Open Access: Beyond selfish interests

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Few would question that the aim of the Open Access ([OA](#)) Movement — to make all research papers freely available on the Web — is a laudable one. OA will considerably benefit the research process, and maximise the use of public funds. It was encouraging therefore to see the topic of OA aired in a number of presentations at the recent [Internet Librarian International](#) (ILI). Listening to them, however, I found myself wondering how many acts of selfishness stand between us and OA.

There is today no shortage of discussion about OA. A simple search for the term on Google demonstrates that. Most of these discussions, however, tend to take place amongst the various warring factions of the OA Movement, particularly researchers and librarians, plus the occasional [scholarly publisher](#) brave enough to put his head above the parapet.

I was interested, therefore, to hear at ILI the opinions of someone with a less partisan view; the view, moreover, of an economist. For the conference keynote was given by [Danny Quah](#), professor of economics at the prestigious [London School of Economics](#). True, Quah is himself a researcher, but it was clear that it was as an economist that he spoke. He also brought a welcome international perspective to the debate.

Quah had been asked by conference chair [Marydee Ojala](#) to give a paper on the [weightless economy](#) (a term Quah coined) and "the knowledge glut". In the event, Ojala [commented](#) on her blog, he didn't talk about either of these, but "the economics of publishing."

However, Ojala may have missed the point. Speaking as an economist, Quah set out to ask a very important question about the so-called [knowledge economy](#). That is, why, despite the glut of information in the world today, is some information increasing in price? He clearly also wanted to draw to the attention of his librarian audience the important role they play in this counterintuitive development.

Maximum social good

Modern economists, explained Quah, work on the assumption that in free markets the greatest social good is achieved when supply and demand are in equilibrium. To help achieve this, he added, brokers, or intermediaries, constantly work to match customers with suppliers. In doing so, intermediaries "perform a useful function — one that increases welfare for society — and they earn the resulting appropriate rewards."

Indeed, he added, the extraordinary thing about free markets is that maximum social good is arrived at through a process in which everyone acts selfishly. "[P]eople do good for society by doing well for themselves", he said, not least the intermediaries, whose sole aim is that of "single-mindedly, just narrowly trying to get suppliers and demanders to meet."

He added: "It is far from the brokers' minds, and rightly so, that in merely doing their job a greater social good might be attained."

Nevertheless, he concluded, the model is not foolproof. When social institutions are created or destroyed, for instance, the opposite effect can occur. And when this happens the system may not automatically be able to repair itself.

That, he argued, is precisely what has happened in the scholarly journal market. Where economists would expect an increase in supply to have caused prices to *decrease*, the rapid growth in published research we have seen over the past several decades has led to an *increase* in the price of scholarly journals.

Even more puzzling, he added, this has occurred during a period of unprecedented advances in the technology for distributing information. As he put it, "In the face of arguably the greatest improvement in information dissemination technology in pretty much all of recorded history … academic journal prices have not fallen but actually increased."

And journal prices have increased in an extraordinary manner. By 2000, Quah said, the average annual subscription of science and technology journals had reached $1,200, having increased by 80% over the previous decade. In the case of biomedical journals, he added, the market experienced a more than doubling of prices in the seven years after 1994.

An important feature of this price inflation, added Quah, is the difference in price between journals produced by commercial publishers, and those produced by non-profit publishers.

So where, for instance, in 2001 the top 10 most-cited economics journals produced by commercial publishers had an average annual subscription rate of $1,370, the cost of the top 10 most-cited economics journals produced by non-profit publishers was just $190.

How could it be, asked Quah, that the market is able to tolerate a 600% mark-up like this?

And in case anyone accuse him of trying to compare apples and oranges, he added, we should note that the same disparity is evident when costs are calculated on a price-per-page basis: thus where the cost of a page produced by non-profit publishers averaged 18 cents, the figure for commercial publishers was 82 cents.

Likewise, when calculated on a per-citation-basis the average non-profit price was 15 cents per citation, compared to $2.40 in the case of commercial publishers.

"Evidently," concluded Quah, "the premium that the marketplace willingly pays commercial publishers remains high — between 5 and 16 times according to these back-of-the-envelope calculations."

Peculiar economic commodity

So why has a glut in scholarly information led not to a fall in price but to an increase? Because, answered Quah, "Information is a peculiar economic commodity. It does not trade easily or conveniently in conventional markets."

As a consequence, he added, "the social institution that has emerged historically to allow information exchange, production, and dissemination is an intellectual property rights (IPR) system."

The problem with the IPR system, however, is that while it is a good way of assigning priority, and according proprietary rights in new information and ideas, it is not an effective pricing mechanism, said Quah.

In short, when the IPR system is used for pricing, rather than assigning priority and ownership, it causes problems — because while ordinary property rights foster market competition, intellectual property rights create and sanction monopolies. As such, rather than facilitating market competition, IPRs stifle it.

The market outcome, said Quah, is one in which price is separated from cost, "and the price mark-up over cost turns out to be whatever the marketplace will bear."

Add to this the fact that the market for scholarly journals is inelastic, he said, and it becomes apparent why there is no market control on the price of scholarly journals.

While Quah did not directly state it, his point was surely that the dysfunction in the market for scholarly journals is a direct result of publishers insisting that, as a condition of publication, researchers have to sign over copyright in their papers, thereby giving publishers an exclusive right to distribute them (at whatever price they want).

Certainly, Quah's analysis touched a raw nerve for some in his audience. Conscious that ILI organiser Information Today is itself also a commercial publisher, the company's president Tom Hogan suggested that Quah's figures did not take into account the fact that learned societies are able to subsidise their publishing activities through membership subscriptions.

"As I said during my talk," Quah replied cannily, "my aim is not to point fingers."

In short, Quah's thesis appeared to be that in a free market diverse selfish actions are aggregated in such a way as to maximise public good — an economic theory first enunciated by Adam Smith in his 1776 book *The Wealth of Nations.* Smith devised the metaphor of the "Invisible Hand", which economists today frequently use to characterise the way in which in a free market multiple selfish acts can lead to outcomes that have beneficial consequences not just for those individual actors, but for society at large.

In the case of the information market, Quah argued, the IPR system has destroyed the benign social function that the invisible hand can have.

Quah's talk spurred me to think about the various actors in the OA drama, and their different motivations. Might we, I wondered, reach a better understanding of the

problems besetting the scholarly journal market if we considered the motivations of the different actors, and the selfish actions that drive the market? Could this also alert us to the dangers ahead, and help us see what needs to be done?

Stark choice

As Quah indicated, librarians are deeply implicated in the problems facing the scholarly journal market. Indeed, since they are the brokers in this market, and since it is they (unlike most brokers) who agree the price of the commodity in question (scholarly journal subscriptions) — rather than the actual users — librarians are surely the key players in this drama.

Certainly it is librarians who have allowed publishers to exploit the public purse by overpricing research information.

Yet it is odd indeed that, despite several decades of hand wringing, librarians have failed to find a solution to the so-called serials crisis. Although they have played an important role in the OA Movement, librarians have nevertheless continued to pay extortionate prices for scholarly journals, and so allowed the problem to persist. If, instead, they had refused to pay the prices demanded by scholarly publishers the problem would have been resolved years ago.

Painful as the serials crisis has been for them, could it be that librarians have their own selfish reasons for continuing to pay up?

