

Academic Publishing : Role of University Libraries in the Scholarly Communication System

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Abstract

The paper reports the changes taking place in the traditional scholarly communication system owing to technological changes in the information and communication technologies, particularly the Internet. It describes the importance and impact of e-journals on academic publishing and the need for universities to adopt 'open access' initiatives and create institutional repositories. It discusses the role of academic libraries in disseminating scholarly information and explores the possibility of librarians acting as partners in electronic publishing and self-archiving of the university's research output.

Keywords: *Scholarly communication, electronic publishing, electronic journals, open access*

Introduction

For more than three centuries the printed journal has been serving as the primary medium of research communication and has remained unchanged in form and function since the first scholarly journal *Journal des Scavans* published in 1665. Since then, scientists have been publishing articles without expecting any payment. They may expect royalties for their textbooks and monographs, but they give away their research articles in exchange for a host of intangible benefits, such as a time-stamp that gives them priority over other scientists working on the same problem, the prestige, citations, and impact that advance their career.

The increase in the cost of printing around the mid-1980s has led publishers to increase journal prices, and consequently libraries were forced to cut down their journal subscriptions which resulted in reduced print volume for the publishers, thereby pushing the unit cost up for the remaining subscribers. Together with the increasing number of journals, and their costs, libraries are unable to meet their user needs.

Due to the "Serials Crisis" the traditional paradigms of scholarly communication are being challenged, and

the academic publishing has undergone a major change. The change from print to electronic medium has given rise to licensing of access to electronic content as the new business models. The Internet has ushered in an era of "online publishing" in which the authors (knowledge creators) have partially regained their intellectual property rights through institutional archives. The information workers including the scientists have also realized the need for free access to research information that is 'public' funded.

At present the scholarly communication system is passing through a technological transformation, where the academic and research community is faced with a new challenge of communicating their research to others directly over the World Wide Web. Thus, electronic networks have not only expedited traditional forms of publishing, but also created new formal and informal opportunities for scholarly communication.

Traditional Communication System

There are two main established channels of communication among scholars and scientists:

- a) Informal communication methods like personal contacts, while attending lectures, conferences, seminars etc. This is usually called an informal communication network or "invisible college".
- b) Formal communication is by publishing research work in a refereed printed journal, which is the primary channel of communication meant for a wider audience.

Apart from sharing and evaluating research results and findings among professional colleagues, there are a number of other important aspects in scholarly communication, which are - ownership of ideas, societal recognition, claiming priority over discovery and establishing status among professional colleagues, etc. In this process, authors are usually concerned with the diffusion of their ideas and findings

with an expectation of spread of knowledge, professional recognition and sometimes career advancement (Crane, 1972).

The peer review process is the single most important element in establishing value for a journal, and this strength is in the hands of the publishers who are able to set the standards and decide the prices of the journals. Rarely do academics and scientists receive any remuneration for scientific articles published in journals. Since academic recognition is attributed to scholarly works published in reputed and peer-reviewed journals, the authors usually 'transfer' their (copy) rights to the publishers in return for the publication of the article.

It is found that around 70 % of scientific journal articles are published by university faculty & research scholars, but university libraries are increasingly unable to subscribe to all this content. A market survey in 1990 revealed that universities publish almost 15% of their scholars' output, including the works by university presses, publications of individual academic departments, working papers and periodicals. It is found that about 90 % of formal academic publications migrate outside the academy before returning home as repurchased monographs and serials. Hence, universities could compete and influence price by retrieving control of a proportion of the academic literature and strengthen the arm of university publishing (Okerson, 1991).

Whether in print or electronic medium, scholarly communication has to retain its scholarly content and purpose by adhering to the following principles by all the stake holders:

- Allow scholars to communicate effectively and efficiently;
- Eliminate barriers and limitations;
- Protect the copyright interests of both scholars and institutions;
- Maintain quality by peer review and referee systems;
- Reduce costs;
- Avoid delays in publishing and delivery;
- Provide tools to help the communication process.

The print journals

Despite its benefits to the academic and research community, the printed journal has been subjected to criticism from many angles. They are: 1) peer review process, 2) delays in publication, 3) escalating costs, 4) lack of selectivity, 5) stoppage of subscriptions by libraries and 6) copyrights held by the commercial publishers. While publishers are concerned with the production of journals and making them available to customers for profit; libraries are concerned only with the acquisition of these journals to serve their user community.

