. There are different values underlying this market: in the scholarly publishing marketplace, there is general acceptance of the belief that long-term access to the scholarly record must be ensured. This has been a traditional responsibility of the library community, and one that the publishers acknowledge. In more consumer-oriented information markets, archiving is not generally acknowledged as an issue.

Outside of the academic and research communities, most libraries have little to offer to the networked environment except for information that is made available for them to redistribute without restriction. Such information might come from government agencies. Much of it, however, is likely to come from new sources—sponsors. In this context, where libraries are heavily involved in redistributing and providing access to information that is either free or rather inexpensive because it is sponsored/subsidized, how does the library add value through its involvement in the information distribution cycle? Partly by facilitating access and helping users find what they want, and partly by providing the access technology itself for use by patrons who cannot afford their own. But, as information technology and network access become increasingly ubiquitous, I believe that this will be a question that will continue to haunt many libraries: how many libraries today justify their existence in part by offering access to TV and radio broadcasting to their patrons?

Within the academic environment, one can speculate about brave scenarios where universities take back control of the information and knowledge that their communities create and make it widely available (although I do not believe that this will happen, generally). In such situations, it is likely that parent institutions would assign the responsibilities for managing and accessing these knowledge bases to their libraries, thus providing these libraries with an inventory of valuable electronic content. But public libraries are not part of organizations or communities that create much information, other than public information at a local, state, regional, and federal level. So local information (which will be relatively unique) will be of primarily local interest, and government information at the federal level will be offered by a wide range of providers across the network and thus will not represent a very unique offering by any local library. This is not to say that libraries of all types will not have a public presence on the networks. If nothing else, they will continue to make their online catalogs of their print holdings available, and public libraries will move into community information, service bulletin boards, and databases. Perhaps libraries of all types will serve as mediators and facilitators for various electronic communication and conferencing vehicles for their communities. But this is not the same as providing access to large amounts of electronic information.

FREE, PUBLIC, AND SPONSORED INFORMATION

Whenever information is offered for free (or, indeed, even for what seems to be an unrealistically low cost), it is reasonable to ask: Why? Where did it come from? Who is offering it?

Sometimes the answers are fairly simple: government agencies are required by law to make certain public information available to the public for free or at low cost, or they may choose to make such information available as part of their basic agency mission. (There is a major public policy debate currently taking place at the federal and the state levels about what government information really should be made available, to whom, and at what cost. This debate is important to libraries and to the population at large in the networked information age.) An academic may distribute free reprints of a paper simply to get the ideas out to a wider audience. Corporate or nonprofit institutions (e.g., political parties, major corporations, ecological groups, and educational institutions) may share their institutional views with the public, either by directly preparing and distributing material or via advertising or sponsored programs. Such free information often, and naturally, represents the distributor's point of view. If we agree with it, we usually call it a public service; if we don't, we label it propaganda or crank material. Basically, sponsorship for the distribution of the material usually comes from the authoring institution (the information provider). There is already a lot of this on the network: product literature, technical notes, position papers, and the like. The scope of topics that will be addressed by this class of information will be defined by the interests of the sponsoring institution. Certainly, it won't address the full range of people's interests.

There is a new, ambiguous class of "free" information appearing on the Internet. This is information that is offered by various individuals and groups for the general good or general interest, often as resource information. Sometimes it's inaccurate. Sometimes it becomes obsolete. Sometimes it represents an individual's not necessarily well-considered or well-expressed thoughts, intended to provoke discussion and reaction. Sometimes it's excerpts from another source taken out of context or even inaccurately quoted. This information is often published without a commitment of responsibility; often it is made available as a one-time (perhaps honestly altruistic) action, with little or no commitment to ensure its validity or to keep it current. In the current economy of free information on the networks, these are important resources, but they must be viewed with constant awareness and caution.

A different source of funding for free or inexpensive information exists in the traditional mass media environments (newspapers and popular magazines and radio and television broadcasting): sponsorship. In the print media, consumers usually pay some fraction of the costs while advertisers subsidize the rest. Newspapers would cost several dollars an issue if they did not accept advertising. Some free print publications are entirely advertiser supported. The general public may be generally unaware of the amount of price subsidy in print media that is provided by advertising and the subsequent influence that advertisers may exert on their editorial contents.

We usually don't pay for radio or television broadcasts, which are totally supported by sponsors. In broadcast media, models of fee-based access to content came very late, which was not, in my view, entirely because of a lack of enabling technology. Content is so much more costly to create in the broadcast environment than in the print world that relationships become much more complex.