Might it be, for instance, that librarians have too much invested in the current system to want to really change it? After all, their primary *raison d'être* is to create large physical collections of books and journals. And the larger the budget they can squeeze out of their institution the greater the prestige and power attached to their job.

One could, of course, legitimately respond by saying that, regardless of motives, if librarians and publishers willingly agree on the price paid for a scholarly journal subscription, why should it matter what that price is? After all, we don't fret overmuch at the huge mark-ups on, say, fashionable consumer goods.

It matters, Quah suggested to ILI delegates, because "Mispricing information is a battle not just for library resources or for dividing the spoils of the academic and publishing industry. Mispricing information is a world-wide problem that goes right to the heart of how we might be able to improve the lives of a great majority of the 6.3 billion people on earth, people whose livelihoods, health, and ultimate well-being depend on our figuring out the right way to create and disseminate information for the good of humanity."

To exemplify his point, Quah cited John Willinsky's 2006 book, *The Access Principle*. In the introduction, Willinsky describes how, from 1979 through 2001, diminishing funds, rising prices, and a fluctuating Kenyan currency forced the Kenya Medical Research Institute (KEMRI) library in Nairobi to slash its journal subscriptions to just five medical titles.

By 2001 none of the remaining five journals — which KEMRI could barely afford — focused on the Institute's primary concern: tropical diseases. As a consequence, said Quah, one of East Africa's leading medical research institutes found itself trying to conduct research without ready access to the most relevant, recent publications in its field of specialism.

In short, by conspiring in the mispricing of scholarly journals librarians have priced developing nations out of a vitally important resource.

For this reason, said Quah, librarians face a stark choice. "When information becomes ever more the source and repository of economic wealth and political power [not to mention physical survival], librarians can be either the enforcers in a police state or possibly subversive guardians for the free flow of information to its greatest social benefit?"

Two roads

It would be wrong, however, to give the impression that librarians have not been sensitive to the scholarly publishing crisis, or sought remedies — if only for the selfish reason that journal price inflation has made it increasingly difficult for them to persuade their institutions to keep raising their library budgets.

In some cases this has even led to libraries having to cancel journals and reduce the number of books they buy.

As early as 1998, therefore, the US Association of Research Libraries (ARL) founded an organisation — The Scholarly Publishing and Academic Resources Coalition (SPARC) — specifically to help create less costly journals and to explore new publishing models.

And as the Internet developed, so others began to put their minds to the problem too — including researchers wanting to ensure that as many people as possible read their papers, entrepreneurial publishers like Vitek Tracz looking for new business opportunities, and research funders like former director of the US National Institutes of Health (NIH) Harold Varmus who, after failing to persuade publishers to improve access to research papers by placing them on the Web (on an embargoed basis), sought to try to do the job himself.

It was from this coalition of different interests that the Open Access Movement grew. The twofold aim of OA is to reduce the escalating costs afflicting librarians (to solve the affordability problem) and to make research freely available on the Web (to solve the access problem caused by publishers' financial firewalls). Out of the consequent exchange of opinions, and the proposals, counterproposals, agreements and disagreements, two primary strategies emerged.

The first strategy — dubbed the gold road to OA — led to the concept of Open Access publishing. Specifically, new OA publishers like Tracz's BioMed Central (BMC) and Varmus' Public Library of Science (PLoS) concluded that what was needed was to turn the traditional publishing model on its head: instead of charging readers (or invariably their institutions) a subscription to read the contents of scholarly

journals, OA publishers chose to charge authors (or their funders or institutions) an "article processing charge" (APC) to publish their papers.

By transferring the costs associated with publishing research papers to a one-off, up-front fee, OA publishers reasoned, it would be possible to make research papers freely available on the Web (solving the access problem) and, since OA journals are electronic publications, to reduce the cost of distributing research (solving the affordability problem).

Librarians were quick to rally around OA publishers, and many agreed to pay BMC and PLoS an annual institutional membership fee to avoid researchers having to pay APCs. Essentially, librarians bought the right for any researcher in their institution to publish a limitless number of papers with the publisher concerned.

This approach was later criticised, however, for being a subscription by another name. Apart from anything else, it was felt that it still left libraries vulnerable to price gouging by publishers — a point made in 2003 by Cornell University librarian Phil Davis.

Thus while OA publishing undeniably solved the access problem it was not clear that it could solve the affordability problem.

More critically, it was soon apparent that since only 5% of the 24,000 scholarly journals are OA, the likelihood of a researcher committed to Open Access being able to find a suitable journal in which to publish was small.

Additionally, since OA journals are by definition new and untried, it meant that researchers had to forfeit both the cachet and the "impact" associated with publishing in a journal with a recognised brand name.

For this reason, many researchers committed to OA were more inclined to adopt the second strategy — the so-called green road.

The green strategy grew naturally out of academia's long-standing preprint culture — the practice of distributing print drafts of papers to colleagues prior to publication in order to incorporate and respond to any criticism, trap any embarrassing mistakes, and establish intellectual ownership of the research.

For researchers working in the computer sciences it was a natural step to adapt this practice for the electronic age, and they were soon emailing copies of their papers to colleagues, making them available on downloadable FTP archives, and later simply posting them on their web sites.

With an equally active preprint culture — and belonging to a fast-moving discipline — the physics community also embraced the online medium early on, and in 1991 a Los Alamos National Laboratory physicist called Paul Ginsparg created a physics preprint archive called arXiv. (arXiv was later relocated to Cornell University when Ginsparg moved there).

arXiv provided a central subject-based location where physicists could post their papers. This avoided their having to constantly monitor multiple FTP sites for new papers, or risk having their e-mail system crash after receiving a bunch of papers (storage space was at that time a scarce and expensive resource, and e-mail systems locked up when users exceeded their storage limit).

Another attraction of arXiv was that searching for relevant papers in a central repository is a simple process. And since computer scientists did not adopt a centralised approach locating self-archived papers was for them a greater challenge.

In 1998, however, researchers at the [NEC Research Institute](#) (now [NEC](#) Labs), in Princeton, New Jersey, developed a service called [CiteSeer](#).

CiteSeer constantly crawls the Web harvesting all the computer and information science papers it finds, and aggregates their bibliographic details and location into a central index. This allows researchers to locate papers by means of a single search on CiteSeer, making the discovery process as easy, and comprehensive, as using a central repository like arXiv. CiteSeer also uses autonomous citation indexing, and ranks returned documents by the number of times they have been cited.

Institutional Repositories

Later dubbed [self-archiving](#), the practice of sharing papers in this way evolved to include postprints as well as preprints — known collectively as e-prints.

The beauty of co-opting the preprint culture for the purposes of OA was that rather than having to turn to little-known untested OA journals, researchers could continue to publish in traditional subscription-based journals like *[Nature](#)* or *[Science](#)*, and then make their postprints available on the Web themselves.

And the end result was the same as OA publishing — the papers became accessible to anyone who had an Internet connection, regardless of whether they or their institution had a subscription to the journal that had published the paper.

As such, self-archiving clearly solved the access problem. Whether it can also solve the affordability problem we shall discuss later.

Publishers were, of course, concerned about self-archiving. But facing growing criticism over the profits they were making from scholarly publishing they were disinclined to challenge the practice too vigorously. Besides, they reasoned, it was unlikely that many researchers would bother to self-archive.

