

Some Economic Challenges in Building Electronic Libraries: A Librarian's View

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Summary

Two points are made in this talk.

- The electronic transition is not cheap for libraries.
- Libraries and information producers need to work at new models for funding and paying for electronic information.

For obvious reasons, this paper will, necessarily, represent an American librarian's view.

Introduction

Some of our colleagues, chiefly scientists, think that electronic information is going to be very cheap;[\[1\]](#) and some of our colleagues, chiefly STM publishers, think that electronic information will be more expensive than print information has ever been. Depending on whom one asks, librarians offer a range of views, but even the most optimistic look with concern on early library studies that suggest that digital costs, at least digital transition costs, will be high indeed. At the same time, it must be admitted that all such assessments to date are at least premature and incomplete and quite possibly very wrong. There are as yet very few examples in place of a system for original creation and production of high quality electronic products that does not at some level imitate printed journals and books. Further, there has been only a limited market period to allow consumers (individuals or institutions devoted to research and teaching) to vote with their money, to say just what they want and how much they are willing to pay for it.

Certainty

We can be sure of two things. First, there are and will be costs for providing access to, integrating, and maintaining electronic formats -- and the scale of systems being created cannot be supported by individuals, any more than individuals can directly pay for today's information and libraries. Libraries of both past and present bear witness that an ordinary reader-driven, supply-demand commodity market has never been a viable way to support any but mass market publications. The costs of new electronic information will similarly be borne by educational and research institutions. Many of these costs are ultimately and indirectly funded from taxes on a nation's citizens, taxes for information resources that are channeled through libraries and research institutions.

Second, the emerging electronic technologies present a need for long-term reliable access and service systems no less demanding than our paper-based system, and libraries are the long-lived institutions that carry out such a role. Accordingly, if libraries today position themselves for a long-term presence in the communications system, they are likely to have a robust future.

This optimistic view of the role for libraries depends, of course, on how one defines the future library. To be sure, for centuries no one library has been able to collect, service, and save in perpetuity all the published material (in whatever formats) that its users may want or need. As a response to the flood of information and the constraints of finite space and funding, libraries of all sizes are borrowing and buying, from external suppliers (other libraries or document delivery services), articles and books for their users on an substantial scale. Over the last ten years or so, a notable development in the United States is the growth of state-wide library systems or collectives of like-minded libraries into consortia whose members in some ways behave as one library with a common online catalog and expedited information delivery between libraries. The expansion of electronic databases and full text files intensifies this trend in two ways:

(1) Library consortia can obtain better bulk pricing deals for the same product than a single institution can for itself. That is, an increasing number of electronic producers now look favorably upon selling access to their databases to an entire network or state under a scheme that reduces the price to each individual institution that is a member of the group, while offering the producer the necessary revenues to continue its business.

(2) Library staffing and facilities savings that accompany such electronic scale-up can be considerable. Rather than each library having to create capabilities for preparing electronic files for access and long-term storage (which commitment means technologically savvy staff to acquire, load, and possibly format/tag/reformat the incoming materials; and investments in enhanced servers and other technological support), such capabilities need only be built by any one of the members in a consortium and deployed for all the rest.

Back to the Present

Let me outline some of the infrastructure issues that concern librarians before even any given piece of electronic information actually comes into the library.

I. Infrastructure Demands and Research Libraries

A. Staff Development

Traditional library training and staff development need to be supplemented with significant technological skills and capabilities. Of course, technical skills take the librarian only so far; she must also know the library's users and their demands, and she must be able to help shape those demands in reasonable proportion to what is possible in new and changing environments. It is a question first of identifying (or, failing that, of training) people with those skills, and second of creating the right leadership roles in the library for them to take up.

B. Equipment and Software

If libraries are to acquire information in electronic form, they must address the technological needs of staff and patrons. In principle, electronic publishing can be cheaply distributed by publishers, but when electronic publications arrive on an academic campus, access suddenly becomes expensive. In the Yale University Library, we have well over 600 full-time-equivalent staff. Each of them must have appropriate current equipment, software, and support, and there must be funding therefore for reasonable refreshment of that technology often enough to keep up with the wave of new electronic products coming down upon us.

Keeping the equipment and software fresh and upgraded when an important "killer application" appears is a substantial and serious responsibility; and keeping it working day to day is another expensive challenge. So are infrastructure questions: do we need networks of servers mirroring each other or more bandwidth linking users to central sites?

