Electronic Journals: The Grand Information Future?

NICOLE JOSE / MAY 25, 2006 / UNCATEGORIZED

Mike Sosteric Department of Global and Social Analysis Athabasca University

mikes@athabascau.ca

Abstract

This article examines the political economy of scholarly publication. After briefly outlining the contours of the current crises in the scholarly communication system, the article goes on to discuss how individual electronic scholarly publication projects have challenged the traditional publishing houses by offering alternative models of scholarly publication that more closely fit with the needs of the academy. The article then looks at some of the ways in which the traditional interests have responded to the threat posed by the independent publishers. As is demonstrated in the article, their response has been aggressive. The article closes with a warning about a possible shift, made possible by advanced information technologies, in the way the scholarly communication system is funded. After examining the potential for the development of a user pay-per service, the article concludes with a warning about the academic and intellectual fallout of a move away from a collectively funded scholarly communication project.

Introduction

I'm concerned about the way our excitement over the creation of this new information superhighway is clouding our basic common sense and our critical faculties as members of a democratic society.[1]

I set up a perpetual financing machine through advance subscriptions as well as profits on the sales themselves. It is a cash generator twice over. It's no use trying to compete with me in scientific journals, because I publish the authoritative journal in each field.[2]

In recent years we have seen a growing interest in the scholarly communication system. There are at least two reasons for this interest. On the one hand, the system is in crises. Exponential growth of the primary literature coupled with an explosive growth in the cost of distributing scholarly information has put serious strain on the financial resources of libraries and universities. This financial crunch has led over the years to numerous critical analysis and various attempts to reform the system (microfiche, publication of synopsis journals). However all of the reforms have failed to bring the cost of distributing scholarly information under control. Yet despite the failure of these early attempts, concern continues to mount as it has become increasingly clear that the integrity of the system is in jeopardy.

The second reason for the growing interest is the recent recognition of the peculiar economics of the scholarly communication system. Because the market for primary journals is completely inelastic, some traditional publishers have been able to exploit the system to the detriment of the primary stakeholders (i.e., scholars and libraries). This has caused considerable bitterness on the part of those who are aware of the predatory practices of some commercial publishers and this bitterness has prompted a search for alternative models of distributing scholarly communication that would make it possible to circumvent the traditional interests and bring some much needed financial relief to the academy.

These calls for alternative distributions systems have become louder in recent years as information technology has matured and made possible viable alternative models of electronic publication. Indeed, many have seen in the electronic journal a new possibility (perhaps the first real possibility) for bringing fundamental reform to the system. The ease of electronic publication coupled with demonstrable economic efficiencies has led those concerned with the economics of the scholarly communication system and the predatory

practices of some commercial publishers to suggest new models of information dissemination which emphasize an increased role for scholars and libraries.

Up until quite recently it seemed as if scholars, with the help of information technology, would be able to provide financial relief by challenging the dominance of the traditional publishing houses. However as time passes the prospects for a revolution in the scholarly information system fade. Traditional interests have recognized the threat to their privileged positions and have responded in ways designed to eliminate the threat posed by alternative publishers.

In this paper I'd like participate in the current hoopla about electronic journals and the scholarly communication system by examining in detail the current crises in the scholarly communication system, some of its causes, and the recently proposed solutions. However these concerns do not form the main concern of the paper. Rather they are the preliminary information or background required before taking up the primary concern of the paper which is the response of the traditional publishers to the threat that electronic publication has posed to their interests. From our current position, it looks very much like traditional publishers are getting ready for an all out war on the alternative press. As I will attempt to show in this paper, the first step to resisting the importation of economic models that benefit the traditional press at the expense of libraries and universities is to clearly recognize the tactics that the traditional press is going to utilize in the emerging struggle between traditional and alternative scholarly publishers.

The Revolution That Wasn'T

The scholarly communication system is in crises. The result of exponential proliferation of scholarly material and[3] consistent and devastating rises in price[4] has been a decline in library acquisition of primary journals.[5] Metz and Gherman[6] note that the percentage of the total serial universe held by member libraries of the ARL dropped from 33% in 1973 to 26% in 1987. Brian L. Hawkins[7] projects current trends into the year 2001 and concludes that when the combined impact of inflation and the growth of information is considered, the end result will be that libraries will eventually only be able to purchase two percent of the total information available. This, as White[8] notes, has long term implications for the state of the scholarly disciplines.

Of perhaps even greater concern is the uncertain support entire subject disciplines would be able to provide for journals published under a laissez-faire system. Journals published in applied science and technology disciplines are the only ones demonstrating continuing operating surpluses of profits. Pure and social science journals hover at the break-even point, while publications in the humanities consistently and increasingly report operating deficits across the disciplines which comprise them. Clearly, a system without subsidies or other buttressing devices would have devastating consequences for research and scholarship in the humanities and could even lead to the demise of all journal publication in certain humanistic specializations. It seems unthinkable that something like this should be allowed to happen.

McCarthy[9] gives a number of anecdotal examples of staggering cost increases. For example, between the years of 1989 and 1992, the price of the journal *Gene* almost doubled from its 1989 price tag of $1,874 to $3,508. The journal *Tetrahedron Letters* moved from $2,715 to $5,289. And if you think that $5,000 dollars is high for a journal, consider the *Gmelins Handbuck der Anorganishen Chemie,* published by *Springer.* Its 1994 yearly subscription price was a whopping $19, 756. Robert Hauptman[10] provides similar anecdotal evidence about the rising cost of publication. He notes that *Brain Research,* which had cost only $1,100 a year in 1983 jumped over 600% to $8,000 in 1994.

Some useful analysis of general trends have been conducted. Paul Nijhoff Asser provided data for years 1971 through 1977.[11] He found price increases of between 14.5% and 34.2% for the years 1971 through 1974 and increases of between 18.7% and 43.5% for the years 1974 through 1977. Asser attributes the higher than average increases in the latter period to the oil crises and its impact on the costs of paper, manufacture and distribution of journals. However since that time, high annual price increases have continued. Between the years 1986 and 1994, the Association of Research Libraries[12] recorded a serial price increase for the 8 year period of 115%.[13] In some cases, especially in the sciences, the annual increases can be almost obscene. For physics and chemistry journals, the year 1989 was an extremely bad year with an average increase of 25.1%![14]

Various explanations have been offered up explain the current financial crises of the academy. Part of the explanation lies with normal inflationary pressures. King, McDonald & Roderer[15] note that between 1960 and 1977, editor's salaries rose 142%, typesetting costs rose 179%, printing costs skyrocketed 175%, paper 52%, and postage and handling by 113%. But inflationary costs are not the only reason for the increases. In his extremely caustic editorial, James Thompson[16] placed much of the blame squarely on the shoulders of the commercial publishers who he felt had discovered the Elysium fields of total monopoly production. As

Thompson noted, the market for academic journals is extremely inelastic. If a publisher owns the prestigious or pace setting journals in a field, no other producer can have access to the market. Further, Joyce and Merz [17] explain how libraries get locked into journal subscriptions:

The factors most heavily influencing elasticity of demand are the number of substitutes for the product and the percentage of income spent on the product. The greater the number of substitutes, the more elastic the demand. From the standpoint of substitutes an individual always has the ability to use the library's copy of a journal, whereas the reverse is hardly practical. Also, individuals can drop or switch subscriptions to journals as their professional interests change with little inconvenience. But the decision to cancel a particular journal or switch to another is entirely different for a library. A major objective is chronological completeness in a collection since the library cannot anticipate future faculty interest in particular journals compared with currently expressed interest. Also these cancelling or switching decisions involve the political influence of particular faculty members on the allocation of a library's serials budget. Remote acquisition of material contained in academic journals is sufficiently bothersome to make it an extremely poor substitute for the journal itself. Thus, with fewer substitutes, a library will have a more inelastic demand than an individual for academic journals.

Thompson accuses commercial publishers of price gouging and vulturistic practices. There is evidence to support Thompson's accusations. It seems that some publishers (3 or 4 of the very largest in particular) assess the market carefully in order to judge what it can reasonably bear. Consider the observation by Dougherty and Barr[18] that journals with high demand (informally operationalized as journals which are regularly duplicated in a libraries acquisition strategies) tend to be those whose prices rise the highest and fastest. Similarly, a study conducted by Economic Consulting Services for the ARL concluded that "`each targeted publisher has increased subscription prices for the sample of titles examined at a much faster rate than the rate at which their costs have increased.' The differentials cited for the four most intensively studied publishers (Elsevier, Pergamon, Plenum, and Springer-Verlag) indicated that prices per page had risen from between half again to more than double costs per page. "[19] Kenneth E. Marks, Steven P. Nielsen, H. Craig Peterson, and Peter W. Wagner confirm these studies with their own data and conclude that "95 percent of the titles from these three [Elsevier, Springer, and Pergamon] foreign commercial publishers are in the top 40 percent of price increases." [20]

Sandra R. Moline,[21] while carefully controlling for the amount of material published,[22] found strong evidence to suggest that commercial publishers price their periodicals based on market and profit considerations. Table 1 below summarizes her findings.

