

A Librarian's View of Some Economic Issues in Electronic Scientific Publishing

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Ann Okerson
Associate University Librarian
Yale University
New Haven, CT
06520-8240
Ann.Okerson@yale.edu
<http://www.library.yale.edu/~okerson/alo.html>

Summary

Three points are made in this talk. First, libraries play a vital role for research and education. That is, they consolidate funds for information, they consolidate information for their clientele, they organize that information, they service it for their users, and they archive it for the long term. Further more, they accomplish these things in such a way that the researcher or student coming to libraries does not have to pay for these various information-enriching activities. Thus, libraries in some form that continues the above services, are likely to endure. Second, the electronic transition is not very cheap for libraries. Third, libraries and information producers need to work at new models for paying for information. Site licensing works at the moment but it is generally not satisfactory for libraries in various ways which include access terms and/or price.

Introduction

It is important to know how librarians see the economics of electronic publishing, but it is equally important to recognize that there is no one "right" view of this topic. Rather, there are perceptions and values differently held by different players in the scholarly and scientific communications system. If here we begin by seeking to privilege or dis-privilege any view, we will surely end in bickering. A more fruitful approach is to recognize that all parties have legitimate interests and concerns and to seek collectively to make a new system that responds as well as possible to the things that all parties value, recognizing that the primary interests to satisfy, in principle, are those of scientists and their research enterprise. In practice, it is a question of matching the needs of science to the practical requirements and possibilities of the institutions that house scientists.

It is in that spirit that I will represent here the main concerns that librarians bring to the table. I will not be bashful about reminding you that librarians have a distinctive vantage point from which to view the system, poised as they are in the middle of the information food chain between authors and readers. But to be sure, librarians are closer to readers than to authors and often represent the interests of the scholars and scientists who need good access to information.

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

Some of our colleagues, chiefly scientists, think that electronic information is going to be very cheap; and some of our colleagues, chiefly STM publishers, think that electronic information will be more expensive than print

information has ever been.¹ 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.² 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.

The Once and Future Library

Dr. Ginsparg's paper at this conference says that the current economic model for funding scientific publishing, borne as it is in part by research libraries and in part by research overheads, is doomed. He makes the further observation that this is because electronic dissemination of science research is so compelling and achieves *such* efficiencies, that the current papyrocentric system with its many limitations will not survive. I respect and support the enormous vision and leadership Paul Ginsparg has provided for us (of scientists shaping and controlling their information future through efficient, cost-effective electronic means) and expect it will become one of the key models for science information distribution. For a number of reasons, I agree with the observation about the survival of the current economic system -- that system cannot endure, and we must become far more imaginative than we are so far about the distribution of electronic publications.

But one should avoid reading too much into Dr. Ginsparg's view and taking it as a pretext for believing that libraries have little to no role in this new future, because:

First, there are and will be costs for providing access to, integrating, and maintaining electronic formats -- and the scale of systems and funding that are being created cannot be supported by individuals, any more than individuals currently can directly pay for *today's* research and libraries. Research 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 scientific and academic publication. 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 research institutions; the market pays for some of this as well (for example, through university tuitions).

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 scientific communications system, they are likely to have a robust future.

This optimistic view of the role for research 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, research libraries of all sizes are borrowing and buying, from external suppliers (other libraries or document delivery services), articles and books for their users on a 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 campuses. The expansion of electronic databases and full text files intensifies this trend in two ways:

First, 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 collective, while offering the producer the necessary revenues to continue its business. (This is really only an extension of the logic of "bulk

pricing" that created libraries in the first instance: many users gaining access to a single copy sold at single-copy price is our foundational economic idea.)

Second, 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. That one place can be centralized and shared (see, e.g., OhioLink in the state of Ohio) or it can be shared/distributed among members (see., e.g., CIC consortium of 13 university libraries in the Midwest).

The scholarly and scientific communication system of the future will encompass the research libraries of today in some form, but the array of resources will be found in a diversity of sites and forms that cannot be limited to our current libraries. New library "systems" are being created, offering us a layered future information future comprising:

--Single or local research libraries. These contain print collections, current and retrospective, along with specialized databases needed locally.