It was also increasingly apparent that self-archiving was having no discernible impact on publishers' revenues. Today therefore around [94%](#) of journals have sanctioned self-archiving in one form or another.

We might note in passing that this suggests IPR is not as malign an influence on the dysfunction of the scholarly journal market as Quah assumes.

Over time the success of distributed systems like CiteSeer led to a gradual shift in focus, away from centralised subject-based archives like arXiv, to the creation of institution-based archives — giving rise the so-called Institutional Repositories (IR) Movement.

The theory was that every research institution would create its own archive, into which faculty would post their papers. And the IR would then be made freely accessible via the Web in order to allow anyone in the world to access the papers.

To support this development a number of dedicated software packages were written to simplify the process of creating an IR. In 2000, for instance, the Department of Electronics and Computer Science at the University of Southampton released the EPrints software.

Other popular solutions now include Fedora (created by the University of Virginia) and DSpace (developed at MIT with the assistance of Hewlett Packard).

And to facilitate the aggregation of papers from multiple archives, common metadata-tagging standards were developed by the Open Archives Initiative (OAI).

As a consequence, any university or research institution can now quickly and simply create an institutional repository and know that — so long as it utilises OAI-compliant metadata and software — it can immediately feed its research into a worldwide virtual archive.

And to enable users search this virtual archive dedicated OAI harvesters like the University of Michigan's OAIster were created, thereby generalising what CiteSeer has done for computer and information sciences for all other disciplines. (Subsequently Google Scholar has also begun to harvest scholarly literature).

While instinctively preferring the more familiar model of OA publishing, librarians saw which way the wind was blowing and threw themselves into the Institutional Repository Movement too. Their decision was doubtless spurred by two seminal papers on the topic: one published by SPARC consultant Raym Crow in 2002; the other by Clifford Lynch in 2003.

In recent years the number of IRs has therefore grown rapidly, and today there are an estimated 750 of them — many run by librarians.

Totally not working

Given its perceived advantages over OA publishing, self-archiving has increasingly been viewed as the quickest and surest road to OA. Its success, however, is dependent on researchers being motivated to do the archiving.

It was soon apparent, however, that publishers' instinct had been right: aside from OA enthusiasts very few researchers have proved willing to self-archive, and today still only around 15% do so.

For OA advocates this was a puzzle. After all, there are selfish reasons for researchers to self-archive: placing a research paper on the Web provides much greater visibility, and OA papers are accessed and read three times as much as non-OA papers. (See also)

This is undeniably good for researchers: the more often a paper is read, and the more often it is cited, the greater the impact it has. And as OA advocates frequently point out, "Greater research impact means (i) career advancement, higher salary, more research income, prizes and prestige for the researchers and their institutions and, more important, (ii) greater research productivity and progress, hence greater benefits to the tax-payers who fund the research."

In the UK alone, estimates OA advocate and self-styled archivangelist, Stevan Harnad, the failure of British researchers to self-archive means that they are annually spurning up to £2,541,500 worth of potential rewards — all for want of "the few extra keystrokes per article it would have taken to self-archive their final drafts."

These few extra keystrokes, it is estimated, require just 40 minutes a year of a researcher's time.

The potential gain for society, says Harnad, is even greater, since removing access barriers to research maximises social good. It enables, for instance, faster cures for diseases, and it increases the likelihood that socially valuable new tools and innovations will be developed. As he put it in an op-ed published recently in *The Hindu*, "Research is the source from which future improvements in the quality, quantity, and availability of food, medicine, technology, and all other potential benefits to mankind will come, if they are to come at all."

That is, the more people are able to access research the more they can build on it, and the more quickly science will progress as a result.

For librarians, researcher intransigence has proved a source of growing frustration. Since it takes so little effort to post their papers in an IR, and the benefits are so evident, why do so few researchers do it?

The answer, associate professor at Oklahoma State University Cokie Anderson told ILI delegates, is that researchers are "unwilling to take on more work in their busy lives, they are worried about the consequences of putting into the public domain information that they hope to develop patents from, they are worried about plagiarism, and they are concerned about copyright." Above all, she added, "they are reluctant to do something for which they are not paid."

Curious to find out exactly how reluctant researchers are, Myoung Wilson, an information services librarian at Rutgers University, spent last summer reviewing all the repositories that have been set up by ARL universities, in order to find out what was in them.

What she discovered, she told ILI delegates, was pretty depressing: one third of the repositories were entirely empty, and there were in total just 5,000 items. Of these,

67% had been deposited by scientists, 27% by social scientists, and 5% by researchers working in the humanities.

"What we are doing now [to try and fill IRs]," she told ILI delegates, "is totally not working."

In the context of OA, it seems, the selfish acts of researchers do not benefit society at large. Nor, indeed, do researchers necessarily do the obvious selfish thing, particularly when it is trumped by more compelling selfish considerations, or of insufficient perceived benefit to overcome their natural laziness!

Defeatism

In short, after jumping on the self-archiving bandwagon, and creating repositories in which faculty can place their papers, librarians have found their efforts widely spurned.

This has led to a growing sense of defeatism. Wilson, for instance, predicted to ILI delegates that the Institutional Repository Movement will prove a "field of dreams". (A reference to the film in which Kevin Costner plays a farmer who becomes convinced by a mysterious voice that he is supposed to construct a baseball diamond in his corn field, and goes bankrupt in the process of building it.)

Anderson was barely more optimistic. "I do think IRs will eventually succeed," she e-mailed me, "but I don't know if will happen until after I've retired." As Anderson is clearly only in the middle of her career this would seem to imply that OA will be a long time coming!

But perhaps such defeatism is unsurprising. After all, setting up and running an IR solely for archiving research papers is hardly rocket science. In fact, volunteering to do so might appear to be a sure way of deskilling yourself if you are a librarian.

Certainly it is a far cry from the visions that librarians were sold. A university-based institutional repository, argued Lynch three years ago, should aim to be "a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organisational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organisation and access or distribution."

Librarians, therefore, assumed that if they embraced the IR Movement they would be able to position themselves as the guardians of large digital libraries containing every piece of information produced by their institution — along with large amounts of third-party material. Libraries, suggested Lynch, "might join forces with local government, local historical societies, local museums and archives, and members of their local communities to establish community repositories. Public broadcasting might also have a role here."

Instead, many librarians now find themselves in charge of modest databases intended to house a bunch of research papers; papers, moreover, that the vast majority of researchers won't provide!

Crow promised an even grander future. IRs, he said, offered librarians an opportunity not only to solve the serials crisis, but to seize control of the scholarly publishing process itself. An institutional repository, he suggested, would, be "a critical component in reforming the system of scholarly communication — a component that expands access to research, reasserts control over scholarship by the academy, increases competition and reduces the monopoly power of journals, and brings economic relief and heightened relevance to the institutions and libraries that support them."

Grandiose visions

Snubbed by researchers, many librarians have, therefore, become increasingly half-hearted advocates of self-archiving, preferring to pursue the more grandiose visions outlined by Lynch and Crow.

Librarians at the University of California (UoC), for instance, decided to take Crow at his word — as I discovered in January 2006 when I interviewed Catherine Candee, director of publishing and strategic initiatives in the Office of Scholarly Communication at UoC. Fed up trying to persuade researchers to self-archive, she explained, librarians at UoC have decided to take the initiative and begin hunting down faculty postprints themselves, and then posting them in the UoC IR.

