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# *Open access – the impact of legislative developments*

**Mary Waltham**



*ABSTRACT: An account is given of the development of the idea of open access for the results of STM research over the period 1999–2005 with particular attention to PubMed Central and to the initiatives of the legislatures in the US and UK in 2004. Stakeholder responses to open access are briefly reviewed and possible future developments are outlined.*

## Context 1999–2003

In May 1999 a proposal from Nobel Prize winner Harold Varmus, then Director of the National Institutes of Health (NIH), was announced called E-BioMed. By September 1999 this initiative contained many of the key publishing features now associated with both the UK House of Commons Select Committee recommendations[1] and the initial US Senate Appropriations Committee proposal.[2] The E-Biomed proposal originally consisted of three parts that are logically completely separable:

1. The creation of an electronic repository in which authors can archive preprints or reprints (post-prints) of their papers and from which readers can freely download these papers.
2. The formation of editorial boards to review, select and publicize papers that authors choose to submit for optional evaluation in place of or in addition to submission to existing journals.
3. The establishment of a governing body that would effectively attempt to set policy on scientific publication.

During 1999 the name E-BioMed was changed to PubMed Central (PMC) and a high-profile scientific advisory committee was established. The plan for a biomedical pre-print server to be called PubMed Express stalled before the formal launch of PMC by the US National Center for Biotechnology Information (NCBI) in February 2000. Throughout the early drafts and subsequent discussions Varmus promoted the concept of PMC as accessible, flexible and evolvable. In June 2000 a Freedom of Information conference was held in New York, organized by Current Science, the commercial publishers of BioMed Central (BMC) journals. At the meeting Varmus stated that the basic vision

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**Some distinctions**

***Producer-pays business model***

The author pays the publisher a fee on acceptance of an article to cover publication costs. The money for this payment may come from the author's research funding agency or employer. The author decides where to publish his or her article independently of the source of funding. On publication there is no subscription based access control of the journal article and it is available free of charge online to anyone with an internet connection.

***Author archiving post-publication***

Publishers now typically described as 'green' permit authors to deposit their published peer-reviewed edited article (post-print) in a repository. Publisher policies on whether this permission extends to personal, institutional or subject-based repositories and when deposit can take place after publication do vary and are evolving.

*a steep rise in the number of electronic versions of traditional subscription-based journals*

of PMC was unchanged: 'What we've retreated to, or I should say progressed to, is a short term view of the project as a public vehicle, with government finance, to help distribute information that is in existing journals.' He also predicted that BMC would have a devastating impact on the mid-ranking journals. However, the number of non-BMC journals available on PMC stayed at around eight or nine throughout 2000; meanwhile other initiatives such as CrossRef[3] and E-BioSci[4] were established to increase linking and access to online research information.

The Public Library of Science (PLoS) initiative was launched in October 2000 to build active support from the research community by suggesting that signatories to the PLoS Open Letter[5] should not publish, review or subscribe to journals that do not deposit their content in PMC (or a similar repository) six months after publication. However, by March 2001 the number of journals deposited in PMC still remained small and David Lipman, Director of NCBI, announced that in future the strict requirement for participating publishers to have their full text hosted on the PMC site – as distinct from their own site – would be relaxed. PMC would provide a link to a journal site for full text, instead of displaying it in PMC. This change was expected to revive interest from publishers.

From the beginning, the titles on PMC included the large number of titles launched with the producer-pays business model by BMC. Indeed senior management from BMC had been involved in early talks with Varmus about changing the current system for biomedical publishing, and Varmus is on the Board of Trustees of BMC and a member of the editorial board of the BMC flagship *Journal of Biology*.

Alongside these radical initiatives there has been, since 1999, a steep rise in the number of electronic versions of traditional subscription-based journals and consequently increased opportunities for networked access to information across whole institutions and a broad geography of remote users not just within the library. All stakeholders in the scholarly publishing system – researchers, libraries, funding agencies and publishers – are taking part in a transition from primarily print access to scholarly information to primarily online access. Based on library purchasing patterns, we have not yet reached the tipping point where online-only is the rule and print a rather extravagant addition; however, that plainly is the direction in which much of the scholarly literature is heading.

