

Open Access: The War in Europe

As the battle for Open Access ([OA](#)) to the scientific literature has intensified, so different fronts of conflict have opened up. With the proposed US Federal Research Public Access Act ([FRPAA](#)) on hold as a result of the American election, the main action in February was in Europe — where the European Commission ([EC](#)) announced a number of measures intended to support OA.

However, to the disappointment of OA advocates — and despite the recommendations of its own study — the EC chose not to introduce a mandate requiring all publicly-funded research to be made freely available in open repositories. Why did the EC step back from the brink, and where does this leave the OA Movement?

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Published 15th March 2007

The EC's long-awaited policy on Open Access was published as a [Communication](#) on 15th February, and formally announced at a [conference](#) on scientific publishing held in Brussels.

While the Commission has decided that it will encourage researchers to publish their papers in "author-pays" OA, or [hybrid](#), journals it chose not to introduce a self-archiving mandate. Rather it will issue programme-specific "guidelines" for making publicly-funded research available on the Web after an embargo period. This, it says, will be done on a sectoral basis, taking into account the specificity of the different scholarly and scientific disciplines.

What this guideline approach will mean in practice, [commented](#) OA advocate [Peter Suber](#) in his March newsletter, is for the moment unclear. "It doesn't tell us when it will issue the guidelines, whether the guidelines will require or merely encourage OA ... [or] ... what the maximum permissible embargo will be ... [However] ... It does tell us that the guidelines will vary by discipline and funding program; hence even if the rules in some areas are strong enough, others are likely to be weak."

Speaking to *CORDIS News* on February 17th, Horst Forster, director of digital content at the EC's directorate general for information society and media, [confirmed](#): "We [the Commission] will not have a mandate on Open Access."

In other words, the EC seems inclined to adopt a voluntary, rather than compulsory, approach. The aim, Forster told *CORDIS News*, is to encourage experiments with new publishing business models that may improve access to and dissemination of scientific information, and to initiate a policy debate.

So why has the EC retreated from a mandate?

No quick fix

In his opening remarks at the Brussels conference — attended by more than 500 delegates from nearly 50 countries — the European commissioner for science and research [Janez Potočnik](#) explained the thinking behind the EC policy.

The EC is conscious, he [said](#), that the new digital networked environment offers considerable potential to "increase the impact of scientific research and innovation through improved access to and rapid dissemination of research results."

And since new ideas are usually built on the results of previous research, he added, it is important that the EC exploit this potential. Ultimately, he said, "it's about the conditions for spreading knowledge."

Moreover, said Potočník, since the EC is a major research funder it has a direct interest in the matter. During the period of the [Seventh Research Framework Programme](#) (2007-2013), for instance, it will invest over 54 billion euros in research and development.

"It is natural that public actors should request a better return on their investment," he said. "I want every euro of this funding to contribute in some way to developing a true European Research Area and creating a strong European knowledge society. That is my job. The European Commission, and, indeed, the European citizen, *must* get a good return on its investment.

The clear implication was that the EC does not believe the public is currently getting value for money out of the scholarly communication system. The commissioner for information society and media [Viviane Reding](#) was a little [more explicit](#). Currently, she said, the public purse pays three times for disseminating research: "for producing the results and writing the article; for the peer-review by professors; and for buying the results through libraries."

Her point, it seemed, was that the public purse provides most of the value in scholarly journals, but then has to purchase them back from publishers. Moreover, it does so at prices many believe to be unreasonable, thereby allowing scholarly publishers to make [unacceptable profits](#) from public money.

But it appears that while the EC understands that change is necessary, it believes that adapting the current system to a networked environment will prove a complex task. Scholarly publishing, said Potočník "raises a lot of important issues — sales, copyright, jobs, access and funding." Consequently, he concluded, "There is no quick fix".

Nevertheless, he added, the European Commission has been following the Open Access debate with interest. Indeed, he said, it has contributed to the debate — by funding a [study](#) into the scientific publishing market in Europe.

(And as OA advocates have been quick to point out, the study recommended that the EC "guarantee public access to publicly-funded research results shortly after publication". In other words, introduce a mandate.).

Two sides to every story

In reviewing the situation, however, the EC has apparently also realised that there is no consensus on how to adapt the system to the digital environment. Above all, pointed out Potočník, scholarly publishers and the research community view the situation very differently.

These differing views were explained in more detail in the EC Communication. Researchers, it said, argue that the Internet has provided a huge opportunity to improve the efficiency and speed with which research results can be disseminated, while at the same time reducing costs.

Yet, while publishers have made most scholarly journals available electronically, the cost of accessing them has increased, not fallen — and prices continue to rise at rates consistently above inflation. As a consequence, research institutions are finding it increasingly difficult to provide researchers with access to the journals they need.

For their part, publishers dispute that there is any access problem, adds the Communication, and argue that access to scientific information has never been better. Moreover, publishers point out, publishing has a cost, and they add considerable value to the research process. In short, if society wants to guarantee the quality of scholarly articles, it is going to have to pay publishers to manage the refereeing process.

Publishers also maintain that the market is highly competitive and does not require public intervention. Indeed, says the Communication, publishers warn that, "an ill-conceived intervention may lead to 'implosion' of the current system without offering a clear and viable alternative."

There are always two sides to any story, conceded Potočnik, adding that it is important to balance the different needs of researchers and publishers. "I recognise the investment that the publishing industry has made over the years. It offers new tools, services and technologies in line with the digital revolution."

Consequently, the two main questions facing us, concluded Potočnik, are: "First, how to offer the research community rapid and wide dissemination of results, facilitated by new information and communication technologies. Second, how to combine this with fair remuneration for the scientific publishers who invest in tools and mechanisms to organise the information flows and the peer review system."

Potočnik pointed out, however, that the scholarly communication market is not a static one, and some research organisations have already introduced mandates for their grant-holders. "The [Wellcome Trust](#), for example, has recently outlined that any publication it financially supports must be deposited in a public repository within six months of publication."

Pressure for change is also being exerted by the research community itself, said Potočnik. In January, for instance, the Scientific Council of the [newly-minted](#) European Research Council (ERC), [indicated](#) a "firm intention" of issuing specific guidelines for the mandatory deposit of research results obtained via ERC grants in Open Access repositories.

The implication seemed to be that, with some encouragement from the EC, the situation will eventually right itself. And for that reason, the EC had decided to take a softly, softly approach and to facilitate but not mandate the adoption of OA.

Back to front?

It might be helpful to remind ourselves what people mean when they talk about Open Access. Essentially, OA implies that research is made freely available online, rather than locked behind the financial firewalls imposed by the traditional subscription-based publishing

model, which restricts access to those researchers whose institutions have paid a subscription to the journal in question.

There are in fact a number of definitions of OA. For its purposes, the EC Communication cited the so-called [Berlin Declaration](#) — which calls on researchers to "grant free access to their scientific contributions, as well as the possibility to use them, subject to proper attribution of authorship." And it suggests they do this by depositing "a complete version of the work and supplemental materials ... [in] ... at least one online repository."

To complicate the picture, however, there are two ways of doing this: there is the so-called "green road" to OA, and the "gold road" to OA.

Advocates of the [green](#) road argue that it is sufficient for researchers to continue publishing in traditional subscription-based journals, but then [self-archive](#) their papers in an institutional repository [[IR](#)] or [open archive](#). However, since most researchers will not do this voluntarily, green advocates argue that it is imperative that they are compelled to do so by means of a mandate.

Advocates of the [gold](#) road, by contrast, argue that researchers should be encouraged to publish in new-style OA journals. Instead of charging a subscription to readers, these journals levy a single upfront "article processing charge" ([APC](#)) for publishing a paper. This enables the publisher to make the paper freely available on the Web, since it has been paid for its services in advance.

The primary advocates of gold OA are new-style OA publishers like BioMed Central ([BMC](#)) and Public Library of Science ([PLoS](#)).

We should also bear in mind that OA is viewed as a solution to two separate issues. The first of these is the *affordability* problem, which is a function of the so-called [serials crisis](#). The affordability problem pre-exists the Internet — [dating back](#) at least 25 years — and we will discuss it later.

The second issue is the *access* problem. As a condition of conducting peer review, publishers acquire exclusive rights in papers that they publish (by insisting that researchers assign copyright to them). As a consequence, only those who subscribe to the journal the paper is published in can access it. While this made sense in a print environment, it imposes an artificial access barrier in an online environment, since researchers can now distribute their own papers electronically. One solution is for researchers to self-archive their papers on the Internet so that anyone can access them. This is a point first made thirteen years ago, when OA advocate, and self-styled "[archivangelist](#)", [Stevan Harnad](#) wrote [The Subversive Proposal](#).

In effect, then the EC has decided to endorse gold OA, but reject green OA (if you assume that green OA implies imposing a self-archiving mandate). And while it acknowledges both the access and affordability problems it has offered no immediate solution to either.

The EC's approach, however, has attracted the displeasure of OA advocates, who believe that the green road should be the priority. While welcoming the EC's decision to support researchers who might want to publish in an OA journal, for instance, Suber suggests that the EC policy is back to front.

"Although I like [the EC's support for OA publishing] I still think it's secondary and that a strong provision on OA archiving would have been much more important," he says. "The most important issue is recommendation A1 from last year's [EC Report](#): the proposed EU-wide OA mandate for publicly-funded research."