Table 1 – Prices and Sizes of Subject/Publisher Categories

Publisher Type/Factor	Arts/ Humanities	Social Sciences	Science	Total
Commercial				
Mean Subscription Mean kchar/year Mean cents/kchar	$40.041681 3.04	$83.96 1942 5.27	$283.18 5755 7.23	$188.69 4063 5.94
Mean pp/year	475.4	557.3	1316.3	973.6
Association/Society				
Mean Subscription Mean kchar/year Mean cents/kchar	$33.11 1995 2.16 529.2	$57.20 2731 2.82	$129.64 6944 2.73	$96.21 5103 2.66
Mean pp/year		633.0	1155.7	925.3
Other Scholarly				
Mean Subscription Mean kchar/year Mean cents/kchar	$25.33 1489 2.30	$46.13 1999 2.72	$138.00 5966 2.89	$63.11 2901 2.58
Mean pp/year	430.4	588.5	1263.9	711.0
Column Total				

Mean Subscription Mean kchar/year Mean cents/kchar Mean pp/year	$32.81 1700 2.53 474.4	$64.66 2287 3.70 595.9	$137.46 6327 4.71 1236.6	$127.16 4274 3.96 904.7
Source: Sandra R. Moline (1988). *The Influence of Subject, Publisher Type, and Quantity Published on Journal Prices.*				

There are a couple of things that strike one immediately about the data. First of all is the clear price differential between arts and humanities journals, social science journals, and science journals. In each category of publisher (Commercial, Society, and Other), the journals of the natural sciences cost more than those of the social sciences which in turn cost more than the journals of the arts and humanities. Two factors make up this difference. On the one hand, science journals publish more pages (or more characters / year) than either the social science or humanities journals. We would expect those categories of publication that average a greater number of pages to cost more. On the other hand, science journals publish more graphic, tabular, and mathematical information. This also effects the average price of the journal since when compared with the cost of printing straight text, graphics, mathematical equations, and tabular data are quite expensive to reproduce.[23]

Another striking feature of Moline's research is the unmistakable differential pricing policy of the commercial publishers. In addition to the fact that commercial publishers invariably charge more for the material they help produce (a fact noted again and again in the past 25 years), they also seem to be charging differentially based on the presumed status of a particular scientific field. Notice that for the categories of "Association" and "Other," the Mean Cents/Thousand Characters remains remarkably stable across disciplinary boundaries. For example, Association and Society publishers average 2.16 cents per 1000 characters for Arts and Humanities journals, 2.82 cents per 1000 characters for Social Science journals, and 2.73 cents per 1000 characters for Science journals. Compare this with the 3.04, 5.27, and 7.23 cent cost per 1000 characters charged by commercial publishers. Surely there are no aggregate differences in the content of Commercial vs. Association journals. That is, we can reasonably

expect that the ratio of graphic/tabular/mathematical data to text would be the same for each category of publisher. Were we cynical, we might think that the comments of major commercial publishers like Robert Maxwell actually reflected a broad industry policy of preying on the inelastic demand of the library market and extracting as much surplus from the system as possible.

Moline provides further evidence of market gouging (Table 2 below) by demonstrating that commercial publishers increased their prices in the years between 1973 and 1985 by almost twice the amount that Association publishers did. Although she enters a caveat that the data provided by Fry and White[24] on which the 1973 figures are based is not strictly comparable to her own, the data remains highly suggestive.

Table 2 – Average Cents Per Page, by Publisher Type

Publisher Type	1973	1985	Approx. Increase
Commercial	3.7-4.0	19.3	400%
Association/Society	2.9-3.2	10.4	240%
Other Scholarly	3.0	8.9	200%

Libraries and some scholars have recently, and after decades of not-so-quiet desperation, responded to the crises in the scholarly communication system by calling for the replacement of the for-profit system by a system controlled by the libraries and scholars themselves.[25] It would be, in the words of Ann Okerson,[26] a change in the "sociology of journal publication." Ownership and control would remain in the hands of the academics who actually use the system. and "all the usual middlemen of publishing" that perform the marketing, subscription, accounting, and fulfillment functions, would be eliminated.

These early calls for a revolution in the way scholarly communication was to be distributed were accompanied by calls for solidarity. There seemed to be a gut sense, even before the current landscape of electronic publication emerged, that universities, scholars, and librarians would all need to come together to solve the problem. In 1989 Deana L. Astle made these comments: [27]

They [universities] must realize the seriousness of the threat to scholarly communication raised by information overload and the high cost of journals. Involvement must spread to all concerned until the issue is perceived not as just a "library problem," but as a challenge facing the entire academic and research community. Faculty, especially those who sit on journal editorial boards, must be made aware of the issues and understand how they are both part of the problem and potential players in a solution.

The most forceful statement of the power of a coordinated effort to overcome the limitations of the current communication system is provided by James C. Thompson. His comments are based on the recognition that the real stakeholders and the real prime movers of the scholarly communication system are the scholars, libraries and academic institutions. He had this to say in his editorial in the journal *College & Research Libraries:* [28]

In the long run, though, we hold the most important cards. The raw material of scholarly publishing, the research and writing, originates within the research community, as does the copyright to it. The commercial publishers are in the information conduit for historical and anachronistic reasons; there is no technical or economic reason why they must remain a part of it. Unthinkable as it might have seemed until very recently, the idea of the academy retaking control of the bulk of scholarly publishing is being forced into consideration by the practices of the commercial publishers themselves. Their bills simply cannot be paid indefinitely, and something must give.

Up until two years ago, it seemed likely that new models of free-for-all scholarly publication would take hold and blossom. But then, back then the only journals on the Internet were maverick startups and random experiments conducted by those interested in the potential of the new medium. The pioneers of these early journals all recognized the extremely low cost of producing electronic texts, the high speed at which results could be distributed, and the sophisticated access to academic material through search tools and database functions that is possible with electronic publication as benefits likely to seriously challenge traditional modes of communicating scholarly information.[29] Many were commenting on the likely demise of tradition paper based scholarly publication in the next 10 to 50 years[30] and some[31] even attempted to hasten the day when all academic publication would be done electronically and non-commercially by the scholars themselves.

However from our 1996 perspective it seems that these early clarion calls to revolution were based on an idyllic fantasy about the ability of all the stakeholders to recognize their role in an overhaul of the system or perhaps on a misunderstanding of the nature of competition in

capitalist societies. While it is perhaps too soon to be predicting the demise of the revolution, we should note that so far scholars have not (except for a handful) taken up the revolutionary banner. Further, there are also still precious few library initiatives and, sadly, it may now be too late to do any serious reconstruction of the scholarly communication system because the big guns are waking up to the threat and moving into the world of electronic publication.

The traditional publication interests began to stir about three years ago. At that time, R.A. Shoaf, President of the *Council of Elders of Learned Journals*(CELJ) made the following comments at the CELJ panel at the MLA in Toronto in 1993.[32]

If we consider the rather remarkable fact that the era of the PC (the personal computer) is barely fifteen years old today and look, in that light, at the revolution it has effected, then I think it is easy for us to predict that within the first few decades of the 21st century, even more revolutionary changes will occur at every level of our profession. There is, then, a sense in which all of us are already very far behind. And although we perhaps do not want to embrace the ethos of the current joke in the marketplace, all of us in academic publishing need to wake up to he [sic] reality of these dramatic changes, or we might indeed become "roadkill on the information superhighway."

Nobody of course wants to end up as "roadkill." And all indications would suggest that isn't going to happen anyway. Since Shoaf's initial call to arms, decisions have been made, battle plans drawn up, and troops moved out into the field. Just recently, the chairman of the Association of American Publishers Enabling Technology Committee noted that "Members of the Association of American Publishers (AAP) have decided that they must become actively involved in the deployment of online information distribution systems or get left behind in the dust."[33]

The response of the commercial publishers to the threat of independent scholarly publication has been swift. A string of initiatives has placed a stunning amount of commercially viable textual material on-line for purchase. More and more, this material is being provided by traditional publishers desperate to get in on the action.[34] In the U.K., the migration of commercial publishers online has been facilitated by the 1993 *SuperJournal* project. This project, funded by the British Library Research and Development Project, was specifically designed to demonstrate the potential of electronic publication to government officials, publishers and the scientific community.[35] Similar experiments have been set up in the U.S. by such big name publishers as Elsevier which has set up a program, called *The University Licensing Program*(TULIP), which makes all 1000 Elsevier journals available electronically. [36]

Springer-Verlag is also heavily involved on the internet. They have partnered with the University of San Francisco's health sciences division, a host of commercial and society publishers, as well as major international corporations like Bell Labs and AT &T in an experimental service designed to develop a "business model for electronic journals."[37] Smaller publishers are also placing material on line. John Wiley and Sons plans to place all of its journals (326 of them) online as does the Academic press; Taylor and France has 16 of its 125 journals online[38] and we can assume that in the future they will place all their journals up for online access.

