

OPEN ACCESS - THE NEW INTERNET ENABLED BUSINESS MODEL FOR SCIENTIFIC PUBLISHING

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Abstract

One of the effects of the Internet is that the dissemination of scientific publications in a few years has migrated to electronic formats. The basic business practices for trading the content between publishers on one hand and libraries and readers on the other, have however not changed much. Scientists have in order to utilise the potential of the Web and in protest against the high subscription prices of mainstream publishers started Open Access (OA) journals and e-print repositories, which distribute scientific information freely. Most early OA-journals were run in a spirit of voluntarism reminiscent of Open Source projects, but recently some large scale efforts have started where the publishers regard the authors as their customers and sell them scientific publication services (including free access) for author charges. The recent launch of the Public Library of Science Biology journal was for instance noted also in the general media.

Despite an increasing awareness among academics that OA would be the optimal distribution mode for publicly financed research results, OA channels still constitute only a marginal phenomenon in the global scholarly communication system, although their share of all published material is rapidly rising. There are many barriers to changing the current system.

The aim of the panel is to increase the awareness of MIS scholars about the current state and possibilities of OA channels and to start a discussion about the many legal, economic, psychological and social issues surrounding the way scholars communicate with their peers and how the Internet is changing the situation. The panel participants include Bo-Christer Björk, Erik Sandewall and Grahame Cooper.

Keywords: Internet, Scientific Publishing, Open Access, Business model

1 INTRODUCTION

Publication of scientific content has been one of the areas to benefit most from the emergence of the Internet. A scientific publication can, as an information good, easily be delivered electronically to the end user. Scientists already have the necessary equipment and skills to access the material from their normal work environment, and have in fact been forerunners in the utilisation of the Internet for communication. In the near future scientists worldwide will access most of the texts they read over the World Wide Web.

While the delivery technique for scientific publications has changed rapidly, the economic ramifications have hardly changed at all. The concentration of the publishing of journal titles in the hands of a few large players, in combination with electronic delivery, has made the strong players even stronger and there have in fact been anti-trust investigations into some of the proposed mergers of the biggest publishers. The extremely low marginal costs of selling information over the Internet favour the use of sales and marketing strategies such as bundling and differential pricing. Publishers of scientific journals have consequently rapidly started offering electronic site licenses to universities and university consortia. The key issue is that there is very little competition in this industry and that the pricing schemes depend much more on each customer's willingness (and capacity) for paying than on the production prices. It is thus today more or less as expensive for university libraries and individual subscribers to access this material over the Internet as before in paper format. The serials crises, the long period of rises in subscription prices to scientific periodicals that started in the 1970's thus still continues.

In parallel to these developments pioneering scientists have leaped to the opportunity that the Internet offers for bypassing the costly intermediaries in the publishing process. During the 1990's several e-print archives as well as a few hundred peer reviewed electronic scholarly journals emerged. The common denominator for these is that they offer free access to the end product in electronic form ("Open Access").

The Internet is a superb channel for the free distribution of information in the public domain. Science as a social institution has also always had as an ideal the open sharing and critique of information (Guedon 2001). Thus there is an even stronger case for Open Access to scientific content than for instance for the use of Open Source methods in the development of IT applications. A related development is also the posting of teaching resources for free on the Internet, a phenomenon to which the label Open Course Ware has been suggested.

2 WHAT IS OPEN ACCESS?

Open Access (OA) means that a reader of a scientific publication can read it over the Internet, print it out and further distribute it for non-commercial purposes without any payments or restrictions. Thanks to the open availability the linking to OA publications via reference lists is substantially facilitated, since the reader does not stumble into barriers such as use licenses, and each reference is only a "mouse-click" away. In general the author keeps almost complete copyright and can also publish the material elsewhere.