At the same time, they completely reengineered the IR as a publishing platform, and began to use it to produce Open Access journals and books.

As Candee explained, "We now view the postprints project as a kind of stepping stone, or a means to an end, to changing the paradigm [of publishing]."

The University IR, she added, is viewed as a way of "providing an alternative to the current publishing system, and [of giving] faculty something to do with that copyrighted material that we keep saying shouldn't be given away to publishers."

She added, "Eventually, I hope all the content will be hosted and managed by universities themselves, and the publishing services [will] be in the form of added value. So, for instance, a published article would refer back to the raw article in the repository."

Instead of conspiring in their own downsizing, therefore, librarians at UoC are hoping to downsize publishers. Clearly, the selfish thing for librarians to do is to seek to enlarge their domain, not to circumscribe it.

UoC's approach, of course, goes some way beyond what OA advocates have been calling for and has, as a result, attracted some criticism. Such developments, self-archiving campaigners complain, are a dangerous distraction from the urgent task of "freeing the refereed literature".

Moreover, they point out, since building the kind of solution envisaged by Candee requires persuading university authorities to invest in substantial infrastructure development, the change in strategy introduces unnecessary obstacles to achieving OA, certainly in the short term.

Besides, they add, it is highly unlikely that one university working on its own — be it as large and powerful as UoC is — can change the publishing paradigm any time soon.

Regulatory capture

All in all, many have concluded that librarians have lost sight of the needs of the primary community they are employed to serve. As Harnad puts it, "the well-meaning library community is profoundly misunderstanding what the research community wants and needs, now, and risks becoming a part of the problem rather than the solution."

Certainly they appear to be suffering a conflict of interest — as evidenced by the publication in September 2006 of a second SPARC-sponsored paper by Raym Crow. Calling for new publishing co-operatives, Crow recommends that learned societies combine together in order to compete with large commercial publishers. In doing so, the report mentions OA just once. As publishing consultant Joe Esposito put it on the Liblicense mailing list, "I know about a foolish consistency is a hobgoblin, etc., but I am puzzled by what could appear to be a policy shift at SPARC away from Open Access toward NFP [not for profit] publishing."

What it points to, perhaps, is that many librarians remain fixated on yesterday's models, as though the online world hadn't changed everything for ever.

Like publishers, for instance, they remain mesmerised by the concept of "the journal", forgetting that more and more researchers spend their time in front of their PC drilling down through large databases of individual articles, not leafing through print journals in a library.

In truth, the very concept of a journal has become moot. Moreover, if it does survive, it is more likely to be in the form of what some are calling the "deconstructed journal."

An instructional analogy here, perhaps, is to consider the way in which music companies and record stores clung to the model of selling and distributing albums rather than songs — only to discover that iTunes had changed the paradigm behind their back.

And with their long-standing focus on buying and building collections, librarians too often appear to prioritise the management of holdings over that of providing access. In a web environment, after all, access to information no longer necessarily implies holding or managing anything — other than access itself.

For this reason no doubt librarians often demonstrate a conflicted understanding of OA and its objectives. Recently, for instance, California Institute of technology

librarian Dana Roth, suggested on the American Scientist Open Access Forum (AmSci) that reducing scholarly journal subscriptions is just as important as achieving OA. As he put it, "promoting a return to reasonable subscription pricing and modest author contributions [i.e. APCs] is an excellent parallel goal with OA Self-Archiving."

Since author-side payments are intended to replace subscriptions this is oddly muddled thinking, and a further demonstration of how many librarians find it hard to think beyond traditional models of scholarly publishing.

What both librarians and publishers share, of course, is a strong vested interest in the current system. Both also want to remain all powerful gatekeepers in the scholarly communication process. This is understandable, but often flies in the face of reality. Essentially, it reflects their own selfish needs, not the needs of their patrons.

Researchers, on the other hand, are increasingly puzzled that the status quo in the scholarly journal market has persisted for so long, despite the disruptive implications of the Internet. Speaking to Educause's Matt Pasiewicz earlier this year, for instance, Ginsparg expressed some surprise that, even though physics researchers have now been self-archiving for fifteen years, scholarly publishing has carried on as if nothing had changed. This odd situation, he said, must be due to some "inertia" in the system.

The truth is, perhaps, that many librarians have succumbed to a form of "regulatory capture". With so much invested in the current system their wish is not to "SPARC" radical change, but simply ease the pressure on their budgets.

Quah, however, suggests that librarians need to ask themselves this: do they view their role to be "only gatekeepers and revenue collectors? Or do they actively guide information to its most productive use?"

Carrot or stick?

What is needed, insist OA advocates, is not to give in to despair, not to engage in high-cost long-term plans aimed at changing the publishing paradigm, but simply to demand that researchers self-archive.

And the best way of doing this, they add, is to introduce institutional self-archiving mandates. That is, make it a requirement of their job that researchers post their papers in the university IR.

"Two international, cross-disciplinary surveys for JISC by Key Perspectives have shown that most authors don't and won't self-archive spontaneously," points out Harnad, "but 95% of them will do so if/when mandated to do so."

Moreover, he adds, "The actual experience of the (few) institutions that have already gone ahead and mandated self-archiving confirms the predictions of these JISC surveys."

To date, however, only seven research institutions across the planet have introduced mandates — including CERN in Geneva, the University of Southampton in the UK,

the University of Minho in Portugal, and Queensland University of Technology in Brisbane. Clearly, however desirable, introducing mandates is not as simple as Harnad implies.

For their part, librarians appear to be deeply sceptical about mandates. It is, Wilson told ILI delegates, "highly unlikely" that any US university would introduce an institutional mandate.

Even if they did, Anderson commented by email, "I really don't see top-down decrees that one must deposit research in an IR ever being successful. Faculty will just rebel. Carrots, not sticks, is the way to go."

What further carrots could be offered to researchers to persuade them to self-archive, however, Anderson did not say.

Nevertheless, if employers won't wield the stick then funders maybe will. Alerted by OA advocates to the fact that the scholarly publishing model currently consists of researchers giving their papers to publishers for free, providing peer review services for free, and then asking their libraries to buy those papers back in the form of journal subscriptions, research funders have had little choice but to conclude that public money is being used neither wisely nor responsibly.

After all, the current system not only allows publishers to make excessive profits, but since it involves locking research behind increasingly expensive financial firewalls it is minimising, not maximising, social good. At the same time it is excluding the developing world from vital information in a heartless manner.

In May 2005, therefore, The National Institutes of Health (NIH) introduced a new policy that "requests and strongly encourages" researchers to deposit all the papers arising from NIH-funded research into PubMed Central (a subject-based repository modelled on arXiv created by the US National Library of Medicine in 2000). And they are requested to do this within twelve months of publication.

As Anderson indicated to ILI delegates, however, waving a stick doesn't necessarily achieve the desired effect: In February 2006, NIH reported that the rate of compliance with its public-access policy was "less than 4%".

More forceful line

Some funders, therefore, have chosen to wave the stick harder. In October 2006, for instance, the UK-based Wellcome Trust introduced a new policy requiring that — as a condition of funding — researchers must archive their papers in PubMed Central (or a new UK version of PubMed Central expected to go live in January 2007) within six months of publication.