Consequently, says Suber, "The Communication is weakest on the most important OA issue and strongest on the secondary issues."

Moreover, [he adds](#) the policy on self-archiving, "doesn't tell us ... what the maximum permissible embargo will be, why it hesitates to adopt recommendation A1, or what new information or insights it needs before coming to a decision ... [to change its mind]."

In fact, the EC did provide some reasons why it has chosen not to mandate OA. As we saw, it is not yet convinced that intervention is necessary. It clearly also has some doubts about self-archiving. The Communication, for instance, poses the question: "Who is responsible for depositing the material? How can the quality of repositories and of repository content (e.g. version management) be guaranteed? And how can repositories within Europe be linked to arrive at a critical mass of information."

It adds: "In order to link digital repositories and make them searchable, interoperability issues also need to be address systematically."

Implosion?

But it seems that the main reason the EC has chosen to sit on its hands is that it has been swayed by publishers claims that intervention could cause an "implosion" of the current system." It is clearly also concerned that if it were to make self-archiving mandatory it might be accused of negatively impacting the European economy.

In a [FAQ](#) published in conjunction with the Communication, for instance, the EC pointedly estimates that there are some 800 publishing houses based in Europe, responsible for publishing 49% of all research articles. These companies, it adds, currently employ 36,000 full-time staff plus 10,000 freelancers, editors and staff working for suppliers.

The EC is also evidently worried that if it pushes OA publishing too hard, research institutions could face internal difficulties. As the Communication puts it, "A shift in the type of publishing business model commonly used may entail unforeseen organisational consequences."

For example, the Communication adds, "in an 'author pays' model, costs for accessing research results are shifted from one part of the public institution (the library) to another (e.g. university departments). This may lead to transitional costs or to a temporary gap in the accessibility of scientific information."

Waving aside the EC's concerns as irrelevant, green advocate Harnad complains that publishers have simply scared the EC into believing that if it intervenes it will be accused of economic mismanagement.

He adds that while the Brussels conference had been portrayed as a forum for discussing ways forward, in reality the policy had clearly been agreed before the conference even took place. Indeed, he suggested, the "rather bland" statement from the EC appears to have been written "with some involvement of the publishers, as there was evidence that they had seen it in advance."

All in all, he [complained](#) on his blog, the publishing lobby has "been successful in again deferring any decision on concrete action."

OA advocates have also been quick to see parallels between the outcome of the EC policy and what happened in the UK when, in July 2004, a UK House of Commons [Select Committee](#) published a report [recommending](#) that the UK government create a network of institutional repositories and mandate all publicly funded researchers to deposit a copy of all their articles in these repositories, thereby making their research accessible to all "free of charge, online."

In November of that year, however, the UK government [rejected](#) the recommendation, arguing that it did not believe it advisable to "intervene to support one model or another."

Unlike the UK government, however, the EC has at least offered to support OA publishing. For this reason, OA publishers are upbeat about the Communication.

"The key outcome is that the EC has stated that the costs of publishing in open access journals will be considered a research cost in the seventh framework programme ([FP7](#))," says Mark Patterson, director of publishing at OA publisher Public Library of Science.

Since this means that the EC will be encouraging researchers to make use of this possibility, he added, "This is a very positive step for Open Access in general."

BioMed Central publisher [Matt Cockerill](#) also welcomes the policy. Moreover, he adds, he was encouraged by the evident confidence among EC officials at Brussels that there is a better solution for communicating the results of scientific research than the current one.

In fact, he adds, rather than appearing to have been browbeaten by publishers, EC officials have evidently concluded that "they are in a position to make a change happen, and publishers can't tell them what to do."

Of course, all policy decisions inevitably please some, and disappoint others. It should come as no surprise, therefore, that the EC Communication has had a mixed reception.

But where does it leave the OA Movement?

Intense lobbying

To answer that question it might help first to review the background to the Communication. The EC began its deliberation in June 2004 when, in the wake of the UK Select Committee report, it [commissioned](#) the European study.

When the study was [published](#) in January 2006, it made a total of ten recommendations. Few, however doubted that the proposal for a Europe-wide mandate (A1) was the key recommendation, and it was widely expected that the EC would implement a mandate.

Following the publication of the study, however, the EC opened a two-month public-comment period (between April and May 2006). During this period it [received](#) 174 comments. "[P]articipants...reacted positively overall," the EC reported in October 2006, but added ominously: "some caution was expressed by publishers."

We can be confident that the latter remark was an understatement. Undoubtedly publishers embarked on an aggressive campaign of behind-the-scenes lobbying. Indeed, what has always been remarkable about the OA debate is the extraordinary degree of energy that all those who take an interest in the subject put into arguing their case.

The EC will, then, have come under considerable pressure, and Harnad is surely right to conclude that the publishers were highly influential in the formulation of the European policy — as they have been whenever governments and bureaucrats have announced their intention to develop a policy on OA.

While their lobbying activities are less visible in Europe, we know, for instance, that between 1998 and 2006 the US lobbying budget of just one company, Elsevier, increased 610%, and in 2006 alone Elsevier spent \$2.84 million [lobbying US Congress](#).

This included attempts to derail the FRPAA (which would mandate publicly-funded researchers in the US to archive copies of their papers on the Web), and lobbying to prevent the current US National Institutes of Health ([NIH](#)) [Public Access Policy](#) from becoming mandatory (currently it is voluntary, and compliance has been derisory).

We should not doubt that the same big guns will have been trained on the EC.

But attempts to persuade the EC have certainly not been one-sided. While the OA Movement cannot bring to bear the same financial muscle as publishers, it has become a highly effective pressure group, and over the years raised awareness of OA highly successfully.

It has organised, for instance, a succession of high-profile statements and initiatives calling on researchers and funders to embrace OA, including the 2001 [Budapest Open Access Initiative](#), the 2002 PLoS [Open Letter](#) to publishers, the 2003 [Bethesda Statement on Open Access Publishing](#), and the 2003 [Berlin Declaration](#). (We should perhaps note that the only one of these initiatives to support green as well as gold OA was the BOAI).

And as the publication of the EC Communication approached, so OA advocates intensified their activities.

In December 2006, for instance, the European Research Advisory Board ([EURAB](#)) — composed of 50% research community and 50% industry representatives — publicly expressed its support for the EC study's AI recommendation, and [called on](#) the Commission to "consider mandating all researchers funded under FP7 to lodge their publications resulting from EC-funded research in an Open Access repository as soon as possible after publication, to be made openly accessible within 6 months at the latest."

Overdrive

And on January 26th The European University Association ([EUA](#)) Working Group on Open Access [endorsed](#) the statements made by EURAB and the European Research Council in support of an EC mandate.

When, however, details of the EC Communication were leaked prior to the conference — and it became apparent that a mandate was no longer being considered — OA advocates went into overdrive:

On 14th January four national research funders ([DEFF](#), [DFG](#), [JISC](#), [SURF](#)) and [SPARC Europe](#) launched an online [petition](#) in support of the AI recommendation. The petition was so widely and so rapidly supported that by the time it was presented to Potočnik in February 19,000 people had signed it.

Importantly, these were not the kind of people that could be dismissed as a few fanatics. Amongst those to sign were the most senior representatives from 1,000 education, research and cultural organisations, [including](#), research funders like the [European Research Council](#), the [German Research Council](#), the [Swedish Research Council](#), the UK's [Medical Research Council](#), and the [Wellcome Trust](#).

It was also signed by major research organisations, including [CERN](#), [CNRS](#), and the [Max Planck Society](#), as well as national academies like the [Royal Swedish Academy of Sciences](#), the Royal Netherlands Academy for Arts & Sciences ([KNAW](#)), and the [Hungarian Academy of Sciences](#)).

In addition, thousands of researchers, senior academics, lecturers, librarians, and citizens from across Europe and around the world also signed, including Nobel laureates [Peter Agre](#), [Martinus Veltman](#), [Richard Roberts](#), and [Harold Varmus](#), as well as the founder of [Wikipedia](#), [Jimmy Wales](#).

Adding to the pressure on the EC, two days before the Brussels conference, fifteen Belgian university rectors and two government ministers [signed](#) The Berlin Declaration.

Publishers were by now sufficiently alarmed that the EC might have a last-minute change of heart, and introduce a mandate after all, that the [International Association of Scientific, Technical & Medical Publishers](#) (STM) released the so-called [Brussels Declaration on STM Publishing](#) (clearly intended as a reference to The Berlin Declaration).

"[D]espite very significant investment and a massive rise in access to scientific information, our community continues to be beset by propositions and manifestos on the practice of scholarly publishing," the Declaration complained.

It continued: "Unfortunately the measures proposed have largely not been investigated or tested in any evidence-based manner that would pass rigorous peer review. In the light of this, and based on over ten years experience in the economics of online publishing and our longstanding collaboration with researchers and librarians, we have decided to publish a declaration of principles which we believe to be self-evident."

Signed by eight publisher associations and 35 publishers, including large players like [Elsevier](#), [Wiley](#), [Blackwell](#), [Springer](#), [Macmillan](#), and [McGraw Hill](#), the Declaration then lists ten bulleted points of these "self-evident" principles.