Publisher'S Prerogative

The traditional publishing interests have not only responded with business plans and online initiatives. In the current environment, which some might argue is decidedly hostile to commercial initiatives, this would most certainly not be enough. Coming online after the first truly revolutionary journals had already demonstrated the ability of scholars to publish their own material without the assistance of the traditional press, publication houses have found themselves in the unenviable position of having to justify their existence to a world not quite prepared to accept their presence. They have approached this unthankful task in three ways. They have engaged in direct frontal assaults on alternative journal projects. They have tried to define alternative publishers as amateur dilettantes who are incapable of surviving in an area of endeavour much too big and complex for them to understand. And they have begun trying to argue that ejournal costs are no different that the costs of regular journals.

I'd like to start the discussion here by examining an incident close to my heart and one that, in my opinion, clearly reflects the contours of the coming struggle between the independent publishers (library based or scholar initiated) and the vested interests who desire to secure a position for themselves on the new information highways. I think the incident is also useful because it reveals the defensiveness of the traditional interests and makes quite clear that they perceive the new models of electronic publications to be a threat.

The incident that I have in mind occurred recently (1996) when a new sociological journal began publication on the Internet. This new journal, *Sociological Research Online* (SRO), announced its presence with much fanfare by leafleting the globe with an announcement of their arrival late in 1995. In their leaflet, they clearly declare their affiliation with the big UK publishing houses and announce themselves as the **first** internet journal of sociology.

Sociological Research Online, the first fully refereed sociology journal to be published on the Internet….Sociological Research Online is produced by a consortium of the British Sociological Association, the Universities of Surrey and Stirling and SAGE Publications, under the aegis of the Electronic Libraries Programme (eLib) of the UK Joint Information Systems Committee…..For 1996 the journal is free to readers, a unique feature of its electronic availability.[39]

SRO was quite incorrect to claim that it was the first sociology journal on the Internet. In fact, it was predated by at least two other journals. One was *World Systems Research* and the other the *Electronic Journal of Sociology.* This *faux pas* is relatively minor and hardly deserves comment. However mistakenly attributing to themselves status as the founding Internet sociology journal was followed, in the very first issue of the journal, with an editorial statement that directly attacked the EJS as *less rigorous* than their own *traditional* journal.[40] SRO based their evaluation of the relative merit of the two journals on what they knew of our peer review process. They argued that because the EJS did not have a *traditional* peer review process, the journal was, in their opinion, less rigorous.

Such an attack by one scholarly journal on another journal is highly irregular. As far as I or my colleagues were able to determine, no other journal in the history of the scholarly communication system has ever come online with a broadside like this one. Even conceding that the EJS might be less rigorous than the society journal because our peer review process is not quite traditional (a concession that we **do not** make), the attack is highly unusual. Normally, in the world of the academy, questions about rigour and scientific validity are left up to the individual scholars to decide for themselves. For a journal to take upon itself the role of adjudicator of the rest of the scholarly world is outrageous and without precedent.

Because of the uniqueness of this event, the board of the EJS was forced to conclude that the attack was prompted by the perceived threat of the EJS to traditional interests in scholarly publication.[41] We further understood the attack to be motivated by a need to disqualify the EJS as an academic publication by appealing to some mythological ideal of the rigour of peer review. There was also an implicit message contained in the attack. The editors of SRO were saying that only society and commercial publications would be able to supply the scholarly world with the requisite rigour and expertise.

Some might make objections to my discussing an issue so close to my heart. But the experience of the EJS is not unique nor is it the only indication that traditional publishers are going to try to construct an ideological and rhetorical landscape that privileges their

contribution to the scholarly communication system. In 1995 Ronald E. LaPorte wrote an article in which he proposed the development of a *Global Health Information Server* modelled after Paul Ginsparg's High Energy Physics archive.[42] The details of the service are not relevant here. What is was the fact that LaPorte explicitly and forcefully called for the development of a system that the scholars themselves would control. The medical establishment did not respond well to his proposal. As Bernard Hibbitts[43] notes:

Laporte's proposal prompted a spirited response from the editors of the prestigious New England Journal of Medicine, who argued that the lack of preliminary peer-review in his system not only threatened to undermine "*time tested traditions",* but might potentially cost lives or cause physical harm to patients whose doctors read inadequately-reviewed literature. At the same time, the Journal moved to pre-emptively stifle any scholarly migration to the Global Health Information Server or other similar electronic archive by issuing an ill-disguised threat: "posting a manuscript….on a host computer to which anyone on the Internet can gain access will constitute prior publication" rendering an article ineligible for publication by the Journal itself.

Note how both of the establishment journals relied on an appeal to traditional methods of peer review to justify themselves. The difference was that the NEJM went much farther than the SRO. Not only did they argue lives and limbs would be lost if the newer system came into effect, but they also threatened to discount all publication that had ever appeared in any electronic forum in what seems like an attempt to strong-arm the medical discipline into ignoring LaPorte's proposal.[44]

Traditional publishing houses have not confined themselves to direct attacks on new and independent publication projects. In the formal literature on electronic publication, traditional publishers have started to define away the scholars ability to publish their own material. Fytton Rowland, [45] for example, suggests that because of academic workloads, the size of the task, the need for quality publications, and the need to filter information for quality purposes, scholars are unfit as purveyors of scholarly information. And lest the reader of Rowland's article misunderstand his message and intent, he states it explicitly when he suggests that all journals need to be run by information professionals and not, in his own words, by "*academic amateurs.*" [46]

Though the standards may not be up to what the commercial and society publishers are capable of given their large organizations, this is not considered a problem by everyone. Scholars and libraries have recognized that lowering publication standards is a reasonable

sacrifice given the high cost of these value added services and the inability of the system to support that cost.[47] As for the size of the task, most experimental services like the EJS or Harnad's Psycholoquy have clearly demonstrated the feasibility of scholarly projects. True, there is considerable effort and time required at start-up but the time required is not inordinate and if we can revise current reward procedures to recognize editorial and technological contributions to the discipline, then the time required would not even be a sacrifice of valuable advancement activity. And while it is certainly true that scholars would not be able to publish hundreds of journals, that is not the intent of the new models. The new models are really about decentralizing the task of distributing scholarly material in order to distribute the workload over a wider area. Given all this, the argument Rowland provides is rather thin and not credible given that scholars have already demonstrated their ability to publish material with high substantive quality.

Rowland doesn't represent, in any obvious manner at least, traditional publication interests. He is a research fellow in the Department of Information and Library Studies at Loughborough University of Technology in Leicester, UK. His concern and comments may be motivated more by a concern over the future role of libraries, librarians, and other information specialists. While his concern is understandable, it is misplaced. Nobody, as far as I know, has suggested that information specialists will not be required. And in any case, the best solutions to the scholarly information crises have recognized the central role of libraries and information specialists by suggesting that these organizations take over a goodly chunk of the scholarly distribution system for themselves.[48] Even if all libraries do not take as central and highly active a position as publishing their own set of journals,[49] there will still be many opportunities for collaboration with university departments and individual scholars.

While Rowland doesn't represent traditional interests, Janet H. Fisher [50] of MIT press does. She suggests that individual scholars do not have the resources, expertise, time or inclination to successfully publish their own material. It is worth quoting at length from her passage because I would not be able to reproduce the tone and content of her words adequately. As Fisher explains,[51]

There are a few other problems with circumventing traditional publisher for electronic journals. First, what happens to the system of subsidiary publication of materials in other forms – University Microfilms, Information Access, CARL, Faxon Finder, and so on? The consolidation of licensing for all of these arrangements with the publisher would no longer be possible. Unless the journal editor was willing to handle these requests and get the necessary rights from authors, secondary publishers would have to go to each author for the right to

produce the article in another form….The typical journal editor does not have the staff to handle this level of rights gathering. Second, what happens when a very important signal for tenure consideration of a researcher's work – the quality implied by a given publishers' name – is gone? Third, standards of reference citation and style, which are currently maintained by the publisher through the copy-editing process, and which make each discipline at least somewhat coherent, would deteriorate and eventually disintegrate. Fourth, who would do the marketing? Would the journal editor do it? Finally, what about indexing and abstracting sources? How will these services know what to cover in their publications and where to find it, given that currently the publisher is the one who contact them, sends samples, and maintains correspondence? There is no easy way out. The production, marketing, and dissemination of quality research material cost money. Publishers are essential to a coherent, efficient, quality publication process; unless funding is forthcoming from universities or the government, the reader – or at least a portion of the readers – must pay in order for the publisher to recover its costs.

Fisher's words only make sense in the context of the way the scholarly communication system operates in the paper world. Take, for example, her argument about the need to distribute material in other forms. She argues that collecting together the various article rights and contacting the tertiary distribution houses requires much too much work for individual editors to be able to handle. Certainly, if this type of redistribution of material was a requirement in the electronic world, editors of independent or library journals would not be able to provide the functions without relying on additional staff. The problem is that alternative publication outlets **are not required**when information is available on the Internet. The whole rationale for using CARL, or Faxon or any of the other tertiary services is to increase document access through the redistribution of material in distinct mediums. But if the document is already freely accessible on the Internet by every scholar in the world, what on earth is the use of these tertiary services?

