

Open Access: Who pays? How much?

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Last month the Scholarly Publishing & Academic Resources Coalition ([SPARC](#)) launched a new guide called [Who pays for Open Access?](#) The guide, says SPARC, is intended to provide, "an overview of income models currently in use to support open-access journals, including a description of each model along with examples of journals currently employing it."

The guide is a useful and informative document penned by the well-regarded publishing consultant [Raym Crow](#). On reading it, however, I found myself wondering whether it might not signal a change in SPARC's mission, or at least its priorities — one of several issues I raised with SPARC Executive Director [Heather Joseph](#).

While Joseph emphatically denies that the mission of SPARC has changed, she concedes that the guide could give the impression that it no longer expects Open Access ([OA](#)) to reduce the costs of scholarly publishing. Since SPARC was created to try and resolve the so-called [serials crisis](#), this is perhaps unfortunate.

Joseph's answers to my questions also left me wondering about the likely outcome of the transition to OA, and whether the OA movement is in danger of losing sight of the need not only to solve the access problem, but to also resolve the financial conundrum at the heart of the current crisis in scholarly communication: That is, how does one create a cost-effective system for disseminating research in a networked world. The promise of the OA movement was that it would lower the costs of scholarly communication. But will it?

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By way of an introduction

Libraries are in the grip of a debilitating phenomenon known as the serials crisis — where the cost of buying subscriptions to scholarly journals constantly increases at a higher rate than the consumer price index ([CPI](#)). Since their budgets are generally static or falling, this presents libraries with a very serious problem, and in recent years even the world's wealthiest universities have been forced to [cancel subscriptions](#) to journals, depriving their faculty of more and more of the raw material they need to do their research effectively i.e. details of previous research.

But the serials crisis is far from new. As long ago as 1997 the US Association of Research Libraries ([ARL](#)) reported that over the preceding decade the unit cost of journals had increased by 147%.

"Despite cancelling hundreds of thousands of dollars worth of serials, research libraries are spending 124% more on serials to acquire 7% fewer titles," ARL [complained](#).

In response it created SPARC — an organisation charged with developing "new strategies for controlling costs and improving access to research information."

Initially this consisted of partnering with not-for-profit organisations like the Royal Society of Chemistry ([RSC](#)) and the American Chemical Society ([ACS](#)) to create new low-cost alternatives to the increasingly expensive subscription journals produced by large commercial publishers — new journals like [PhysChemComm](#) and [Organic Letters](#) for instance.

At first this strategy looked as though it might offer a solution. For instance *Organic Letters*, the product of a partnership between SPARC and ACS, and launched as [a low-cost competitor](#) to Elsevier's [Tetrahedron Letters](#), proved [very successful](#).

But founding a handful of new journals in a world already populated with at least [25,000](#) established journals was never going to "spark" the kind of revolution necessary if the crisis at the heart of scholarly communication was to be solved, or the financial difficulties faced by libraries overcome.

Moreover, not all these new journals proved as successful as *Organic Letters*. *PhysChemComm*, for instance, survived just five years, [ceasing publication](#) in 2003.¹

All in all, twelve years on the serials crisis is still very much with us. Indeed, in the wake of the global financial crisis libraries could now be facing an [impossible](#) situation.

Two new strategies

The development of the Internet, however, meant that the status quo could be challenged in new ways, and [in 2001](#) the Open Access ([OA](#)) movement emerged as a potent force for change. Rather than trying to create alternative subscription journals, OA advocates proposed two new strategies — subsequently dubbed [Green and Gold OA](#).

Gold OA consists of researchers publishing their papers in new-style [Open Access journals](#). Rather than charging a reader-side subscription in the manner of traditional journals, OA journals levy an up-front one-off article processing charge ([APC](#)). Importantly, this allows OA publishers to make the

¹ We should also note that ACS was later to prove a staunch opponent of Open Access. [According to Nature](#), for instance, in 2007 ACS, with commercial publishers [Elsevier](#) and [Wiley](#), sought advice from the so-called pit bull of PR [Eric Dezenhall](#) on how to discredit the OA movement.

contents of their journals freely available on the Web, thereby avoiding the access barrier created by the serials crisis.

Green OA consists of researchers continuing to publish in subscription journals, but then making supplemental copies of their papers freely available on the Web themselves; by, for instance, depositing them in an institutional repository ([IR](#)), or a central repository (CR) like [arXiv](#) — a practice that came to be known as [self-archiving](#). The rationale for Green OA was that it too removed the access barrier, but on a paper-by-paper somewhat anarchic basis.

What implications do these two strategies have for the financial predicament confronting libraries that SPARC was created to resolve? Since self-archiving assumes that researchers will continue to publish in traditional journals, Green OA was never envisaged as a solution to what some have come to call the "[affordability problem](#)". Rather, the objective was to ensure that any researcher who wanted to read an article published in a journal for which their institution did not have a subscription could access the self-archived version instead. From the start, therefore, Green OA's focus was exclusively on access, not affordability.

By contrast, it was assumed that Gold OA would solve both the access *and* the affordability problems. This was possible, OA advocates argued, because OA journals would be online only (allowing them to dispense with print costs), and many of the publishing tasks associated with producing a scholarly journal would be automated.

Gold OA was expected to eliminate other costs too, not least those associated with managing subscriptions. As de facto leader of the Open Access movement [Peter Suber explained](#) to me in 2007: "Open Access journals also dispense with subscription management: They don't have to qualify their subscribers, they don't have to hustle for new subscribers, and they don't have to worry about managing their subscriptions."

In short, the promise of Gold OA was not just that it would improve access, but that it would provide a cheaper system for disseminating research. As such, OA advocates argued, it would reduce the financial burden on libraries, and on the scholarly community at large.

Unsurprisingly, SPARC became one of the most active and effective advocates for OA. While its initial focus was on Gold OA, it later began to promote Green OA too — by, for instance, encouraging research institutions to create institutional repositories where faculty could deposit supplementary copies of their papers.

Over time, however, it has become [less clear](#) that Gold OA will solve the affordability problem, although it does undoubtedly remove access barriers.