They include a mixture of the obvious ("One size fits all' solutions will not work"), the questionable ("Open deposit of accepted manuscripts risks destabilising subscription revenues and undermining peer review"), to the downright controversial ("Current publisher licensing models are delivering massive rises in scholarly access to research outputs.")

All in all, then, the Declaration was stronger on asseveration than reasoned argument, and its illogicalities and contradictions were quickly dissected by the OA Movement. "Publishers who call for evidence have to live by evidence," [commented](#) Suber. "For example, that means not asserting without evidence that OA archiving will undermine subscriptions and peer review."

It also means, he added, "acknowledging the evidence that in physics, the field with the highest levels and longest history of OA archiving, the [Institute of Physics](#) and the [American Physical Society](#) have found [no cancellations](#) attributable to OA archiving ... [and it means] acknowledging the evidence that OA journals [also] perform peer review."

Suber concluded by pointing out that the [ALPSP](#), one of the signatories of the Brussels Declaration, had in fact done an empirical [study](#) on journal cancellations. This, he said, concluded that "high journal prices were a much more significant cause of cancellations than OA archiving."

All in all, [suggested](#) Matt Hodginson, an editor with OA publisher BioMed Central, "[T]his declaration makes these publishers look self-satisfied and a bit silly."

Above all, what the Brussels Declaration — and its immediate refutation — confirmed is that OA advocates are invariably able to out-argue publishers.

Media messaging

What do you do if you can't win an argument with reason and facts? You turn to spin. And that is precisely what publishers have apparently chosen to do.

On January 24th the science journal [Nature reported](#) that a number of e-mails had come into its possession that revealed a group of its fellow publishers — including large players like [Elsevier](#), [Wiley](#) and the American Chemical Society ([ACS](#)) — had employed the services of controversial publicist [Eric Dezenhall](#).

Dezenhall, explained *Nature*, is a man who "made a name for himself helping companies and celebrities protect their reputations, working for example with [Jeffrey Skilling](#), the former [Enron](#) chief now serving a 24-year jail term for fraud."

Dezenhall's firm, it added, was also reported by [Business Week](#) to have used money from oil giant [ExxonMobil](#) to criticise the environmental group [Greenpeace](#). As a result, reported *Nature*, Dezenhall has earned the sobriquet "the pit bull of public relations."

The journal also revealed that Dezenhall had first spoken to employees from Elsevier, Wiley and the American Chemical Society in July 2006 — at a meeting arranged by the Association of American Publishers ([AAP](#)).

At that meeting, said *Nature*, Dezenhall, advised them "to focus on simple messages, such as 'Public access equals government censorship'. And he hinted that the publishers should attempt to equate traditional publishing models with peer review, and 'paint a picture of what the world would look like without peer-reviewed articles'."

To build a campaign around such slogans, Dezenhall estimated his fee would be \$300,000–500,000. (Presumably the Brussels Declaration was the first shot of this campaign).

What was most embarrassing, however, was that *Nature* quoted from an e-mail sent out by the director of corporate communications at scholarly publisher Wiley, Susan Spilka.

In the e-mail Spilka explained how Dezenhall had suggested that "publishers had acted too defensively on the free-information issue and worried too much about making precise statements ... [and he] ... noted that if the other side is on the defensive, it doesn't matter if they can discredit your statements ... [since] ... 'Media messaging is not the same as intellectual debate'."

Unsurprisingly, *Nature's* revelations spread across the Web like wildfire, eliciting a storm of protest and ridicule.

Andrew Leonard's comments at *Salon.com* perhaps best summed up the public response. Leonard [wrote](#): "[A]ny publisher of scientific research who even begins to entertain the notion that free access to scientific information can or should be equated with government censorship should be mocked mercilessly in every publication, online or off, free or subscription required, evanescent as a blog or solid as a hard-copy Encyclopaedia Britannica, from now until they beg forgiveness from every human on this planet for their disingenuous mendacity."

Carrots and sticks

To be truly effective, of course, PR really needs to be non-transparent. After all (to change the metaphor), an audience won't believe that the puppets on stage are real if they can see the strings manipulating them.

Why then has the EC apparently swallowed publishers' spin? Is it so fainthearted that it has given in to the doomsday scenarios without questioning them? Or is it that politicians and bureaucrats today are so risk averse that they are unprepared to take decisive action if there is the slightest possibility that it might lead to charges of economic mismanagement.

Or could it be a calculated strategy intended to persuade publishers to voluntarily do the right thing? After all, one way of forcing recalcitrant capitalists to adapt to the times is to shake the stick of intervention at them, and then offer them a carrot. In this case, to threaten publishers with a mandate stick, but then replace it with the carrot of new money; in this case, new money for researchers to spend on OA publishing.

Such a strategy would at least be low-risk for the EC. Moreover, it would avoid offending liberal sensitivities by imposing a compulsory regime.

Certainly it has become apparent that what most alarms publishers is a scenario in which researchers are mandated to make their papers freely available on the Web, and journal subscription revenues fall through the floor as a result.

After all, publishers reason, what incentive would there be for research libraries to continue paying journal subscriptions if their researchers could access all the papers in those journals freely over the Web?

The former CEO (now editor-in-chief) of the Association of Learned and Professional Society Publishers ([ALPSP](#)), [Sally Morris](#) has frequently [argued](#) that self-archiving poses a serious threat to the financial sustainability of publishers.

The irony is that publishers initially conspired in the self-archiving movement, by agreeing to allow researchers to place their papers in their institutional repository, and today [92%](#) of publishers allow some form of self-archiving.

In retrospect, we can see that publishers agreed to this in order to fend off growing criticism of their pricing practices, and in the (accurate: [only 15%](#) of researchers spontaneously self-archive) belief that researchers would not take up the option voluntarily.

What publishers clearly never anticipated was that research funders and research institutions might start to mandate self-archiving. For this reason, they have increasingly tried to claw back what they had conceded, by [imposing embargoes](#) on self-archiving.

And yet, as Suber has pointed out, ALPSP's own research has revealed that libraries are more likely to cancel subscriptions as a result of price increases than self-archiving. Ironically, therefore, publishers appear to be at greater financial risk from clinging to their current subscription model than from embracing a new one.

Traditional publishers, however, appear not to have grasped this. Or if they have, they are keeping very quiet about it.

Unwinnable war

Cockerill, however, thinks that traditional publishers are now fully aware of the reality of the situation. While at the Brussels conference they continued to repeat the same old arguments in support of the *status quo*, he says, they nevertheless appeared "resigned to the fact that things were changing, and they would have to make the best of it."

Cockerill's impression, of course, could simply be the wishful thinking of an OA publisher who believes he has seen the future, and can't believe that everyone else hasn't too.

Certainly the public statements of traditional publishers are as feisty as ever, and apparently intended to portray the Communication as a return to sanity and good sense.

As STM's CEO [Michael Mabe put it](#): "I am pleased that the Commission has recognised the complex issues that surround the publication and preservation of scientific information and

has seen fit to initiate dialogue rather than prematurely imposing a policy that could undermine STM publishing, which is such an important industry for Europe."

Whether this is false bravado or triumphalism we do not know. After all, one way of interpreting the EC Communication is that it was, as Harnad suggests, a victory for publisher lobbying.

Nevertheless, publishers must surely know that to continue fighting OA is to fight an unwinnable war. For, regardless of their wishes, science has reached a point where society can no longer afford the traditional subscription model for scholarly communication. Why?

Because research is now being generated at such a rapid rate that the subscription system can no longer deliver the goods, or not in a way that society can afford any longer. As Suber [points out](#), it simply no longer "scales".

About this all rational people now appear to agree, including more thoughtful employees at traditional publishers; people like Springer's [Jan Velterop](#) for instance. Commenting recently on the American Scientist Open Access Forum ([AmSci](#)), Velterop [agreed](#) that the subscription system can no longer "cope with the unrelenting growth of scientific articles that is being produced worldwide."

Indeed, the system has been in a state of crisis for several decades now, as the escalating cost of subscriptions has forced libraries to cancel more and more journals each year, to the point where few (if any) universities can now provide researchers with the journals they need. As we noted, therefore, the so-called [serials crisis](#), has been an important driver of the OA Movement.

In short, under the subscription model researchers are finding more and more of the papers they need are the wrong side of the subscription firewall. As the corpus of scholarly literature grows, so the percentage of toll access [TA] papers accessible to the average researcher or library decreases; and the faster the rate of growth, the greater the percentage that becomes inaccessible.

By contrast, argue OA publishers, by front-loading the cost of publishing an article with a one-off fee (the APC), they can make research freely available on the Web, to all, in perpetuity. As such, they say, OA publishing *does* scale. We will come back to this point.

What is certain, however, is that so far as OA is concerned it is a matter of *when*, not *if*. OA is inevitable, since no responsible society can ignore its logic indefinitely.

For profit-hungry scholarly publishers focused on maximising shareholder value, however, there are good reasons for seeking to delay the inevitable. After all, each year that they can maintain the *status quo* is another year of healthy profits.

What kind of profits? The kind of profits that — during the UK Select Committee enquiry into scientific publications — British MP for Newcastle-Under-Lyme [Paul Farrelly](#), [described as](#) so attractive that most industries would give their "eye teeth" to enjoy them.