An unprecedented cohesion of groups of

academics and librarians intent on freeing what is perceived as limited access to high-priced scientific journals gained pace. Varmus left NIH in 2001 but has continued to campaign for the producer-pays business model as the most appropriate solution to the shortcomings of the subscription-based one. The Scholarly Publishing and Academic Resources Coalition (SPARC)[6] as part of its central mission has provided further practical support for this insurrection providing a focus and support for initiatives such as Create Change,[7] Declaring Independence[8] and the SPARC open access newsletter. Funds to support producer-pays business model initiatives were rapidly forthcoming from the Soros Foundation as part of the Open Society Institute, and from the Moore Foundation in response to a specific request for start-up funding for the publishing business which grew out of PLoS in the USA.

By January 2004 PLoS had launched a high-profile open access journal in biology with plans to do the same in medicine. By this time BMC had launched 106 open access journals across biomedicine, and several other publishers were beginning to experiment with an open access/producer-pays model for their journals. The details of some of these experiments are described later in this article, but the results are as yet mostly preliminary.

### Activity 2003–2004

The first concrete sign that politicians were getting much more interested in these changes and were not going to leave publishers, libraries and academics to solve the so-called 'serials crisis' on their own came in the USA through the proposed Public Access to Science Act (H.R.2613), often referred to as the 'Sabo Bill', in June 2003.[9] The nub of Sabo's proposal was copyright assignment to publishers, which it was claimed got in the way of public access to information. The Bill set out to amend existing US copyright law so that research that had been 'substantially funded' by the US federal government could not be copyrighted, thus ensuring its free availability to the public. If enacted the Bill would have required all federal agencies that fund scientific research to insist that copyright is not assigned to the publisher of the research so that funding agencies and authors could make their information available free to 'taxpayers with illnesses or other reasons to want access to the results of research that they funded in the first place'. Without copyright assignment to publishers the argument was that authors could then post their articles to a central repository such as PMC where they could be available to anyone able to access the internet and find them. The Sabo Bill did not move ahead; it was mistaken in assuming that simply removing copyright protection for authors and publishers would result in free and unfettered public access to the results of federally funded scientific research, and this central point prevented its adoption. It was a solution looking for a problem because publishers never have copyright assigned to them by government employees (nor from a substantial portion of book authors). The journal and book industries thrive because publishers control distribution and access – not copyright. Since this time many ('green'[10]) publishers have agreed to permit authors to self-archive their published articles in open archives.

*the journal and book industries thrive because publishers control distribution*

In the UK a Science and Technology Select Committee of the House of Commons was announced in December 2003 to investigate STM journals publishing. This involved a broad consultative process with extensive evidence received by the Committee from UK-based stakeholders and others from March to May 2004. There were four sessions of oral testimony from 23 witnesses and some 143 written submissions. The report with recommendations to the UK government was published on 20 July 2004.[1] Although there appears to have been no co-ordination of these efforts either side of the Atlantic, both the US and UK legislatures produced challenging recommendations in the same month. On 14 July 2004 a US Senate Appropriations Committee published its recommendation[2] that all NIH-funded research articles should be deposited in PMC either immediately on publication if NIH funds had supported any aspect of the publication costs *or* after six months if only the research had received NIH support.

### The position in the UK

The House of Commons Science and Technology Committee chaired by Ian Gibson submitted its report *Scientific Publications: Free for All?* to the UK Government in July 2004. The UK report was not explicitly about open access although some groups have interpreted it in that way. The report included some 82 individual and quite detailed recommendations and in parts has a somewhat scolding tone with statements such as:

> Government invests a significant amount of money in scientific research, the outputs of which are expressed in terms of journal articles. . . . We were dismayed that the Government showed so little concern about where public money ended up.

And about publishers:

> It is not for us to pronounce on the acceptability of the profit margins secured by private sector companies . . . [it is] in everybody's interest for profit margins to be kept at a reasonable and sustainable level. We urge publishers to act on the recommendations of this Report to address these issues.

The UK government responded to the Committee report on 8 November 2004[11] by rejecting proposals for reforms that would favour the producer-pays business model (open access journals) such as the key recommendation in the report that the UK government should instruct the UK Research Councils to meet author charges in support of this model. In response the Science and Technology Committee released a press release condemning the government response and accusing the Department of Trade and Industry (DTI), which had been charged with formulating the government response, of:

> kowtowing to the powerful publishing lobby (rather than) . . . looking after the best interests of British Science . . . this isn't evidence-based policy, it's policy based evidence.

