Open Access

In the 1990s persons with AIDS or who were HIV-positive were seeking information on the treatment, medical trials, and results presented in papers published in medical journals. Those who were not part of the research establishment had difficulty gaining information because the papers were available by subscription and usually resided in research libraries. They challenged this arrangement, arguing that most of the research was paid for by their taxes. They called for open (i.e., free) access to such information.

The technological advance that provided opportunities for those seeking open access was the establishment of the Internet and creation of the web browser. These advances made it easy for any interested and informed person to search and download papers. About the same time the entire concept of peer-reviewed publications was called into question by Paul Ginsparg of Los Alamos National Laboratory, who set up the first preprint archive.[1] This effort was partly in response to the lengthy peer-review and printing processes and to the high subscription prices of the commercial scientific journals.

There have been a number of definitions of open access by various bodies—all somewhat similar. One is the statement established by the Bethesda Meeting on Open Access Publication on April 11, 2003:

> 1. The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use.
> 2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving.[2]

The players in the current scholarly publication model are the commercial publishers (Elsevier, Wiley, etc.), nonprofit publishers (Oxford University Press, Harvard Press, etc.) and association publishers (Royal Society, SPIE, OSA, etc.). Publication of papers is supported by an admixture of individual and library subscriptions and author's page charges, although, in most instances, acceptance of a paper is not dependent on the author's ability to pay. Funds derived from these publications are used for publication expenses, for the development and technology for new delivery systems, and in the case of professional associations, for support of charitable work. It is a tested and stable system begun over 300 years ago with the publication of a letter by Isaac Newton to the Royal Society that is still accessible from an archived print copy.

In the Open Access publishing model the author pays publication costs or there is a limited time access subscription model, or both. The limited access model can either charge only for access during the first six months or year or, as do many newspapers, charge for archival material after an initial "free" period. This is a cost recovery model. That is, the costs are limited to publication expenses, although the funding may be supplemented by funds from donors and foundations. To keep costs down all papers are published electronically. This means that the Open Access publishers must assure that the papers they publish will be archived in an electronic format that will be available for future generations.

There has been movement toward governmental approval and practices that will affect the current state of journal publishing in the United States and the nations of the European Union. Along with efforts from other organizations including the Wellcome Trust, a private medical research foundation, there appears to be an almost inevitable movement to Open Access publication of scientific and technical research.

However, others have weighed in on the side of the current publication model. The Royal Society stated:

> The Royal Society is in favour of the widest possible dissemination of science but we believe that

> the current proposals for Open Access journals (where papers are free online to all) lack a sustainable business model. There are many uncertainties about how Open Access journals will operate as they become established and where authors will get the money to pay the required article processing fees. This has led to concerns that: the overall cost of the science base will be greater than under the subscription model, some authors will be unable to publish in certain journals due to lack of funds, the quality of publications may be reduced as publishers bow to commercial pressures to reduce the rejection rate of papers, it will not be possible to cross-subsidise minority interest publications, and that the total number of scientists funded by charities will be reduced in order to pay publishing fees.[3]

If open access is adopted and the Author Pays model is used, the ability to pay will become a foremost concern. Many authors in fields outside of medicine work with small budgets and limited resources. This is particularly true in the third world. The open access model assumes that all significant research will be funded appropriately. The size of the payment to sustain the cost recovery model will have to be substantial. There are a number of uncertain funding scenarios, where author charges from $500 to $1500 USD are estimated, but no one knows whether it will provide enough for publication and archiving. It almost certainly does not permit development of personalized features, described above, that are possible with electronic publishing.

Finally, there are the unknown consequences of changing an information delivery system that also contains within it both feedback mechanisms and reward structures. For example, if accepting more papers generates increased cash flow, then publishers might establish a fee structure that produces the greatest number of submissions. And if only published papers had to pay, the editorial strategy could be changed to allow marginal or inferior papers to be accepted in ever-increasing numbers. In comparison, the current review system, isolated from monetary considerations, should be tougher than an open access/pay-to-publish model.

I am concerned about the possibility of a great funding transfer, wherein funding supplied partly by universities through their libraries will be no longer required because paid subscriptions will not be needed and additional funding, mainly from governments, will be required to fund grants to pay author's charges. In some cases, the amount of publication money provided by the funding agency may determine where and whether a paper will be published.

References

1. http://www.arxiv.org/
2. http://www.earlham.edu/~peters/fos/bethesda.htm
3. "Royal Society response to the House of Commons Science and Technology Committee Inquiry into scientific publications," February 2004. Copy can be obtained at http://www.royalsoc.ac.uk/displaypagedoc.asp?id=11437

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