Fisher might be able to respond to the argument about the irrelevancy of redistribution of material by suggesting that tertiary services that collect and collate scholarly material will still be needed in order to continue to provide centralized bibliographic control and current awareness services and that editors would still be required to manage interactions with these services. But again the argument would be specious. Services are already available on the Internet, like the Url-Minder service provided by Net-Mind, that monitor Internet documents and alert readers when changes have been made. At the EJS we provide this service for our Table of Contents page. By simply entering in their email address in an online form readers of the EJS can be automatically notified whenever a change is made to the page. There is no time

requirement for the editor and readers all over the world are alerted in the normal course of updating the journals contents. This is a simple, elegant, and completely cost-less and time-less solution to the problem of current awareness.[52]

As for the centralized bibliographic control services provided by tertiary distributors, it is important to remember that these are largely used to assist scholars and librarians in their efforts to locate scholarly material. As more and more journals are published in electronic form WWW search engines, which are much more powerful than the services provided by the current tertiary houses, will no doubt take over the task of bibliographic control of the literature.

Fisher also attacks independent publishers by arguing that the name of reputable publishing houses is an extremely important added value of the current system and a key signal in employment and advancement decisions. While this is true it is important to remember two things. One is that publishers only achieve their reputations by relying on the expertise of editors who are themselves scholars. Who is to say that an independent editor alone, or working as part of a publication team in a university or a library, or in a globally connected collection of editors and reviewers donating their time, cannot achieve the same quality and reputation as a commercial publisher? In the second place, universities are already calling for alternative methods of evaluating published contributions that offer a more direct method of assessing the impact of scholarly contributions than that provided by simple publication counts or the reputations of the journals in which the piece is published.[53] Its seems most probable that universities will settle on Citation Analysis as the method of choice. For those who do not know about citation analysis, this is a method of evaluating the impact of a scholarly piece by counting how many times the article is used (i.e., cited) by other authors. This method, although questionable on many grounds, does not rely on publishers reputations and could even be used to assess the quality and impact of articles that are self-published!

As for standards of reference and citation, here Fisher has a point. The standards are likely to decline a bit, at least initially, while the new breed of publishers get their feet wet. However it is unclear whether or not these declines will be permanent and, even if they are permanent, whether they will be significant enough to even be a bother. In any case, I know from my own experience reading traditional books and paper journals that references are not always accurate. I can't remember how many times I have gone to the library to track down a journal article only to find that the reference information was in error. If the scholarly community can suffer through the inability of the traditional publishers to ensure perfect citation, surely they

can be convinced that independent scholars making the same mistakes are not a threat to the integrity of the system.

Fisher also makes some comments about the need to contact indexing and abstracting services to ensure that an article or book is distributed as widely as possible. But like the uselessness of alternate publication outlets, indexing and abstracting is not a requirement on the Internet. Simply dial up the Open Access search engine, enter your key words, submit, and presto, you are able to locate every single document in the world that comes even close to your chosen topic area. I can't imagine that the abstracting services that exist now can even approach the speed, efficiency, and resolution of these electronic search engines. And, while it is true that these search engines often turn up much superfluous material, the same problem is experienced with CARL Uncover or any of the other available abstracting services. In either case the scholar will have to sift through material. But the benefit of the free services is that they do not require editorial efforts (beyond choosing an appropriate set of keywords) and they are not filtered by an organization that, because of limited resources, cannot abstract all existing publications. Unlike current abstracting services which cannot possibly abstract all material, electronic search engines can and do.

Finally, Fisher points to the need to engage in professional marketing. But this requirement seems to be based on questionable assumptions. Not only does it assume that scholars passively sit back and wait for someone to tell them about what new information is available in their field, but it also ignores the stunning power of information technology to automatically inform individual scholars of new developments. In the electronic world, all the marketing that an editor will ever have to do is done simply, quickly, and efficiently by submitting the home page of the publication to a service that announces the existence of the publication to *all* available search and indexing services on the WWW. Following this, all the available search and indexing services will extract information from the publication and index and store it in their databases. Subsequently, any individual who wants to know what journals exist in a specific area, or what is contained in their pages, will only have to do a search at any one of the numerous free services available. No effort is required and the scholarly community can benefit by eliminating the completely unproductive, wasteful, and costly practice of marketing.

As we can see, the traditional publishers are trying to convince us of the impossibility of providing an alternative publication system by insisting on our inability to achieve rigorous publication, by decrying our motivation, by accusing us of sloppy writing habits, by suggesting that we cannot market our own information, and by generally painting us as amateurs and

dilettantes. As I have attempted to demonstrate, the arguments are based on biases and misunderstandings of the dynamics and power of electronic publication. However ultimately these attempts to discredit alternative publication efforts are not that serious a threat. Scholars are a critical bunch that are perfectly capable of making decisions all by themselves. A more serious threat to the revolution comes from the attempts of the traditional publishing houses to define electronic publication as a process that is as or more expensive than the traditional paper based mode of scholarly communication. If traditional publishing houses are able to convince scholars and libraries that the "real" cost of electronic publication (as opposed to the "fake" costing formulas of scholars like Harnad) is equivalent to the older model, than they will be able to maintain the current costing structures and all the disadvantages that this mode has for the scholarly system of communication.

A Publisher'S Victory

Would commercial publishers do this? After all, there have been thousands of words written about the cheapness of electronic publication and the benefits which it could bring to an academy cornered on all sides by funding cuts and retrenchment. And besides this, scholars in various disciplines have demonstrated quite clearly that electronic publication can offer significant benefits in terms of cost, access, and speed of distribution. In this environment we might ask how traditional publication interests could even think about trying to justify a high cost publication system? Yet as Lubans suggested way back in 1987, traditional publishers are highly motivated to retain their privileged position. Lubans[54] predicted pessimistically that "… electronic publishing may enable us to make gains in space, but not in budgets; publishers will not give up earnings regardless of how many fewer `pages' they may `publish' in some giant computer." If Lubans is right, the we shouldn't be surprised to find traditional publishers trying to pull the wool over the eyes of the scholarly world.

A few years latter, Steve Harnad[55] said much the same thing when he predicted the strategy that traditional publishing interests would use to prop up their claims about the high or higher cost of electronic publication. He noted that the only publications that would report higher costs would be those advocating models of publication that tried to publish via the subscription model (and therefore required a top heavy bureaucracy to administrate the journal), those that offered all sorts of unnecessary frills (which the users would have to pay for), or those publishing in both the paper and the electronic realm.

Only a year latter we can see just how accurate Harnad was. Jack Meadows, David Pullinger and Peter Such,[56] speaking from their experiences with the United Kingdom ELVYN project, make just the claims that Harnad predicted the traditional publishers would make. In the extract below, the authors suggest two models of publication and then, for reasons not clearly articulated in their text, suggest that it is the journal with the more varied format (i.e. the model with the biggest tail fins) that should become the standard for electronic publication. The message is unmistakable. Electronic publication (in the sciences at least) offers no cost benefits .

One publishing sector consists of individuals or specialist groups; the other of professional publishers. The first sector tends to emphasize electronic journals in the humanities or social sciences: the second is more likely to be concerned with STM (science, technology, and medicine) journals. Publications within the former sector consist primarily of text, whilst those from the latter incorporate graphics, mathematical equations, and extensive tabular material in their text. Creation of the latter type of electronic journal obviously requires more effort; its dissemination to readers, and their handling of it, is also likely to be more complicated. In terms of future electronic journals, it is this more varied format which should provide the prototype.

The authors are not clear about the reasons why the second model should be emphasized except to vaguely suggest that it is a better format. But even if the more expensive model did offer some services that were desirable, the benefits of the services would have to be weighted against the cost to the academy. Given all we know about the scholarly communication system and the crises in funding, scholars should, unless there is a very good reason for doing otherwise, be advocating models with less frills and add-ons in order to reduce the cost and return the system to a healthy state. Yet here we have, as Harnad predicted, publishers attempting to con the stakeholders into accepting a model that will continue to put strains on the financial resources of the academy.

We can give the publishers the benefit of a doubt. After all there are some disciplines that use more graphical and tabular information and this does require more labour. But even here it is too soon to tell just how much more work the more complex journal formulas will cost. Assuming that publishers utilize HTML and not some costly propriety format, we simply have to wait for HTML and the technological landscape to settle before we can start making accurate estimates of the cost of journal publication. The EJS, for example, is uncertain about the future labour requirements of the journal just because the technological landscape is so volatile it is impossible to predict what future enhancements or labour saving technology

might be introduced that would facilitate the incorporation of complex tables and mathematical equations.

But besides the fact that the technology will mature and continue to advance, there are other options for *scholars* who wish to publish more elaborate journals. What if, for example, authors themselves submitted articles that already incorporated tabular and graphical data in the required format. Sure there would be still be extra formatting and copy editing work. but this would be nothing like the effort required to create camera ready copy from tabular and graphical data for print journals. Although the EJS is only one journal among many,[57] the fact that one of our authors created a multimedia document for submission to the EJS without professional editorial assistance, and without putting an undue drain on my time and resources, would seem to suggest that it is possible for the scholars themselves to handle some of the things that libraries are now paying professionals to do for us.