The potential demands on institutional budgets of this kind of capital cost and rapid depreciation outstrips traditional budgeting. We understand far better how to build a brand new library building every 25 years than how to replace substantial components of an electronic library every 3 - 5 years. We are not sure yet how to begin replacing one with the other.

C. Public Service

Most important are the patrons for whom libraries exist. For a long time to come, many of those patrons, particularly students, will present themselves physically on library premises and ask for access to information on machines libraries provide. Already many U.S. users have equipment at their office desktops that lets them access on-line library information without libraries providing terminals for them; but preliminary evidence suggests that this does not result in a demonstrable reduction in demand for facilities on library premises. More users are coming to libraries than ever before. The varying electronic information sources with their diverse interfaces also need to be integrated with related print and electronic resources. Electronic information seekers need a new kind of library integration and "instruction" to ease navigation through incompatible and non-transparent interfaces and search strategies. Always, the user remains libraries' largest focus and challenge and visitors to libraries remark on a rapid growth in formal and informal teaching and outreach to support these users as they learn new skills and information sources.

II. Electronic Publishing and Research Libraries

With those preliminaries, let us now consider some of the issues that electronic library content raises.

A. The Electronic Explosion -- Existing Publishers

There looms an explosion, driven by electronic technologies, in the production and distribution of information begging for librarians' attention. The risk here is one of de-stabilization. The same information now begins to present itself in multiple formats, each answering a particular kind of user need. How do librarians serve their patrons' needs if a long-established product starts appearing first in one form, then in another, then in another, then disappears for a while? There have already been cases of this happening. Each format decision entails a series of decisions not only to buy (or rent or pay for access for a specified period to) the information but also to equip the library to present the information in one or another electronic form and then to train and retrain staff and users to adapt to each new form the particular information resource takes. If that pattern multiplies itself by a large number of individual publishing projects undergoing such transformation, the library and its users find themselves victims of a particularly insidious form of cost increase that is well nigh unavoidable.

B. Electronic Explosion -- New Players

At the same time, the excitement of the new environment and the relative ease of "publication" encourages many who never thought to "publish" before to begin creating electronic resources that demand the librarian's attention. Some of these new publications will carry high purchase prices, but neither can the costs of the free resources of the Internet be underestimated. Three years ago, several colleagues and I originated NewJour, an e-mail list with a continuously updated "hot link" WWW archive,[\[2\]](#) to notify scholars, librarians and other interested parties of new electronic journals as they began to appear. In early 1995, after almost two years, NewJour had distributed information about 200+ new e-journal titles. Now we post on average 10 new announcements per day of journals

available over the Internet. Many of these Internet titles are e-versions of publishers' print titles and bear a subscription price tag; others are created by academics for "free" distribution. At least half the readers of NewJour are librarians who assess these items and decide whether to make Internet e-journals available to their clients. That evaluation time carries a cost, and when the resources themselves are unstable (one of the commonest chores with the NewJour list is updating URLs that have changed within weeks or months of original announcement), the world of free information begins to carry a significant price tag.

C. Explosion Unabating

And it is also a truism that, at least for the present, the tidal wave of print publication shows few signs of abating. For libraries, that means that most electronic information costs are added costs. A few products (chiefly abstracting and indexing services) appear in new electronic forms that happily replace paper forms, but for the moment, user attachment to print forms and the experimental quality of the electronic titles means that for the most part the incentive is not to replace but to duplicate. How often should libraries upgrade paper copies? On what bases should a library make such decisions, especially if the paper copies show no decline in usage? In practice, the net effect of electronic information on library budgets for the foreseeable future is a substantial increase in information costs. Longer term, the shape of things to come may be seen in that the cost of, say, the electronic Encyclopaedia Britannica is based not on quantity of information but number of users; that betokens a radically different economic basis for our future decisions. That is, the paper encyclopedia costs about \$1500; the electronic versions costs \$0.50 or per user. It is impossible to predict when, if ever, the acquisitions budget for print materials will begin to abate its growth to facilitate growth on the electronic side; for the moment, there is no release in pressure.

D. Long-Term Access/Preservation

Electronic materials bring their own worries, as well, regarding long term access and preservation. Who will assure readers that material of high current value (and thus in a publisher's interest to prepare and sell) will be kept intact or migrated to a next generation of technology when the value falls below a publisher's criterion for marketability but remains significant for scholarly and scientific users? Some scientific disciplines require only literature of the last few months; others rely on literature going back decades.