A more forceful line has also been taken by five UK Research Councils: the Biotechnology & Biological Sciences Research Council (BBSRC), the Economic & Social Research Council (ESRC), the Medical Research Council (MRC), the Natural Environment Research Council (NERC), and the Particle Physics and Astronomy Research Council (PPARC) have all announced that from 1st October 2006 their

funded researchers must make their papers publicly available, with the proviso that they should respect any embargo periods requested by publishers.

Mandates are also being considered by a number of other funders around the world, including the Canadian Institutes of Health Research (CIHR).

In addition, politicians have been drawn into the debate. In December 2003, for instance, after being lobbied by BioMed Central, the UK Science & Technology Select Committee launched an enquiry into scientific publications.

When it published its report (*Science Publications: Free for all?*) in July 2004, the Committee recommended that the UK Government create a network of institutional repositories, and mandate all publicly funded researchers to self-archive their published articles in those repositories — so making their research accessible to all "free of charge, online."

While the UK Government rejected its recommendations, the Select Committee Report has nevertheless proved hugely influential, providing a huge fillip to the Self-Archiving Movement, and leading directly to the five UK research council mandates.

It was also instrumental in encouraging the European Commission to launch its own report, resulting in a mandate proposal whose fate has yet to be decided, and it undoubtedly also played a part in the introduction of a highly controversial US legislative proposal known as the Federal Research Public Access Act (FRPAA).

The FRPAA would require all US government agencies with annual extramural research expenditures of over $100 million to make manuscripts of journal articles stemming from research they have funded publicly available on the Internet. Unsurprisingly, the FRPAA has become the target for aggressive lobbying by scholarly publishers, who are apparently determined to kill it off, or remove its teeth.

In the meantime, US politicians appear keen to give the NIH Policy the teeth it does not currently have. As part of the Appropriations Bill for fiscal 2007, the House Appropriations Committee is directing the NIH to convert its OA request to an OA requirement, although the fate of this Bill has yet to be decided.

Finally, a recent draft report from the Australian Government Productivity Commission has suggested that both the Australian Research Council (ARC) and the National Health and Medical Research Council (NHMRC) consider introducing a self-archiving mandate. And a day later the Australian Government published a report (Research Quality Framework: Assessing the quality and impact of research in Australia: The Recommended RQF) that stated, *inter alia*, that the purpose of the RQF was to "ensure that information about research and how to access it is available to researchers and the wider community."

Stable and sustainable?

In short, mandates now seem inevitable. What we don't yet know, however, is what form they will eventually take, and whether such mandates can be effectively policed. Nor is it clear who could or should police them.

But even if self-archiving mandates are implemented, and complied with, can we be sure that OA as currently envisaged is capable of providing a stable and sustainable model for the future of scholarly communication?

Quah, for one, has yet to be convinced. As he pointed out to ILI delegates, "not everyone agrees that the form of Open Access that currently exists is as successful as perhaps Willinsky sees it to be."

Specifically, he added, "There is dispute about the so-called green and gold routes .. [and] .. the research on all these questions needs to be done still."

Wherein lie the doubts? For a start, many believe that self-archiving is an inherently unstable strategy. Commenting recently on the AmSci Forum, for instance, computer science librarian at the University of Kent, John Smith, argued that since self-archiving is parasitic on scholarly journals it will "ultimately destroy the current journal model."

In other words, by publicly posting copies of papers that have been published in subscription journals, researchers are subverting the very system on which self-archiving depends — since it would not be possible to self-archive a research paper if the journal that published it did not exist, but by self-archiving it researchers threaten the financial stability of that journal. Self-archiving bites the hand that feeds it.

As we saw, this has always been a concern for publishers. But so long as only 15% of researchers were self-archiving it was not viewed as unduly threatening. If, however, research funders introduce mandates requiring all researches to self-archive the threat becomes much greater.

As group operations director of Blackwell Publishing Mike Fenton commented recently to *Industry* magazine, "Some funding agencies are demanding that their researchers self-archive for free access over the net within six months of publication."

In doing so, he adds, they "could undermine the paid circulation of journals as librarians might no longer feel the need to pay when the material soon becomes available from institutional repositories and can be readily found through search engines such as Google."

Even Harnad occasionally acknowledges the risk. If librarians were to stop subscribing to journals, he said recently on the AmSci Forum, it would cause the collapse of "the research community's access to its own published literature, immediately (by definition), and by the same stroke, the collapse of that literature itself (journals, peer review, preservation, etc.).

Nevertheless, OA advocates argue, this could be avoided if self-archiving were to enable an orderly transition to OA publishing. In other words, if self-archiving were to allow librarians to gradually cancel journals, it might persuade publishers to adopt an OA publishing model.

Moreover, such a scenario would address both the access and the affordability problems, since librarians would be able to realise "windfall savings" from cancelling their subscriptions, and an increasing amount of research would become OA as publishers embraced the new business model.

Any such transition, however, would inevitably involve a period of instability and uncertainty, subjecting the whole system to a risk of what Harnad once described as "a possibly chaotic inter-regnum, to the detriment of us all."

Idle and empty

Today, however, Harnad prefers to discourage what he now dismisses as "idle, empty, arbitrary, fruitless and paralytic armchair speculation", insisting that we have no reason to assume that self-archiving will not provide a stable and permanent OA solution. After all, he frequently states (echoing Ginsparg), despite 15 years of self-archiving in physics there has been no discernible impact on physics journal subscriptions.

The problem, director of Open Access at Springer Jan Velterop pointed out on the AmSci Forum recently, is that this model, "seems to be based on illogical and irrational behaviour by librarians." That is, although constantly complaining about the serials crisis, they appear happy to continue paying for subscriptions when it is no longer necessarily.

For their part, librarians blame researchers. As the head of collection development at the University of Utah Margaret Landesman commented on Liblicense in 2004, "The faculty say that 95% of the time they don't need the journals — the pre-print server [arXiv] works better. But the more punctilious among them feel they ought to verify citations and check for changes in the actual journal before submitting grant applications or citing other's articles."

Landesman concluded that librarians "seem to be operating a $400,000+ a year citation-verification service for physics."

But whatever the cause, and however irrational or self-serving the motive for this illogicality, the important question is: will librarians continue to pay up if self-archiving becomes the norm?

After all, if they do they will never resolve their affordability problem.

Undoubtedly, a lot is at stake. Consequently, however idle and empty it may seem to Harnad, many are more than willing to speculate. A recent survey of librarians by the Publishing Research Consortium, for instance, found that 40% of respondents agreed with the statement, "Librarians who continue to subscribe to journal when almost the same content is available for free on repositories are wasting money."

There is a second issue too: It remains unclear whether the OAI infrastructure can deliver on its promise of providing an effective distributed search system that researchers can rely on when looking for self-archived research. As web &

information technology specialist at London's Imperial College Richard Jones pointed out to delegates at ILI, the interoperable archive project is still a work in progress.

We are, he said, just "moving into the second generation of IRs, and what we don't know yet is whether all the different systems will work together."

Even Google, it seems, is struggling to effectively index repository material, as pointed out on the AmSci mailing list recently by Thomas Walker. Walker's comments led to some disagreement about the problems of locating papers in IRs, and how best to "expose" them to search engines.

If OAI proves unable to deliver a good enough discovery mechanism then the *raison d'être* of self-archiving is surely put in question; unless, of course, self-archiving is viewed simply as a way of shooing publishers down the gold road.