In the late 1980s there has been a major 'shakeout' between publishers, libraries and academics due to the proliferation of journals, increasing cost of journals, library budget cuts and publishers holding the copyrights for journal articles. This global crisis has led to the study on *University Libraries and Scholarly Communication* sponsored by the Andrew W. Mellon Foundation in 1991 to analyze the situation and propose suitable measures to foster scholarly communication.

Several studies have shown that academic and research libraries are subscribing to fewer journals, despite new journals being launched every year. One such study reveals that "university libraries are subscribing to 7 % fewer journals and 21 % fewer books. This means that libraries were able to offer to their faculty and researchers only about 70 % of the information that they had provided 10 years ago. The price of an average journal subscription had increased by 147 % and the price of an average book by 63 % between 1986 and 1996" (Stubbs, 1998).

The "Serials Crisis"

Commercial publishers have been identified as the 'villains' in the serials crisis along with some other elements directly or indirectly responsible for this situation. Universities are concerned about the long-term impact on academic programmes unless a reasonable library resource base is maintained by providing a balanced mix of both print and electronic journals (Walker, 1998).

On the other hand, academic libraries are running out of space for storing bound volumes of print collection and seeking new opportunities such as better document delivery mechanisms through commercial document supply vendors. The problem of keeping archival copies of e-journals and adding them into their catalogues and holdings is also of great concern to libraries.

Libraries are pressed with the burden of maintaining the minimum number of journal titles in print at the same time trying to provide means of access to electronic journals without additional or with little financial resources. With the advent of the Internet, more and more journals are being published in electronic media, thus enabling publishers gaining strict controls over copyrights (McKnight, 1993).

In spite of non-availability, increase in volume and high price of printed journals, the academic and research community is trying to maintain research communication through newer channels such as online journals with little or no cost. Experts say that the print journal is likely to remain as the primary channel of formal communication in this decade, but at the same time e-journals are likely to become an important parallel source of scholarly information.

It is predicted that a complete overhaul of academic publishing is necessary to solve the problem of 'Serials

Crisis' forever. This requires a change in the current production and distribution methods of journals which will eliminate the factors responsible for the current price increase.

Emergence of e-Journals

The electronic journal is a version of the traditional print or paper-based journal which is disseminated electronically in some form or the other directly to the end-user. Although electronic journals have been in existence since 1976, full-fledged e-journals came into limelight only in the 1990s. One study identified 30 scholarly e-journals in 1991, which by 1997 have increased to 2,500. Most of these belong to science and technology and there are many more in the humanities and social sciences (Hitchcock et al., 1996).

Some say that the emergence of e-journals is driven by a few large societal forces beyond technical capabilities. These forces are - increasing journal prices, increasing cost of printing and reduced library budgets. Others say that the change is driven by technological developments.

With the emergence of the World Wide Web, publishing has become very easy, quick and cheap in a medium that can be accessed easily by everyone from anywhere. With the steady growth of e-journals on the Internet, it was noticed that creativity and productivity has also improved due to network technologies. Scholars welcomed the power of electronic journals and seem to have accepted this new medium for communicating research information among fellow professionals.

Simultaneously, print journals have rapidly moved towards on-line while still retaining their traditional formats. Further, the additional cost of electronic versions of traditionally printed journals is usually born by the subscribing libraries. The average increase in journals cost is estimated to be around 8% per year. One study observes that the distribution cost of a printed journal is between 20-80 % of the journal cost.

At present, vast majority of printed articles are also available in electronic form. Elsevier, a major publisher has so far digitized 4.5 million articles and aims at 8 million articles on the World Wide Web by the end of 2008 for all their subscribers.

It is very clear that the Internet is re-shaping the way in which scholars communicate with one another. Librarians have readily adopted this new technology for fear of being eliminated or losing their role in providing information services to their customers. The present atmosphere is said to be very "congenial" for the digital library model of information system envisaged by many intellectuals.

Where to Publish?