Traditional publishers are not only justifying their higher costs by arguing that there is a need to accommodate elaborate publication formats. Jack Meadows, David Pullinger, and Peter Such[58] also point to the need to hire financial and administrative experts as one factor that will likely up the cost of electronic journals. The authors note:[59] "Establishing the electronic version of a new journal is likely to require finance and skills equivalent to those of a medium-sized publisher." However, the experience of the EJS and other independent journal projects is clearly the opposite of what Meadows, Pullinger and Such suggest. None of the independent projects have had to hire financial or administrative expertise in order to create viable journal projects. This add on frill is only an requirement for the big traditional operations who must ensure wide distribution in order to generate profits in order to survive. Large publishers are thus completely dependent on a top heavy bureaucracy which costs money that the academy cannot afford to pay. Independent projects, whether they be conducted by scholars or libraries, have no such requirement since they can afford to simply sit tight and let the scholarly world learn about the journal in its own good time.

There are still other strategies for justifying higher costs. Some are trying to maintain their position by suggesting that the first copy costs (i.e., things like editing, peer review, and markup) are equivalent in the paper and electronic realm. Robert H. Marks, who is director of the publication division of the American Chemical Society, develops an elaborate model designed to convince the reader that "complete elimination of the printed journal … will not solve the present library funding problem. It may even put increased pressure [read cost] on the library community for access to the increasing scope and quantity of scientific information that will be available on electronic networks."[60] Marks has this to say about first copy costs:[61]

…our studies show that elimination of the printed journal actually saves very little because the major share of high quality journal cost is still the so-called first copy costs: the expense of acquisition, peer review, and editing and converting the information into a digitized format.

In situating Mark's comments, it is important to keep in mind that for scholarly journals, editing and peer review are often provided at no charge and are subsidized by the parent institutions of the scholars who serve on the editorial boards. Peer review and editing only become pay-per services for the larger publishing houses, and especially the commercial houses. And remember that the whole rationale for moving away from this model is to eliminate the need for paying for these services. As for conversion into a digitized format, this in simply not a requirement for journals produced in **HTML.**Tags can easily and almost automatically be added to word processed documents. However the scenario is quite different for journals that are published in digitized *images* of the original camera ready copy. Not only does it take a long time to scan images at high resolution, but the images require considerably more disk storage space, take longer to transfer over networks, and require camera ready copy for the input. All this increases the cost of electronic journals substantially. It makes no sense to adopt this model when HTML is available and evolving.

Yet another strategy that has been used to justify high cost electronic journals is to argue that marketing an electronic journal requires more effort than similar paper journals and is thus more expensive. Janet H. Fisher compares the costs per article for the electronic journal *Chicago Journal of Theoretical Computer Science CJTCS* and the traditional journals of the MIT press. She feigns surprise when she notes that the costs per article for the traditional and electronic formats are identical.[62]

How can that be? This print journal on our list publishes short articles and uses author-supplied disks primarily in TeX – essentially the same process we are using for CJTCS. It has a print run of about 2,000 per issue and is mailed using second-class, nonprofit rates. Printing, binding, and mailing costs account for approximately one-third of this journal's total expenses. Marketing expenses are essentially the same for the two journals. Because electronic journals are so new, much of the marketing expenses for CJTCS will come from the need to encourage contributions and reassure researchers their articles will be broadly distributed, covered by the major indexing and abstracting publications, and count for tenure consideration. This need for intense marketing may taper off as e-journals become more accepted, but marketing costs are unlikely to decrease below those for a print journal, regardless of format, based on the production work required, the number of subscribers, and the number of journals in MIT Press' entire program. Marketing and overhead expenses for

CJTCS are approximately two-thirds of the total expenses, whereas for the print journal they are one-third of the total expense. Thus, the relatively heavy marketing and overhead expenses that characterize CJTCS overwhelm any savings in production costs that come from the new medium, yielding a similar overall cost picture between the CJTCS and the comparable MIT Press print journal.

An electronic journal published on the Internet by scholars or libraries does not require marketing – unless of course their is a need to convince the market of the need to buy the journal. But scholars surely don't need to be told about the journals in their field. They are highly motivated to track down all the relevant literature in their speciality. And even if they have no time, a simple subject search with the new Internet search engines will turn up the relevant titles. Further, scholars will not need to be told by a publishing house that an article or journal is worth reading. They are perfectly capable of ascertaining that for themselves. And if scholars don't contribute to the journal – so what. Perhaps the new electronic journal is not needed. Why get the scholarly system to pay for the effort required to justify journal twigs?

However if the goal is to market new journals to libraries, then that is a different matter. In the present environment many libraries will most certainly have to be convinced that the new electronic format is worth the money they are going to have to pay for it. They will have to be assured that the material is of the highest quality and that scholars will contribute. Libraries will not want to buy titles that will be dead in a year and will no doubt display extreme caution in acquiring the new electronic journals. If the journals are provided free by scholars or at cost by other libraries, there is of course no risk to libraries. But it is a different story if traditional publishers are trying to create a viable electronic journal. They will indeed have to conduct an intense marketing campaign.

Perhaps the most questionable part of the current efforts to justify continued high costs of publication come from those who would accuse scholars and libraries of not bearing their fair share of the work involved in scholarly communication. Fisher,[63] after castigating scholars for the presumptuous idea that they could publish their own scholarly material, goes on to say that if the new (commercial) system is going to offer cost benefits, then libraries and scholars will have to work harder to make it easier for publishing houses to publish scholarly material!

…whether there will be savings to pass on to librarians and individuals will largely depend on what librarians and individuals are willing to do for these publications. Will individuals provide well formatted, standardized files to publishers for use in production? Will the publisher's

overheads be reduced because electronic publications are easier to handle internally? MIT Press has not seen any such reduction to date, but it is too early to tell.

It is true that publications like the EJS would like to see authors bear more of the burden for disseminating scholarly material. But the EJS is free and the justification for getting the authors to do more work is that the publication does not want to hire additional assistance and thus put additional financial burden on an already unstable communication system.

If talk doesn't convince libraries, commercial publishing houses have one more trick up their sleeve that they can use to ensure that they get their way in the new electronic environment. It is an age old tactic really. All they have to do is wield their not inconsiderable market clout. There seems to be two things that they can do here. First, they can use their market power to smash experiments in alternate delivery of scholarly information and second they can use their access to large volumes of scholarly information to provide value added services against which small independent operations will not be able to compete.

There is no evidence that either of these tactics have been pursued so far in offensives against the alternative press. However some publishers have used their market power in similarly predatory ways so we can assume that if the competition (i.e., the alternative publishers) do not just role over and die, traditional publishers will start to engage in more aggressive manoeuvres. We can see this dynamic in the following extract taken from Dennis P. Carrigan.[64] A word of explanation is in order first. Because the first copy costs of producing paper journals are largely fixed, paper publishers prefer a subscription model where fees are paid up front. They don't like the new access model (i.e., document delivery) favoured by some libraries because it does not generate a guaranteed revenue stream. As Dennis Carrigan explains,[65] the traditional publishers distaste for the new model may mean its eventual elimination.

The University of Kentucky libraries recently experienced a publisher's ability to influence the choice between the ownership and access service models. Several library clients asked the interlibrary loan office, which also handles document delivery, to obtain for them articles from the same journal, to which the library did not subscribe. When the office reached the limit of five copies permitted under the CONTU guidelines, it turned to a document supplier to meet the next request for an article from the journal. When the article copy arrived, the interlibrary loan office was shocked at the fee charged by the supplier, and when the office looked into the matter it learned that the copyright royalty fee was $10 per page. The library decided to subscribe to the journal…..Although such experiences may be infrequent at this time, they can

be expected to increase, as the shift from ownership to access grows, and to exert an increasing influence on libraries' decisions.[66]

Commercial publishing houses that have been around for a long time also enjoy the competitive advantage of having a large back library of academic content to draw on in order to provide value added service. As Malcolm Getz[67] notes, this may give the large publishing houses, if they choose to use it, a considerable advantage in the online environment.

Moreover, the present advantages enjoyed by the multititle publisher may well persist and even increase in the electronic arena. Access to targeted mailing lists, multititle advantages in advertising and distribution, and the ability to integrate new publications into the logical context of large databases may give significant advantages to the large publisher supporting titles in many related micro-disciplines. The upshot may be that, after an era of experimentation, the market for scientific publication will be no more competitive than today, and perhaps even less competitive. The gap between market price and incremental cost may be wider in the electronic world than in the print world.

While there are many scholars and information specialists who would want to see a revolution (and would even be satisfied with a partial revolution) in the scholarly communication system, the impression that we are left with after examining even briefly the publishers response to the threat of free-for-all publication (or even some less revolutionary quick-fixes) is that there doesn't appear to be a utopian like future for scholarly communication in the works. Indeed by now it should be clear that if we are to significantly alter the sociology of the scholarly communication system, we are going to have a tough fight on our hands.