Meanwhile, growing calls for researchers to self-archive has caused subscription publishers to become increasingly alarmed. Green OA, they complain, will encourage libraries to cancel their journal subscriptions. As such, it not only threatens to wreak havoc on publisher profits, but could destroy the entire scholarly communication process.

Essentially the argument is that if publishers' profits fall to the point where they decide to exit the market the whole system will collapse, since Green OA relies on subscription journals to manage the peer review process.

As chief executive of the [Association of Learned and Professional Society Publishers](#) [Ian Russell told *Times Higher Education*](#) recently, "Repositories are parasitic on the existing journal structure for

their peer-review process ... If the subscription journals are unable to sustain themselves then what will provide that authority and badge of trustworthiness?"

Given up?

The new guide produced by SPARC — [Who pays for Open Access](#) — is pertinent to both these issues: For publishers it offers advice on how to create OA journals (or convert subscription journals to OA in order to pre-empt the catastrophic collapse that publishers predict will be triggered by Green OA).

For those looking for a solution to the affordability problem, however, the guide makes less cheerful reading, since it appears to imply that affordability may have to be sacrificed on the altar of access. In other words, if the OA movement wants to ensure that published research is made freely available on the Web it may have to abandon its expectation that the costs of scholarly communication will come down.

The author of the guide, Raym Crow, writes for instance: "*The most compelling argument for Open Access is that it improves the efficiency, effectiveness, and equity of the research process, delivering greater social and economic benefits as a result. Greater social utility, however, does not necessarily translate into reduced costs from a local library procurement perspective.*"

Struck by the wording in the guide I emailed SPARC executive director Heather Joseph and asked whether SPARC no longer expected OA to reduce the costs of scholarly communication. As is clear from her answers ([below](#)) she denies this is the case, but concedes that the wording of the guide could lead to that conclusion.

Joseph's answers to my questions, however, still left me wondering whether SPARC may be in danger of losing sight of its founding mission of developing "new strategies for controlling costs".

It is instructive, for instance, to juxtapose two of Joseph's answers to my questions:

"I do think that OA has the potential to reduce costs, and to alleviate pressure on library subscription budgets," she told me.

However, in answer to a separate question, she said: "We've always felt at SPARC that there is enough money in the subscription based scholarly publishing system to sustain a more robust, equitable distribution of scholarly research results, but that a conscious re-direction of that money is necessary."

But are not these two statements incompatible with one another? After all, is the aim to reduce current costs or simply to re-direct them? If it is the latter, then surely we must conclude that SPARC has given up on solving the affordability problem?

Meanwhile others in the OA movement appear to have concluded that unless publishers are thrown a life line by the research community self-archiving will indeed lead to Armageddon.

This, for instance, would seem to be the implication of the [recently-announced](#) Compact for Open-Access Publishing Equity ([COPE](#)). The brainchild of Harvard computer scientist [Stuart Shieber](#), COPE is intended to assuage publishers' fears that the OA movement is intent on destroying their business. And the way to do this, Shieber believes, is for research institutions to create [Gold OA funds](#) and encourage faculty to use those funds to pay to publish in OA journals.

Outlining his thinking in an article published in [PLOS Biology](#), Shieber [argued](#) that it is important to "send a signal to publishers and scholarly societies that research universities and funders appreciate and value their contributions and that universities and funders promoting self-archiving have every intention of continuing to fund publication, albeit within a different model."

Presumably with a similar aim in mind, last month the UK-based [Wellcome Trust](#) (which in 2005 became the first research funder to create a special fund to help researchers pay to publish their papers) [announced](#) that it was committing a further £2 million to its Gold OA fund — a move that SPARC [hailed](#) as one of the highlights of the recent [Open Access Week](#).

Should the OA movement welcome these initiatives? The problem is that while Gold OA may solve the access problem, it is not evident that it will solve the affordability problem, particularly if the research community creates large pools of new money to pay APCs. Indeed, the likely short-term consequence is that the costs of scholarly communication will go up, not down — since the research community will still need to pay journal subscriptions. And while that may be only a transitional issue, I shall argue that Gold OA funds raise a more worrying long-term problem.

It is hard not to conclude, therefore that COPE is further evidence that the OA movement is so determined to see access barriers removed that it is prepared to forego its aspirations on affordability.

Hybrid OA

The most immediate danger posed by Gold OA funds is where they are used to help authors publish in [Hybrid OA journals](#)². However, evidence suggests that we can expect their impact to be felt across the entire OA publishing market.

What is Hybrid OA? It is a strategy that subscription publishers devised when confronted by growing calls for [self-archiving mandates](#). Essentially, Green OA mandates make it compulsory for researchers to make their papers freely available on the Web. As such, they feed into the fears of subscription publishers that self-archiving will destroy their business. And today mandates are being [introduced](#) by research funders like [Wellcome](#) and the US National Institutes of Health ([NIH](#)) and, increasingly, by research institutions themselves.

In practice, Hybrid OA allows authors to continue publishing in subscription journals but — on payment of a voluntary APC — to request that the publisher makes their paper freely available on the Internet for them (And so it dispenses with the need for researchers to self-archive). Hybrid OA, argue publishers, will allow them to make an orderly transition to an OA environment, and so avoid Armageddon.

Suspensions have grown, however, that some publishers are treating Hybrid OA as little more than an opportunity to enhance their profits by "[double dipping](#)" i.e. charging APCs on top of subscriptions. Clearly, this would have the effect of increasing the cost burden on the research community, not reducing it — although in theory only temporarily.

Wellcome raised the issue of double dipping when it [announced](#) that it was providing new money for its Gold OA fund. "In recent months," it said, "concern has been expressed by the research community that publishers are using open access fees as an additional revenue stream without making a concerted effort to adapt their business models."

² COPE does actually advise against using Gold OA funds to pay for Hybrid OA

In short, Wellcome is concerned that traditional subscription publishers are exploiting current interest in OA simply to increase their profits, and in reality have little interest in converting to OA. For this reason, added Wellcome, there is need "for greater transparency among publishers to counter the argument that access fees are being paid twice."