Since then a further release from the House of Commons Science and Technology Committee on 2 February 2005 simply published 'without comment' the latest responses from the government and from the Office of Fair Trade to the Committee report. In both cases there were no further policy changes or developments. The Office of Fair Trade stated its intention to take into account the European Commission study into the market for scientific publications which will report in 2005, before writing to the Committee again.

*the report has a somewhat scolding tone*

### The position in the USA

The House of Representatives Committee on Appropriations proposed its bill on Government expenditure in July 2004 entitled *FY 2005 Labor, Health and Human Services, Education, and Related Agencies Appropriations Bill*. With PMC already in operation and NIH actively considering how to improve access to the research it funds, it was not a large step to the critical wording of the Bill which is:

> The [House of Representatives Appropriations] Committee is aware of a proposal to make the complete text of articles and supplemental materials generated by NIH-funded research available on PubMed Central (PMC), the digital library maintained by the National Library of Medicine (NLM). The Committee supports this proposal and recommends NIH develop a policy, to apply from FY 2005 forward, requiring that a complete electronic copy of any manuscript reporting work supported by NIH grants or contracts be provided to PMC upon acceptance of the manuscript for publication in any scientific journal listed in the NLM's PubMed directory. Under this proposal, NLM would commence making these reports, together with supplemental materials, freely and continuously available six months after publication, or immediately in cases in which some or all of the publication costs are paid with NIH grant funds. For this purpose, 'publication costs' would include fees charged by a publisher, such as color and page charges, or fees for digital distribution. NIH is instructed to submit a report to the Committee by December 1,

2004 about how it intends to implement this policy, including how it will ensure the reservation of rights by the NIH grantee, if required, to permit placement of the article in PMC and to allow appropriate public uses of this literature.

A 'public access draft policy' was released by NIH on 3 September 2004[12] and comments were invited. The original language of the policy was softened considerably from the Appropriations Bill. For example, it requested – but did not require or mandate – that NIH-funded investigators submit to NIH the final peer-reviewed 'author's copy' (i.e. unedited prior to publication version) of their article. This would then be embargoed by NIH for 6 months before it was available on PMC. With the publishers' explicit agreement this unedited peer-reviewed version could be replaced by the final published version. NIH was requested to submit a report to the Committee by 1 December 2004, taking into account responses to the draft policy, about how it intended to implement the policy, including how it would ensure the reservation of rights by the NIH grantee, if required, to permit placement of the article in PMC and to allow appropriate public uses of this literature. The report and final policy did not appear, and on 11 January 2005 a telephone conference to unveil the new policy was abruptly cancelled. On 3 February NIH finally announced its policy of enhancing public access to NIH-funded research.[13] From 2 May 2005 NIH investigators are *requested* to submit an electronic version of the author's final manuscript to PMC as soon as possible and within 12 months of the publisher's official date for final publication. Although the extension of the deadline for submission to PMC from 6 months to 12 months could be viewed as a concession to publishers, there clearly is more to be developed from this policy by the the key stakeholders. For example, what advice should publishers give to their authors when asked what they should do? The debate will certainly continue.

*tacitly convinced that the producer-pays publishing model is viable*

**Similarities and differences of approach**

Since all STM publishing is an international endeavour, both of these activities within the US and UK legislatures are of critical strategic relevance and they have resulted in policy changes in government and private research funding in several other key countries (see Stakeholder responses: funding agencies below). A brief overview of the similarities and differences between the two committees' reports will be useful for readers who are not close to the situation on either or both sides of the Atlantic.