E. Licenses

It is so far characteristic of electronic information that it rarely comes to libraries, when they pay for it, as free of 'strings' as did print material. The concept of First Sale in the US. Copyright Act of 1976 (Section 109, with the equivalent principles in other countries) has given libraries the ability to service and lend all the objects they buy. Books are their purchasers' to keep and preserve. Electronic information, however, characteristically comes with license agreements that constrain rights in various ways.

- i. Potential loss of knowledge. Libraries generally do not own the electronic material that they are paying for (they lease or access it for a limited time). If at the end of that time, they cease paying the lease price, prior investment may become worthless as the information is taken away.
- ii. License restrictions on use probably mean that libraries cannot let all and sundry make reasonable use of materials but must employ passwords and user IDs to restrict use to formal members of specified academic or scientific communities.
- iii. Limitations on users' rights. In the world of license agreements the licensee generally begins with fewer rights to use information than in the world of print material,

and then further limitations may be added.

iv. Licenses are labor-intensive. Negotiation requires time, and time is a major cost here. How librarians can work together with publishers to encourage a more enlightened form of agreement, with a fairer balance of rights and responsibilities, is an open question of the greatest importance.

v. Cost. In general, electronic licenses so far have cost on average 1/3 more than print equivalents. This has been the experience, in any case, for Indexing and Abstracting services, and American libraries have attempted to find the funding to absorb these increased costs for such valuable bibliographic tools. Now, full text is coming. For full text, many publishers also have the expectation that higher prices will be asked and should be paid. Publishers are setting surcharges of as much as 35% on electronic journals, and libraries simply do not have the capacity to pay such monies without cancelling a corresponding number of the journals of that particular publisher or dipping into other publishers' journals. Many of these licenses are for trial projects. For these titles, we are partners in an important experiment with publishers. It is not readily within our power to pay higher-than-print prices for such titles as well.

vi. Copyright issues. The costs of copyright clearances as librarians begin to offer electronically-enhanced forms of document delivery, are a real economic factor. If indeed an adversarial atmosphere springs up between users and publishers and leads to litigation to define more precisely what rights users have, the results will be expensive in the short term and unlikely to lead to freer access in the future.

Cooperation on e-licensing between the sectors is vital. The Yale Library has received funding from the Council on Library Resources/Commission on Preservation and Access to provide for the academic library community some guidelines and models for negotiating and signing e-licenses. We are designing a World Wide Web resource to do this job; it should be live in late 1996 or early 1997.

The Research Library -- A Proactive View

What then may we expect of libraries and librarians in the years to come?

1. We will seek out electronic projects and products that permit and encourage wide use of material by not only by our own institution's clients but, as far as possible, by a wider audience.
2. We will prefer to buy information delivered through widely accepted, non-proprietary formats and standard protocols so that this information can easily integrate through a common front end for users. It is expensive and inefficient to deal with dozens of incompatible formats.
3. We will vote with our libraries' pocketbooks, strongly preferring cost-recovery mechanisms that succeed in spreading out the costs of information thinly enough that access will not be reduced and perhaps will actually be improved. The power of the new media is such that we should press for affordable prices with maximum access. We will form buying cooperatives that increase bargaining power for license prices and terms.
4. Where this is not possible -- with recondite scientific information -- we need then to press vigorously for social attention to issues of appropriate subsidies for the common good. Questions of funding are a high priority in the United States today, where many forms of educational and library support are under threat.
5. We librarians expect to continue in our valuable role as after-market stock managers for the publishing industry. A fear in this new environment is that when the sales life of a product has been

exhausted, it will simply disappear. Libraries are good places to assure cultural access to the past and its treasures, even sometimes the very recent past. Appreciation of librarians' value in performing that function needs to be reflected in the economic transactions that we enter. License agreements, for example, characteristically ignore this problem.

6. Most of all we intend to pursue the opportunities that present themselves not with a view to our own economic interests, short or long term, but to the truly exciting educational and cultural possibilities that now lie open before us. We enter an age that is already miraculous and that bids fair to make more and greater miracles all the time. We all need to keep our eye on those miracles -- their real capacity to contribute to the advancement of knowledge and the betterment of human life. If all parties to the economic transactions that we negotiate in the future keep these values in mind, all of us will make the practical decisions more responsibly and more effectively.

FOOTNOTES

1 *Scholarly Publishing at the Crossroads; a Subversive Proposal*. Ed. Ann Okerson and James O'Donnell. Washington, DC, ARL, June 1995.

2 The archive is located at <http://gort.ucsd.edu/newjour>. To subscribe, send mail to listserv@ccat.sas.upenn.edu with the message "subscribe newjour".

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