To soften its message, while driving the point home, Wellcome Director [Sir Mark Walport](#) took the opportunity to commend Oxford University Press ([OUP](#)) for [publishing](#) details on how it is lowering its journal subscription rates "to reflect increases in income from open access fees".

OUP launched its [Oxford Open](#) hybrid scheme in 2005, and it is one of the few publishers that appears to be making adjustments to the cost of its subscriptions to reflect take-up of its Hybrid OA scheme. And it has been documenting this publicly.

But has OUP done enough to warrant Wellcome's praise? Specifically, how conscientious is it being in its efforts to avoid double dipping? And what level of transparency is it really providing?

In conjunction with introducing its hybrid scheme OUP has sought ways of encouraging libraries to maintain their subscriptions — by, for instance, offering [discounted APC rates](#) to any author whose institution has a current online subscription with OUP.

But [University of Stuttgart](#) librarian [Bernd-Christoph Kaemper](#) argues that, while OUP has reduced its online subscription prices, the cost of its discounted APCs have been increasing at an unwarranted rate. In [a message](#) forwarded to the [SPARC Open Access Forum](#) one day after the Wellcome announcement, for instance, Kaemper said that OUP plans to raise the price of its discounted APCs by 40% in GBP (25% in USD).

"The discount for authors from subscribing institutions has been reduced twice in the 5 years since the program started," Kaemper said. Over that time, he added, its discounted APCs "have increased by 60% (USD 50%) which amounts to an annual increase of 10% (USD 8.5%)."

He concluded, "If this were intended to shift money from subscription fees to OA funding, and to limit any loss due to a higher OA uptake, it would be clearly driven only by the needs of the journals with the highest current OA uptake (near 30%). Given the multiple other means of revenue increase used by OUP, it seems doubtful whether such a large increase is really necessary, especially if it is applied to all journals, even those with very low OA uptake."

Similar disconnect

Kaemper ended his post by saying: "Article processing charges so far seem to spiral up in the same way as subscription charges did in the past. We are in a transition period, and it is still too early to make predictions. Nevertheless, what we see here indicates that there is now more money on the table for paying article processing charges in certain fields for gold OA publishing in established journals and OUP must think that price elasticity of demand for gold OA is low enough to allow adjustments such as those described above."

As I shall argue, the broader implications of Kaemper's remarks appear to be that both Hybrid and Gold OA prices are likely to experience a similar inflationary spiral as has been evident with subscriptions. This does not bode well for those who hoped that OA would solve the affordability problem.

Kaemper's intervention also alerts us to the fact that in creating Gold OA funds research institutions and funders are in danger of stoking these inflationary fires, not least because such funds will create a market "disconnect" similar to the one that lies at the heart of the serials crisis.

Speaking to me in 2002, anti-trust economist [Mark McCabe explained](#): "One distinctive aspect of [the scholarly journals] market is that end users do not pay for the material they use since the actual purchases are mediated by the libraries. This means that the principals (the professors, the scientists, the researchers of a particular institution) ask their agent (the library) to buy whatever they need, and the agent has no way of enforcing price discipline on the users."

MCCabe was talking about the way the subscription market works, but if libraries (or other intermediaries like research funders) create central funds and pay APCs for researchers a similar disconnect between principal and agent must inevitably arise. As such, OA could simply replace the serials crisis with a new financial conundrum, one likely to prove equally debilitating and intractable.³

Kaemper is of course right to point out that since we are in a transition period we cannot make firm predictions about the future. If nothing else, however, his calculations caution us to look more critically at OUP's transparency than Wellcome appears to have done.

When I emailed Kaemper to ask how transparent he felt OUP was being he replied: "Even with OUP we still lack transparency in important respects — e.g. the interdependence between APC adjustments and site license price adjustments, the arbitrariness of imposing such a price increase on all journals in the program independent of actual OA uptake, or the mysterious case of [eCAM](#)⁴, and also the arbitrary in my view unjustified use of company exchange rates that are very far from true exchange rates."

In fact, OUP is not the only publisher Kaemper feels is being insufficiently transparent about its Hybrid OA pricing. The same day he posted his critique of OUP, for instance, he [posted a second critique](#), in which he outlined what he believes has been a failure on the part of [Nature](#) to take sufficient account of the take-up of [EMBO Open](#) when setting the subscription price for [The EMBO Journal](#).⁵

Kaemper argues: "If publishers like NPG/EMBO do not keep their promise to adjust their pricing in response to increased OA uptake and published output, we in effect have an additional revenue model, not a mixed revenue model."

³ McCabe's views on the "[portfolio effect](#)" created by the scholarly journals market are also relevant here.

⁴ The electronic-only subscription to eCAM (*Evidence-based Complementary and Alternative Medicine*) is scheduled to double in price in December. In 2009, the e-only subscription had been set at around half the cost of the print subscription, says Kaemper, on the grounds that the journal was part-sponsored by the Ishikawa Natural Medicinal Products Research Center (INMPRC). The aim of the sponsorship was to ensure that the content was made OA. However, this sponsorship appears to have been mysteriously curtailed five years into a 10-year sponsorship programme and, as a result, the 2010 electronic subscription will be the same as the print subscription, says OUP. Kaemper notes that — despite an [announced policy change](#) in 2008 (in which eCAM became a hybrid journal) — all its articles continue to be published on an OA basis. It would appear that authors are now asked to pay for reviews and commentaries (but not original research) in order to have their articles made OA, while libraries are asked to pay a subscription. However this mixed revenue model appears not to be reflected in the pricing. Kaemper wonders: "Are there any libraries that would pay for something for which their researchers have full access anyway?"

⁵ Nature publishes The EMBO journal on behalf of the [European Molecular Biology Organization](#)

Same inflationary forces

We should note that both Kaemper and Wellcome are not concerned so much over whether OA will reduce the cost of scholarly communication, but whether traditional subscription publishers are treating OA as an opportunity to increase their profits (by double dipping) during the process of transition to an OA environment — either by failing to reduce their subscriptions to reflect OA take-up, or by unjustifiably scaling back the APC discounts they offer to authors whose institutions continue to pay a subscription.

But as I've suggested, there is a larger problem here: That is, that the same inflationary increases that Kaemper has identified pushing up OUP's discounted APCs can be seen pushing up the cost of standard Gold OA APCs.