This, however, invites questions about the viability of OA publishing itself.

Peter Banks, a publisher with the American Diabetes Association for one, is highly sceptical. In a recent discussion about PLoS on the Liblicense mailing list, for instance, he argued, "the evidence suggests that PLoS is not moving in a positive direction and that it will never be able to survive without continuing grant support." And he concluded: "Were this a commercial start up, investors would be bailing out just about now."

Librarians are also becoming sceptical. In a recent paper published in the journal *Serials* Victoria Rae and Fytton Rowland conclude that, "it is as yet unproven whether or not a viable OA business model exists."

The controversial decisions by PLoS and BMC to increase their APCs earlier this year have only fanned the flames of doubt.

Moreover, regardless of its sustainability, if OA publishing cannot solve the affordability problem then what's in it for librarians? "Unfortunately I can no longer recommend BioMed Central journals," commented Phil Davis on Liblicense in June. "Since they raised the author processing fees in 2006, their journals are now more expensive than our calculations for subscription-based journals."

Meanwhile, for researchers there are good reasons to think twice before using an OA journal. As Quah put it to ILI delegates, would "47 additional citations increase someone's salary or research budget enough that they pay the $1,500 publication fee to an Open Access PLoS journal?

In asking the question, of course, Quah overlooked the fact that APCs are more likely to be paid by funders, or by a researcher's institution, than by researchers themselves. Today BioMed Central estimates, for instance, that thirty one funders will pay APCs. In addition, many OA journals levy no APC at all.

Regardless of who might pay the APC, however, the selfish thing for authors to do is to continue publishing in traditional subscription-based journals. Yet without a mandate only 15% of researchers will self-archive.

As Yale law professor Yochai Benkler [put it](#) in his 2006 book *The Wealth of Networks*. "The established journals, like *Science* or *Nature*, still carry substantially more prestige than the new journals," he "As long as this is the case, and as long as hiring and promotion decisions continue to be based on the prestige of the journal in which a scientist's work is published, the ability of the new journals to replace the traditional ones will be curtailed."

Unacceptable face of capitalism

But what about the publishers? What are their motives and how are they responding to OA?

To ask what motivates publishers may seem superfluous. Clearly, they are motivated to make money. But there is here a question of degree, and many today argue that scholarly publishers have shown themselves to be excessively greedy, particularly since many of them are learned societies not commercial concerns. They are, it seems, the most selfish actors in the OA drama.

In fact, publishers' evident determination to squeeze the maximum amount of money out of publicly-funded research could fairly be described as a classic case of what in the 1970s British Prime Minister [Edward Heath](#) characterised as "the unacceptable face of capitalism" Heath was referring to the [activities](#) of [Tiny Rowland](#) and his company [Lonrho](#) (one time owner of *The Observer* newspaper), but many believe the behaviour of scholarly publishers warrants just such an epithet.

Such thoughts were no doubt uppermost in British MPs' heads when, during the UK Science & Technology Select Committee Enquiry, they [grilled](#) the CEO of [Reed Elsevier](#) Sir Crispin Davis. Why they asked, do publishers routinely impose above-inflation price increases? And why is Reed Elsevier in particular able to enjoy a profit margin of 34% — a state of affairs, suggested MP for Newcastle-Under-Lyme [Paul Farrelly](#), that other industries would give "their eye-teeth for".

One can't but conclude that had publishers not been so greedy they would not only have avoided the growing opprobrium they face, but the serials crisis itself.

What is most striking, however, is the hypocritical stance taken by learned societies, who have constantly claimed to be acting in the best interests of science, while in reality caring only about their own selfish financial interests.

As one NIH researcher commented to me by email, on a strictly non-attributable basis, "My professional society routinely advocates policies with respect to journal publishing that are counter to the interests of its members and to the stated purpose of the society. The professional societies are not acting in the best interests of science, but rather are doing what is necessary to perpetuate themselves and pay handsome salaries to their executives. "

He adds, "The American Chemical Society [[ACS](#)] has a huge journals publishing business with yearly revenues in the range of $360 million. The business is so

profitable that ACS can afford to provide total annual compensation to its two top executives of $1.1 and $0.91 million. Other executives receive high six-figure compensation."

Obdurate and self-serving

And while the figures cited by Quah at ILI suggested that commercial publishers are more egregious price gougers than learned societies, the latter have proved far more obdurate and self-serving opponents of OA.

Consider, for instance, the behaviour of The Royal Society (RS), which in November 2005 angered RS fellows when it responded to an RCUK proposal to mandate OA by publishing a position statement claiming that Open Access could have "disastrous" consequences for the research community. A response that led to 64 of its own fellows — including nine Nobel prize-winners — signing an open letter censoring the RS.

In August 2005, The Association of Learned and Professional Society Publishers (ALPSP) mounted its own attack: Writing to the Chair of the RCUK Executive Group, Professor Ian Diamond, ALPSP warned that the RCUK proposal "would inevitably lead to the destruction of journals" and thus to the "whole process of quality control, including (but not limited to) peer review."

And in June 2006 the American Anthropological Association (AAA) publicly opposed the FRPAA — a stance that so enraged the AAA Steering Committee that in August it published an open letter to the AAA President and Chair. Accusing them of having "placed commercial interests at the forefront of its publications program" it demanded that AAA reassess its opposition and "develop a member-informed policy on open access."

It would, therefore, seem no accident that the scholarly publishing industry we know today is the creature of one Robert Maxwell. After paying £13,000 to acquire Pergamon Press from Springer Verlag in 1951, Maxwell proceeded to turn Pergamon into a publishing monster that, by the time he sold it to Elsevier in 1991 for £440 million, had turned the business of expropriating public money for private profit into an art form.

So successful was the model created by Maxwell that in the 1960s Pergamon attracted the hostile attention of US investor Saul Steinberg. And so vigorously did Maxwell pursue his selfish interests after seeing off Steinberg that his activities led to a 1969 DTI enquiry during which civil servants concluded that Maxwell was someone who "is not in our opinion a person who can be relied on to exercise proper stewardship of a publicly quoted company."

The scholarly publishing industry eventually became so convinced that the world owed it a living that, as recently as 2002, the former director of Pergamon Journals Brian Cox was happy to boast about the "windfall profits" he was able to add to Pergamon's already overflowing coffers by means of currency speculation. By pricing the journals in pounds, not dollars, when selling into the US market, Pergamon was

able to profit from the declining value of sterling. This "exchange illusion", said Cox, "was a major factor in Pergamon's profitability."

Indeed, the business model created by Maxwell proved so effective at generating large profits for very little effort that publishers simply forgot how to innovate — to the point, suggested Tracz when I interviewed him, that they don't even try any longer.

Essentially, he said, publishers, "have just one decision to make each year: how big should their annual price increase be? In other words, how much can they get away with?"

What is also abundantly clear is that the Maxwell model is so attractive that publishers have no intention of giving it up without a fight — as their latest strategy demonstrates.

Third road

As the clamour for OA has increased in both volume and intensity, so publishers have had to think the unthinkable. If, as seems likely, mandatory self-archiving becomes the norm, then unless publishers start to make concessions to OA their embarrassment of riches will rapidly start to evaporate.