-- Legally created or voluntarily established collectives of research libraries. Here, heavily used electronic research tools (such as A & I services, mainstream preprints and journals and others) will likely be held by cooperatives, collectives or consortia for all the members of the group. This is an important emergent model, and one might foresee that the ARL (Association of Research Libraries), now a group of 119 top North American individual institutions, may create a second membership category: 12-20 super-libraries, the research libraries for electronic information.

--National libraries and national licenses. We have long financed national libraries for both general and specialized needs. In the future, electronic information of indispensable national interest will be licensed and distributed nationally. Already some of the heritage collections the Library of Congress proposes to digitize, as well as the work of the U.S. Government Printing Office, are being managed in this national fashion, and the National Library of Medicine's MEDLINE has provided a central electronic resource for some years. However, because of the diverse funding models and agencies for U.S. research it is hard to imagine that such a national model (emergent in various EU countries) can prevail for many, let alone all, fields.

-- Other "libraries." This picture of future libraries does not intend to say that information will be library-centric by today's definition of a library. Old and new participants in the information chain will take on distribution and archiving roles -- some are present in this room. The LANL physics archives have achieved a vital "library" role in a very short time. Several publishers in this room, such as Springer Verlag and some scientific societies, have gone on record with a vision of becoming electronic libraries.

Back to the Present

Enough of prophecy. Let me outline some of the infrastructure issues that concern librarians before even any given piece of electronic information actually comes into the library. Then I will sketch briefly some of the hopes and fears begotten by an impending upheaval in the traditional ways of scientific publishing; and finally, I will outline the basic positions that (I believe) librarians will take in assessing developments in this area.

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 fresh and upgraded when a new software "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 25 million dollar library 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 users have equipment at their office desktops that let 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. The varying electronic information sources with their diverse interfaces 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 if you visit research libraries you will notice 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 publishing 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. The Modern Language Association's important bibliography database

has had several electronic lives already (as the MLA has worked through arrangements with different vendors packing their information in very different ways and at very different costs) and may have more before stability is achieved.³ 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 being nibbled to death by a particularly insidious form of cost increase that is well nigh unavoidable -- for the *MLA Bibliography*, for example, is so essential a resource that libraries cannot simply opt out for a decade and revisit it when things have stabilized.

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,⁴ to notify scholars, librarians and other interested parties of new electronic journals as they began to appear; this was done in connection with the annual preparation of the ARL's print *Directory of Electronic Scholarly Journals, Newsletters, and Discussion Lists* (First ed., 1991; fifth ed., 1995). 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 -- if only by a Netscape "bookmark" list or by acquisition and maintenance within the institution of full electronic files -- 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. Even the venerable *Encyclopedia Britannica*, now attaining excitingly high levels of use in networked form, still offers new editions to be refreshed in print form in library buildings. 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 the electronic *EB* 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 per user per year for consortia purchasing access for large blocs of students. 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. Most wrongly, libraries generally do not own the material that they are paying for (they lease 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. Librarians who are used to defining institutional access policies feel acutely at such a moment a loss of control, a loss of the power to grant wide access to information for the good of our communities and society.
- 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 are added (the licensee is liable for misuse of the data and for preserving security, while the licensor apparently takes limited responsibility to assure that the resource performs as advertised). As Associate Librarian for Collections Development and Management at Yale, I review and sign the license agreements that are offered the library for electronic information. It can be a chastening experience. I am reminded of the pre-printed contracts that landlords in big-city apartment buildings hand to prospective tenants, according to which most of the rights are the landlord's and all the obligations are the tenants', with requirements of legal indemnification added as well. I cannot in good conscience sign many of the first drafts of licenses that are presented to us (and our university lawyers have their own concerns!). These agreements, indeed, seem to have been designed for commercial rather than educational customers.
- 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. Loss of browsing. There are also signs that many producers will begin experimenting with "pay by the drink" systems of information access by electronic network, where every glimpse of the precious metal of information can have a price tag. The threatened end of browsing and serendipity is a worrisome one for all concerned with the free flow of ideas and creativity in scientific and academic settings.

vi. 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 research 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. At Yale, we are contemplating signing a couple of full-text WWW e-journal licenses offered us by two important science publishers and we are in exactly this predicament: what titles will we cut in print in order to afford the electronic surcharge we are being asked to pay?