And it's not just commercial publishers that have become addicted to the profits that can be made from scholarly publishing. As the [Royal Academy of Engineering pointed out](#) to the

UK Science & Technology Select Committee, "Even learned societies seek to subsidise other activities from surpluses on their journal publishing operations by extracting from universities money over and above the cost of the production and distribution of their journals."

And addicts, of course, will do anything to fuel their addiction. As BMC founder Vitek Tracz [put it](#) when I spoke to him: "[I]f I were running one of these companies I too would be doing anything to prolong the *status quo* for another year; and I would invent any argument — no matter how idiotic — to prolong it."

As we shall see, however, to focus exclusively on the level of profits that are possible in scholarly publishing might be to miss the point. If scholarly communication is to become more effective in a world where research is growing at exponential rates, it may not be enough simply to curb publishers' profits.

Trojan Horse

With the writing so clearly on the wall, however, some publishers are starting to jump ship. In January 2007, for instance, [The American Society for Cell Biology announced](#) that it now "supports efforts to require that the results of federally funded biomedical research be made freely available to the public, no more than six months after they are published."

And in February 2007 [Hindawi Publishing announced](#) that it had made a complete transition from its previous subscription-based model and is now a 100% OA publisher.

But perhaps the most significant sign of a growing awareness that change is inevitable was the decision by *Nature* to publish the Dezenhall story, suggesting that the venerable journal has decided to hedge its bets, and distance itself from the pit bull activities of its publisher colleagues.

This is all the more striking given that *Nature* is itself a member of AAP — a point made [with some bitterness](#) by the chairman of the AAP's Professional/Scholarly Publishing (PSP) division, [Brian Crawford](#), when he wrote to *Nature* to complain about its whistle blowing story.

It is also clear, says Cockerill, that most other large publishers — including Springer and the [American Physical Society](#) — are in the process of developing "a roadmap for a full, smooth transition towards OA publishing."

In fact, this process began nearly three years ago — in June 2004 — when Springer launched [Open Choice](#), an initiative that offers Springer authors the option of either publishing their papers in the traditional manner (where there is no charge, but the papers are only accessible to subscribers of the journal in question), or — for a charge of \$3,000 — to pay to have their paper made freely available on the Web, as if it had been published by an OA publisher.

Since then many other STM publishers have introduced similar schemes, including APS' [Free to Read](#), [Blackwell Publishing's Online Open](#), the [American Institute of Physics' Author Select](#), and OUP's [Oxford Open](#).

In other words, subscription-based journals are gradually morphing into [hybrid journals](#), where some of their electronic articles are available only to subscribers, and others (where an APC has been paid) are freely available on the Web.

The aim, Springer CEO [Derk Haank told me](#) in 2004, was to signal to Open Access advocates that it is time for them to put up or shut up. Or, as Haank, phrased it: "Let them put their money where their mouth is."

Harnad, however, saw a deeper purpose. [Describing](#) Open Choice (and its clones) as a Trojan Horse, he warned: "Please be aware that the publishing lobby will now be using the paid-OA option that they are offering as yet another means of trying to delay or divert the adoption of the OA self-archiving mandates."

Certainly one benefit to the publisher of introducing a hybrid option is that it enables it to publicly demonstrate a willingness to experiment with OA. By voluntarily reaching for the carrot, they presumably hope that they can avoid the stick of a self-archiving mandate. More importantly, if they price the APC at a sufficiently high level they have nothing to lose by doing so.

Indeed, OA advocates were quick to [complain](#) that, since Springer has overpriced Open Choice, it is far more likely that Springer's intention was to dissuade researchers from embracing OA, not encourage them.

Moreover, while the hybrid option came with a promise that publishers would reduce subscriptions if a sufficient number of researchers opted for it, OA advocates are sceptical. "The publishers' promise that as paid OA catches on they will scale down subscription prices is a hollow one," said Harnad. "It is tantamount to saying, to an individual customer: 'Buy more of my product and the effect will trickle down in the form of a lower price for everyone, including you.' Nonsense: individual authors, if they paid for the OA option for their own articles, would simply be subsidising an infinitesimal reduction in the price of subscriptions for institutional libraries the world over."

As we shall see, at the time even Harnad did not contemplate just how subversive Haank's Trojan Horse would prove.

That said, some of the more forward-looking publishers have also begun to embrace green OA. APS, for instance, recently created a [mirror](#) of [arXiv](#), the physics preprint archive. arXiv is an OA repository into which physicists have been self-archiving their papers for sixteen years now.

As such, APS has sent a clear signal that it believes publishers can co-exist quite comfortably with self-archiving.

Nevertheless, progress toward OA has proved to be so painstakingly slow that those keen to see it prevail sooner rather than later have sought ways of speeding things up.

Some funders and research institutes, therefore, have begun to adopt a carrot *and* a stick approach. Both the Wellcome Trust and [CERN](#), for instance, have introduced [self-archiving mandates](#), and also agreed to pay any APCs incurred by their grant-holders.

Strong-arming

To its increasing frustration, however, even this two-pronged approach has not delivered sufficient benefit to CERN. As a research institute, for instance, it still needs to access externally-produced research. So even though it has insisted that its own researchers embrace both green and gold OA, CERN has still had to continue paying the constantly rising subscription charges imposed by journal publishers.

In December 2005, therefore, it tried [another tack](#), announcing that it had established a task force charged with putting together a coalition of funding agencies, laboratories, libraries, and scientists, with a view to recruiting willing journals in the field of particle physics to convert to gold.

"This is the first time that any organisation has tried to convert all the TA journals in a field to OA," [commented](#) Suber when reporting the news on his blog. "The plan is to raise the money to pay reasonable processing fees for every article in participating journals. The journals could drop subscriptions, go full OA, and charge neither readers nor authors."

As a major research institute (rather than a research funder like Wellcome), therefore, CERN has decided to leverage the very considerable purchasing power of the physics research community to strong-arm the journals in its field of speciality — [particle physics](#) — to embrace OA publishing. The expectation is that this will produce windfall savings from journal subscription cancellations that can be used to pay APCs.

The initiative (called [SCOAP³](#)) looks like a variation on the consortial "[membership](#)" scheme pioneered by BMC, but across not one publisher, but multiple publishers. It is also expected to involve multiple institutions, and will include funds contributed by research funders and research laboratories, not just money recovered from library budgets. Whether this will work has yet to be determined. Certainly BMC's model has attracted [frequent controversy](#).

Importantly, CERN hopes that SCOAP³ can kill two birds with one stone: ensure that all the papers produced by researchers at the consortial institutions are made freely available on the Web for the wider research community, while reducing the scholarly communication costs incurred by member organisations. If successful, therefore, it would resolve both the *access* problem, and the *affordability* problem — the two core issues at the heart of the OA Movement.

The gamble is, of course, that by persuading all the particle physics journals to move the costs of publishing from a *post factum* subscription charge to an upfront APC charge consortial members will indeed end up paying less.

CERN believes that the omens are good. When, in June 2006, [Rüdiger Voss](#) — a senior researcher at CERN — [reported](#) on the findings of the task force he wrote: "Based on the cost per article quoted by the publishers, and on the average number of papers published in the period 2003-2005, sponsoring all journals ready for OA at the time of the enquiry would require an annual budget of 5–6 Million €, significantly less than the present global expenditure for particle physics journal subscriptions."

As always, of course, the proof of the pudding will be in the eating. As the wider physics community began to mull over the implications of CERN's initiative, however, voices of protest began to be heard.

What has become apparent, explains Harnad, is that "the CERN solution and the CERN calculations *"do not scale"* — i.e., they do not generalise to other institutions, other disciplines, or even other areas of physics."

In other words, when CERN does the arithmetic, it needs only to take into account its own particle physics journal holdings, and calculate how much it would cost to subscribe to those journals compared to how much it would cost CERN to pay an OA publisher to publish its annual paper output.

The problem is that CERN is not typical. This is because it is a research institute, not a university. As such, its interests are limited to just one discipline (physics, and mainly particle physics).

This point was also made recently — although for a different purpose — by Velterop. As a specialised institute, he [commented](#) on AmSci, CERN "needs no more than a handful of journals." Universities by contrast, are multidisciplinary, and so need "a vastly larger numbers of journals" to satisfy the needs of their constituents.

Whatever the merits of CERN's initiative, says Harnad, in practice forcing all particle physics journals to convert to gold will likely create hardships for non-member institutions and other fields of physics — because they will have to pay to publish in the newly gilded OA journals, but will have no windfall savings from cancelled journal subscriptions to do so. Consequently, he says, they will be forced "to redirect money from *research funds* (which are already scarce)."

It is precisely this kind of scenario that concerns the director of the Mathematical Physics Lab at the University of Montreal [John Harnad](#) (brother of Stevan Harnad). If CERN forces all the particle physics journals to convert to gold, he worries, physicists without generous funders will lose some of their funding.

Inflationary effect

In a [preprint](#), John Harnad cautions: "For those researchers working in domains that are not funded at levels comparable to experimental high energy physics, or at huge physics laboratories like CERN for which publications charges are only a relatively small burden offset by reduced costs in journal subscriptions, such a switch would be a major increase in the cost burden to themselves."

This means, he adds, that many physicists may be forced to fund the costs of publishing from their existing funds, which "will have to be subtracted from current research expenditures."