The problem that publishers face, however, is that any resolution of librarians' affordability problem will be achieved at their expense, and so lead to a dramatic fall in their revenues. In theory, publishers would have little choice but to downsize to the point where they offered peer review services alone.

The alternative would be to exit the market — an option that clearly proved compelling for the Blackwell family, who on 17th November 2006 agreed to sell Blackwell Publishing to Wiley for £572 million.

Unwilling to abandon the market, and unwilling to take the drastic step of converting their journals to OA, most scholarly publishers have decided to take a half-way position, offering authors the option of paying to publish their papers in traditional subscription-based journals, on the understanding that if they do so the publisher will make their paper freely available on the Web.

This strategy was devised by the shrewd Derk Haank. In July 2005, five months after moving from Elsevier to Springer, Haank announced Open Choice — an initiative that allows authors to elect to pay $3,000 in order to have their paper placed on the open Web, rather than locked behind Springer's subscription toll gate.

This model is subsequently being adopted by most scholarly publishers, including Oxford University Press (Oxford Open), Blackwell Publishing (Online Open), The American Physical Society (FREE TO READ), Cambridge University Press (Cambridge Open Option) and even that one-time sworn enemy of OA, The Royal Society (EXiS Open Choice).

In effect, publishers have adopted what one might call a "third road". Ironically, this is a strategy first proposed in 1998 by OA advocate Thomas Walker, but subsequently dismissed by OA advocates — on the grounds that "human nature being what it is, people will not part with their money unless there is no alternative. And there *is* an alternative for providing free on-line access to one's work in the paper era: Authors can put their papers on-line themselves."

If self-archiving mandates become the norm, of course, the same argument still applies: Why would authors choose to pay to publish when they can self-archive?

Because doing otherwise is selfish, suggests Velterop. "Self-archiving," he complained on the AmSci Forum, "is the perfect way of having one's cake and eating it."

That is, by self-archiving researchers are letting publishers incur the costs associated with publishing, but then conspiring to deny them any chance of recovering those costs. Choosing to pay to publish, by contrast, would be to behave responsibly.

Self-archiving advocates respond that it is actually publishers who want to have their cake and eat it. First, by selling back to researchers (at unsustainable prices) what researchers freely gave to them in the first place; second, by introducing a hybrid option that allows them to charge twice for that research (without incurring any additional cost): that is, one charge in the form of the APC, another charge in the form of the subscription cost — because in introducing their hybrid option most publishers have not offered any reduction in subscription prices in return.

Today APC revenues are negligible. But conscious that the hybrid option is even less likely to be embraced by researchers than self-archiving, OA advocates are deeply suspicious about the current strategy of publishers.

The case we're making…

The fear is that they are lobbying governments in the background, proposing that rather than mandate authors to self-archive, research funders should be instructed to mandate them to embrace OA publishing, either by publishing in an OA journal, or (much better!) via a traditional journal's hybrid option.

Publishers are surely whispering in the ears of politicians right now, suggests Harnad, saying: "Yes, OA is a desired good for all, we agree now, and we even agree that researchers should be induced to provide it! Trust us! We will keep the prices reasonable and transfer all the benefits, and everybody wins."

At the same time, he adds, they are doubtless suggesting that research funding should include an allowance for APC costs, a development that would neutralise an important advantage that self-archiving currently has over OA publishing.

For if APCs were automatically paid by funders OA publishing would begin to seem far more attractive. What better way for those lazy researchers to comply with an OA mandate than by paying someone else (the publisher) to do the archiving, and with someone else's money!

Are publishers lobbying governments to this effect? Certainly they are promoting such ideas in public. Commenting on the merits of introducing self-archiving mandates on the AmSci Forum in September, for instance, Velterop said, "The other way of achieving open access is for funders to mandate and support open access publishing."

When I asked Velterop if Springer is lobbying governments to that effect he replied: "The case we're making is that mandates should be for open access *per se*, not specifically for self-archiving or the gold road, and that the cost of publishing should be seen as a cost of research itself, as publishing the results is part and parcel of research itself."

In fact, the ground work for Velterop's proposal has already been done. For instance, in announcing its OA policy in 2005, the Wellcome Trust insisted that funded papers are archived in a repository, but did not specify that this had to be done by the researchers themselves.

Indeed, by promising to "provide grantholders with additional funding to cover the costs of page processing charges levied by publishers who support the open access model," it clearly assumed that if authors opted for OA publishing the archiving would be done by publishers not researchers.

And when in 2005 it announced its OA policy, CERN adopted a similar two-pronged approach. At that time, of course, there were no hybrid journals, and the aim was to encourage researchers to publish in gold journals, not traditional subscription-based journals.

In retrospect, Haank's hybrid initiative seems really rather astute.

Plus ça change?

The greatest potential benefit to publishers of seizing the initiative in this way is that it might enable them to migrate their current profit levels into an OA environment.

Critics point out that in setting their APCs at the level they have, commercial publishers chose deliberately to overcharge. The OA options of Elsevier, Springer, Wiley, and Taylor & Francis, for instance, are all $3,000 or more per article. This compares with the American Physical Society's $750 and BMC's ~$1,350. And for purposes of comparison, consider also that in 2002 Fytton Rowland estimated that the cost of peer review (which is essentially all OA publishing does) at $400 per article.

If funders were to mandate OA publishing those prices would be locked in. And if APCs were treated as "part and parcel" of research, as Velterop proposes, there would be no mechanism for regulating prices — since researchers would be running up a bill at someone else's expense.

Suddenly, OA begins to seem like a "good thing" for publishers. As Harnad points out, no organisation, "would *not* be happy to become a subsidised oligopolist, guaranteed its asking price by the government." He adds, "McDonald's could make

the same offer to lower and phase out the payment for its hamburgers if the government simply agrees to pay for them up-front, so every citizen can have a Happy Meal."

For librarians, by contrast, OA suddenly becomes a "bad thing". As Roth put it on the AmSci Forum, if politicians mandated OA publishing it would lead to "funding agencies being required to pay publication charges based on publisher demands, rather than economic reality."

In short, while an OA publishing mandate would solve the access problem, it would not address the affordability problem — although, interestingly, the costs would shift from librarians to research funders.

For politicians fearful that by supporting OA mandates they could be accused of being instrumental in a "chaotic inter-regnum" (or possibly even of destroying the system of scholarly publishing), and conscious that institutional and subject-based repositories have to be funded out of the public purse (the National Library of Medicine estimates the costs of PubMed Central at between $2 and $3.5 million a year), and aware that with publishers on board the problems of policing self-archiving would never arise (since scholarly publishing would by definition be OA publishing) the temptation to heed publishers' advice might be too great.

There is, then, still much to play for.

And with the OA debate still raging the opportunities for publishers to make their case are plentiful. For instance, Lord Sainsbury, the British politician who took publishers' advice and rejected the UK Select Committee recommendation for a national self-archiving mandate (and has now retired as Minister for Science and Innovation) has just been commissioned to carry out a review of science and innovation policies across government, "taking a forward look at what needs to be done to ensure the UK's success in wealth creation and scientific policy-making."

What better occasion for publishers to try and change the agenda. Repeating their warnings that self-archiving mandates will destroy the scholarly publishing industry, they could argue that — on certain conditions — they are now happy to support an OA publishing mandate. And we know from a 2005 Freedom of Information request that Lord Sainsbury is far keener to listen to publishers than to OA advocates.