Today almost all publishing houses are accepting articles submitted in electronic form for review before

publishing in printed journals. However, distribution in electronic form is creating debate and doubts. Critics feel that creating electronic version of a print journal for online access by commercial publishers is in no way going to help the scholarly communication process in the new environment, unless the characteristics of print journals are built into e-journals and print versions are totally eliminated (Branin and Case, 1998).

This new method could certainly reduce the long "cycle of publishing" of articles in peer reviewed print journals. The inherent problems of print journals could be eliminated if authors migrate from print to electronic medium. However, well established print journals will continue to attract many scholars because of their inherent quality and credibility. Whatever said and done, publishing still operates largely on an economic model that had evolved when there were fewer journals available in print (Owens, 2002)

Since access to e-journals is beyond any physical boundaries with the availability of excellent Internet security, libraries are forming consortia and subscribing to electronic journals at concessional rates. With ever-increasing demand for information from the end-users and the need to keep alive in the profession, librarians have re-oriented themselves in their new role as resource managers, licensing managers, information aggregators and tutors of information literacy.

Some scholars say that the intellectual quality of e-journals is deficient in some ways compared to paper-based ones. Since the transition of journals from print to electronic has been made necessary by factors such as cost, delays in publishing and accessibility, it does not seem to aim at "dilution" of any of its "scholarly characteristics". This trend is a positive sign for the academic and research community.

Some experts predict that while high-circulation journals will exist in print as well as electronic form; low circulation titles will exist only "electronic only". The fact that there are some journals which are being published as "electronic only" journals on the Internet, is itself an indication of their popularity (McKiernan, 1999).

The Next Step in Publishing

Developments in information technology have enabled authors to create, publish, access and download/print scholarly content easily and quickly in a networked scholarly publishing environment. Although the Internet has enabled wider dissemination and access to scientific literature with no associated distribution costs, the publishing industry still operates largely on an existing economic model.

Prior to 1990, computers were used to produce conventional printed products including scholarly journals. With the introduction of Tex, LaTeX, PostScript and Adobe's Acrobat Reader, users

acquired the ability to create, edit and print documents in a universally acceptable format called “Portable Document Format” (PDF). This software can handle mathematical symbols, pictures, graphs and tables along with the text.

The most popular HTML has become the language of everyone and improved the researcher’s ability to “navigate” the vast amount of information available on the World Wide Web. XML is another recent language which has added a new dimension and capability in handling digital information on the Web. Electronic media have significantly expanded the researchers’ ability to reach new audiences easily and quickly.

As the world becomes increasingly “networked”, a researcher in a remote place can have access to an e-journal, whereas the nearest library which contained the print version might appear thousands of kilometers away. Having access to e-journals from their desktops, many academics might stop going to libraries. Publishing in “electronic-only” journals without the intervention of the publishers has also increased in recent years. These journals are free and are easily accessible to everyone (Whalley et al., 1996).

With the increase in their number, wider acceptance, inclusion of peer review process and easy accessibility, more and more researchers are publishing in e-journals. While maintaining the scholarly content, e-journals seem to provide a great relief to the academic and research community.

The present shift in this direction is yet to satisfy the most important aspects of academic research, namely ownership of ideas, societal recognition, authenticity and claiming priority over a discovery.

Commercial Vs Non-commercial Publishers

Apart from libraries, commercial publishers and learned societies are the main and probably most important intermediaries in the scholarly communication system. While the learned societies publish for the promotion of scholarship, commercial publishers are largely interested in:

- Expanding their readership base despite low print volume;
- Widening subject coverage;
- Establish editorial supremacy;
- Earn more profits and increase market share;
- Maintenance of quality norms;
- Provide both print and non-print media;
- Gain ownership of property rights;
- Establish global partnerships with intermediaries.

There is a big gap between commercial publishers and learned societies in terms of pricing, accessibility

and ownership rights. In spite of this, the commercial publishers are not willing to share their profits with the “creators” of information. So far so good, with the learned societies who are prepared to pass on the benefits of electronic information to the creators, but the commercial publishers are still unwilling to let go their grip on the costs and copyrights.