The history of the relationships between sponsors, advertising agencies, and the networks during the development of radio and television is interesting. Readers wishing more information might enjoy *The Mirror Makers: A History*

of American Advertising and Its Creators by Stephen Fox (1984). In the early days, most shows had a single sponsor, and many of them were developed by the advertising agencies on behalf of the sponsor; the broadcasters simply sold airtime without control of content. A considerable battle ensued which led to a new model in which the broadcasters developed programs and then marketed them to the sponsors and their agencies, allowing them to purchase advertising time. Even after the broadcast operators gained control of content creation, many shows had sole sponsors. Thus, while initially sponsors (or the advertising agencies working for them) created the content, and thus shaped it completely after the transition, they continued to have a great deal of control over the content by virtue of being the "buyer" of the program. Obviously, as multiple sponsorship became the norm and broadcasters became more sophisticated about designing content to reach various types of audiences, the influence of sponsors on direct content waned. But it is still real.

Unlike the radio and television broadcast channels, computer networks can support a basically infinite amount of programming. One wonders, as more sponsored material appears, if we will see independent producers and broadcasters develop content which is then sold to sponsors. Carl Malamud's Internet Talk Radio project is one of the few examples we have today of sponsored content on the Internet, though "sponsorship" here conforms more to the public television model of underwriters than to the model of purchasers of advertising time as part of the talk radio programming. Certainly, Malamud's model is one of content production independent of sponsors. Or will sponsors themselves return to the old model of creating content primarily as a vehicle for advertising products? Advertising might be directly embedded in the programming, as was done with some of the early radio shows ("The Chesterfield Hour" characters made dozens of specific references to Chesterfield cigarettes!), or might be more indirect, in what we now view as more traditional advertising messages surrounding content that does not contain explicit advertising.

The influence of sponsors and advertising agencies on the content of mass media has been of great concern for decades and has been studied in depth by a number of authors. One excellent study is *The Media Monopoly* by Ben Bagdikian (1990). There are many aspects to this problem, including:

- Inability to get controversial materials sponsored and thus made available to the public. Many sponsors prefer to avoid controversial shows. Offsetting this concern, of course, is the fact that controversy often attracts interest, and controversial shows may be a way to reach a large audience.
- Direct meddling in content. A show may give a bad review of a product from a vendor who is a sponsor, who then discontinues its advertising, and thereby program support. News coverage of lawsuits against advertisers may be strongly discouraged. The move away from sole sponsorship, however, has limited the impact of such a withdrawal of support. But the recent formation of huge conglomerates with massive advertising budgets has led to new concerns in this area, as has the acquisition of broadcasters by those conglomerates.

• Indirect shaping of content coverage. This is a more subtle issue. A newspaper that relies primarily on local stores for advertising may not run a series explaining why mail order is a more cost-effective way to purchase products.

There is a final question that merits attention in the discussion of sponsorship of mass media: Exactly what is being sponsored? In the print context, an advertiser pays for inclusion of advertising content with a print publication such as a newspaper. The revenue from the advertising allows the publisher to sell the newspaper at a low cost. A library can purchase the periodical at the subsidized cost and make it available to library patrons or even to other libraries through interlibrary loan.

In the broadcast environment, the issues are more complex. Essentially, the advertiser is purchasing airtime scheduled in a specific relationship to specific programs, which economically enables the network to broadcast the programs. But the programs can also be rebroadcast with other advertising. Often, today, purchasers of advertising airtime are really interested in the viewer demographics of the airtime they are buying, rather than the content of the sponsored programs, subject only to the caveat that the content not offend their customers. If anything, the advertisers can be viewed as subsidizing a performance of the content, rather than the publication of that content in the way that a library might capture and subsequently make available a program to its user community. Ironically, libraries probably cannot legally capture the performance of the advertising itself and make it available to patrons as part of the overall cultural record without specific permission. In this sense, sponsorship of material distributed over the Internet may offer sponsors many more options—a continuum between a print-like publication model and a performance subsidy that is similar to broadcast advertising practice. By sponsoring material that is placed in libraries under license, a sponsor might be able to gain the analog of airtime for an unlimited number of performances within the term of a license (for example, a year or two). One can imagine an entrepreneur creating products like "the consumer health information database" and signing up sponsors to subsidize its placement in public libraries in exchange for including advertising for their products.