The four most important OA channels are electronic refereed scientific periodicals, research area specific e-print servers, institutional repositories of individual universities and self-posting on the authors home pages (Björk 2004). OA scientific periodicals have been founded since the early 1990's, usually as individual efforts. Almost as a rule such journals are electronic only, due to the need to minimise costs, but in some cases it may be possible to have a paid subscription to a paper version. OA journals have usually been funded largely by the voluntary work of the involved editors and direct

or implicit grants (the free usage of the hosting university's web servers could be seen as a subsidy). In more recent years a number of efforts to publish OA journals on larger scale have emerged. Their business plan is usually to finance the operations through author charges. OA journals today account for around 4 % of all journal titles and of around 1 % of the approximately 2 million scholarly articles published annually. On the other hand the share of OA-journals of all newly established refereed scientific journals founded in a particular year has been steadily raising, from 10 % in 1996 to 32 % in 2002 (Hedlund et al 2004). A variety of OA journals are also traditional subscription based journals, which become freely available in electronic form after a delay, typically 6-12 months.

The best-known subject-specific repository was founded already in 1991 for high-energy physics. Such repositories typically target at parallel publishing of material, which is being written for other outlets (such as conferences or traditional journals), allowing earlier and more efficient dissemination. Subject-specific repositories typically have emerged in research areas where traditions for the exchange of preprints have existed prior to the Internet and where the speed of publication is an essential factor. The guiding principle of such electronic archives is, that researchers themselves upload article manuscripts, conference papers etc. into the repositories. Thus very low maintenance costs can be achieved. The custodians of the repositories usually only check, that totally irrelevant material is not deposited. Papers in a repository are available globally much earlier, than for instance the finally published versions of the manuscripts in paper-based journals. In some areas like computer science this can be a significant benefit.

Institutional Repositories represents a third important OA-channel, and are relative newcomers compared to the journals and subject specific repositories. Universities and their libraries are in a better position than individual academics to guarantee that the material is available even after decades and that the collection is systematically maintained, for instance to take account of changing file formats and media. Institutional repositories represent an integral part of the long-term strategies of the universities in question, in particular as these have to redesign their publishing and library policies to take into account the totally new conditions created by the Internet. The university's own production of thesis and working papers can easily be put up on such repositories, but in the long run the posting of the central production of the university's researchers, i.e. their conference and in particular journal papers, is crucial. Although institutional repositories can be seen as useful marketing channels for individual universities their most significant impact on the global scale can only be achieved via co-operation via open access indexing services.

Today the primary channel for finding OA-material is through general-purpose web search engines, unless the reader is a regular visitor to the journal or repository in question. A recent study from the domain of computer science showed that publications, of which copies had been freely available on the web, received on the average three times as many citations as others (Lawrence 2001). The problem with using general search engines is, however, how to distinguish the relevant publications from all the very varied material which is available on the Internet and tends to clutter the search results from queries.

3 CONCLUSIONS

The scientific publishing system is today a global interconnected information system, where the central glue is provided by the citations (Björk and Hedlund 2003). It has not been developed based on a plan but has evolved organically, due to the efforts of publishers, indexing services, librarians and scholars. It fulfils two main functions: The obvious one is efficient communication of research results to those who may be interested in them. The less obvious one is acting as a decision support system for grant giving organisation, promotion committees etc who evaluate the performance of scholars. Currently the way this second function works (for instance high emphasis on impact factors of journals where authors publish rather than on efficient and timely communication) hinders the rapid

reengineering of the process (Björk 2004). Most academics find using OA channels very convenient as readers, but shun from submitting their best work to them when it comes to their own output.

Although many Open Access initiatives have proved their sustainability during the last ten years, their effects on the total volume of scientific papers published annually is still very marginal. The enthusiasm and iconoclastic spirit of the early days is now changing into a more realistic search for sustainable business models, and a better understanding of the formidable barriers to change, including legal, economic, social and issues.

Some questions to be highlighted in the panel discussion are:

- Should academics be more careful in totally surrendering the copyright of their articles to traditional journal publishers?
- What should be valued in a journal where you publish: prestige and/or rapid and efficient dissemination?
- Would authors be willing to start paying authors charges in exchange for the OA-services a publisher provides them?
- What could be done in the MIS field in particular?

The essential aspect about OA is that it is a model, which in the earlier paper-based world was technically impossible, due to the considerable cost of printing and distributing each marginal copy of a scientific publication. The new model offers free electronic access to primary scientific knowledge, not only to the research community within the university but to the whole society. In order to study the effects of this change more emphasis should be put on the total life-cycle economics of the publishing process (Björk and Hedlund 2003), including activities as research, publishing, archiving, indexing, retrieval and use.

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