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# Freedom from the Press: Alternative Academic Publication Strategies and the True Potentials of Information Technology

*by Mike Sosteric*

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> The same idea [to create an online publishing consortium] has been bandied about by university leaders and head librarians in the United States for the past year. But the consortium . . . may be the first large-scale project designed to encourage scholars to publish their work on their own.
>
> Lisa Guernsey
> *Chronicle of Higher Education*
> October 1998
> ftp

As Mary Case (1998) notes in a recent special issue of the *Association of Research Libraries* (ARL), scholarly communication and research "are the life blood of the advancement of knowledge". This is certainly true, much more so today than twenty-five years ago when Daniel Bell (1973) first envisioned the Information Age in which we are now living. Access to information of all sorts—from basic to applied, social to natural—is essential for researchers, graduate students, industry, and even government. Indeed, establishing an adequate information infrastructure has become a basic policy requirement of many international governments.

However, society currently suffers from an information crisis caused by a high-cost scholarly communication system. Until recently, this has been called a "serials" crises because the stakeholder most affected has been the academic library. As libraries have cut back on serial and monograph acquisitions, thereby "decimating their collections" (Case, 1998), it has become increasingly clear that this crisis extends past the library, into our classrooms and laboratories. Not only are whole lines of scholarship in danger of disappearing, but professionals in industry, government, and education are finding that the information that does remain available is too expensive to access.

What is the answer to this information crisis? For many years, electronic journals

have been offered as a potential solution (Sosteric, 1996). Electronic journals are said to be cheaper, faster, and more efficient ways of distributing scholarly information than the more traditional venues. They supposedly do away with the high cost of paper (thereby eliminating 75% of production costs) and streamline the editorial process (thereby eliminating some of the administrative overhead). They should, in short, revolutionize the scholarly communication system. Unfortunately, this revolution has not yet occurred. And while we continue to wait for it, the associated problems remain or get worse. In the race to maintain the status quo, even wholly electronic journals demand subscription rates that are as expensive or more so than their paper counterparts—despite the fact that there are no paper or printing costs.

Then has the revolution failed? I do not believe so. The potential of information technologies to enhance access to scholarly information and lower costs has barely been tapped, and in some cases, the potential has been totally ignored. This is perhaps because of a lack of awareness and expertise on the part of those who might be most interested in reforming the system (scholars, librarians, or even graduate students wanting to break into the publishing arena). It could also be due to a failure of nerve or an inability to see "outside the lines" of entrenched practices and conceptual schemas by the traditional stake-holders of the system (university presses, scholarly societies, and even some commercial presses). Peter Boyce, Senior Consultant to the American Astronomical Society, suggests this possibility:

> Most publishers can't step back far enough from the day-to-day production demands to visualize what "ground zero" really is. They can't shed their old habits. I think it says something that the real innovators, (us with UC Press, High Wire, Community of Science, the LANL xxx server, etc.) all originated from groups who were not publishers. We were able to start with what it is the users would want and design a system to get there. Professional publishers, even most non-profit publishers, could not, apparently, blaze this trail (P. Boyce, personal communication, March 15, 1999).

Boyce points to what is essentially a lack of vision. If he is correct, this absence has important ramifications. Instead of recognizing and exploiting the potential of new technologies, we are forcing them to serve old needs and old production patterns. This is akin to forcing a round peg into a square hole. Consequently, and to the detriment of the scholarly world as a whole, the ineffective utilization of technology perpetuates the serials cost crisis.

What is perhaps needed are more projects like that of the American Astronomical Society (AAS) and the Los Alamos National Laboratory (LANL) preprint server [1], both of which overtly demonstrate the potential of information technology to lower the cost or provide alternative methods for distributing scholarly information. The LANL preprint server, for example, is an extremely low-cost but very effective means for rapidly disseminating scholarly information (Ginsparg, 1994). If more

publishers, universities, and individual scholars were to demonstrate that IT can be utilized to enhance access to information, then more readers of serials would pressure publishers to change the production patterns that lead to costly publication strategies.

This is the underlying motivation for the International Consortium for Alternative Academic Publication (ICAAP). ICAAP is a consortium of scholars, libraries, programmers, and university officials based at Athabasca University in Canada and devoted to proving that a high-quality scholarly communication system can be created without incurring the high cost of the old paper-based system. The strategy is simple and based on three general tactical movements. The first step is to leverage economies of scale. ICAAP localizes many key "information" services, such as archiving, site management, conferencing and list services, and the provision of a secure server (HTTPDS). By providing these basic services, it frees individual journal editors from the provision and administration of a substantial portion of the technical overhead of electronic journal production.