In fact, we are coming to believe that the sizeable library costs for managing the e-journal transition dictate that the appropriate surcharge (over print costs) that libraries should pay for publishers' e-journals is 0% initially and that later we should be expect to pay a lower price than for print. Lest I be accused of extreme naivete here, let me say that the full-text e-journals licenses offered us by publishers are experimental in many ways and their longevity is far from secure. 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.

vii. 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. There is a real risk of killing the goose that has laid the golden egg of high quality scientific information, and publishers and librarians have very different ideas of where the risks lie. Failure to achieve working arrangements on electronic fair use will continue to drive publishers (and librarians) to an increasing reliance on contract law -- that is, license agreements with their own greater restrictions -- than on copyright. It is in the interests of all parties, I would argue, to achieve the best and fairest understanding, legally grounded, of electronic fair use.

In practice, the response to reduced fair use and pay-by-the-drink pricing models include a phenomenon many publishers are already noting: retention by authors of selective rights, a trend with potentially far-reaching effects on production and use of information.

Another consequence of asking users in the research and education sectors to pay fees for copyrighted works many times over (in the purchase of original works by institutions as well as payment for photocopying) might be that the courts, at least in the U.S., will perceive that students and faculty are being asked to pay too many copyright fees in pursuit of scholarship and education. The outcome of the *Texaco* case a couple of years ago had suggested that the U.S. Second Circuit Court accepted the argument that researchers, at least in for-profit organizations, should pay for each copy of scientific articles that they make, even though their companies may carry multiple subscriptions to the journal titles. In the 1991 Kinko's copy shop decision, a circuit court ruled that copy shops had to pay fees to the CCC for works copied into academic coursepacks. However, in contrast, on February 12th, 1996, the 6th Circuit Court, in the case *Princeton University Press, et.al. vs. Michigan Document Services*,⁵ ruled that a copy service making coursepacks for faculty and students did not need to pay copyright

royalties to the copyright owners, i.e., publishers since the copies are being made to further education, one of the basic tenets of the U.S. Constitution. (Incidentally, this is a decision much like the one handed down by the Australian courts last year.) The owner of Michigan Document Services and his attorneys made their fair use argument in part by obtaining affidavits from numerous academic authors who said it was their intention that their writings be widely read in pursuit of scholarship and education, as well as from students who said that the increasing costs of classroom materials posed economic difficulties for them in obtaining higher education.

In the interests of stability, it is important to make sure that pendulums do not swing too far in either direction; hence cooperation on e-licensing between the sectors is vital. The Yale Library has been offered support by an American funding agency to provide for the academic library community some guidelines and models for negotiating and signing licenses. We aim to design a hyperlink resource with sample licenses for different types of electronic resources and to identify the elements that are most crucial for academia. As examples, I hope we will be able to feature licenses of publishers who have been particularly understanding of research library needs. These include, for example: PsychInfo (APA) with their user-friendly definition of what a site is; BIOSIS, with their new, excellent fair use language as it applies to downloading in print and electronically; and Academic Press with a fine first draft license for full-text WWW-available e-journals. I have found publishers are willing to give libraries and users fair contract language, provided that we -- the customer librarians -- ask.

Please contact me if you are interested in participating in this project. We would also like to include, for compare/contrast purposes, the terms of publishers such as LANL and various researcher-created electronic journals.

Room for Optimism?

Let me suggest a few of the things that librarians *hope* will happen. These form a counterpoint to our concerns, and need to be taken as seriously, not least because they point potentially to a bright future.