Commercial producers of information on the other hand are not willing to forego their profits in the stoppage of print versions and hence have evolved “misleading” pricing policies like added discounts on electronic access, etc. Libraries are in no way benefited by this “monopolistic” approach of the publishers. Further, the recurring nature of journal subscriptions poses a greater threat to libraries in terms of financial commitments.

Publishers have now started collaborating with academics and spending millions of dollars in converting their back files into digital archives. Many commercial publishers are wealthy enough to take up the challenges posed by the Internet since they have large volume of data already in print which can be converted into digital medium.

Stiff competition has also led some publishers to provide free searching of their electronic journals but charge only for the number of records/pages printed or downloaded (pay-per-view). It is also noticed that various publishers are coming together and interlinking their databases through third-party “aggregators” so that the users can access all these databases by subscribing to any one vendor. The revenue thus collected is passed on to the respective publishers based on the data source and the records downloaded.

Although publishers have gained supremacy over the information technology, two fundamental issues need to be addressed by them. These are copyright issues and cost of information access and storage. By eliminating the print editions and digitizing back issues, publishers can greatly reduce costs without reducing their profits. They must bring in reforms with respect to electronic media so that both parties can benefit.

Open Access Initiatives

Until 1990s, the “author-donated” works were distributed in print editions by the publishers, whose costs were covered by library subscriptions. The authors could not avoid giving away the copyrights to the publishers, which is termed as ‘*Faustian bargain*’. The result is an access crisis in which no institution could afford access to the full range of journals.

Around the same time when the Internet was born, the price of journals began to grow sharply. At the same time, scientists in some of the major research organizations have started adopting alternative ways of sharing their research through Open Access Initiatives (OAI).

The Open Access revolution had begun with Professor *Stevan Harnad* a Cognitive scientist from Hungary, proposing the “subversive proposal” of scholarly communication system. Open Access aims to remove restrictions that exist on the access to journal articles and knowledge in general, to the research community world-wide, particularly in Developing Countries.

It is believed that Open Access enhances educational and research opportunities and bring the world together. Open Access also helps visibility of the hitherto unknown authors. The usage and impact of researcher’s own findings can increase with open access, as does their ability to locate access and use the works of others (Harnad, 2000).

Experts say that Open Access accelerates research, enriches education, shares learning among rich & poor nations, and enhances return on taxpayer’s investment in research. Since access to information is essential in a democratic society, the society benefits from the open exchange of ideas. There are many forms of Open Access Initiatives, each having its own costs and benefits (Suber, 2003).

Thus, Universities can also benefit from their researchers’ increased impact, which also increases the return on investment of those who provide the research funds. The librarians believe that open access promises to remove both the *price barriers* and the *permission barriers* that undermine the efforts to provide access to the journal literature. With more and more authors and institutions turning towards open access publishing, scientific research is expected to be collaborative and more productive.

“Academic libraries are positioned to be at the forefront of the open access revolution, but it is altogether possible that they will allow themselves to be left behind. They stand to gain much by investigating potential new roles they might play in the transforming landscape of scholarly communication, but first they must consider the many ways in which they may be affected by open access, weighing significant costs against significant benefits and always with their communities’ best interests in mind” (Giarlo, 2006)

Role of University Libraries in Publishing

University libraries have been profoundly influenced by the developments in electronic publishing. Today, librarians acquire, organize and distribute information in electronic format and are more concerned with licensing and copyright issues. They are a major part of the ‘market of distribution’ in the scholarly communication system. Without library subscriptions, the publishers cannot survive and readers have no access to information (Parks, 2002).

In the present scenario, libraries which are the main facilitators in the scholarly communication system are caught in between the producers and the end-users. Their task of providing research information has taken a different course from traditional print media to that of ‘networked digital information’.

Many libraries, while retaining limited print-based services, have migrated to electronic media so that the traditional library model does not become an obstacle to the scholarly communication process in the new digital environment. Due to the rising cost of e-journal subscriptions, libraries have once again gained control over the acquisition and delivery of electronic information services to their users; although every researcher can tap this information from their desktops (Branin and Case, 1998).

Libraries, particularly university libraries are already engaged in hosting electronic content on networked environments such as library web sites and IRs to provide much-needed primary research information. Many universities with good computing facilities and communication networks have already initiated institutional “self-archiving” of their research output including in-house publications using open source software like - DSpace, E-Prints and Greenstone.