***Similarities***

- Both the US and UK groups concluded that leaving the 'serials crisis' of upwardly spiralling journal costs and over-extended, often under-funded library budgets to be sorted out by publishers, libraries and academics was simply not going to be adequate – they both decided to step in and propose government action as a matter of some urgency.
- Both seek to 'populate' open access databases (repositories) that are, or would be, publically funded.
- Both seemed initially to be tacitly convinced that the producer-pays publishing model is viable. This view was based largely on published reports that were not peer-reviewed, such as the Wellcome Trust report on costs and business models[14] and the oral evidence of what some would say were inexperienced futurists.
- Both consider that further experimentation is necessary for the producer-pays (open access journal) business model to be proven, and so while *mandatory* deposition of research articles in public databases is likely to undermine the subscription business model, neither the US nor the UK committee wishes to take responsibility for this directly and hence the 'experimentation required' diagnosis.
- Both wish to encourage and enable public access to research – in the USA against the backdrop of requests from patient advocacy groups and surveys such as Internet Health Resources.[15] In the UK this is part of the overall mission of improving the public understanding of science – a well worn yet hard to quantify goal – and more recently a push to

improve the health of the nation. It is now quite clear that medical publishers face a different set of challenges with respect to public access to research information. The recently announced patientINFORM initiative[16] could provide a much-needed, well-measured and useful response to the interest from both the US and UK governments in ensuring access to information by patients and will be the subject of a separate article in a future issue of this journal.

- Both groups perceive that a large percentage of the money in the current publishing system from subscriptions and site licenses is going to a few publishers, and while they cannot openly oppose or prevent this, the documents emerging from both sides reflect unhappiness with that perceived situation:

  *From the UK:* '. . . concern that during the digital transition period – some publishers are making excessive profits while the going is good'.

  *From the US:* '. . . specifically between 1998 and 2002 journal prices in the fields of medicine (+43%), biology (+32%), and chemistry (+39%) witnessed some of the greatest increases [in journal prices]. . . . Data indicate that mergers in the publishing industry have accelerated this process especially for STM journals (Zerhouni: NIH Access Report).

### *Differences*

- The UK Science and Technology Committee recommended that all higher-education institutions establish their own institutional repositories to store the published output of their researchers, thus providing a distributed model for access. So far this has not received government support or funding. The US considers that institutional repositories may be fragile and impermanent – and with PMC already in place and expanding to cover disciplines beyond strictly biomedical topics, a centralized repository is recommended.
- The UK Committee recommends that the Research Councils – major funders of research – should establish a fund to which researchers can apply if they wish to pay to publish. NIH already allows use of grant funds to pay for publication charges – currently these are mostly for page or colour charges.
- The UK Committee saw an overarching goal for the government of establishing an efficient and sustainable environment for the publication of research findings; this seems way beyond the remit of the US Appropriations Committee recommendation. In addition the UK Committee report makes extensive and quite detailed recommendations on, for example, site licensing terms, maintaining access after a subscription is cancelled and the national role of JISC in independently monitoring journal pricing. In an extension of this proposed control the UK Committee recommended that the Research Councils mandate researchers to self-archive their research articles within one month of publication, and that higher-education institutions assume control over copyright of research supported by them.
- In sum, the UK group tried to make recommendations to the government to build infrastructure to take more control over the outcome of research spending, while the US proposals build on the current infrastructure.
- In their report, the UK Committee recognized that a substantial amount of money is put into the publishing system through the purchase of journals by the commercial and industrial sectors and that this will be lost if all research publishing moves to the producer-pays model, because more published research is used by the industrial sector than is produced by it. There is no mention of commercial interests in the US Appropriations Committee report, but it is worth noting that NIH is the major source of basic research funding with a $28 bn budget in 2005, making it a focus of the open access debate. In the USA the federal government funds about 59% of all academic research and development, followed by universities (20%) and state and local government (7.1%), according to the US National Research Council. In