While libraries have clearly demonstrated their willingness to discuss and struggle for solutions to the scholarly information crises, so far scholars have not had much to say outside of a very small circle of individuals who have pushed ahead. It would seem to me that this is the missing component in the struggle. We all know the arguments about being overworked. And in the past, these have been reasonable. Scholars have been overworked and the scholarly communication system has not been much of a priority for us simply because we have enjoyed subsidized access to it. However now it appears that this subsidy is about to end. Perhaps raising the awareness of this possibility among scholars will be enough to get them motivated to do something more about the current shabby state of the scholarly communication system.

Going Down With The Ship

We have already seen how scholars and librarians are pushing for alternate models of information delivery. Therefore, it should come as no surprise that, given the incredible flexibility of information technologies, commercial vendors are also actively investigating alternate models of information delivery. However unlike scholarly models that seek to reduce the cost of distributing scholarly information, traditional publishers are pursuing alternative ways of charging more for the information they distribute.

One of the models that publishers are currently thinking about, and the one that seems the most popular when dealing with institutions like libraries, is one based on site licenses. Site licenses for journals would essentially allow subscribing institutions and their patrons unlimited access to the complete set, or perhaps a subset, of the periodicals that a publisher distributes. Gary Taubes[68] notes:

Once they begin charging, many of the publishers are currently planning to sell subscriptions to their on-line journals through so-called site licenses, which will allow unlimited and unrestricted access for users who log in from subscribing institutions. To set a price for these site licenses, publishers are contemplating one of two formulas: either offer them free to print subscribers or, as Bob Kelley of the American Physical Society describes it, “charge a little more for both paper and electronic, and a little less if electronic” or paper only.

This model of offering subscriptions has certain benefits. For example, journals will essentially never be off the shelf. Their contents will always be accessible by anyone who logs on with the institutions internet domain name. However it is clear that this model will not cost the libraries less and it certainly may end up costing libraries more if publishers charge additional fees for access to both print and electronic journals. It is even conceivable that the subscription rates for fully electronic journals (i.e., with no print version) will be higher since publishers will easily be able to justify higher subscriptions based on the value added brought to the institution by unlimited access, powerful search tools, and comprehensive journal collections. Because of the value added functions of electronic journals, it is conceivable that a journal that costs $1,000 per year in the paper realm would cost an additional 5%, 10%, or even 20% percent in the electronic realm.

However it is not only that publishers may be able to corner libraries with site licenses. Publishers also stand to benefit by their increasing ability, brought by advanced information

technologies, to shift the burden of payment directly onto the shoulders of the users. Some commentators feel that this is an extremely likely possibility. Gerard M. Van Trier [69] fully expects publishers to exploit a direct market to consumers of information as it becomes available. Dennis P. Carrigan[70] notes that some form of direct purchase is a definite desire of many information providers because it represents a vastly expanded market for information.

Moreover, payment for the service can be made not only from a depository account but also by VISA, MasterCharge, or American Express card, another feature that is spreading and that opens the way for individuals to deal directly with document delivery organizations. According to Martha Whittaker, general manager of the UnCover Co: `We believe that the real growth market in article delivery is the consumer – or 'end user'. We are developing strategies to reach the individual researcher, faculty member, and ultimately, the person sitting in any office anywhere with a computer and modem.

By all indications, this direct market will be upon us in no time flat. Marvin A. Shirbu[71] reports on an experiment with the sort of technology required to institute direct user billing being conducted at Carnegie Mellon University. Called *NetBill,* the technology allows authenticated and almost transparent transactions to take place on the internet. Transactions costs are extremely low (as low as 1 cent per item) and the system has the capability of charging as little as 10 cents per page and maybe even less. The technology is ideally suitable for scholarly publication in as much as it will allow publishers to charge scholars for individual articles, data files, or any other subsidiary information that they feel scholars might be interested in. Netbill was designated to go into pre-commercial trials in the fall of 1995 so by now it may even be in commercial experimentation.

This technology, or some variant of it, may be a gold mine for commercial publishers. As Gary Taubes notes, online services provide a wealth of opportunities for shifting the burden to users.[72] "As journals become increasingly interconnected, researchers will find themselves hot-linking from one cited or related article to the next, regardless of who the original publisher happens to have been. "People will find themselves buying articles and related sources material from almost every publisher on the internet. And what is worse, the technology is being designed to be as transparent to the user as possible. Debits are made from a central account and software will have an auto pay function that allows users to set a lower limit (say 20 cents per page) below which information items are purchased automatically.

The major disadvantage with this move is that scholars will be one of the hardest hit. This will be especially true in some disciplines since we can fully expect, given the ongoing trend of

libraries to cut subscriptions, that it will become necessary for the individual scholar to support esoteric publications that might be highly relevant to a small group of researchers but that aren't fortunate enough to make it into the core periodicals list of the nations libraries. Duane E. Webster and Mary E. Jackson,[73] speaking about the ongoing push for libraries to provide access to material, suggest the likelihood of this scenario.

Recent studies suggest that institutions acting together to implement the access model may satisfy short-term needs of the faculty and administration but over the long term will damage and weaken scholarly communication. Without collective action the nation's information resources will become more and more limited. The availability of esoteric, foreign language imprints and lesser-used information will diminish and as a result the scope and richness of available collections will decline. If libraries continue to reduce collection development to focus only on local and immediate needs, then the "commons" that scholars rely on will become impoverished.

We may see a two tiered system of publication emerge. The highly popular journals in the sciences will be licensed to institutions and be freely available to faculty and students. Some journals in the social sciences and many in the humanities, because they do not have a sufficient readership or are not used on a regular basis, will be cut from library acquisitions lists and will only be accessible through services like NetBill where scholars can purchase individual articles. A worst case scenario would find those unfortunate scholars in areas that are not that popular unsuccessfully battling for increased per diems for information purchase. The chances that this could be worked into contract is, given the current budget crises of most universities, highly unlikely.

But the disadvantages are not just about scholars worried that their subsidy will be eliminated. Moving away from collective information services (i.e., libraries) to individually funded services will have a serious impact on the quality and cost of education. The accessibility of much information will be reduced with the new commercial models since only users who can pay will be able to access it. Universities will almost certainly not subsidize their undergraduates access to current information in journals not locally held. And even if universities subsidize the access of their graduate students to the information they need, the funding decisions are likely to be made on a per-institution basis. Wealthier institutions will be able to subsidize this access while smaller institutions will shift the burden onto the students. This will exacerbate an already existing hierarchy in the U.S. and perhaps even contribute to the creation of a similar hierarchy in countries like Canada.

Although not directly related to scholarly publication, we can see that the type of balkanization predicted for the scholarly communication system is already occurring in the public library sector as libraries focus on popular pursuits at the expense of other areas. John Buschman[74] describes the loss of access at the New York Public Library caused by an emphasis on the development of Science, Industry and Business collections.

The New York Public Library only recently has found the funds to restore staff and extend hours cut from branch libraries around the city (of primary benefit to local neighborhoods and schoolchildren). In the meantime, NYPL was able to proceed with a Science, Industry, and Business Library with an integrated technology system at a cost of $18.5 million to the public.

There seems little reason to suspect that a similar dynamic will not also occur in the academy.

Besides this balkanization, education and intellectual development may well suffer even at those institutions that provide subsidized graduate access. This will have less to do with financial access to the material and more to do with the unbundling of scholarly information. Currently, scholarly information is bundled in relevant packages (i.e., journals). The fact that these journals have been contained on shelves has been extremely useful both for faculty developing a new research interest and for graduate students who obtain easier access to all the relevant literature while studying for their exams. But with unbundling and sale of information in bite size pieces, graduate students will not be able to browse relevant journals in order to quickly develop a sense of the field. Nor will they be able to take home the last ten years of a journal in order to develop substantive depth in their field. Faculty will also suffer for much the same reasons. Its seems plausible to suggest that large scale unbundling of scholarly information might contribute to less depth in scholarly endeavours simply because unbundling will force scholars to focus more narrowly on their topics of interest.

It is true that the scenario predicted here, i.e., similar or rising costs for distribution of information, declining access, the development of a tiered communication system, and a decline in educational quality, is a worse case one. It might not turn out to be as bad as all that. Clifford A. Lynch notes that some universities are now turning their attention to revitalizing their academic presses. Because academic presses have been traditionally concerned with distributing material that is not profitable enough to find outlets in the commercial press, and because new technology might allow them, through reduced costs, to again offer this vital service to the academic community, the outcome of this growing concern might be the salvation of the esoteric press. As Lynch notes:[75]

Ironically, universities, reacting to the increasingly intolerable costs of acquiring scholarly information from commercial publishers, are now asking whether their university presses can play a greater role in making scholarly information available at lower costs to the research and education communities. This is exactly what the university presses were supposed to be doing, before their parent institutions told them to act like commercial publishers.