This is partly due to the disconnect that lies at the heart of scholarly journal publishing, partly due to the way in which Hybrid and Gold OA interact with one another.

Consider, for instance, that when pioneer OA publisher BioMed Central ([BMC](#)) launched it charged [\\$525](#) to publish an article; today its [standard APC](#) is nearly three times higher, at [\\$1,525](#).

Similar increases have been evident with other OA publishers. When Public Library of Science ([PLoS](#)) launched its first journal, for instance, it charged an APC of [\\$1,500](#); today it charges nearly twice as much, with costs ranging from [\\$2,250 to \\$2,900](#).⁶

Significantly, most of these rises occurred after subscription publisher [Springer](#) entered the OA market in 2004, when it introduced the first Hybrid OA scheme, [Open Choice](#).⁷ In doing so, Springer set its APC rate at \$3,000, nearly six times higher than the price set by BMC when it pioneered the concept of Gold OA. By entering the market at this level Springer drove up APC costs across the board.⁸

That Springer's move had this effect, of course, serves to confirm McCabe's claim that scholarly communication does not operate like [a regular market](#).

This suggests that if the research community wants to ensure that OA delivers the promised cost savings, it will need to insist on greater transparency not just from hybrid publishers, but from Gold OA publishers too. And if this is not forthcoming, some other way of imposing price discipline on publishers will be necessary.

The problem is that — as Kaemper's critiques of OUP and Nature demonstrate — transparency is an increasingly scarce resource in the scholarly journal publishing market. Rather than increasing in transparency, pricing is becoming ever more opaque, both Hybrid OA and Gold OA pricing.

For instance, most Gold OA publishers now operate quasi-subscription schemes. And one characteristic of these schemes is that they are extremely complex, and their financial implications hard to understand.

⁶ [PLoS ONE](#) charges [\\$1,350](#), but it is not a traditional journal

⁷ And not without some short-lived [controversy](#)

⁸ In fact, many concluded that Springer deliberately over-priced Open Choice in the hope that it would attract few takers. That's speculation, of course, but it could in theory be construed from what Springer CEO [Derk Haank said to me](#) at the time, "Let them put their money where their mouth is. I am not saying that they are not going to do that, but the academic community now needs to show how seriously it wants open access. So, yes, it is now time for the open-access movement to put up, or go off and do something else."

BMC offers several such [schemes](#), for example, including its "[supporter membership](#)" programme. The latter entitles authors at subscribing institutions to a 15% discount on their APCs when they publish in a BMC journal. As such, it is not dissimilar to OUP's discounted APC scheme. And as with OUP's scheme, it is very difficult to predict or assess the financial implications.

In a recent [post](#) on [The Scholarly Kitchen](#) blog, for instance, [Phil Davis](#), describes a [presentation](#) he attended at the [2009 Charleston Conference](#) given by Susan Klimley, a librarian at [Columbia University Health Sciences Library](#).

Klimley, says Davis, explained how until this year Columbia had been paying almost \$10,000 a year to be a BMC supporter member. Each year, Klimley explained, she noticed that Columbia's membership fee rose by 8%. Then in 2009 it jumped by 10%, encouraging her to sit down and work out whether it offered value for money. Due to the complexity of how the programme works, however, this proved difficult in the extreme.

Nevertheless, reports Davis, Klimley's conclusion was unequivocal: "No matter how you sliced it, the 15% cost savings did not equal the cost of the membership."

With APCs (and discounted APCs) constantly rising, a growing number of increasingly complex pricing schemes emerging, and falling library budgets, it is important that librarians are able to establish whether the frequent price increases are fair and justified, and whether the various membership schemes offer value for money. Unless they can, the likelihood is that several years down the track the research community will have to conclude that it has been a silent witness to the birth of an OA analogue to the serials crisis.

How can this be avoided? Once again, we are driven back to the issue of transparency: Essentially, publishers need to provide answers to three questions: Exactly how much does it cost them to publish an article? How do they calculate the price they charge authors for publishing an article? And how can the research community know that this is a fair price?

Porting existing revenues

With the first question in mind I emailed OUP and asked whether, as part of its stated aim of providing transparency, it had published details of how much it costs to publish a single article. "I am afraid we have not analysed the data that you have requested," replied Kirsty Luff, senior communications & marketing manager for OUP's academic and journals divisions. "However," she added, "there are quite a few studies on the costs of publishing journals, which you may find useful. All point to the complexity of cost and pricing."

Indeed, as we have seen, the costs of scholarly publishing *are* complex; and they are becoming ever more complex. But why do they need to be? If publishers were truly interested in fairness and transparency would they not make a point of calculating exactly how much it costs them to publish an article and then — rather than obfuscate the issue with increasingly complex pricing structures — demonstrate exactly how those costs relate to the price the research community is asked to pay?

Luff is of course correct to point out that there have been a few studies published on the topic of pricing. In particular, there have been several that have set out to calculate the comparative per-article costs of publishing in a subscription journal versus publishing it in an OA journal.

In 2004, for instance, the Wellcome Trust [published a report](#)⁹ in which it concluded that OA publishing could reduce the first-copy costs of publishing a paper in a good-to-high-quality journal by at least 30%, from \$2,750 per paper to somewhere between \$500 and \$2,500, "depending on the level of selectivity used by the journal".

Earlier this year a [JISC-funded study](#) reached similar conclusions.¹⁰ Led by [John Houghton](#), professorial fellow at Victoria University in Australia, the study estimated that the cost of publishing an article under the subscription model is currently £2,920 (\$4,841). If only print versions of the journals were produced, it added, this could fall to £2,730 (\$4,528), and to £2,340 (\$3,880) if only electronic versions were produced.

The cost of publishing a paper in an all-electronic Gold OA journal, however, could be as low as £1,520 (\$2,536)¹¹.

The authors of the JISC study conclude: "average per article cost savings of around £390 might be realised through a shift from print to e-only toll access [subscription] publishing, and average per article cost savings of around £810 might be realised through a shift from toll to open access e-only publishing. Per article publisher cost savings of around £1,400 might be realised through a shift from the mix of formats and models current in 2007 to all OA publishing e-only."