ADVERTISING AND SPONSORSHIP IN A
NETWORKED INFORMATION ENVIRONMENT

Certainly, one can view the Internet as a media channel waiting to be filled with content, and with a "viewer" base that is hungry for such content. In this sense, it should be an attractive environment for sponsored content. But we cannot assume that the frameworks and practices that work in the print and broadcast mass media will succeed in the new networked information environment. The unlimited number of "channels" and the ability to narrowcast to individuals or small groups, the interactive nature of the media, and the ability of the medium to reach a national or international user base, thus allowing inexpensive aggregation of relatively large numbers of people with specialized interests for the benefit of service or information providers (or advertisers), will also alter the nature and economics of advertising and sponsorship.

If, for the moment, we equate sponsorship with advertising (and I will argue that sponsorship may come to have other, perhaps more substantive, benefits in a networked environment), then we must recognize that the usual purpose of advertising is to reach the maximum number of target viewers at minimum cost. Advertising is expensive and adds substantially to the costs of many products. In the network environment, it may be possible to link sponsorship much more closely to content that engages precisely defined target audiences. Mass media are just that—they reach the masses, and, unless one is advertising very broad-based consumer products (which is often simply image or name recognition rather than product information advertising), they are inefficient. Even broad-based consumer articles such as cars are inefficiently advertised through mass media. Most viewers buy cars only occasionally; most of the time they just ignore the advertising. How much more effective would it be if people interested in purchasing cars could simply subscribe to an electronic distribution list, receive material as long as they were interested, and then unsubscribe when they were no longer interested? This is but one argument suggesting that in the networked information environment there may be far fewer advertising dollars to support traditional broadcast-type media content, and that advertising price/performance for products may improve dramatically, at least in situations where advertising is trying to "inform" customers rather than just promote brand name recognition. *Future Shop: How New Technologies Will Change the Way We Shop and What We Buy* by Snider and Ziporyn (1992) offers a much more extensive exploration of these themes.

Advertisers will face other concerns in the networked environment. How easy will it be for a viewer to filter out advertising content? In broadcast media, this has always been inconvenient for the viewer, even when using a VCR and fastforwarding through advertisements in TV programs. If this could be simply accomplished by an automated filter, it seems likely that investing in traditional mass media advertising as part of networked information content would be unappealing to many advertisers. And, based on the experience of public television, it is unclear that simply receiving a recognition in the opening panel of a networked resource will sell many products.

A final issue is the increasing emphasis on the value inherent in the development of lists of interested purchasers of certain types of products. This is well understood in areas such as the mail-order catalog industry, and is increasingly being emphasized as retailers, particularly large chains, move into more precise point-of-sale technology. For example, bookstores may give you a modest discount if you join their book clubs; this simply means you fill out a form with some demographic information and receive a card with a member number. From that point, however, the store can build a detailed database of the books that you purchase, which is of sufficient value to them that they are willing to discount their prices. Similarly, grocery stores are now delighted to let you pay by credit card, and the credit card companies are also mining their databases of purchasing patterns in more sophisticated ways.

The networked environment seems to be an ideal context in which to extend this sort of point-of-sale compilation. It supports very narrow interest publications and distribution lists. One can easily offer free software or other information in exchange for demographic information or for the identities of

those who want to participate in the free offer. An advertiser or sponsor might make information available just to build up these sorts of profiles of potential buyers for other products. Unlike the mass media, in the networked environment it's often easy to find out who is looking at your sponsored content or at your information. Here, perhaps, is a new justification for sponsorship: to acquire and possibly resell information about people's interests.

CONCLUSION: LIBRARIES AND THEIR COMPETITORS ON THE NETWORK

It should be clear from the above arguments that libraries that are not in a position to act as purchasing collectives for well-focused and well-funded user communities face a difficult time in the networked environment, at least in providing information in electronic form. We've identified a number of problems already:

- Breakdown of the interlibrary loan system as a way of providing access to electronic information,
- High costs of electronic information,
- Attempts to bypass libraries and market this information directly to consumers.

Some argument has been made that libraries may obtain certain types of sponsored content that they can make available to their user communities in electronic form. Yet their role as providers of access to this type of information will weaken as information technology and network access becomes more prevalent; it will be easier and easier for the developers and sponsors of this type of information to reach library patrons directly.

Libraries will also be uncomfortable with pressures to collect demographic information, and perhaps even individual user identities, as a condition of being able to make the information available. Of course, if they stand on principle and refuse, any number of commercial information suppliers will have no such reservations.