In order to actuate this scenario, Lynch notes that a coordinated effort needs to be developed. University presses, scholars, societies, and libraries all have to become involved in the planning of the new scholarly communication system. And what's more, there has to be an awareness on the part of all concerned that the scholarly communication system should not be designed with profit as the primary goal. Whether or not such action will be taken is an open question at this time. And despite the fact that the interest shown by scholars in the revitalization of the communication system has been minimal, this may change as some key publications begin to disappear and as scholars are forced to pay directly for their information. At that point the scholars who are dependent on esoteric titles may in fact choose to start their own electronic publications in order to ensure continued low cost distribution of their own and their peers work.

Conclusion

We have covered considerable ground in this paper. We talked about the economic crises in academic libraries and about the causes of this crises. We have paid particularly close attention to the nature of the academic market for primary journals and the predatory practices of some commercial publishers. We have also noted that opposition to the current situation is increasing as librarians and some scholars recognize that the system is in dire need of overhaul. Although up until now there have been only a handful of experiments into alternative delivery, by and large they have demonstrated clearly the ability of information technology to allow the academy to circumvent the top heavy, costly, and predatory publishing houses.

People like to talk about the ability of information technology to empower the individual. As information technology applies to the scholarly communication system, this potential certainly exists. Unfortunately as we have seen, just because powerful technology exists and is capable of offering the tools needed to change the "sociology" of academic publishing does not mean that these changes are inevitable. In this paper we have seen how the traditional publishing

interests are attempting to mould the new cyber publication system in the image of the old paper-based system. Their strategies are relatively simple. They are suggesting that only they can provide a professional service that serves the needs of the academy, that the service they provide is essential, and that their services are just as expensive to provide in the electronic world as they are in the paper realm. I have also suggested that if the traditional publishers don't get their way, we can expect them to engage in increasingly aggressive manoeuvres to eliminate the emerging alternative press.

There is a very real need to overhaul the system of scholarly communication. As it currently operates, universities and libraries are getting the short end of the stick. But their disadvantaged position makes little sense given that the universities provide the bulk of the information upon which the traditional presses have profited. The ridiculousness of the situation is heightened when considered against the power of the new information technologies to streamline the process of communicating primary information by eliminating the middle-people in the circuit.

It is currently within our power to change the market structure of the scholarly communication system and make it more sensitive to the needs of those whom it is supposed to serve. Moving the system in this direction does not necessarily mean eliminating the traditional press although this is a distinct, if unlikely, possibility. They certainly may have a role to play. But they cannot be allowed to play this role in a marketplace that allows them all the benefits of monopoly production. Whether or not scholars and libraries choose to take over the bulk of scholarly distribution system, information, the one thing we can do, if we recognize the need to overhaul the system, if we accept our role in the overhaul of the system, and if we organize with librarians and other concerned stakeholders, is give them a run for their money. The very least that we need to do is to compete with them by clearly demonstrating that the scholarly information system does not need to be expensive. If we can do that, and if we can do it in significant numbers, then the traditional press will be forced to accept less expensive models. Then, if they did not honestly search out ways to create an efficient and cost effective system, the only alternative they would be left with is declining support from the scholarly world and growing status as an unfortunate chapter in the history of the scholarly communication system when scholars and libraries, because of immature technology, had no choice but to let the information we produce be distributed by corporations whose only interest in the distribution of academic material was in the fat bottom line it was able to generate.

If we can do this, then the traditional press would do well to consider what happened to the hulking behemoths that we know as dinosaurs.

References

Alexander, Adrian W., & Carpenter, Kathryn Hammell. (1995). U.S. Periodical Price Index for 1995. *American Libraries, 26:* 446-454.

Asser, Paul Nijhoff. (1979). Some Trends in Journal Subscriptions. *Scholarly Publishing, 10:* 279-286.

Astle, Deana L. (1989). The Scholarly Journal: Whence or Wither. *The Journal of Academic Librarianship, 15:* 151-156.

Buschman, John. (1994). Librarians, Self-Censorship, and Information Technologies. *College and Research Libraries, 55:* 221-228.

Carrigan, Dennis P. (1995). The Emerging National Periodicals System in the United States. *Journal of Scholarly Publishing, 24:* 93-102.

Chaffin, Nancy J. (1995). U.S. Serial Services Price Index for 1995. *American Libraries, 26:* 456-457.

de Gennario, Richard. (1977). Time to Fight Back. *American Libraries, 18:* 69-74.

Dougherty, Richard M., & Barr, Nancy E. (1988). Paying the Piper: ARL Libraries Respond to Skyrocketing Journal Subscription Prices. *American Libraries, 14:* 4-9.

Duxbury, Nancy (1994). *University Presses Innovate With Internet Book Catalogs.* Association of Research Libraries: [http://arl.cni.org/symp3/duxbury.html].

Fisher, Janet H. (1995). The True Costs of an Electronic Journal. *Serials Review, 21:* 88-90.

Fry, Bernard M., & White, Herbert S. (1976). *Publishers and Libraries: A Study of Scholarly Research Journals.* MA: Lexington Books.

Gardner, James S. (1993). "The Place of Electronic Media Publication in the Evaluation of Faculty Research and Scholarship." In *Proceedings of the 1993 International Conference on Refereed Electronic Journals,*(pp. 9.1-9.5). Manitoba: University of Manitoba Libraries.

Getz, Malcolm. (1992). Electronic Publishing: An Economic View. *Serials Review, 18:* 25-31.

Harnad, Stevan (1994). *Publicly Retrievable FTP Archives for Esoteric Science and Scholarship: A Subversive Proposal.* public-e-print-archives-subversive-proposal.

Hauptman, Robert. (1995). Publish, Purchase, Perish. *Journal of Scholarly Publishing, 26:* 257 – 261.

Hawkins, Brian L. (1994). Creating the Library of the Future: Incrementalism Won't Get us There! *The Serials Librarian, 24:* 17-47.

Hibbitts, Bernard (1996). *Last Writes?: Re-assessing the Law Review in the Age of Cyberspace.*

Jarvis, Sonia (1993). "The Social and Legal Costs of the Information Superhighway." In Association of Research Libraries, *The Emerging Information Infrastructure: Players, Issues, Technology and Strategies,* (pp. 31-34). Virginia: Association of Research Libraries.

Joyce, Patrick, & Merz, Thomas. (1985). Price Discrimination in Academic Journals. *Library Quarterly, 55:* 273-283.

King, Donald W., McDonald, Dennis, & Roderer, Nancy (1981). *Scientific Journals in the United States.* Pennsylvania: Hutchinson Ross.

Licklider, J. C. R. (1965). *Libraries of the Future.* Massachusetts: M.I.T. Press.

Lubans, John. (1987). Scholars and Serials. *American Libraries, 18:* 180-182.

Lynch, Clifford A. (1994). Scholarly Communication in the Networked Environment: Reconsidering Economics and Organizational Missions. *Serials Review, 20:* 23-30.

Marks, Robert H. (1995). The Economic Challenges of Publishing Electronic Journals. *Serials Review, 21:* 85-88.

Meadows, Jack, Pullinger, David, & Such, Peter. (1995). The Cost of Implementing an Electronic Journal. *Journal of Scholarly Publishing, 26:* 227-233.

Messmer, Ellen. (1994). University Pioneers Electronic Access to Science Journals. *Network World, April:* 33.

Metz, Paul, & Gherman, Paul M. (1991). Serials Pricing and the Role of the Electronic Journal. *College and Research Libraries, 51:* 315-327.

Moline, Sandara R. (1989). The Influence of Subject, Publisher Type, and Quantity Published on Journal Prices. *The Journal of Academic Librarianship, 15:* 12-18.

Monty, Vivienne. (1996). Electronic Journals: Publishing Paradigm. *Feliciter, February:* 56-61.

Odlyzko, Andrew. (1994). The Impending Demise of Scholarly Journals. *Surfaces, 4:* [http://tornade.ere.umontreal.ca/~guedon/Surfaces/vol4/odlyzko.html].

Okerson, Ann L. (1993). "The Electronic Scholarly Journal: Its Surprising Past and Mysterious Future." In *Proceedings of the 1993 International Conference on Refereed Electronic Journals,*(pp. 1.1-1.8). Manitoba: University of Manitoba Libraries.

Okerson, Ann L. (1995). Forward to the Directory of Electronic Journals.

Okerson, Ann L. (1994). Oh Lord, Won't You Buy Me a Mercedes Benz Or, There is A There There. *Surfaces, 4:*[http://tornade.ere.umontreal.ca/~guedon/Surfaces/vol4/okerson.html].

Pullinger, David J. (1994). *The SuperJournal Project.* Philadelphia: Institute of Physics Publishing.

Quinn, Frank, & McMillan, Gail. (1995). Library Copublication of Electronic Journals. *Serials Review, 21:* 80-83.

Readings, Bill. (1994). Notes from the Electronic Underground. *Surfaces, 4:* [http://tornade.ere.umontreal.ca/~guedon/Surfaces/vol4/readings.html].

Ribbe, Paul H. (1988). Assessment of Prestige and Price of Professional Publications. *American Mineralogist, 73:* 449-469.

Rowland, Fytton. (1995). The Need for Information Organizations and Information Professionals in the Internet Era. *Serials Review, 21:* 84-85.