In other words, OA offers the potential for substantial cost savings: where the current system costs British libraries £205 million a year, the JISC study suggests, this would fall to £150 million a year if all journals adopted a Gold OA model.¹²

How do the Wellcome and Houghton estimates compare with what is being charged by Hybrid and Gold OA publishers today? BMC's [APC comparison chart](#) shows that Hybrid OA prices range all the way up to \$5,000 per paper.

And while Gold OA prices are generally lower than Hybrid OA, they are catching up fast. The cost of publishing in journals like *PLoS Biology* and *PLoS Medicine* (\$2,900), for instance, is now within spitting distance of the \$3,000 charged by Open Choice and [Oxford Open](#).¹³

Let's return to our second question: How do publishers calculate the price they charge authors for publishing an article OA? Do they, for instance, estimate what it costs to publish a paper in the manner of the Wellcome and Houghton studies, and then set their prices accordingly?

It appears not; or not at least at Hybrid publishers like OUP. "Our pricing models are not based on a detailed calculation of the cost of publishing an article, but in balancing different revenue streams to ensure sustainability during a time of transition from one model to another," explains Luff.

⁹ [Costs and Business Models in Scientific Research Publishing](#)

¹⁰ [Economic Implications of Alternative Scholarly Publishing Models: Exploring the Costs and Benefits](#)

¹¹ It is worth noting that some believe the cost of publishing a paper to be lower still. OA advocate Stevan Harnad [estimates](#) the costs at around \$500 per article. Julian Fisher, from the not-for-profit [Scholarly Exchange](#), [believes](#) they are as low as [\\$10 to \\$100](#). Fisher's paper explaining his calculations can be read [here](#).

¹² If these UK-only savings are projected on to the global market it quickly becomes apparent that, in theory, the total savings available to the research community from migrating to an all-OA environment are very considerable.

¹³ As such, their charges are already higher than both the Wellcome and Houghton estimates.

She adds: "Our approach to open access pricing at OUP is to try to ensure that any revenue that we lose from subscriptions is compensated for by revenues we gain from open access fees and institutional memberships."

This suggests that the aim is to port OUP's existing revenues to an OA environment, regardless of how much it costs to publish a paper. Is this a good way to arrive at a fair price? Surely not. And yet it seems to be the approach taken by most (if not all) Hybrid OA publishers — including [The Royal Society](#).

As *Times Higher Education* [points out](#), "Royal Society Publishing, the Royal Society's publishing arm, offers a hybrid option in all seven of its subscription journals. It has a 2 to 3 per cent take-up rate and charges authors £2,600 per paper, worked out by dividing its annual subscription income by the number of articles published."

We should of course note that hybrid journals still incur print costs, and so it would seem reasonable to expect their prices to reflect that. But if the goal of subscription publishers is to migrate their existing revenue stream to an OA environment how will the research community obtain the savings that the Wellcome and Houghton studies predict?

In most industries this might not matter, since market forces could be expected to impose price discipline. But as we've seen, the scholarly communication market is not a true market, and so suffers from significant [pricing inelasticity](#). In effect, this allows publishers to name their own price. Consequently, even when the costs that publishers incur fall, it cannot be assumed that their prices will fall in response.

This suggests that if subscription publishers are permitted to lock in their current profit levels during the transition to OA, it is highly unlikely that any immediate or subsequent savings will ever be passed on to their customers in the form of price reductions.

And since experience shows that Gold OA publishers are content to take their pricing cues from Hybrid OA publishers, we can anticipate that as subscription publishers migrate to an all-OA environment prices will continue rising across the entire OA marketplace — regardless of the costs that publishers actually incur.

What about our third question: How can the scholarly community know whether it is being charged a fair price? Without adequate transparency, clearly it cannot.

At odds with its mission?

Back then to question of whether OA can reduce the costs of scholarly communication. When I asked Kaemper for his view he replied: "I think so." He then added, "[The Houghton Report](#) has opened up the view to a more relevant and informed discussion of costs and benefits of alternative scholarly publishing models. It is time that publishers made their data on costs transparent in order to contribute to that ongoing discussion."

Again transparency. But herein lies the problem: If the publisher applauded by Wellcome (and SPARC's Heather Joseph) for its transparency (OUP) is unable to say how much it costs it to publish an article, and along with most OA publishers (Hybrid and Gold) is in the process of developing ever more complex pricing tariffs, the research community can have little hope of getting the transparency it needs in order to have a more "relevant and informed discussion of costs and

benefits". And in a market devoid of the necessary mechanisms for imposing price discipline on vendors there can be little hope of prices falling naturally.

But what do we make of the fact that three weeks after Kaemper publicly complained about EMBO's pricing, *Nature* [posted](#) a press release on its web site announcing that, as a result of OA take-up, "Prices for site licence access to *The EMBO Journal* and EMBO reports will be reduced by 9% in 2010, reflecting the increased publication of Open Access content in 2008."

Is this not evidence that publishers are responsive to customer concerns and committed to a fair and transparent pricing regime? Not necessarily. Certainly Kaemper was not impressed, and quickly [challenged](#) the way in which *Nature* had calculated its figures. He also suggested that *Nature* had still not provided sufficient data to demonstrate the fairness of its pricing.

"If we had data to actually calculate revenue per article, we would see that it has risen sharply," he concluded. "I doubt whether that will convince funders that we see no 'double dipping' occur here; pricing of NPG is and has always been opaque."

The research community would surely need greater transparency than either OUP or *Nature* are currently providing before it could be confident that it is being charged a fair price. And it is not clear that Gold OA publishers are prepared to be any more transparent.¹⁴

But why would publishers want to be more transparent? If scholarly communication is in the process of moving to a new, cheaper publishing environment, and incumbents are (understandably) keen to migrate their current profit levels to this new environment, why would they want to sit down and calculate how much it costs them to publish an article — let alone publicise the figures — when doing so might draw attention to a growing gap between the costs they incur and the prices they charge.