In some cases, he concludes, this could be as much as 10-15% of their research budgets. "Given currently available resources, a large-scale switch to 'Gold' Open Access is therefore neither in the interest of maintaining quality in scientific publishing, nor beneficial to most researchers."

But as more and more funders and research institutions like CERN, ERC, the Wellcome Trust — and now the EC — offer to pay the costs of OA publishing why should it be any concern to researchers? It is no skin off their nose if they are asked to incur costs at someone else's expense is it?

One reason it matters is that it is not at all clear that all research funders *will* offer to foot the bill. While the EC has said that it will provide 85 million euro for digital preservation projects, and work on digital infrastructure, for instance, it has made no commitment to provide new money for OA publishing. It has simply said that it will allow researchers to pay APCs out of their research grants. As the Communication put it: "Costs for publishing, including Open Access publishing [will be] defined as eligible costs in Community funded research projects."

Pointing out that the Communication is not the final policy, Suber suggests that funds may yet be earmarked specifically for this purpose, or grantees allowed "to apply for special, additional funds for publication fees."

As things stand, however, the EC policy looks more like a disincentive to embrace OA, rather than an incentive.

On the other hand, The Wellcome Trust does provide money for OA publishing; as does the US equivalent of The Wellcome Trust, The Howard Hughes Memorial Institute [[HHMI](#)]; as [will](#) the ERC.

But this raises a different kind of problem. As [Jim Till](#), a researcher at the [Ontario Cancer Institute](#), [points out](#), while the role of research funders is to provide money for "knowledge generation" (i.e. research grants), historically it has been the responsibility of academic institutions to pay for "knowledge dissemination" (e.g. pay journal subscriptions).

This suggests that if funders also begin to pay for knowledge dissemination (by paying APCs for grant-holders), they will be putting more money into the publishing pot. For reasons we will come to, this is likely to have an inflationary effect on the costs of publishing. As Heather Morrison, a librarian at [Simon Fraser University](#) in Vancouver [warns](#): if funders provide money for OA publishing it could lead to a "processing fee cost spiral."

For this reason, [says](#) Morrison, funding agencies "should not feel that they need to provide additional funds to cover APCs, since there is enough money in the system."

More importantly, it would mean that scarce resources intended for knowledge generation would be diverted to pay for knowledge dissemination. In the process, publishers would end up devouring an even larger slice of the scholarly communication cake.

Double dipping

But this is not just a funding matter, suggests Stevan Harnad. Spending time (and money) on OA publishing today will also slow down, not quicken, the transition to OA. And the "resurging gold rush" that will be sparked by the EC Communication, "is going to be one of the big obstacles to OA progress (specifically, green mandates) in coming months."

As we shall see, his concern is that the urgent need to solve the access problem will become bogged down in hopeless attempts to solve the affordability problem.

Undoubtedly, converting 24,000 scholarly journals to gold OA would take a long time to achieve, even with OA-friendly research funders and institutions pushing at the door. If, in the process, OA mandates were put on the back burner, the research community would have to wait a very long time before 100% OA was achieved.

In any case, adds Stevan Harnad, the research community is already paying for the journal publishing process, in the shape of library subscriptions. To ask it to pay publishing costs as well is to ask it to pay twice over (what Morrison [calls](#) "double dipping") — thereby exacerbating, not ameliorating, the affordability problem.

Essentially, this goes to the same problem that CERN is trying to resolve, but on a much larger scale: that is, how to avoid paying APCs in addition to, rather than instead of, subscriptions. In this case, however, the likelihood that the [10,000](#) or so research universities in the world would be able to work together to form a single CERN-like consortium is laughable.

The financial implications of double dipping have not escaped the attention of librarians. As the people who pay journals subscriptions, they are more attuned to issues of affordability. "Until subscription journals turn into OA journals, libraries will *still* have to pay the subscription costs for these journals," [says Paul Ayris](#), director of library services at the [University of College London](#). "It is the transition period which concerns me."

In other words, the only way OA publishing can be paid for today is by poaching money from research funds. Why do this, asks Stevan Harnad, when "Green is available as a free alternative with none of these liabilities?"

Consequently, he says, a more rational, and much faster, approach would be to allow researchers to continue publishing in traditional subscription-based journals, but then mandate them to self-archive their papers in an institutional repository or open archive (I.e. the green route).

What we need to bear in mind, Stevan Harnad [reminds us](#), is that "The publications that are being self-archived today have been *paid for*. This remains true until and unless OA self-archiving ever actually does cause cancellations and makes subscriptions unsustainable. Till then, it's green OA and nothing more to pay."

Moreover, he adds, publisher claims that a mandate would wreak havoc on current subscription revenues are erroneous, for if and when libraries did begin cancelling journal subscriptions, they would in the process free up money to pay for gold publishing. In this light, rather than threatening an implosion, green OA holds out the promise of an orderly transition to the new environment. Crucially, it would also provide OA much more quickly than the gold route.

In any case, [says](#) Suber, most proposals for introducing a self-archiving mandate now recognise that publishers need to recover their costs, and so assume that publishers will be given a period of exclusive distribution rights (generally six months).

Devil in the detail

Commissioner Reding apparently sees the problem. As she put it at the Brussels conference: "As usual, the devil is in the detail. What is a fair remuneration and what is an embargo period that makes a fair remuneration possible?"

Nevertheless, it would be disingenuous to imply that OA is good news for publishers. After all, while the case for OA is primarily made on the basis that it will improve access to research, there has always been an implicit assumption that it will also resolve the affordability problem. Certainly this is what CERN expects.

And it is not unreasonable for the research community to expect reduced prices: In a networked environment the expense of paper goes away, and distribution costs rapidly begin to approach zero.

Indeed, most of the historical costs of publishing scholarly papers start to fall away in a networked world, and in theory the only essential role remaining for publishers is to organise peer review. After all, points out Stevan Harnad, in a compulsory self-archiving regime, where researchers would place their papers in institutional repositories, publishers wouldn't even need to provide electronic versions of the papers, since "access-provision will be offloaded onto the distributed IRs instead."

It is for this reason no doubt that green OA is so antithetical to scholarly publishers. Finding a solution to the affordability problem inevitably implies lower profits for them. Moreover, as well as threatening their current levels of profitability, it could significantly reduce their role. As such, publishers could find themselves pushed out from the centre of the scholarly communication process, to the periphery, where they would become peer review service providers only.

Whatever the end point, the rapid growth of research we are now experiencing suggests that society can no longer afford to pay the high overheads associated with disseminating research in the way it has done until now.

Moreover, [Michael Kurtz](#), an astronomer at the [Smithsonian Astrophysical Observatory](#), [predicts](#) that OA itself will increase the rate of growth of research (from ~4 to 10%). If this is right, then the need to take costs out of the system becomes even greater.

In any case, it would not be rational for society to spend money unnecessarily on expensive knowledge dissemination processes when that money could be diverted — to much greater effect — to the more valuable process of knowledge generation.

On the other hand, if we could be confident that publishers were willing and able to provide a gold publishing solution cost-effectively, why not let them remain the main agents of scholarly communication? The problem is that, for understandable reasons, they appear determined to fight tooth and nail any potential threat to their profitability.

The laws of economics

This would seem to imply the need for intervention in the scholarly communication market. As we've seen, however, the EC appears to have opted for a voluntary approach, in the

apparent belief that publishers simply need to be shepherded in the direction of OA. The assumption, presumably, is that publishers can be left to manage the transition. Is such an assumption justified?

Perhaps not. After all, publishers will surely seek to port their current revenues (and surplus knowledge dissemination costs) to the new environment. While this may (eventually) resolve the access problem, it would not resolve the affordability problem.

The key issue will be the level at which publishers set their APCs. To put it another way: What counts as a fair price for publishing a research paper? That is, a price that reflects the true costs?

The challenge is that no one knows. Moreover, the people best placed to estimate those costs — publishers — have a vested interest in exaggerating it them. What we do know — thanks to the [price comparison chart](#) BMC has put together — is that currently APC rates range from \$750 to \$5,000 per paper.

We also know that in introducing hybrid options, traditional publishers have invariably set their fees higher than those charged by OA publishers like [BMC](#) and [PLoS](#).

And in response, OA publishers have tended to increase their prices — a development that has proved [controversial](#), since many researchers viewed the move as an opportunistic attempt to increase revenues in the slipstream of commercial publishers, not an attempt to establish a fairer price.

A more likely explanation, perhaps, is that rather than being a deliberate ploy to maximise revenues, these price rises reflect a misunderstanding as to the appropriate role that publishers should play in a networked environment.

As Stevan Harnad puts it, "All of these publishers are *inadvertently*, perhaps without even realising it 'locking in' the costs (and hence the price) of goods and services that are bundled with publishing today, but that will no longer be needed in an all-OA world (including the paper edition, the online edition, distribution, archiving, marketing, fulfilment: in short all the current expenses and overhead except those of implementing peer review)."

Velterop [denies](#) any attempt to lock in prices. Indeed, he says, unlike the traditional subscription model — where intermediaries (librarians) select what journals to subscribe to on behalf of the end-user (creating a disconnect between product and customer) — OA publishing is far more price sensitive, since it is end-users themselves (authors) who choose which journal to publish in.

Critics, he says, "forget — or ignore — that unlike for subscribers, for authors there is a real choice of journal in which they publish, or at least to which they submit their articles. Where the party who pays (even if with 'someone else's money') is the party with the choice, the laws of economics do function."