Shoaf, R. A. (1994). Policing Electronic Journals. *Surfaces, 4:* [http://tornade.ere.umontreal.ca/~guedon/Surfaces/vol4/shoaf.html].

Sirbu, Marvin A. (1995). Creating an Open Market for Information. *Managing Technology, 21:* 467-471.

Taubes, Gary. (1996). Science Journals Go Wired. *Science, 271:* [http://brasil.emb.uwick.us/nib/epub/papers.sciwiri.htm].

Thompson, James C. (1988). Journal Costs: Perception and Reality in the Dialogue. *College and Research Libraries, 49:* 481-2.

van Trier, Gerard M. (1992). The Future of Libraries and Information Services: Report of a Delphi Study. *Information Services and Use, 12:* 205-215.

Webster, Duane E., & Jackson, Mary E. (1994). Key Issue: The Peril or Promise of Access. *Journal of Academic Librarianship, 20:* 261-262.

White, Herbert S. (1976). Publishers, Libraries, and Costs of Journal Subscriptions in Times of Funding Retrenchement. *Library Quarterly, 46:*

Endnotes

1. Sonia Jarvis (1993).

2. Robert Maxwell, Pergamon Journals Commercial Publishing House. Quoted in William Kay, *Global Business*(Spring, 1988: 42).

3. Astle (1989). J. C. R. Licklider (1965). Donald W. King, Dennis McDonald and Nancy Roderer (1981).

4. Richard de Gennaro (1977). Metz and Gherman (1991).

5. A graphical representation of this point is provided by data collected by the ARL. For the ARL member library universe, serials acquisitions have declined by 4% (while expenditures on serials increased 93%) in the period 1986 to 1994. Monographs took an even harder hit declining 22% in the same period.

The ARL statistics page is available at http://viva.lib.Virginia.EDU/arlstats/1994/graphs.html. The graph of serials expenditures, price increases, and acquisition data is available at http://viva.lib.Virginia.EDU/arlstats/1994/arl952.gif.

6. Paul Metz and Paul M. Gherman (1991).

7. Brian L. Hawkins (1994).

8. Herbert S. While (1975: 372).

9. Paul McCarthy (1994).

10. Robert Hauptman (1995).

11. Asser's (1979) data is based on the results of two surveys conducted by the Journals Committee of the International Group of Scientific, Technical and Medical Publishers. The samples are quite small comprising only 43 responses from an initial sample set of 158 questionnaires sent to interested publishing houses.

12. The Association of Research Libraries is an organization of 58 of the largest North American research university libraries (Okerson, 1995). The ARL home page is located at http://arl.cni.org/. For a description of the purpose of ARL and a list of member libraries see http://arl.cni.org/members.html/.

13. Data provided by ARL in the graph, *Monograph and Serial Costs.* It is available at: http://viva. lib.virginia.edu/socsci/arl/1994/arl952.gif

14. Complete data on periodicals is available in Alexander and Hammell (1995). Also see Chaffin (1995) for an analysis of serial publications.

15. King, McDonald & Roderer (1981).

16. James C. Thompson (1988).

17. Patrick Joyce and Thomas Merz (1985).

18. Richard M. Dougherty and Nancy E. Barr (1988).

19. Economic Consulting Services Inc., quoted in Metz and Gherman (1991: 317).

20. Kenneth E. Marx, Steven P. Nielson, H. Craig Peterson, and Peter E. Wagner (1991: 136).

21. Sandra R. Moline (1989).

22. Ribbe (1988: 460) notes that "In order to meaningfully compare the prices of journals, it is necessary to somehow normalize the database. To consider price per page would be misleading, because formats vary widely. For example, word density in *Mineralogy and Petrology* is ~ 500 per page, but in *Contributions to Mineralogy and Petrology,* it is > 1000." An oversimplified analysis based on price per page was what led White (1976) to his mislead support of commercial publishing houses.

Various analysts have approached this problem in different ways. Ribbe (1988) for example uses the cost per source item (article) and Moline (1989) uses cost per character.

23. These price differentials are duplicated in the most recent data from the U.S. Periodical Price Index (Alexander and Carpenter, 1995).

24. Bernard Fry and Herbert White (1976).

25. Richard M. Dougherty and Brenda L. Johnson (1988). Andrew Odlyzko (1994). Ann L. Okerson (1993).

26. Ann L. Okerson (1993: 1.2).

27. Deana L. Astle (1989:155).

28. James C. Thompson (1988: 482).

29. Andrew Odlyzko (1994). Bill Readings (1994).

30. Steve Harnad (1991: 1995). Bernard Naylor and Steve Harnad (1994).

31. Steve Harnad (1994).

32. R. A. Shoaf (1994).

33. Quoted in Vivienne Monty (1996: 59).

34. Nancy Duxbury (1994). Gary Taubes (1996) describes the wave of publication starts as a *tidal wave*.

Two WWW pages give a good overview of what is now available from traditional publishers. One is provided by a service called E-doc and is available at http://www.edoc.com/ejournal/publishers.html. The other is provided by the British library and is available at http://www.comlab .ox.ac.uk/archive/publishers.html. Nancy Duxbury (1994) also provides a list of university presses now on line.

An exhaustive compilation of UUAP presses is available at http://gopher.pupress.princeton/.edu. Another list of traditional journal publishers is provided by *Project Muse* at http://muse.jhu.edu/.

For examples of electronic texts on the internet see *The Catalog of Electronic Texts on the Internet* http://www.lib.ncsu.edu/stacks/alex-index.html or *The Online Books Page* http://www.cs.cmu.edu/Web/books.html.

35. David J. Pullinger (1994). The Superjournal home page is at http://www.dlib.org/dlib/january96/briefings/01super.html

36. Ellen Messmer (1994). Also Gary Taubes (1996).

37. See the RedSage Home Page http://www.cnri.reston.va.us/home/dlib/august95/lucier/08lucier.html.

38. Gary Taubes (1996).

39. Pamphlet Distributed by SRO, December 1995.

40. The editorial by Martin Bulmer and L. Stanley (1996) is available at http://kennedy.soc.surrey.ac.uk/socresonline/1/1/editors.html.

41. See the response of the EJS at http://www.sociology.org/ .

42. Ginsparg's server is located at http://xxx.lanl.gov/.

43. Bernard Hibbitts (1996; emphasis added).

44. This appeal to traditional publication practices will, given its early use in the struggle between independents and traditional publishing houses, likely become a key strategy for traditional publishing houses in the coming years and is therefore something to be watched for. A key counter strategy will be to confront the argument head on my systematically dismantling the myths of peer review.

45. Fytton Rowland (1995).

46. Fytton Rowland (1995: 85; italics added).

47. Andrew Odlyzko (1994). Ann Okerson (1994).

48. Frank Quinn and Gail McMillan (1995).

49. Frank Quinn and Gail McMillan (1995).

50. Janet H. Fisher (1995).

51. Janet H. Fisher (1995: 90).

52. A similar service called *ContentsDirect* has recently been announced by Elsevier Publishers and is, according to the publishers, "the fastest and most direct alerting service for Elsevier Science Journals." The service is operated via traditional Bitnet Listserver and provides table of contents pages 2 or 3 weeks prior to the official release of the publication thereby obviating the need for other current awareness services. More information on the service can be found at http://www.elsevier.com/homepage/about/caware/condir/.

53. James S. Gardner (1993).

54. John Lubans Jr (1987: 181).

55. Steve Harnad (1994).

56. Jack Meadows, David Pullinger and Peter Such (1995).

57. Gary Taubes (1996) identifies the projects of both Steve Harnad and Paul Ginsparg as publications that are also seeking to shift some of the responsibility for publication onto the scholars themselves.

58. Jack Meadows, David Pullinger, and Peter Such (1995: 231).

59. Jack Meadows, David Pullinger, and Peter Such (1995: 231).

60. Robert H. Marks (1995: 86).

61. Robert H. Marks (1995: 85).

62. Janet H. Fisher (1995: 89).

63. Janet H. Fisher (1995: 90).

64. Dennis P. Carrigan (1995).

65. Dennis P. Carrigan (1995: 100).

66. Dennis P. Carrigan (1995).

67. Malcolm Getz (1992: 29).

68. Gary Taubes (1996).

69. Gerard M. van Trier (1992).

70. Dennis P. Carrigan (1994).

71. Marvin A. Sirbu (1995).

72. Gary Taubes (1996).

73. Duane E. Webster and Mary E. Jackson (1994: 262).

74. John Buschman (1994: 222-3).

75. Clifford A. Lynch (1994: 27).

Last Articles

Anthropology vs Sociology: A Scientific Comparison of Human Behavior and Societal Structures

Folkways Sociology: Understanding Their Impact on Social Behavior and Norms

Best Sociology Essay Writing Services in the USA

CONTACT HOW TO CONTRIBUTE SUBMISSION GUIDE
TERMS OF SERVICE EJS ARCHIVES ABOUT

Socjournal

Useful Information

The website Sociology.org offers a rich collection of articles, research papers, and educational resources focused on sociology.

Contact Info

Address:
Metrotech Center, Brooklyn, NY 11201, USA

Email:
info@sociology.org