Nevertheless, this is information that the research community should be demanding from publishers. Instead, by creating Gold OA funds, and continuing to pay publishers their asking price, it is conspiring in the process of obfuscation, and thereby making a rod for its own back.

We should, however, point out that OA advocates like [Stevan Harnad](#) have long [insisted](#) that affordability is of secondary importance, and so should be treated as a separate issue from access. Even Suber appears to believe that Open Access is a sufficient goal, regardless of the cost. As he [put it](#) in 2002: "If [the] benefits [of OA] were expensive to produce, they would nevertheless be worth paying for...."

But for SPARC — a library organisation created specifically to address the issue of affordability — to state that OA, "does not necessarily translate into reduced costs from a local library procurement perspective" is surely at odds with its own mission?

True, Joseph maintains that she still believes OA will reduce the costs of scholarly communication. But it is hard not to view her asseverations as an example of what Oscar Wilde might have [called](#) "the triumph of hope over experience".

¹⁴ When [I asked](#) BMC publisher Matthew Cockerill recently exactly what costs BMC incurs in publishing an article, and for what, he pointed me to a SlideShare presentation, and said: "As I've noted in many presentations — e.g. [here](#) Open access publishing has most of the same costs as the traditional system. That is, editorial, technical, production, customer services, marketing (e.g. conference attendance)." After looking at the presentation I concluded that Cockerill must have misunderstood my question.

In fairness, we should also note that a primary aim of the SPARC guide is to demonstrate that there are other ways of funding OA journals than charging processing fees (and indeed many OA journals currently do not). Other sources of funding highlighted by SPARC, for instance, include advertising, sponsorship and grants etc.

But are these realistic alternatives?

Shieber apparently thinks not. In his *PLoS Biology* article he responded to the [repeated claims](#) that the majority of OA journals do not charge APCs by [pointing out](#) that the more prestigious journals invariably do charge APCs. Moreover, he added, processing fees, "are likely to be an important revenue model for open-access journals ... [because they] ... are the only revenue source that inherently scales directly with the publishing services provided by a journal."

He added, "The importance of the processing-fee model can be seen in the fact that of the open-access journals of sufficient standing to have an Institute for Scientific Information ([ISI](#)) [impact factor](#), the proportion charging processing fees rises above 50%."

What Shieber might also have said is that Hybrid journals invariably charge APCs too. Indeed, we can expect the processing fee to become the business model of choice for subscription publishers as they migrate to OA, not least because — as the approach of OUP and The Royal Society demonstrates¹⁵ — it appears to offer them their best chance of making the transition to OA with their current revenues intact (particularly when these costs are shrouded in complex transitional pricing tariffs).¹⁶

And as subscription journals morph into OA journals they will undoubtedly set the standards for OA publishing. This will include importing their historic inflationary habits to OA publishing — as the sharp rise in Gold OA fees following the introduction of Open Choice amply demonstrates.

Moreover, it seems highly likely that the creation of Gold OA funds will fuel these inflationary fires. Certainly that is what Columbia's Klimley appears to have concluded. Gold OA funds, she told delegates at the Charleston Conference, will simply recreate in the OA environment the same disconnect that characterises subscription publishing. As she put it: "Setting up a pot of money [to pay article processing fees] is not going to solve that problem."

Longer-term issue

In the twelve years since SPARC was formed two things have become apparent. First, few now doubt that publishers earn excessive profits from scholarly publishing. As publishing consultant [Alma Swan explained](#) to *Timer Higher Education*, "Libraries are very angry about the profits made by Elsevier, for example. If [supermarket chain] [Tesco](#) is content with 5 per cent profit, you know you are being

¹⁵ While both OUP and The Royal Society are not-for-profit rather than for-profit organisations, the distinction is not always clear-cut when it comes to pricing, and to profits, in scholarly publishing. It is for this reason presumably that some not-for-profits have proved to be staunch opponents of OA, as we saw with ACS. Indeed, four years ago The Royal Society itself was [warning](#) that Open Access could have "disastrous" consequences for scholarly communication.

¹⁶ In fact it is likely that the APC will prove a temporary way station on the road to OA. As time passes we can expect membership schemes to become the dominant payment mechanism and — unless the research community acts soon to prevent it — the net result will be that OA will be achieved, but the research community will remain in the grip of the affordability problem, suffering from the constant price inflation characteristic of the subscription model (which membership schemes effectively are).

ripped off when you're paying a publisher that is making a profit of some 30 per cent (in its journals division)."

Second, OA's potential for significantly reducing the costs of scholarly communication is looking increasingly unlikely to be realised. And if it is not, publishers will surely continue to earn excessive profits. This is all the more likely given that many in the research community appear content to sit on their hands while publishers manage the transition to OA to their own advantage.

The current danger is that while Wellcome's concern about double dipping is a genuine concern, it is focused too narrowly on a short-term problem, and fails to address the longer-term issue of how the research community can ensure that it obtains the financial benefits OA should deliver.

But here's an interesting thing. In reading SPARC's new guide, and considering Joseph's answers to my questions I found myself driven to a surprising conclusion: Resolving the financial crisis that has for so long afflicted libraries may be possible without resolving the affordability problem.

How come? Because while historically libraries have been responsible for managing journal subscriptions, and invariably it is they who are managing Gold OA funds today, this looks likely to change — as Joseph acknowledges.

In other words, responsibility for paying for scholarly communication looks set to be shifted from the shoulders of librarians to someone else — becoming, say, the responsibility of university research and enterprise offices. In other cases research funders are likely to pay the costs directly — by means of Gold OA funds like the one created by Wellcome.

For libraries this holds out the tantalising possibility that as scholarly journals convert to OA their budgetary headaches will begin to go away. That is, as more and more researchers embrace OA, journal subscriptions will start to fall (assuming Wellcome and Kaemper are successful in rooting out any double dipping), and the financial pressures on libraries will begin to ease.

However, while transferring the costs of scholarly communication to other cost centres might help libraries, it will not solve the underlying affordability problem. Moreover, if APC costs continue to rise (fuelled by the growing number of Gold OA funds) rather than producing savings OA could usher in a new era of price inflation; for as we've seen, the same inflationary forces that characterise the serials crisis looks set to plague the OA publishing market too.

