nature webdebates

Future e-access to the primary literature

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The topic of this *Nature* forum — the impact of the Web on the publishing of the results of original research — has, since the emergence of the Internet, filled volumes in the reports of conference proceedings and reams of individual articles. Many of the often arcane and complex socio-economic and technical issues involved are well-trodden paths for a narrow circle of specialists, and excellent in-depth coverage of the issue is regularly provided by specialists outlets such as the D-Lib Forum and the *Journal of Electronic Publishing*. The main aim of this forum is to bring some of the substance of this Brownian motion of Internet issues to a broader grassroots audience and debate the implications for the future dissemination of scientific information.

Beyond the academic debate, there is constant cross-fertilization. Science feeds the development of online initiatives with bold projects like Internet2 and computer 'Grids' and the commercial Internet provides new challenges and opportunities for scientists with the professionalization of technologies such as peer-to-peer computing. Then there is the plethora of joint initiatives in Extensible Mark-up Language (XML) and other standards and technologies. The list of potential Internet opportunities for science is endless.

The issue is, to say the least, multifactorial. At one level, there is the economics. It is hardly a state secret that some commercial publishers have charged high prices for low-circulation journals, and enjoyed very high profit margins while contributing to the so-called serials crisis. Few if any libraries can afford subscriptions to even a significant fraction of the literature (see *Nature* 397, 195-200; 1999).

The most recent and prominent manifestation of the debates surrounding this topic is an initiative by researchers — The Public Library of Science. (PLS) who, by threatening a boycott, are trying to force publishers to release archive reports of original research into centralized, (as opposed to dispersed) databases that are freely available and to which there is unrestricted access.

Is this the optimal solution?

The question is an open one. While this is a solution that has superficial appeal and is noble in its aspirations it does, on closer examination, raise many questions. PLS argues that its scheme poses few financial risks for publishers, but this is far from established. What about "responsible publishers" such as the non-profit learned societies, the revenues of whose journals often fund their core activities? Ann Okerson, Associate University Librarian at Yale University, warns that we must be careful not to thoughtlessly abolish a journal system which, for all its failings, works and replace it with a model that, while attractive, is still lacking in terms of detailed economics and how it would provide the quality controls that exist in the established system. The PMC option is also, in practice, dominated by the United States and this in itself raises serious issues.

That these topics are now being addressed in earnest is good news, but anyone who believes that they have a monopoly on the solution should be mistrusted; the socio-economic and other implications of the Web in science do not lend themselves to dogmatic solutions. While pressure for change can only be welcomed, the reality is that all of us involved in scientific information and exchange are in a phase of experimentation, the outcome of which remains uncertain. The challenge is to preserve the best of the current journals system, while seizing the opportunities of alternatives.

If we just look at the economics of scientific publishing, the landscape has completely changed over the past few years. The way in which electronic journals are bundled and sold (as opposed to the way print is distributed), means that powerful consortia of libraries and indeed whole countries can now use their collective weight to negotiate stiff deals with publishers and, in a market economy, this is a healthy development. Could it be that spreading the reduced but inevitable costs of quality electronic publication over a wider market might ultimately be a better solution than free access? This is also perhaps an open question.

The PLS initiative has drawn attention to the reasons for rethinking the traditional model and also promotes the idea of centralized databases. In stark contrast, most of those involved in the Internet business see a future in distributed computing, and consensus standards. Indeed, a valid question for all scientists is how Medline, PubMed and similar public services, for all their much vaunted qualities, measure up to current mainstream content management standards in industry. PubMed Central has now dissented from the central PLS proposal and decided that, while it requires participating publishers to deposit material with PMC for indexing, publishers can choose to allow viewing of full text via links to their own sites.

Change in the models for scholarly publishing is inevitable, and is badly needed. But perhaps functionality and people's needs are more important than the issue of cost. What do scientists consider most lacking in the current system, and what is at the top of their wish lists? In what way could scientific information be better handled so that they can work more easily and efficiently? Do use the forum to let us know.

We believe it is time to explore the many dimensions of these issues and debate them fully. The way we have chosen to do this is to invite leading representatives of the main groups of stakeholders and observers -- including libraries, promoters of free access, non-profit and for-profit publishers, database publishers, digital libraries, online-repositories, economists and people at the forefront of technological advance -- to express their views in 1,000-word articles. While we don't expect to reach any firm conclusions about where scientific publishing on the Internet is heading -- something we can all only guess at -- we do aim, in this comprehensive suite of articles, to examine some of the key factors that may determine the future.

We also strongly encourage readers to contribute their thoughts and opinions and proffer useful facts, and will consider publishing these contributions in the forum. The forum will be moderated by Declan Butler and Tony Delamothe, web editor of the *British Medical Journal*, which is making its content freely available on the Web on publication, both on its own site and on PubMed Central.

In short, we hope to help identify some of the best opportunities offered by the Internet, and see what the best public and private strategies might be, in economic and other terms, to ensure that science reaps the most benefits.