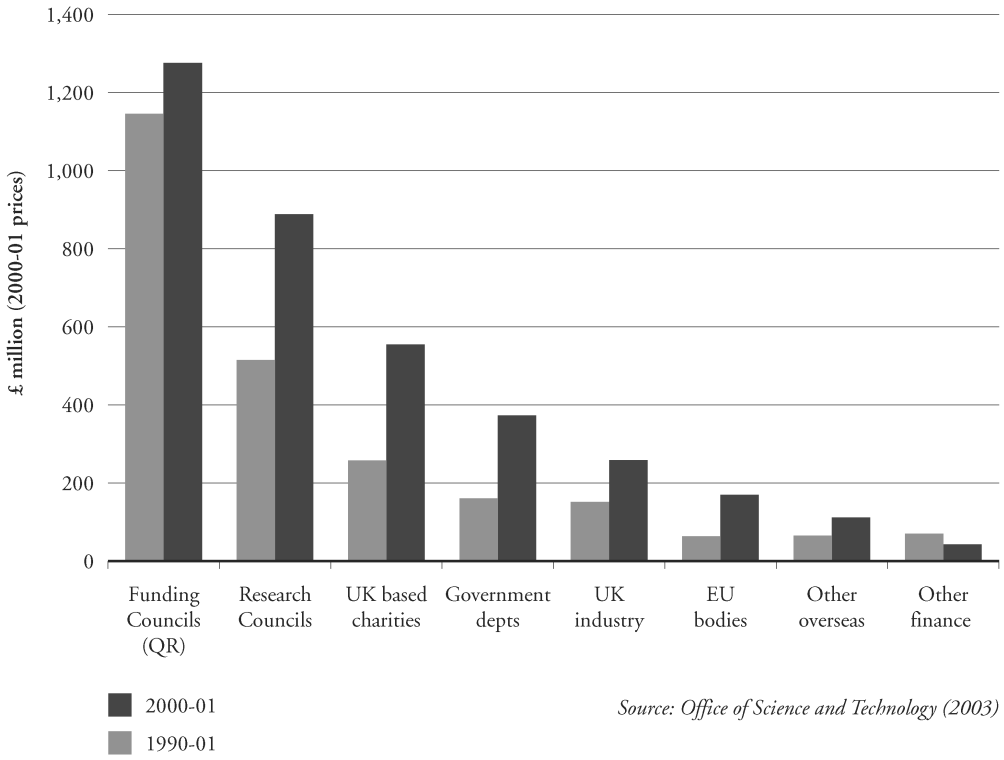


**Figure 1 Comparison of sources of university research funding in the UK in 1990–91 and 2000–01 (constant prices).**
(HM Treasury, Lambert Review of Business–University Collaboration, Final Report, December 2003. www.lambertreview.org.uk. Crown Copyright. Reproduced with permission.)

the UK, university research has five main sources of funding as shown in Figure 1. The UK government contributes the greatest proportion of funds to university research through the Funding Councils and the Research Councils (see Figure 1).

## Stakeholder responses

### *Funding agencies*

Over the past 12–18 months an increasing number of funding agencies have stated or restated their policy on supporting publication charges, and while the situation is fluid, the following funding agencies have all agreed that authors can use their grant funds to pay fees associated with publication of research:

Canadian Institutes of Health Research
Deutsche Forschungsgemeinschaft – German Academic Research Council
Fonds zur Forderung der wissenschaftlichen Forschung – Austrian Science Foundation
Health Research Board
Howard Hughes Medical Institute
International Human Frontier Science Program
Organization Israel Science Foundation
National Health Service (UK)
National Institutes of Health
National Science Foundation
Rockefeller Foundation
Swiss National Science Foundation
Wellcome Trust

The Research Councils UK, which is a strategic partnership between the seven UK Research Councils and the Arts and

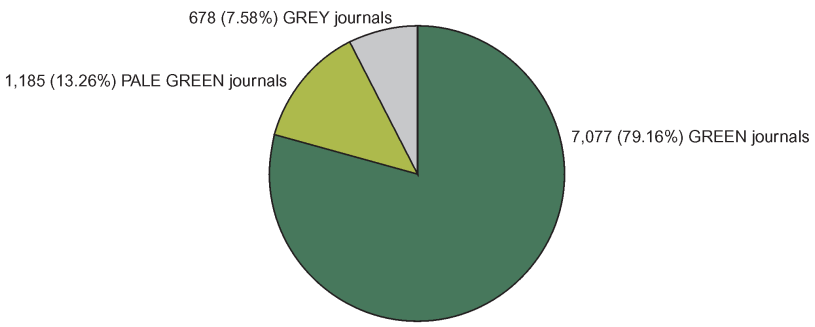


**Figure 2 Journal policy on author post-print article archiving: February 2005, see http://romeo.eprints.org/stats.php.**