As we've discussed, one way in which this might be avoided would be for the research community to demand much greater transparency from publishers, and to do so with much greater determination — transparency, that is, not just about the specific issue of transitional costs, but the costs of OA overall.

However, as I've suggested, it is unlikely that publishers will ever provide the level of transparency necessary; for when push comes to shove they will doubtless fall back on the argument that information about how they price their products is subject to trade secrecy laws. As publishing consultant [Joe Esposito put it](#) when I [asked about costs](#) on the [Liblicense](#) mailing list last year, "All the figures Richard Poynder is looking for have been developed and redeveloped by commercial (and some not-for-profit) publishers over the years. Doing this analysis is simply part of what it means to run a business. Of course, this information is proprietary."

Armageddon?

Does this mean that the research community is destined never to shake off its debilitating affordability yoke? Not necessarily. Ironically, a possible solution may lie in a strategy that was never intended to address affordability — that is, Green OA.

After all, if a sufficient proportion of the research corpus became freely available through self-archiving, libraries would — as publishers fear — be able to cancel journal subscriptions. And we should not doubt that they would. Rather than precipitate a catastrophic collapse, however, this might finally enable the research community to break the stranglehold that publishers have for so long had on it.

In other words, if funders and research institutions all insisted that their researchers self-archive their papers, it would become increasingly apparent that publishers have a smaller role to play in an online environment, and they would be forced to adapt to that reality — journal cancellations alone would necessitate this.

So for instance, as the network of institutional repositories filled with papers¹⁷ the research community would start to be able to disseminate its own research, and publishers could be restricted to organising the peer-review of self-archived papers.¹⁸ Since it is the research community that does the reviewing (for free) publishers would thus be limited to performing a simple and inexpensive (but important) task.¹⁹

In effect, the research community would take back ownership of scholarly communication, and in the process publishers would be forced to lower their prices and downsize their operations (Again, subscription cancellations would ensure this). Essentially, publishers would have to reinvent themselves as service providers performing a more limited role than heretofore.

All that appears to be preventing the research community from taking the necessary steps to achieve this is the bogeyman of catastrophic collapse.

True, some research funders and institutions *are* [introducing mandates](#), but the number doing so is still far too small, and it is growing too slowly²⁰ Moreover, many of the mandates being introduced include opt-outs that allow publishers to impose embargoes and other restrictions — as though the research belonged to publishers, not to the research community itself.

Meanwhile, the growth of Gold OA funds threatens to limit the impact of these mandates, not least because, as we have seen, they conspire to allow publishers to lock their current prices into the emerging OA market, and maintain proprietorial control over scholarly communication. Indeed, fuelled by Gold OA funds OA publishing could grow sufficiently rapidly that research institutions began to conclude that — since OA publishing is making Open Access a reality — there is no need to introduce mandates.

¹⁷ Today many, if not most, institutional repositories are as good as empty.

¹⁸ I.e. the process would reverse from "publish, then self-archive", to "self-archive, then publish" (as in peer-review) — a model advocated, for instance, by OA advocate [Eberhard Hilf](#).

¹⁹ Essentially, this would lead to the notion of what has come to be called the "[overlay journal](#)".

²⁰ Note that fifteen years after Stevan Harnad made his [Subversive Proposal](#) there are still only [109](#) mandates in place worldwide. Harnad estimates [10,000](#) mandates would be necessary for Green OA to succeed.

As I have [suggested elsewhere](#), what we are therefore witnessing today is a race between Gold and Green OA. If Gold wins the race, "the research community will have freed itself of the access burden, but failed to free itself of the affordability burden. Publishers will have won the war."

If, on the other hand, Green OA wins the race, the research community will achieve OA, it will win the affordability battle, and it will regain ownership of its own output. It will have won the war.²¹

But let's face the question of catastrophic collapse a little more directly and ask the question: Does Green OA threaten to destroy the whole process of scholarly communication? True, faced with lower profits some commercial publishers might exit the market, but would that unleash an Armageddon? There is no reason to believe so.²²

Rather, were publishers to go away it would provide an opportunity for learned societies to step up to the plate, and re-establish themselves as the appropriate gatekeepers of scholarly communication. Who better to manage the peer reviewing of physics papers, say, than organisations like the German Physical Society ([DPG](#))?²³

Plainly it would be preferable if publishers continued to play a role, so long as they began to cooperate with the research community, rather than trying to call all the shots; and so long as they embraced the new scaled-down role (and, inevitably, lower profits) that OA assumes for them. As such, the message that the research community ought to be transmitting to publishers is not (*a la* Shieber), "Hey, we've found some new money for you", but a re-phrasing of Derk Haank's 2004 [challenge to the OA movement](#)²⁴, but directed back at publishers: "It is now time for scholarly publishers to put up, or go off and do something else."

The fact is that unless the research community takes the initiative — and soon — money will continue to be "leached out of the research process in the form of corporate profit margins", to use Joseph's expression.

²¹ It is worth highlighting here the following JISC report comment: "[E]stimates suggest that a shift to OA self-archiving with basic overlay services (i.e. peer review management, editing and proofing) might result in somewhat higher publisher cost savings than OA publishing." These assumptions, of course, were made in the belief that the study's assumptions about Gold OA costs were accurate. As I've pointed out, they are already an underestimate (not of what is possible, but of what is happening) e.g. Open Choice and Oxford Open today charge nearly twice what the JISC study estimated. Elsevier's [Cell Press](#) titles, meanwhile, charge over three times JISC's estimate. For the reasons stated, we can assume that Gold OA prices will rise to meet these costs (some are already approaching the heights of Open Choice). Consequently, the potential savings offered by Green OA can be much expected to be much greater than the JISC study assumes.

²² In truth, Gold OA poses a greater risk of catastrophic collapse because, if one thinks about it, what led to the founding of SPARC in the first place was the growing inability of the research community to pay the costs of scholarly communication. If Gold OA locks in current prices, then instead of facing a serials crisis the research community will find itself struggling to afford to pay to publish all its research.