But what laws of economics are at play here? More importantly, will they ensure that we arrive at a fair price for publishing an article in an OA world?

Controlling the transition

[Fytton Rowland](#), a senior lecturer in information science at the UK's [Loughborough University](#), [pointed out](#) recently on AmSci that every scholarly journal is a natural monopoly. "You can't get the same content anywhere else."

His point, perhaps, was that journals are not like cars — where a number of different models might fit a customer's needs — but each is totally unique. This is because, as he says, the content is not replicated anywhere else (unless, of course, the papers in it have been self-archived by the authors).

In making his point, Rowland was, like Velterop, presumably arguing that this monopoly effect will go away in a world where researchers pay to publish, since they will be free to choose which journal they spend their money on. Is this accurate?

The problem is that while, in theory, authors will be able to choose which journal they publish their research in, the reality is that most want to publish in the handful of prestigious journals (i.e. those with high [impact factors](#)) that cater for their speciality — journals like *Nature* and *Science* for instance.

This "impact factor" effect is evident in a recently-published [study](#) undertaken by researchers at [Ludwig Maximilian University](#), in Munich, and the [University of Arkansas at Little Rock](#). The study found that while researchers like the increased speed, reach and potentially higher citation rates of Open Access publications, many decided not to publish in OA journals because they had lower impact factors.

But if these researchers were able (at the expense of their research funder or institution) to pay to make their papers freely available on the Web by publishing in a high impact journal that provided an "Open Choice" option, might they not prefer it to the traditional subscription model?

After all, in a gold OA environment (where self-archiving had not been mandated, and might not even be possible), the challenge would lie less in getting access to the research of your peers, but in getting your own research published in a journal of your choice.

In such a situation, would not the laws of economics mean that the more prestigious journals (those with a high impact factor) could (and so would) charge a premium for publishing papers? If so, the cost of publishing a paper would surely be set by the top journals, and all the others would set their prices as close to the highest rate as they felt able to.

This is, after all, precisely what occurred when Springer entered the market with Open Choice and set the APC rate at \$3,000. At the time BMC charged \$525 and PLoS \$1,500. Today the latter two publishers [charge](#) ~\$1350-\$1750 and \$2,500 respectively.

We witnessed the same inflationary spiral when commercial organisations first entered the scholarly publishing market after WWII. The incumbent learned societies watched with their mouths open as the new entrants pushed their subscription prices higher and higher. Eventually, seeing that the market was far more elastic than they had appreciated, learned societies in their turn began increasing their prices. And it was this process that sparked the serials crisis in the first place.

The end result is that today there is little to choose between for-profit and non-profit scholarly publishers — a point made by [Daniel Greenstein](#), associate vice provost at the [California Digital Library](#), in *Nature's* online forum in 2004. Indeed, he [said](#), in some cases nonprofits are more expensive than their for-profit competitors. "For the University of California at least, *Nature* ... is far less expensive than its society-produced counterpart, *Science*."

In fact, some of the non-profit publishers have proved the most obdurate opponents of OA, and they have [shown themselves](#) to be the most unscrupulous — as the behaviour of ACS in recent years attests. And today ACS — which boasts the AAP's Brian Crawford as its senior vice president, and whose two top executives in 2004 received an annual compensation package of \$1.1 and \$0.91 million respectively — has replaced Elsevier in many people's minds as the evil empire of the scholarly publishing universe.

Sellers' Market

In short, it would seem perfectly logical to assume that the laws of economics in an OA environment would be no more likely to produce a fair price than [they did](#) under the TA regime, particularly if publishers are left to manage the migration process without the intervention of an external agent.

The crucial point is that scholarly publishing is essentially a [sellers' market](#). When buying subscriptions, librarians feel compelled to buy every journal available, since the content of each one is unique. In a gold OA world, by contrast, when choosing journals to submit a paper to, researchers would naturally turn first to a select group of high impact journals, who would expect to be able to charge a premium. And this would be possible because they would be selling a scarce resource — *Nature*, for instance, [claims](#) to reject 90% of all the papers submitted to it.

And as economists will tell you, a scarcity market without any price control mechanism will inevitably lead to a situation where customers pay not what is reasonable, but what the seller can get away with. It has already been [demonstrated](#) that the traditional subscription market is broken: Evidence suggests that in an OA environment the situation will be little better.

There are, then, good reasons to assume that scholarly publishers cannot be trusted to migrate to OA in a way that will protect the public purse, or establish a fair price, and currently there is no evidence that there will be any mechanism available to control prices.

Further evidence, were it needed, of the determination of publishers to maintain a tight grip on the scholarly publishing process as it migrates to an OA environment came on 8th March, when it was [announced](#) that HHMI has done a deal with Elsevier in which the publisher will deposit papers it publishes in PubMed Central ([PMC](#)), the open repository of biomedical and life sciences literature maintained by NIH. In other words, Elsevier has agreed to archive researchers' papers for them.

The catch? HHMI will to pay Elsevier \$1,000 to \$1,500 per article for doing so.

What is alarming about this development, [commented](#) Suber on his blog, is that these payments are not for undertaking peer review (which is paid for by the subscriptions Elsevier still charges for its journals); they do not buy access to the published edition (because the

archived version will not have been edited or formatted); and they don't buy gold OA (which would provide immediate free access to the final edited version), but free access only after a six month embargo.

Essentially, HHMI is paying for green OA. "Despite its fee, HHMI is not getting OA to the published version of the article," adds Suber. "With minor exceptions, Elsevier is getting paid for what it formerly allowed for free. Elsevier (beyond Cell Press) is even lengthening its embargo period."

As such, the scheme not only makes a mockery of OA publishing, but it threatens to strangle self-archiving in the crib — by seeking to move the world to a position where publishers can demand that researchers pay them before they self-archive their papers. The truly subversive nature of Haank's "Trojan Horse" has finally become apparent!

As OA advocate, and researcher in the department of comparative literature, at the University of Montreal [Jean-Claude Guédon puts it](#), "I remember too well the satisfied laughter of Derk Haank in Frankfurt, over a year ago, when he announced with a visible degree of glee that he enjoyed seeing new revenue streams coming out of the granting agencies. He was thinking about "Open Choice" then. Now, Elsevier increases the new revenue streams by taxing granting agencies for the right to archive."

What such developments surely underline is that publishers will never produce a fair price for publishing a scholarly paper under their own steam. But what sort of price can we expect in a gold OA environment?

There have in fact been a number of studies undertaken to try to establish this. The conclusions are mixed. One study undertaken by a librarian at [Millersville University](#) — [Bill Walters](#) — [suggests](#) that the average price for publishing a paper in a gold OA world would be \$6,491.69.

This is not a figure Walter focuses on, [says Ray English](#), a librarian at [Oberlin College](#), but it is what his study reveals, and "way more than most estimates of cost per article that have been cited in the literature."

Interestingly, in arriving at this figure, Walters developed what he calls the "equal-revenue Open Access model." This model "maintains current levels of total aggregate spending within each subject field", and was developed by Walters on the grounds that he did not believe publishers would accept too great a loss in revenue.

One problem with such projections, in any case, is that they can only work with today's prices, and cannot accurately estimate the future dynamics of an OA gold market. The Walters' study, for instance, was based on the much lower rates that were charged by OA publishers like BMC and PLoS at the time he did his research.

Undoubtedly we can also expect publishers to come up with a range of new ways of charging users; ways that will probably be somewhat more opaque than a simple APC. And we can be sure that these will be devised on the principle not of arriving at a fair price for the new environment, but of assuring the current levels of profitability enjoyed by scholarly publishers.

Expect publishers, for instance, to persuade librarians to swap their current "[big deal](#)" licensing contracts for OA publishing packages that buy the institution's researchers the right to publish their papers without incurring APC costs. These will likely be based on consortial membership schemes like those developed by BMC and CERN. As we have seen, these kind of arrangements have proved [controversial](#) and are widely seen as [unworkable](#) in the long-run.

The problem with this kind of scheme, says Stevan Harnad, is that no institution can commit to submit N papers to a journal as they can commit to buying N issues of a journal; nor can journals commit to accepting N articles from an institution. "A 'membership' is a monopoly for a journal, without free choice for authors," he concludes. "Institutional subscriptions don't morph into institutional memberships: It is an [Escher](#) impossible-figure."

Above all, as there will be no way to ensure market discipline, research institutions will remain vulnerable to constant price inflation.

"As a university librarian, my concerns are these," [says](#) Ayris: "once commercial journal subscriptions are turned into a consortial payments for OA publishing, I would have no more money to give to the consortium should its costs increase. So the consortium will have to manage its costs with great care in order for libraries to support them. Otherwise, libraries are no better off than they were in the commercial subscription environment, when we could be presented with large increases in costs with no concomitant ability to meet these costs."

"Ultimately", [says](#) OA advocate and researcher at Southampton University, [Steve Hitchcock](#), "this debate is not about whether we will have full OA (we will) but about control of the transition and about control afterwards. Does gold deal with the 'unrelenting growth' and, therefore, cost? That is far from being demonstrated. It's entirely possible that it wouldn't. It could be just a continuation of the current cost spiral."

Access and/or affordability?