There is a final factor at work as we move into the networked environment. Networks dissolve geographic distance which has always been the strongest link between public libraries and their user communities. As we move into the networked environment, we may be moving into an age of increased specialization by information providers, including the libraries. The economics work: it is possible for anyone in the United States, and indeed in much of the world, interested in a specialized topic to use the network to reach some central organization that offers information on this topic. And this may set the stage for new organizations that compete with libraries by mixing access to information, services, and products, as well as to communications mechanisms, for specific communities of interest rather than geographically defined communities.

Consider collectors—of stamps, coins, antiques, or even model airplanes. A good public library may have a few reference books of interest to such a collector. An interested collector probably subscribes to one or two magazines

or newspapers, as much to look at the advertising as to read the articles. Perhaps the local library subscribes to a few of these magazines. The collector may also attend meetings to chat with other collectors and to transact business with dealers. In the network environment, one could combine a buy/sell bulletin board, reference sources, various communications tools, online magazines, and everything else (except for face-to-face social and business interaction) that could be desired by even the most avid collector in a given area. In this situation, it is likely that the service operator would want to create significant electronic content and perhaps even partially subsidize access to it to attract collectors to other services. Advertisers would also want to subsidize content access to some extent, just as they subsidize magazines for collectors through their advertising today. It is difficult to see how a library could match the attraction of the combination of information access and services that these new electronic environments can offer, even if it were willing to invest in acquiring the electronic reference content for its user community. In areas where people are willing to spend money, specialist services on the network will quickly supplant the limited services offered by general-purpose libraries.

I do not want to suggest that libraries will go away. But general-purpose public libraries are, to my mind, severely threatened and constrained in scope by many aspects of the evolving networked information environment, particularly if they continue to avoid, as a matter of policy, fee-for-service offerings and refuse to act as brokers acquiring information for patrons at cost. They will continue to serve a number of roles: providing access to at least some electronic information, particularly for those who do not have the information technology, the access, or the skills to obtain and use this electronic information directly (a slowly but steadily diminishing group). They will still offer a place where an information seeker can obtain personal help from a specialist in locating, navigating, and obtaining information, to the extent that libraries can continue to offer these services. They will continue to be places that teach literacy and information-seeking skills. They will play an essential role in providing access to government and other free information, and perhaps to some information that is made publicly available through sponsored funding. And, of course, they will continue to provide access to their print collections, which will continue to grow.

But libraries may play a limited role in providing access to networked information outside of scholarly and scientific settings, where the libraries are still the sponsors to a great extent. This is perhaps the key lesson in the parallels with the history of the broadcast media, where libraries play an extremely limited role in making the content of these media accessible or in organizing and preserving their content. It is commercial sponsors, rather than libraries, that make this media content available to the public at a price the public is willing to pay, and that largely set the terms for what is available for viewing.

Consider the shifting models of information and the roles that libraries play in funding and providing access to information in its various forms. Libraries played a role in financing traditional book publishing: creating content was relatively cheap, and libraries purchased a fair amount of the product. They were able to make these books available to their patrons and could share them through interlibrary loan. This is the model that has been

projected with scientific and scholarly information. Though the costs have gotten out of hand in recent years, this is still the model we follow. Here, libraries are actually the primary funders. Print mass media (a relatively recent development in the history of publishing) is mostly subsidized by advertisers and by readers. Libraries get involved mainly in its preservation as part of the cultural and historical record rather than by providing access to it when it's new (few people go to the library to read the daily newspaper). But, because the information was in print form, libraries could still acquire, house, and share it. Broadcast content has become very expensive. It is paid for mostly by advertisers. Libraries cannot afford to acquire it, in general, since it is "performed" under advertiser subsidy rather than sold. And under the legal regimes governing performance, the ability of libraries to capture and replay these performances is highly restricted. The goal of those paying for broadcast content is to reach consumers. They don't need the libraries' help. Indeed, they make the content "freely available" themselves. Libraries have been cut out of the loop as initial access providers, much as they have been with mass print media, but because of the different legal framework (and, frankly, because most libraries seem to be rather uncomfortable with broadcast media on a number of levels and certainly have not, generally, aggressively pursued a role for themselves), they have little to do with ensuring continued access to the content of broadcast media.

Electronic information is taking on strange new shapes; it is a mix of content, communications, and services. It is not clear to libraries what part of the new kind of information is properly part of their responsibility. And again, networked information comes under a legal and marketplace framework that does not facilitate a role for libraries in providing access to it. It is expensive to produce, and since libraries will not be the primary funders for the creation of much of this information, they are likely to play a small role in offering access to it, unless they can convince those who are financing its creation that they can add value by furthering the objectives of the financiers.

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