²³ In fact, during the 1990s the DPG expended a great deal of energy trying to persuade commercial publishers to adapt their services to the new world in a way that would benefit the research community — without much success. As a result, the then head of the DPG [Burkhard Fricke](#) told me recently, he personally concluded that: "What we really need is to cut publishers out of the business." And he added: "My hope at the time (although I couldn't say it) was that the system would collapse completely. That no one would be able to pay. Then we could have started from scratch." Some, it appears, would welcome the departure of commercial publishers from scholarly publishing.

²⁴ "Let them put their money where their mouth is. I am not saying that they are not going to do that, but the academic community now needs to show how seriously it wants open access. So, yes, it is now time for the open-access movement to put up, or go off and do something else." See also footnote 8

Publishers are, of course, only doing what commercial organisations are supposed to do: maximising their profits.²⁵ But let us not forget that it is mostly taxpayer's money that is leeching out. At bottom, therefore, this is a public interest issue. Publishers cannot be allowed to continue raiding the public purse in the way they have been doing.

All in all, the main question raised by SPARC's new guide is not "Who pays for Open Access?", but "How much should Open Access cost?"

SPARC'S view



Heather Joseph, Executive Director, SPARC

RP: When SPARC was launched in 1997 the press release announcing it described SPARC's rationale in this way: "Responding to the steadily increasing costs of library materials acquired from large commercial publishers and the impact of these price increases on the scholarly process, the Board of Directors of the Association of Research Libraries approved last week the formation of the Scholarly Publishing & Academic Resources Coalition (SPARC)."

The implication of the above paragraph would seem to be that SPARC was created primarily in order to explore ways in which the costs of scholarly publishing could be reduced. So SPARC's mission in 1997 was to lower the costs to libraries of supporting the scholarly journal system?

HJ: Yes.

RP: What has changed over the past 12 years in terms of SPARC's mission and priorities, and why?

HJ: Our mission has stayed consistent, and its aims remain the same today.

SPARC's very specific mission is to: 1. Expand the dissemination of the results of research and scholarship; 2. to do so using networked digital technology as a lever or catalyst, and 3. in doing so, to reduce the financial pressures on libraries.

The major change was actually the addition of using Open Access to help define what an equitable, balanced system would look like in the best of all possible worlds.

²⁵ As stated earlier, many not-for-profit scholarly publishers have got into the habit of behaving as though they too were for-profit organisations, which only serves to underline the problem the research community faces.

RP: So SPARC has not given up on its attempts to reform the economics of scholarly publishing in order to lower the cost burden on libraries?

HJ: No, of course not!

RP: Page 4 of your new guide "Who Pays for Open Access?" states:

"The most compelling argument for Open Access is that it improves the efficiency, effectiveness, and equity of the research process, delivering greater social and economic benefits as a result. Greater social utility, however, does not necessarily translate into reduced costs from a local library procurement perspective."

A footnote adds: "An insistence on lowering system-wide costs also discounts the effect of open access distribution on the use of the content. By increasing access to the content, open access distribution would be preferable to gated models, even without reducing overall publication costs. Greater access, even at the same cost, represents a net system-wide gain."

To me this implies that SPARC no longer assumes that OA will reduce the costs of scholarly communication? Is that correct?

HJ: This could have been clearer, and I agree, in re-reading it, that it does make it sound like we think that OA doesn't have the potential to lower overall costs, and that isn't the case. I *do* think that an Open Access distribution mechanism — supported by thoughtful, balanced business models — can have a positive impact on the economics of the scholarly publishing system, particularly over the long term.

RP: If, however, OA does not reduce the costs of scholarly publishing how will libraries be able to continue to afford to play their part in funding scholarly communication, particularly given the current budgetary crisis following the global economic downturn? Might the serials crisis be replaced by what the [University of Southampton's Steve Hitchcock](#) refers to as an "[author crisis](#)"?

HJ: Again, I do think that OA has the potential to reduce costs, and to alleviate pressure on library subscription budgets. I also think that we need to approach the development of business models to support OA thoughtfully and pragmatically, which was one of the driving factors for SPARC to produce this guide.

There has been so much conflation of "Open Access" with the "Author Pays" model that we wanted to illustrate the breadth and range of *other* potential mechanisms that are in use — and that are emerging — to support robust, sustainable OA publishing practices.

As with any emerging model, however, the community needs to go into this with eyes wide open, and to evaluate progress and pitfalls of each mechanism, and to be willing to be agile enough to make adjustments as things develop.

As one example — the Wellcome Trust hit the nail on the head when they, in one very nice stroke — both made a large amount of money available to support publication in Open Access journals, but also challenged the community to essentially be responsible consumers and provider of OA publishing services.

By [calling for transparency](#) on the part of publishers as to how OA fees interact with current subscription charges, they are helping to make authors, publishers, and libraries aware that we share the responsibility to ensure that these emerging models indeed develop in a positive direction.

OA is a powerful concept, but market forces — like profit maximisation — are also very powerful. They have become entrenched in many areas of scholarly communication, and OA on its own won't alleviate that. Conscious, responsible decisions about how to deploy sustainable models to support OA, however, can make a difference.

RP: What predictions would you make about the future development of OA and the costs to the research community of continuing to support it?

HJ: We've always felt at SPARC that there is enough money in the subscription based scholarly publishing system to sustain a more robust, equitable distribution of scholarly research results, but that a conscious re-direction of that money is necessary.

With several billion dollars each year in play, and much of that leeches out of the research process in the form of corporate profit margins, it seems reasonable that an effort to more accurately create mechanisms to tie costs directly to services performed (and valued) — like quality control, convenience services, content enhancements — can have a net positive effect.

The acknowledgment that distribution of the results of research is part and parcel of the research process — that research is not complete unless and until the results are shared broadly — is a huge first step. But funders don't — and shouldn't — bear the burden of the entire cost of distribution. The conversations that are happening now on campuses around creating of Institutional Funds — whether library based or rooted in other parts of the campus — is a critical step as well.

Publishers — [like Oxford University Press](#) — who are willing to contribute their data about the true costs of OA publishing are also providing an important contribution to the discussion of how best to realistically support and sustain OA. Research is a shared process within the academy, and the support of the unhindered dissemination of its results should be a shared process as well.

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