So we come back to the question: Can the EC's policy ensure a fair price as we migrate to a gold OA environment? Evidence suggests not. And yet unless we find a way of removing some costs from the system, society will not be able to afford to disseminate research any better in a gold OA world than it can in today's subscription-based system.

On the positive side, of course, the various initiatives underway are beginning to deliver some OA, although often on an embargoed basis. As such, the access problem is beginning to be solved — although only at very slow rate. Rather than addressing the affordability problem, however, many of these initiatives look set only to exacerbate it.

Stevan Harnad, however, suggests that we forget about the affordability problem, and focus only on access. "Affordability and access are not the same problem, even though the affordability problem helped launch the OA movement", he says. "The real point about gold is not that it does not reduce prices: It is that it is not within reach as green is, and it cannot be accelerated by mandates."

He adds, "This debate is about when and how we will have full OA, and it has nothing to do with speculations about publishing economics. It has to do with when we will get around to mandating green."

But however much Stevan Harnad might want the access problem decoupled from the affordability problem it should be clear by now that that is simply not going to happen. If only for historical reasons, no one is going to treat them separately. The fact is that a great many people now have a vested interest in the issue of OA, and the vast majority of them will not (or cannot) separate these two issues.

The irony is that Stevan Harnad can argue, convincingly, that green mandates can solve both problems.

First, as he constantly reminds us, if a sufficient number of research funders and research institutions introduced green mandates (and researchers complied), the world's IRs would immediately begin to fill up, and we could achieve 100% OA "[within two years](#)". In the process, the access problem would be solved.

Second, he suggests, green mandates could provide the price control mechanism that has always been lacking in the scholarly publishing market, thereby ensuring that publishers did not overcharge for their services.

His reasoning is that if researchers were mandated to make copies of their papers available in institutional repositories then librarians could start cancelling journal subscriptions — not catastrophically, but gradually. And in the process, the green-driven cancellation pressure would force journals "to downsize to the bare essentials (peer review alone), rather than inflating them with unnecessary current products and services."

Indeed, he adds, this is the only way to arrive at a fair asking price, as publishers came "under market pressure from cancellations driven by 'competition' from the parallel Green Open Access versions of the articles, along with the availability of the network of distributed institutional repositories containing them — onto which the journal's access-provision function can be offloaded. That will both minimise the price and release the funds to pay it."

In other words, publishers would be forced to downsize, and the research community would regain control of the scholarly communication process, with publishers relegated to providing peer review services on an outsourcing basis.

At this point even gold OA may become moot. We don't know. Certainly once the research community had wrested back control of the scholarly communication process the importance of "the journal" would surely diminish.

Rather than continuing to use clumsy and imprecise journal impact factors, for instance, in an OA environment researchers will want to use [alternative metrics](#) to estimate the value and [quality](#) of a paper. And once journals were no longer able to charge a scarcity value, publishers would not be able to charge unreasonable fees for peer reviewing the papers they published.

Inherent conflict of interest

Whatever the outcome of the war for OA in Europe, one casualty will doubtless be the always-fragile alliance between OA advocates and OA publishers. In that regard, the EC Communication may prove a watershed for the OA Movement — the point at which the

inherent conflict of interest between the needs of researchers and the needs of publishers became impossible to deny or, apparently, to resolve.

For with OA now widely accepted as inevitable, it has become clear that publishers — both dyed-in-the-wool subscription addicts, and those who have adopted the OA model — have far more in common with one other than they do with OA advocates. Nowhere is the commonality of interest that all publishers share more evident than in their mutual antipathy to self-archiving mandates. What this underscores, of course, is that the primary focus of any commercial organisation is inevitably to maximise its profits.

In short, since self-archiving mandates are viewed as a direct threat to the control that publishers currently exercise over the scholarly communication process, and so their profitability, all publishers — OA or traditional — view them with an extremely jaundiced eye.

Unsurprisingly, therefore, as the OA debate has crystallised around the issue of green mandates, so OA advocates have had to conclude that there is little to choose between traditional publishers and OA publishers.

As Stevan Harnad [put it](#) recently: "Green OA mandates will deliver 100% OA: How can a publisher call itself an OA publisher while opposing (or failing to support) Green OA mandates?" And yet it seems that they do.

Realisation of this incompatibility began with the high-profile [move](#) Velterop made from BMC to Springer in 2005 — where he became "director of Open Access" — and his subsequent public [baiting](#) of OA advocates.

Velterop's abrupt change of employer invited the question: what difference is there between a traditional publisher and an OA publisher if a leading advocate of OA could move seamlessly from OA publisher to traditional publisher? And if his aim was to convert the world to OA why would Velterop launch a campaign against OA advocates?

True, Velterop now no longer represents an OA publisher, but a hybrid publisher. But it invites questions as to how BMC's aims and objectives might differ from those of Springer. And to do him justice, BMC founder Vitek Tracz has never pretended to be anything other than a businessman, and motivated to seek profits before anything else.

Nor has he ever presented himself as an enthusiast for self-archiving, or of green mandates. Speaking to me in 2005, for instance, he expressed considerable scepticism. "If self-archiving were so easy why isn't it happening?, he [asked](#). "Because in practice self-archiving is impractical."

What about non-profit OA publisher PLoS? PLoS too has never advocated self-archiving. And like Tracz, PLoS co-founder [Harold Varmus](#) presents himself as a sceptic. In an [interview](#) with me in October 2005, he said, "My views are very clear: at this point self-archiving is not Open Access."

True, OA publishers *do* support mandates: Varmus signed the EU petition calling for recommendation A1, for instance. But they don't view them as green mandates. OA publishers support mandates on the basis that they will bring them more business. They want

to be able to say to researchers: "You don't need to get involved with self-archiving, just publish with us, and we will do all the work for you."

As such, like any other publisher, PLoS works on the assumption that it will control the entire scholarly communication process, all the way to archiving the researcher's papers for them. Essentially, it expects to remain the gatekeeper and price setter. In effect, it has an "institutionalised" view of itself as publisher, and views its purpose and role as differing very little from that of any other publisher.

What's wrong with that? Actually nothing — so long as a fair price is charged for publishing a paper, and any additional services offered are charged for separately, and transparently, and not simply rolled into the cost of an APC or a consortial fee.

The likelihood is, however, that non-profit OA publishers will be sucked into the system in the way that learned societies were, finding good reasons to let their prices drift upwards, and adding more and more services in order to enhance their revenues.

After all, OA publishers see themselves in competition with other publishers. As such, they will surely set their prices against other publishers, and seek to provide all the value-added services that they do too. Suddenly, the game isn't so much about publishing research, but maximising revenues.

For instance, although it is in theory an online-only publisher, PLoS also provides print copies of its journals. In addition, it runs high-profile PR campaigns, and has even funded a television [spot](#). Such things don't come cheap. Do research funders really want the APCs that their grant-holders pay to be used to fund expensive marketing campaigns, or do they want them simply to reflect the cost of peer reviewing a paper, and then making it available on the Web?

The fundamental conflict here, perhaps, is that publishers — OA or traditional — see themselves as the centre of the scholarly publishing process. OA advocates, by contrast, believe research institutes need to reassert ownership of their intellectual output, and relegate publishers to a subordinate role as low-cost service providers.

The incompatibility of these two world views became impossible to ignore during a series of online duels Velterop had with OA advocates on AmSci in the wake of the EC conference — interchanges that concluded with OA advocate, and librarian, [Heather Morrison pointing out](#), that Velterop's claim to be an OA supporter is in direct conflict with his role as an employee of a company that signed The Brussels Declaration.

As usual, it was Stevan Harnad, who captured the mood best. "[W]hat is especially disappointing, if not deplorable, is when so-called 'Open Access' publishers take exactly the same stance against Open Access (OA) itself (sic) that conventional publishers do," he [said](#) "Conventional publisher opposition to OA will be viewed, historically, as having been a regrettable, counterproductive (and eventually countermanded) but comprehensible strategy, from a purely business standpoint. OA publisher opposition to OA, however, will be seen as having been self-deluded if not hypocritical"

As the penny dropped, so another OA advocate, and professor of computing at the [University of Tasmania](#), [Arthur Sale](#), [suggested](#) — as if in sudden realisation — that publishers had

never contributed much to scientific communication. "Rather they realised a profit-making opportunity, and seized it ... [and] ... Publishers are still in it for the money alone."

To have assumed otherwise, of course, was plain naïve. Moreover, to have believed that OA publishers could stand aloof from this profit-obsessed culture of scholarly publishing was equally naïve.

Not one voice

It would, however, be wrong to imply that the OA Movement speaks with one voice, or that all OA advocates are equally suspicious or opposed to supporting gold OA, or even disturbed at the exclusively commercial motivations of publishers.

Certainly many OA advocates see no reason not to support OA publishing initiatives. As [SPARC Europe's](#) David Prosser, [put it](#), for instance: "I think deposit mandates are a good thing and should be implemented by all research funders. But I view mandates and provision of publication charge funds as an 'and', not an 'or'."

Suber too is sanguine about OA publishing, and supportive of consortial initiatives like CERN's. After all, he [suggests](#), "there would be no burden to researchers ... Journals in particle physics would convert from TA to OA, and the institutions that formerly paid subscriptions would thereafter pay author-side publication fees. Authors themselves would pay nothing."