The upshot could be that governments start to insist that research funders shift the emphasis from self-archiving to OA publishing. If they did, we might discover that publishers had re-appropriated the scholarly communication system for their own ends, and emerged the other side of the OA chasm with their hands still deeply embedded in the public purse. *Plus ça change* perhaps*?*

But would not the hybrid model at least allow for an orderly transition to OA? Indeed, in *some cases* publishers have offered to start reducing journal subscriptions as income from paid-for articles grows This, surely, would avoid any "chaotic inter-regnum"?

Actually, no, says Harnad, because there simply isn't "the cash or the will, or the need, to fund 100% OA publishing now."

In any case, he adds, "it would be absurd to throw research money at paid OA today, when subscriptions are still paying the bill. The time to talk about paying the bill is when it looks convincingly as if subscriptions won't be able to do it any more. And then it will not be research money poached, but subscription savings redirected..."

The danger, he concludes, is that if funders changed their mandate policy to insist on OA publishing rather than self-archiving, they would derail the Self-Archiving Movement, and in the process possibly the entire OA Movement itself.

That, of course, is speculation. But what if self-archiving mandates were converted to OA publishing mandates — and there was no chaotic inter-regnum and no cash crisis? While affordability issues would remain, at least he world's research would be freely accessible to anyone who needed it. Right?

Actually, no, says Quah.

Tinkering at the edges

For even if all research papers were made freely available on the Web, Quah pointed out to ILI delegates, many in the world would still be unable to access them.

Consequently, he said, "in one view these [various OA solutions] are all tinkering around the edges of a hugely important problem, a problem that the KEMRI example highlights."

It seems that the ultimate act of selfishness might be for the developed world to re-invent scholarly publishing without considering the needs of the developing world. Referring again to Willinky's book, Quah explained how, conscious of the access problems faced by organisations like KEMRI, in July 2001 The World Health Organisation convinced a number of publishers that they should allow institutions in poorer countries free access to electronic versions of their medical journals.

The initiative — the Health InterNetwork Access to Research Initiative (HINARI) — quickly grew to cover 2,000 journal titles and 1,000 institutions from over 100 developing countries.

But while Willinsky used the example to demonstrate the importance of making research available to nations who cannot afford it, Quah pointed out that the solution was still far from adequate — since access to the HINARI journals requires a computer connected to the Internet via a high speed Internet connect.

As late as 2003, Quah said, KEMRI had only one computer with a high-speed Internet connection able to conveniently access the HINARI database. As a result, he said: "A clipboard sign-up sheet next to that one computer became the rationing mechanism to mediate demand and supply."

And while today KEMRI has more than just the one computer, added Quah, the incident underlines the extent to which at KEMRI, "Open Access alone was insufficient for raising digital attainment; computer hardware instead was the bottleneck that mattered."

Quah's point was that for many in the world making research freely available on the Web is only a partial solution. If they don't have access to the necessary infrastructure they don't have access to OA research. As Quah put it, "hardware also matters."

And Kenya is far from being the only country challenged in this manner. The UN Department of Public Information estimates that in 2004, seven out of 100 people in the developing world were connected to the Internet, compared with 54 out of 100 in the developed countries. In the case of Africa figure was just 2.61 Internet users per 100 inhabitants.

To do him justice, Willinsky in his book acknowledges this to be a problem. "The digital divide is obviously rooted in larger economic disparities that are unlikely to be overcome within the current world system," he writes. He adds, however, that, "waiting for the divide to be closed somehow is a poor excuse for the academic community's not doing what it can now do about the inequitable distribution of access to research and scholarship."

That is a fair point — so long as the OA solution eventually adopted in the developed world does not ignore the needs of the developing world, and does not make the situation for them worse instead of better.

Even if we ignore the issue of whether OA publishing mandates would help the developed world's affordability problems, and even if we ignore the infrastructure problems faced by the developing world, there are other issues to be considered. OA publishing mandates, for instance, could lead to researchers in the developing world being unable to publish their research — for while BMC and PLoS have a policy that allows researchers in financial hardship to request that the APC is waived (although this waiver has come under some pressure recently), none of the hybrid options offered by traditional scholarly publishers include a waiver request.

These are, then, hugely complex issues, and it would undoubtedly be selfish of the West to reinvent scholarly publishing without taking into account the needs of the developing world. As Quah pointed out to ILI delegates, "All of us who take part in a market economy have responsibilities."

Do the right thing

As I left the ILI conference I was struck at the absurdity and illogicality of the position that scholarly publishing finds itself in today.

Each year the world produces around 2.5 million research papers. To make optimal use of that research, and maximise its social good, it needs to be accessible to as many people as possible.

Historically there were a number of significant barriers to maximising access: each paper had to be peer reviewed, edited, typeset, printed on paper, and then physically distributed — a process that was both expensive and time-consuming. Publishers, therefore, had to sell research at a price that reflected the costs involved (although, as we have seen, they chose to charge much more than was necessary). And this inevitably limited the accessibility of that research.

With the advent of the Internet, however, all that is required is that research papers are placed on the Web, so that anyone with an Internet connection can access them.

As Harnad put it way back in 1994, "For centuries, it was only out of reluctant necessity that authors of esoteric publications entered into the Faustian bargain of allowing a price-tag to be erected as a barrier between their work and its (tiny) intended readership, for that was the only way they could make their work public at all during the age when paper publication (and its substantial real expenses) was their only option."

True, the peer review process still imposes some costs on the process (although there are those who argue that even these costs go away in an online world). Yet as Quah pointed out to ILI delegates, rather than falling in price the cost of published research has increased.

The tragedy is that the only forces holding back OA today are not practical constraints but simply the selfish interests of the various actors in the scholarly journal market.

Quah's analysis of the situation is that where in a free market one would expect these diverse selfish interests to be aggregated in such a way as to maximise the social good the natural workings of the scholarly journal market have been distorted by the IPR system.

While Quah is undeniably correct to argue that IPR is a very significant problem in today's knowledge economy, it is not clear that it is the malign force in the scholarly journal market that he maintains. After all, the vast majority of scholarly journals have now given up any claim to exclusive rights in the papers they publish. Even that great cynic of OA The Royal Society recently announced that its authors can now publish under a Creative Commons attribution non-commercial licence.

The dysfunction in the scholarly journal market will only be resolved, said Quah, when and if "the multiple constituencies — authors, publishers, libraries, readers — all with different goals, jointly end up reaching an outcome that is reasonably socially efficient?

This assumes, however, that these multiple constituencies are capable of reaching a reasonably socially efficient outcome on their own. History tells us that, for whatever reason, this is extremely unlikely. Quite simply the scholarly journal market is irremediably dysfunctional, and incapable of automatically repairing itself. Those involved just cannot get beyond their own selfish interests.

The only way this market can be repaired is for an outside agency to intervene. And the only agency with sufficient authority to do so in such a way as to protect public

good from private greed is government. As Wikipedia points out, the job of government is providing for the collective good and "serving the needs and wishes of the people … [where]… that cannot be properly satisfied using purely individual means."

The good news is that governments now seem of a mind to intervene. What has yet to be established, however, is whether in intervening they might succumb to the special pleadings of incumbent publishers intent only on preserving their hegemony over scholarly communication? In short, we are going to have to wait and see if governments finally do the right thing.