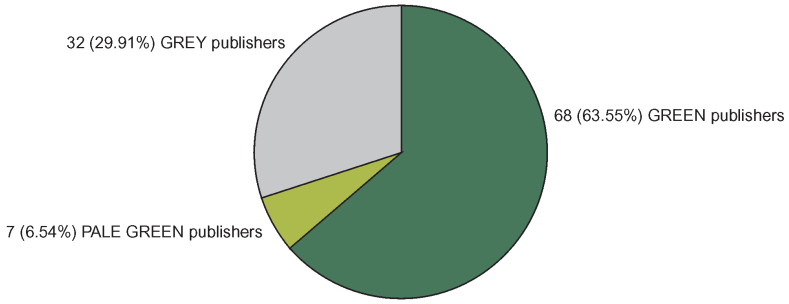


**Figure 3 Publisher policy on author post-print article archiving: February 2005, see http://romeo.eprints.org/stats.php.**

Humanities Research Board, is intending to increase support for UK research outputs. As part of this initiative it will be focusing on the role and development of post-print repositories, and may be interested in supporting the publishing fees associated with the producer pays model.

### *Scientists as authors and readers*

Much of the recent research on attitudes to the producer-pays publishing model took place before the events of July 2004 and the subsequent media coverage. As a result, the two reports exploring author behaviour published by CIBER[17] and JISC[18] may well come out rather differently if and when they are repeated following the events of summer 2004. For example, one recent proprietary study in September 2004 detected significantly more author awareness of open access than previously, and 20% of a large and statistically significant group of respondents across all the basic science disciplines favoured journals where the author pays for publication and readers access articles free online. As in other studies, there were some important disciplinary differences. In particular, amongst those favouring producer-pays, chemists were proportionately less well represented than life scientists or physicists.

*polarized views have emerged from publishers*

In the meantime publisher policies on author archiving post-publication changed rapidly during 2004 to the point where as at February 2005 some 7,000 journals and 70 publishers permit authors to archive their peer-reviewed article in a repository after publication (see Figures 2 and 3). There are significant differences in publishers' policies on where and when the published article can be archived in a repository by the author – despite the apparent 'greenness' of a large and growing proportion of publishers.

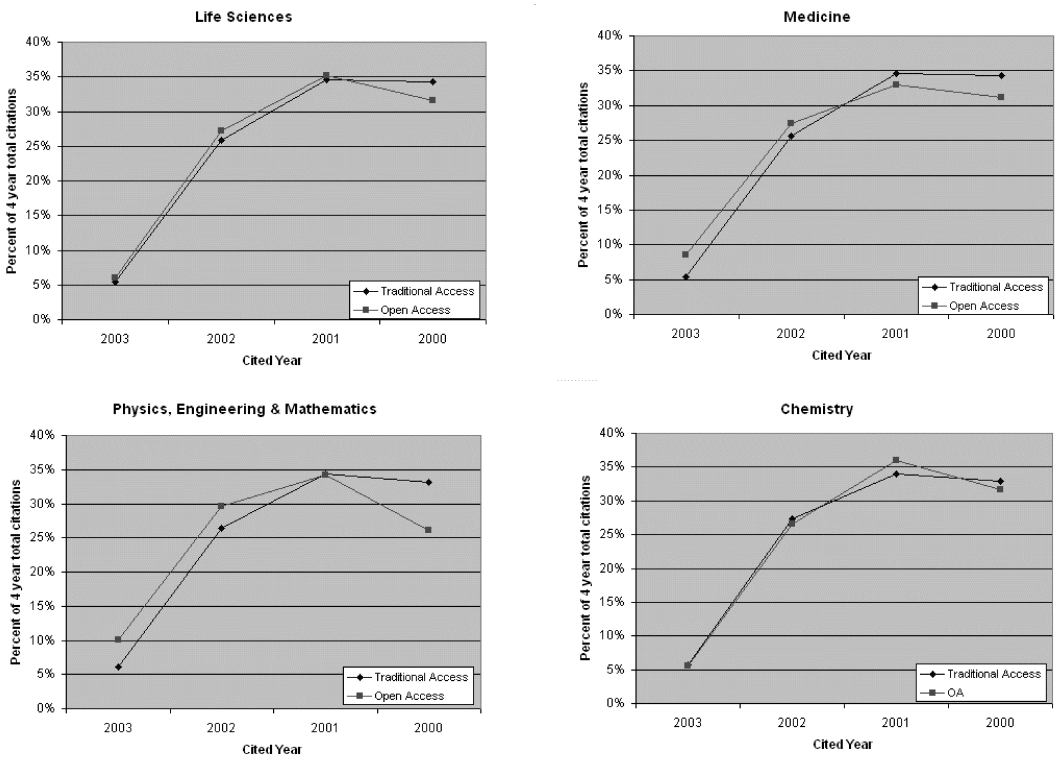


**Figure 4 Time characteristics of citations in 2003 to prior year's content. (Source: McVeigh: OA journals in the ISI database: analysis of impact factors and citations patterns: Oct 2004.)**