Indeed, Stevan Harnad can sometimes seem a lone voice. Critics complain, for instance, that he is too dogmatic and, simply wrong to insist on the centrality of self-archiving. As [Long Island University](#) librarian [David Goodman puts it](#), "As for the view that only self-archiving ought to be pursued, I can recall no other person who has ever taken that position."

However, lone voice or not, Stevan Harnad's voice is a singular one. He is also the most articulate and energetic OA advocate, as well as the most logical. Consequently, few can out-argue him. Moreover, unlike many in the OA debate, he appears to have no vested interest in the *status quo*. Practically everyone else does. For this reason, perhaps, he can see the situation more clearly than most.

What one might question is Stevan Harnad's practicality. Is it practical to assume for instance, as he does, that people can be persuaded to treat the question of access to research as separate from its affordability? Is it practical to believe, as he appears to do, that people will always take the most rational decision, regardless of their vested interests and the power of money?

But what unites OA advocates, and distinguishes them from publishers (both traditional and OA), is a firm conviction that the stress should be on *access*. And since most agree that only self-archiving mandates can solve the access problem with any speed, they view mandates as the first priority.

For publishers, by contrast, access has only ever been a commodity that they could sell, not a goal in its own right. For them the only issue has ever been about "publishing models", and so questions of affordability.

Librarians, for their part, are obsessed with affordability. For this reason they too have tended to stress OA publishing, and so business models. However, they have become increasingly [sceptical](#) about the ability of OA publishing to reduce costs, and now realise that it will take a long time to achieve OA via the gold road. Consequently, many are now also sympathetic to [self-archiving](#).

The fear for librarians is that in an OA environment they might — like publishers — be pushed to the periphery. For in a world without journal subscriptions they too could face downsizing, particularly as more and more researchers turn to the Web, not the library, for information.

As [Rick Anderson](#), a librarian at the [University of Nevada](#), [put it](#) on the [Liblicense](#) mailing list, "Maybe a 100% Green world would be a wonderful place. But make no mistake: it would be a world largely bereft of paid subscriptions."

However, none of the differences of opinion amongst OA supporters would matter, or need to come into conflict with one another — if the gold route could guarantee OA as quickly as green can, if gold was not too frequently treated as a substitute for green, and if gold was able to guarantee OA at an affordable price.

War of attrition

So how does the future of OA in Europe look in the wake of the Brussels conference?

The good news is that the EC clearly appears to support OA. "We think that, in principle, results of publicly funded research should be accessible to all after a certain period," [commented](#) Commissioner Reding at the end of the Brussels conference. "That has a consequence for the way in which we deal with the issue within our own programmes."

The public sector, she added, "should have a bigger say in the system and not just rely on rules dictated by the publishers."

But can the EC policy achieve this? Here again OA publishers and OA advocates view things differently. OA publishers view the EC policy statement as a good outcome, because it supports their "business model". OA advocates, by contrast, believe it to be back to front. Moreover, not only does it not go far enough in solving the access problem, but it seems unlikely to address the affordability problem adequately.

Traditional publishers, meanwhile, are surely pleased that, once again, they have convinced the powers that be that to intervene in the scholarly publishing market would destabilise it, and hurt a vibrant industry.

The problem is that this is a market that cries out for intervention. And that is what the EC has apparently chosen not to do. If it continues to sit on its hands, the danger is that publishers will choose to migrate to OA in their own time, and on their own terms.

In short, OA advocates believe it is time for politicians to act. Politicians are elected to represent the public's interests, so now is the time for them to step up to the plate and impose mandates.

As Stevan Harnad puts it, "Failing to take advantage of the power of OA now that it is within reach, in order to protect one obsolescent service industry, is rather like failing to take advantage of the diesel engine to protect coal-stokers, or failing to take advantage of email in order to protect the telegraph industry."

The EC, [says](#) Suber, is behaving as if it were a neutral adjudicator in the matter, not an active agent. As such, it seems to see its role, "as mediating a controversy rather than deciding it. Reding and Potočnik should recognise that taxpayers are a major stakeholder in this debate and are not otherwise represented at the table."

The good news, he [adds](#), is that the Communication is not the final EC policy and the guidelines for OA archiving are still under development. "There's still time for friends of OA to try to influence their direction."

At some point, for instance, the EC will take up OA policy with the European Parliament and Council of Ministers. "When the question moves to the European Parliament for discussion and debate, we have to anticipate relentless and well-funded publisher lobbying," [says](#) Suber. "We have to help members understand the issues, make clear that publishers who oppose an OA mandate do not speak for researchers, and make clear that researchers need OA."

In short, he [says](#) "We have to keep working for a simple, enforceable mandate on OA archiving for publicly-funded research ... We have to show that OA policies relying only on requests and encouragement fail, as [documented](#) by the NIH ... We have to show that further concessions to publishers will put the financial interests of a private industry ahead of the public interest in advancing research and jeopardise the mission of the EU's public funding agencies."

What also has to be pointed out to politicians, says Stevan Harnad, is that the publishing industry is not the industrial arm of research. "The vast family of R&D industries is, and many of them signed the EC petition"

For that reason, he says, "The OA Movement needs to systematically mobilise an alliance with the R&D industry to support the green mandates against opposition from the publishing industry."

He adds. "My impression was that the EU Commissioners, Directors-General and Directors in attendance were favourable to OA and that concrete developments can be expected as a result of the conference and the petition."

The problem, he explains, is that the EC itself needs a "mandate" — that is, a mandate in the sense of strong political support. "The only palpable political pressure so far has been coming from the publishers. The EC would like it to come from researchers, their institutions, the research industries, and the general public. The petition started to provide that. They will have more ..."

Rather than give up their lobbying, therefore, OA advocates can be expected to intensify their efforts. One way of doing this is to continue advertising the EU [petition](#) which, at the time of writing, is approaching 24,000 signatories.

The next step in pushing the case for a European mandate had already been taken prior to the Brussels conference, when OA advocate [Leslie Carr](#) polled what would be the target constituency were a European mandate to be introduced.

As Carr [explained](#) on AmSci, "The administrators of currently active EU [FP6](#) projects were asked to register a vote FOR or AGAINST Open Access to research results. The result was overwhelming: 85.8% in favour of Open Access, 14.2% against (based on a healthy 8.22% response rate from 2,652 e-mail invitations to vote)."

In short, this is now a war of attrition.

No armistice yet

And as European combatants get back into their trenches, so hostilities look set to be renewed in the North American zone of conflict. *Wired* [reports](#), for instance, that Senators [John Cornyn](#) and [Joseph Lieberman](#) plan later this year to re-introduce the FRPAA.

Since this is a proposal for a green mandate it is good news for OA advocates. Moreover, it is a good green mandate: not only would it make self-archiving compulsory, but it would be much broader in scope than the NIH policy, requiring all federal agencies who spend more than \$100 million a year on research grants to non-employees to ensure that publicly-funded research was freely available in open repositories.

When it was first introduced in May 2006, Suber [described](#) the FRPAA as "a giant step forward". He added, "Don't let the technical detail of this section disguise its importance. The NIH recognised the existence of a government license to provide OA to NIH-funded research, but deliberately decided not to use it. Instead, it relied on publisher consent, with the effect that it accommodated, if not invited, publisher resistance. By relying on government licenses instead, FRPAA makes publisher dissent irrelevant."

Unsurprisingly, in anticipation of the re-introduction of the FRPAA, publishers have already re-commenced battle. On 20th February, for instance, a coalition of 75 non-profit publishers (the self-styled "[Washington DC Principles for Free Access to Science](#)") [announced](#) its opposition to "any legislation that would abruptly end a publishing system that has nurtured independent scientific inquiry for generations".

Directly citing the FRPAA, the statement argued that any such legislation "would impose government-mandated access policies and establish government-controlled repositories for federally funded research published in scientific journals."

A few days later, the DC Principles coalition launched its own [petition](#) — in support of society publishers who oppose FRPAA. At the time of writing, however, this had attracted only 266 signatories.

And on March 7th the [Professional and Scholarly Publishers](#) division of the AAP formally [endorsed](#) the Brussels Declaration on STM Publishing.

Have publishers still not understood that OA cannot be withstood? Or is their aim simply to persuade the US government to follow Europe's example, and back off — on the tacit understanding that so long as no one forces a green mandate on them, and they get to retain

control of scholarly publishing, publishers will take a few more steps down the road to OA, but under their own steam?

We should not doubt, however, that OA advocates in the US are no more likely to give up the fight than their fellow combatants in Europe.

On February 16th, for instance, thirty-nine patient and consumer organisations sent [open letters](#) of support for the FRPAA to the bill's sponsors, Senators John Cornyn, Joe Lieberman, and [Susan Collins](#).

And on March 13th eight non-profit organisations launched a [US equivalent](#) of the EU petition, in support of the re-introduction and passage of the Federal Research Public Access Act. The new petition gained nearly 1,000 signatures in the first two days.

This is also a war that is spreading around the globe, with OA movements now active in many other countries, including [India](#), [China](#), [Japan](#), and [Australia](#).

But whatever the eventual outcome, OA combatants can anticipate a lot more lobbying, and a lot more arguing before the matter is resolved. They can also expect a good many more setbacks, and plenty of casualties along the way. What they certainly can't expect any time soon is an armistice.

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