Academic and research libraries are expected to develop new information systems where scholars and scientists can access the latest information quickly from their desktops. This should be cost-effective, timely and networked while maintaining the values of peer review and protecting the intellectual property rights of scholars and institutions.

New Models of Publishing

Many universities have been in the publishing business for many decades and have gained wide popularity and in some cases established *de-facto* standards of publishing (ex. *Chicago Manual of Style*). Universities like Oxford, Cambridge, Stanford, Harvard, Chicago, John Hopkins, etc. publish a large number of printed books and journals in various disciplines. In addition, there are more than 300 learned societies around the world who publish peer-reviewed scholarly journals and distribute them at actual cost without any profit.

HighWire Press a division of Stanford University Libraries which publish life-science journals, provide free access to most back issues of its publications and some current journals. HighWire Press, committed to bring scientific publications free and open, hosts a collection of more than seven hundred thousand free full text articles from around three hundred and fifty academic journals published and hosted by HighWire press and its partners.

Some of the recently established electronic journals are mostly from academic departments at the initiative of a handful of researchers. The actual impetus has come from academic administrators or the university presses. Many librarians and other members of the university community have envisaged that university-based electronic networked publishing might lead to the academy regaining control and distribution of its own intellectual output (Okerson, 1991).

University Librarians have already accepted the role of publishers by maintaining copies of open access journals under the banner of ‘Institutional Repositories’.

which might lead to a transformation of the scholarly communication system itself. Further, the availability of free online journal publishing software - "Open Journal System" made available by the Public Knowledge Project, enabled everyone to publish journals online.

The software is very simple, user-friendly and supported by many organizations including leading universities such as Stanford University, Arizona State University, Simon Fraser University, etc. It is surprising to note that within a short span of time, many new open access journals have been launched.

The future of Academic Publishing

In order to achieve a "virtual information system" for scholarly communication, we have to consider certain key issues such as editorial standards, high cost of retrospective conversion, database maintenance, user acceptance, copyright, archiving and reliable storage and retrieval mechanisms (Cummings et al, 1992).

It is clear that electronic publishing technologies will have to go a long way to gain popularity and appreciation by the audience. The Academics, libraries, publishers and learned societies are going to witness many more changes in the new environment driven by the Internet and perhaps with some disturbance in the established traditions towards a better scholarly communication system.

Finally, we have to remember that the costs don't go away even in electronic publishing; someone has to pay for the creation & distribution of the scholarly journals. In open access, the access and publishing costs are shifted to the user and publisher respectively.

The emergence of Internet access to electronic journals was made possible by low cost of production, storage and distribution over the World Wide Web resulted in significant change in the economics of publishing. Looking back, it is very clear that the factors influencing the scholarly communication process are multi-faceted in nature but are still under control. The control lies in the hands of authors, learned societies, commercial publishers, libraries and the university research community at large.

The World Wide Web brings in a new paradigm to the work of the academic community. The time is right for the academy to re-affirm its commitment to publish its own scholarly information and disseminate it to wider audience. In other words, adopt an "old solution to a new problem".

Conclusion

The World Wide Web offers unlimited possibility for publication and distribution of information in digital form. Authors, being the prime producers of knowledge seem to have no choice but to accept the new means of publishing over the Internet. This would also help them to serve as an alternative to print journals, but also to reach a large audience quickly and at no cost. The Internet revolution has partly given the 'power'

back to scientists, universities and learned societies.

Publishing in e-journals is gaining recognition and momentum with the inclusion of the referee or peer review system by major publishers. Not all members of the academic community approach the idea of electronic publishing with enthusiasm, but some universities are beginning to accept electronic publications of their faculty for tenure and promotions.

One has to accept that no single player can achieve dominance over the other. It is necessary that every player has to satisfy their interests and at the same time continue to promote the scholarly communication process in spite of the growth of knowledge, changing user needs and technological developments.

There are many factors that are responsible for the evolution of scholarly communication system to its present state. It appears as though the characteristics of scholarly communication are under the influence of the communication medium. To achieve the full advantage of the archival and distribution potential of the new digital information technology, scholarly communication has to once again adopt its original "circle of academy" which existed in the early days.

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