The second step is to exploit the potentials of information technology in order to create a simple and efficient journal production infrastructure; many advances have been made in this area. For example, ICAAP has developed an internal eXtended Markup Language (XML) [2] document system that allows ICAAP to create a low-cost, extremely flexible production system. The system, known as ICAAP eXtended Markup Language (IXML), allows ICAAP to, among other things, deliver its journal articles in multiple formats at the flick of a switch (for more information on IXML and how ICAAP applies document markup, see Sosteric, (1999, 1999a). The principle advantage of using multiple formats is that it allows ICAAP to serve a wider segment of the scholarly market with no additional costs (contrary to the beliefs of some commercial publishers). Thus, a simple HTML version can be provided for users without the latest technology, and for those with more up-to-date technology on their desktop, enhanced HTML versions (complete with pop-up notes and graphics) can be provided (for examples, see http://www.sociology.org/content/). The provision of printable documents or even camera-ready copy from the original source files (and with little or no additional cost) is also being investigated.

The third step is to develop a distributed production system that allows various "centers of excellence" to provide essential services. ICAAP has recently started working with the Internet Applications Laboratory at the University of Evansville in Indiana on a project designed to provide sophisticated indexing and search services for scholarly journals on the Internet *at no charge*. In order to realise this essential service, the IALab will deploy a powerful Limited Area Search Engine (LASE). Basically, a LASE search engine will index *only* scholarly journals (thus indexing a limited area of the World Wide Web). Indexing only scholarly journals increases the quality and value of the World Wide Web for research and arguably moves full-text indexing of Internet resources a quantum step beyond current search services such as Excite or Hotbot.

To date, the IALab has developed LASE search engines for philosophical resources.

Noesis (http://noesis.evansville.edu/) and Hippias (http://hippias.evansville.edu/) are two examples. However with the initiation of the Goliath Project (jointly administrated by Anthony F. Beavers, Director of the IALab, and this author), the coverage and functionality of the engine will be greatly extended. Using technologies developed by the IALab and ICAAP (Beavers, 1998), this service promises to be a spectacular example of the truly revolutionary potentials of information technology. Planned services include (in addition to basic LASE functionality) the ability to perform structured search queries (searching for author, subject, title, etc.), and the ability to provide links to article locations independent of their physical location on the Web (for a working example, see http://www.icaap.org/iuicode?100.4.1.1 and note how the browser is redirected to the current location of the article).

ICAAP, along with organisations like the IALab, is moving to provide an essential suite of services in order to encourage experimentation and alternative publication. However, the services and strategy of ICAAP are important for other reasons as well. As a service to journal editors, the search engines, indexing services, markup projects, and document tracking services add value to all independent scholarly journal projects. This is critical from a competitive point of view because it allows ICAAP to organize and provide the same sorts of services we would expect to find only in larger commercial publishing houses. It is hoped that this will allow innovative and experimental projects to compete more effectively against commercial providers with the internal resources to create a competitive advantage for their own journal titles.

The potential seems enormous. Limiting prognostication only to ICAAP (and not considering the impact all this might have on other journal projects which might draw competitive advantage from ICAAP technologies), we expect that when all the technologies and services are in place, we will be able to provide production services to journal editors at a drastically reduced cost. It is ICAAP's intention to provide production support for thirty journals at the rate of about $300.00 to large institutional libraries (services are free to editors) [3]. Should ICAAP achieve this goal, it would then be possible to make an unequivocal statement about the potential of IT to revolutionize the scholarly communication system.

Is this scenario attainable? Scholars working alongside ICAAP believe so. Anthony Beavers, who has extensive experience in the deployment of search technology, makes the following comments about the cost of deploying free search services for scholarly journals:

> What we have learned from these experiments is that, in no uncertain terms, it is technologically possible and economically feasible to build a system of dissemination for academic resources that is completely administrated by the scholarly world without the intervention of economic interests. If the IALab has not yet demonstrated this fully in the concrete, this is only because we have been operating on a very small budget in an inexpensive lab that employs undergraduate interns under

> the direction of a single faculty advisor. It is not because standards must first be reached for meta-tags, nor is it because the problem is technologically difficult, though a considerable part of the paper paradigm must be rethought. We fully believe that the new Internet
>
> technology offers the academic community improvements to the existing system of dissemination as long as it does not wait for the corporate sector to solve these problems for it (Beavers, 1998).