1. Quality. Librarians hope that electronic information will be produced to meet the high standards of the academic and scientific community, one that is marked by quality control through peer review, good editing, and reliable technological delivery vehicles, in particular.
2. Standards for Delivery and Presentation. Librarians hope that electronic information will integrate itself well into a common "front end" for users, thus easing pressure on library staff and technological facilities and making information more accessible. If librarians do not have to deal with a thousand incompatible formats, they can spend more time on organizing the information and supporting users. Standard browsers such as Mosaic and Netscape are an encouraging sign; at the time of this writing, the imminent use of "Java" offers the hope that individual producers of information will be able to use it to tailor the presentation of their information via a common medium.
3. Dialogue. Librarians hope that where specific, important pieces of the universe of scientific information begin their migration to electronic form, publishers and librarians will improve conversations to help design formats and markets that assure continued access to that information efficiently and cost-effectively. If transformations are undertaken with too little consultation, there is a risk that serious work will be disrupted by bumpy transitions, as a precious resource temporarily becomes inaccessible.
4. Experimentation. Librarians hope that specific publishing projects will demonstrate the possibility of efficient production of information that can still be distributed widely and so cost-effectively as to

make the new medium a place for better communication. The pressure of price increases on library budgets and their deleterious effects on collection development have been amply documented in Association of Research Libraries statistics.⁶ At a moment when university budgets are under renewed pressure, seeking additional funds is not often reasonable. Therefore, led by the Association of Research Libraries and the Association of American Universities in a joint initiative, some American universities are considering support for a series of pilots produced within their institutions with a view to creating resources of high value, low cost, and optimal intellectual property policies designed to assure widespread ease of use.⁷ Other projects, including "preprint" servers such as that at Los Alamos National Laboratory, continue to push the envelope in this direction. It is not a question of establishing hegemony for such resources, but of demonstrating their viability as one *part of* a larger system of scholarly communication, including all players in the present system as far as possible.

The Research Library -- A Proactive View

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

1. Librarians will seek out projects and products that permit and encourage wide use of material by not only traditional clients but, as far as possible, by a wider audience -- this has really always been the case. Empowering the scholar and scientist in smaller institutions or in nations with limited economic resources for research offers exciting prospects. Librarians will negotiate licenses that define their users' communities as broadly as possible.
2. Librarians 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. Librarians will vote with their pocketbooks. They will strongly prefer cost-recovery mechanisms that succeed in spreading out the cost of scholarly and scientific information thinly enough that access will not be reduced and perhaps will actually be improved. The power of the new media is such that together we should press for lower prices and maximum access. Low prices ought to make information accessible to broad audiences.
4. Where this is not possible -- with recondite scientific information -- libraries and their users (researchers and students) 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 all forms of primary research support are under threat. My point is that we must consider funding not only the research but also the distribution of the results.
5. Preservation and Long-term Access. Librarians expect to continue in their 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. Partners in Scientific and Scholarly Communications. Most of all librarians intend to pursue the opportunities that present themselves not with a view to their own economic interests, short or long term, but to the truly exciting scientific 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.

Economic issues are not abstractions subject to the whim of specialists in the dismal science. They are instead embodiments of real human, social relationships, quantified and measured for the good of us all. The objectivity that economic analysis provides also offers the risk of losing sight of the social dimension of the relationships it describes. Our greatest need -- and here, I speak of a wider "we" that embraces all members of the community engaged in producing, distributing, and receiving the discourse of our researchers -- is to sustain and where possible enhance the truly remarkable system of scholarly and scientific communication that we have built up over the centuries since the *Journal des Scavans* brought the scientific journal into the world.

NOTES

1. *Scholarly Publishing at the Crossroads; a Subversive Proposal*. Ed. Ann Okerson and James O'Donnell. Washington, DC, ARL, June 1995.
2. Archiving Task Force Report of the Commission on Preservation and Access and the Research Libraries Group, August 1995; Charles Lowry, in the Proceedings of the North American Serials Interest Group, 10th Annual conference, June 1995.
3. The MLA Bibliography was selected as an example in this conference on scientific publishing because it is a major non-science database and so would neither privilege nor insult anyone present at the ICSU meeting.
4. 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".
5. URL: <http://www.library.yale.edu/~okerson/copyproj.html> (The text of the majority and dissenting opinions may be found linked from this page.)
6. ARL Statistics, 1994/95. Washington, DC, ARL, March 1996 (in press).
7. URL: <http://www.library.yale.edu/~okerson/alo.html> (See Reports of The AAU Task Forces, April 1994).

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