*there are important disciplinary differences to consider*

### *Publishers*

Two particularly polarized views have emerged from publishers. One sector holds that scientific research publications should be freely and immediately accessible to all and that the producer-pays model is the only way to achieve this. PLoS and BMC are clearly among those highly committed to that business model. The other view is that the producer-pays model is not tenable because the cost of publishing an article is substantial and authors and their funding agencies may not be able to afford what publishers feel they need to charge, so the model favours authors who have the wherewithal to make the payment and it might entice journals to publish more articles to remain profitable. In the midst of this often-heated discussion many publishers have seen that permitting authors to archive their published articles on a personal, institutional or subject specific repository can meet the goals of open access (free access to all) without immediately disrupting their business model and so the numbers permitting open access through author-archiving – the so-called 'green' publishers – have grown steadily and include many large commercial publishers.

For a publisher who is not already strongly committed to a producer-pays business model or to permitting post-print archiving by authors in open archives, there would seem to be two key factors to consider in developing a strategy in these areas:

- Are articles in open access journals and/or open archive repositories cited, read and integrated into research more, and more rapidly than subscription-only access articles?
- Does an open access journal receive more (high-quality) submissions than a competing subscription-based journal?

The answers to these questions are beginning to emerge but will take time and rigour

**Table 1 Publishers' experiments in by-the-article, producer-pays publishing**

| Publisher | Journal | Price to producer per article for open access (no other fees/memberships paid) |
|---|---|---|
| Entomological Society of America | e.g. *Annals of the Entomological Society of America* | $124 for an 8 pp. article |
| American Society of Limnology and Oceanography | e.g. *Limnology and Oceanography* | $350 for a 10 pp. article |
| Hindawi Publishing | *Journal of Applied Signal Processing* | $960 |
| National Academy of Sciences | *Proceedings of the National Academy of Science* | $1,000 |
| Oxford University Press | *Nucleic Acid Research* | $1,500 |
| American Physiological Society | *Physiological Genomics* | $1,500 |
| American Institute of Physics | *Journal of Mathematical Physics* | $2,000 |
| Company of Biologists | *Journal of Experimental Biology* | $2,160 |
| Springer | All | $3,000 |
| Nature Publishing Group | *Molecular Systems Biology* | $3,000 |

to develop a clear understanding as there are important disciplinary differences to consider. The Institute for Scientific Information (ISI) has completed several studies on open access journals within the ISI Journal Citation Reports[19] which show that on average open access journals tend to have lower impact factors but higher immediacy indices than subscription-based titles (see Figure 4).

Antelmann[20] has also sampled open access articles across a range of disciplines within high-impact journals to determine if open access articles have a greater research impact. The results show that in the four disciplines selected the open access articles were cited significantly more than directly comparable access-controlled articles. This means that authors will be rewarded for archiving their articles and this is likely to reinforce more self-archiving behaviour.

Publishers are actively involved in a number of experiments with existing journals – opening up the option for authors as producers to pay for open access to their published article within a journal. Table 1 shows some recent pricing schemes. More information is needed and should be collected in a place where publishers can access it.

Several commercial publishers have chosen an apparently liberal policy on post-print author archiving which can achieve the same goal as the producer-pays journal, although there may be restrictions on when and where the article is available. If users can find published articles on an open archive/open repository, they can download them free, and with search technologies changing this is a key trend to watch. As Table 1 shows, a number of not-for-profit publishers have taken the lead in experimenting with an option for the author to choose the producer-pays model. Springer and Nature Publishing Group are the only high-profile commercial publishers so far to offer a producer-pays-by-the-article option.