Other officials from ICAAP also believe that there is a verifiable potential to reduce the cost of distributing scholarly information. And indeed, like the IALab, ICAAP has achieved much with only a limited budget. Not counting affiliated resources, ICAAP currently produces five electronic journals with only part-time editorial and production assistance (total labor of about 1 week per month). Significantly, this has been achieved even though a considerable portion of the initial task of starting production on an established journal is up-front and occurs as a result of converting journal back issues to the ICAAP markup format. That is, much of our current labor requirements are tied up in one-time startup tasks. As conversion is completed, the process will become more streamlined and more cost-effective.

Of course, the ICAAP experiment is still in the very early stages. The extent of the final reduction in cost will depend on many factors, not the least of which is ICAAP's ability to elicit broad and voluntary financial support from the scholarly community. Volunteer support, though not absolutely necessary, is critical for maximizing the cost savings, simply because eliciting adequate funding through volunteer donations eliminates the need to provide the bloated bureaucratic infrastructure necessary for subscription-based services. Eliminating agents, subscription processes, and software systems designed to manage access, etc., shaves a further order of magnitude from the cost of producing scholarly information.

Besides volunteer support, the final outcome will also depend on others carrying forward the vision and solutions developed at ICAAP. It is not a clich?Ã‰Â¬Â© to say that ICAAP will accomplish nothing alone. Everything depends on the ability and willingness of other universities and scholars to adopt and adapt to the ICAAP model. Only when such a model of scholary publication becomes commonplace will the inertia of the current system be overcome.

In the final analysis, it seems senseless not to use technology to reform—even revolutionize—the current scholarly journal system in order to control spiraling costs and realize creative alternatives. At the risk of oversimplifying the associated problems, all that we really need is to draw on our creative ability to think outside the lines drawn by the creators of a dated and inefficient paper-based publication system. Once we move outside the boundaries that confine our thinking as to what is possible, we will begin to see the true potential embedded in advanced information technologies. At that point, scholarly communication will begin to move, as predicted by Steve Harnad (1991), *At the Speed of Thought ?Ã‡Â¬Â©*[4].

**References**

## References


Beavers, A. F. (1998, December). Evaluating search engine models for scholarly purposes: A report from the Internet Applications Laboratory. *D-Lib Magazine*.

Retrieved March 31, 1999 from the World Wide Web: http://www.dlib.org/dlib/december98/12beavers.html

Bell, D. (1973). *The coming of post-industrial society*. New York: Basic Books.

Boyce, P. (1999, March 15). Personal Communication.

Case, M. (1998). Views of the current marketplace for scholarly journals. *Association of Research Libraries Newsletter 200*. Retrieved March 31, 1999 from the World Wide Web: http://www.arl.org/newsltr/200/200toc.html.

Ginsparg, P. (1994, October 14). After-dinner remarks at the 1994 American Physical Society meeting at Los Alamos National Laboratory. Retrieved March 31, 1999 from the World Wide Web: http://xxx.lanl.gov/blurb/pg14Oct94.html.

Guernsey, L. (1998, October 30). Research libraries' newsletter examines profits of journal publishers. *Chronicle of Higher Education*. Retrieved March 31, 1999 from the World Wide Web: http://www.icaap.org/chronicle98.html.

Harnad, S. (1991). *Post-Gutenberg galaxy: The fourth revolution in the means of production of knowledge*. Retrieved March 31, 1999 from the World Wide Web: ftp://ftp.princeton.edu/pub/harnad/Harnad/HTML/harnad91.postgutenberg.html.

McCabe, M. J. (1998, October). The impact of publisher mergers on journal prices: A preliminary report. *Association of Research Libraries Newsletter 200*. Retrieved March 31, 1999 from the World Wide Web: http://www.arl.org/newsltr/200/mccabe.html.

Sosteric, M. (1999). ICAAP eXtended markup language: exploiting XML and adding value to the journals production process. *D-Lib Magazine*, *5*(2). Retrieved March 31, 1999 from the World Wide Web: http://www.dlib.org/dlib/february99/02sosteric.html.

Sosteric, M. (1999a). The EJS and SGML production: a new era in scholarly communication. *Electronic Journal of Sociology*, *4*(1). [iuicode: 100.4.1.1]

Sosteric, M. (1998, October). At the speed of thought: Pursuing non-commercial alternatives to scholarly communication. *Association of Research Libraries Newsletter 200*. Retrieved March 31, 1999 from the World Wide Web: http://www.arl.org/newsltr/200/sosteric.html.

Sosteric, M. (1996). Electronic journals: The grand information future? *Electronic Journal of Sociology*, *2*(2). [iuicode: 100.2.2.2]

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