### *Librarians*

There has been much discussion among librarians of the producer-pays journal model, which at first blush appeared highly attractive to any librarian battling with low or no increases in budget over recent years. Institutional repositories also seemed to offer a whole new role for librarians within a research-generating institution. To put some flesh on the new distribution of costs to the largest libraries at research intensive institutions in the US, Cornell University Library[21] carried out a thorough analysis of the costs of open access publishing if all the journals it currently subscribed to moved to the producer-pays model. The results are now available by institution for 113 ARL libraries; 67 of the institutions would spend more on the articles published by their

*highly attractive to any librarian battling with low or no increases in budget over recent years*

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faculty based on the producer pays model, for 37 the costs would be about the same, and for nine institutions the producer-pays model would be less expensive than the subscription model. This data for one year (2003) does provide a challenge to university administrators who are not at all sure that they can afford to spend more on publishing their faculty's research than they currently spend on library resources. It also brings home the fact that a producer-pays model does favour industry research participants who currently pay for their journals – but would not need to if all the research literature was open access.

In the UK, project SHERPA[10] hosted at the University of Nottingham has been set up as part of the JISC Focus on Access to Institutional Resources Programme, which supports projects aiming to achieve the 'disclosure of institutional assets'. As part of the quite broad remit of this group SHERPA has set up a database detailing individual publishers' policies with respect to access to articles pre- and post-publication. Publishers are assigned colours according to these policies.

**Looking ahead: why and will open access matter?**

Open access is not a business model but an access model. Publishers can choose to change their access policies, but changing them will have a broad impact on their publishing business and will affect the net profit/surplus generated by the journals list whether the access is changed to the entire journal contents, certain paid-for articles or all the contents distributed through repositories post-publication.

If introducing a producer-pays business model for journals means that content can be accessed without subscription payment, then payments from authors must at least cover the costs of publication. For most publishers it must do more than cover current costs, or there will be no reserves for future investments in technology or new product development, both of which require funding from surplus operating income.

If authors are rewarded for making their articles available in an open repository by greater citation of their research, then they will do more of it. If producer-pays journals have more high-quality submissions and citations than subscription titles, then more publishers will adopt this model.

If author posting of articles on open archive repositories means that, for example, a search with Google Scholar[22] can find the free version of any or most of the articles in a journal, then over time subscription cancellations are inevitable. Publishers' revenues will fall if *all* the content of the published journal that readers wish to read is available entirely as individual articles distributed across a range of free sources.

Current producer-pays costs per article published are set to create a competitive environment across the journals that choose open access. If a publisher has a journal of exceptional quality with a powerful following in a large, well-funded research community, surely they will be in a strong position to charge authors more for their services and high visibility than a lower-tier journal in a poorly funded, smaller research community? As a result there will tend to be downward pressure on publishing costs, to maintain and maximize net profit/surplus.

*open access is not a business model but an access model*

Society and association publishers are likely to come under increasing pressure from their publications boards as open access journals and open archiving policies are promoted and discussed more widely. Publication boards are often dominated by professional researchers who will be listening hard for signs of a shift to the producer-pays model from their faculty colleagues and institutions. The task of clarifying the risks as well as the rewards of open access publishing models to such groups will need to go beyond current compressed summaries of the journal's business performance at relatively brief annual meetings, in order to adequately articulate the economics of different publishing models. The impact on not-for-profit publishers of reducing or stagnating net surplus on the ability of the whole organization to fulfill its mission must be clarified with those in a position to influence such a shift. This is not a statement that such a shift should not occur, but plainly if it does, the decision needs to be made in full knowledge of the facts of current revenue

and costs and the impact on the sustainability of the entire organization of such a decision. There has been a great deal of fulminating from all stakeholders over the past 18 months about open access and open archiving; now the theories need to be thoroughly tested and the results reviewed and made available in a spirit of openness and productive collaboration.

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A summary of the results of the first phase of the ALPSP/AAAS/HighWire study, 'Variations on Open Access: a study of the financial and non-financial effects of alternative business models for scholarly journals' will be available shortly (see http://www.alpsp.org/openacc.htm). The first phase covers analysis of the DOAJ journals, HighWire journals offering Delayed Open Access, and more than 20 case studies covering a wide range of publishers and models. The final report, to be published later in the year, will also include data from the Association of American Medical Colleges and ALPSP member publishers.