

# Gold Open Access: my heart says yes but my head says no

It's been hard to ignore the great OA (Open Access) debate recently. The whole affair, previously regarded by many as a rather technical academic issue, has rapidly become the stuff of current affairs, politics and even the odd newspaper headline. Ministers have spoken, conferences have taken place and many of the great and the good have made pronouncements on the subject. Recently (28–29 November 2012) what might possibly come to be regarded as a seminal OA conference took place at the RSS. Run by the Academy of Social Sciences and entitled '*Implementing Finch*' (hereafter abbreviated to 'ACSSIF Conference'), it brought together a large number of stakeholders from every part of the OA arena including authors, research leaders, learned societies, publishers, academics, funders, copyrighters and lawyers. Dame Janet Finch (author of the Report discussed below) played a key role and gave very generously of her time to answer questions and join the debate. So what came out of the Finch report, were its recommendations good or a bad, where are we going and what's the future of OA publishing? This article attempts to summarise the key issues and give an opinion about how we should try to address this undeniably difficult and elusive problem.

## 1 The catalysts

The topic of OA publishing has long been discussed, but recent debate has become elevated to a new height of both urgency and importance: why has this happened now? First, we should congratulate ourselves as a discipline (Life Sciences should also be saluted for backing OA journals and publishing some of their best papers in gold OA journals such as PLOS one). The Elsevier boycott so energetically led by Sir Tim Gowers and joined now by over 13,000 researchers has really had an effect. Elsevier increasingly struggles to run its mathematics journals and a normally very smart company has somehow managed to manoeuvre itself into the woebegone position of 'public enemy #1'. Seeing Elsevier as prime villains of the piece is, however, rather naïve. Not only do Elsevier actually do many good things (for example, they are a founding member of the Research4Life initiative that helps academics in developing countries), but many other publishers also post a thumping profit each year. Informa, for example (owners of Taylor & Francis) posted profits of nearly £300m in 2010 on a 25% margin. It is also a fact that Elsevier's arrangements for allowing authors to share their work are surprisingly generous compared to some other publishers.

Publishing science is big business. Headington Hill Hall, part of the estate of my own university, once housed the infamous Robert Maxwell. He made his fortune not from the Daily Mirror, but from publishing journals and books (mainly science and medicine) with Pergamon Press. The real catalyst has been a kind of collective realisation that something has to change. As a community we have known for many years that the business model of the current publishing system has some serious faults, including:

- Most academics provide their services (writing, editing, refereeing, correcting, proof reading etc.) free, but the journals (and, for the commercial publishers their shareholders) make the profit.
- Subscriptions for many STEM journals have risen sharply in the recent past, making them unaffordable for developing countries and unsustainable even in nations where research is well funded.

- The practice of 'journal bundling' means that instead of allowing libraries to choose which subscriptions to maintain, publishers offer them a choice between no service and a large bundle of journals that they have chosen. If the library considers some journals indispensable they are often forced to also take a large number of unwanted journals. Moreover, publishers can ensure that their weakest journals enjoy healthy subscription figures.

In spite of knowing about this for many years, we have somehow allowed the status quo to endure. The issues though are more complicated than one might think. Publishers at the ACSSIF conference were questioned a number of times about the free service so generously provided to them by universities. Their opinion was pretty much unanimous, namely that there was no reason why funding could not be made available, but historically editorial boards had constantly vetoed the idea of payment for editing or refereeing on grounds that this would conflict the independence of peer review. Since this issue lies rather at the heart of the OA debate, members of editorial boards might want to discuss again whether they should be asking for remuneration for their referees and themselves. Bundling is also not completely straightforward, for many publishers argue that bundles substantially decrease the overall cost of journals.

What else has moved the debate on? We all know the many theoretical benefits of Open Access (not the least of which is that unfettered access to publications tends to move research forward significantly faster). We all also know that the current subscription-based model is being disrupted by the internet, and the publishing ecosystem is no longer stable. Something has to happen, and clear potential exists for anarchy if the nettle is not grasped.

Finally, the rise of institutional repositories ('IRs') has further informed recent OA discussion. A key purpose of IRs is to allow the rapid dissemination of research, and there is evidence to show that a paper's citations are increased when it is accessible via an IR. The UK has been at the forefront of establishing IRs, and we may probably regard ourselves as leaders in this field – but the green route for OA lies at the heart of most IRs and this, as we shall see, is at odds with the principles that look like being adopted.

## 2 OA terminology

Since terminological confusion is not uncommon in the debate, we should take care with our definitions. Most of us are probably aware of the two most popular OA routes, namely:

**GOLD OA:** the author pays a sum (an 'APC' – Article Processing Charge) to the journal for publication: access is then free to all via the internet. APCs vary hugely from journal to journal but a charge of about £1,000–2,000 is not unusual.

**GREEN OA:** the postprint (see below) is displayed, after an agreed embargo period, in institutional or subject repositories (other rules may also apply: for example some publishers allow the postprint to be displayed on the author's personal website with no embargo).

It may help at this stage to clarify some further terminology: some OA journals (such as PLOS one) only publish material that has been paid for. The entire journal is therefore free to view. These are often termed 'all-gold' journals. Other journals

(currently massively in the majority) normally charge a traditional subscription, but allow authors (if they wish) to pay an APC to give their article gold OA status. These are normally referred to as 'hybrid' journals.

We also distinguish between the following stages of a journal output:

- **Preprint:** the article that the author(s) originally sent to the journal to be refereed.
- **Postprint:** the final accepted article sent to the journal by the authors after peer review.
- **Reprint:** the final version of the paper that appeared (including journal livery and branding).

### 3 The Finch report and further pronouncements

How has the current debate progressed? The Finch Report was finally commissioned in late 2011 by David Willetts. The notion of transparency has always figured highly in the coalition's mindset and the idea that anybody should be able to enjoy the fruits of publicly-funded research proved to be a strong political driver. The report was commissioned to be truly independent, and most will agree that this was achieved by its varied and carefully-chosen membership. Importantly, the group was *asked to advise* on the best practical way forward regarding a move to OA for research outputs. Finally appearing in June 2012, the report (which is often now incorrectly interpreted as 'sanctioning an immediate move to gold OA') was mindful of the following key terms of reference:

- It concerned itself only with peer reviewed outputs – not data.
- It only considered journal outputs (framed largely in STEM subjects) – monographs and books were hardly discussed.
- It was not tasked to propose either an implementation plan or a road map for a move to gold OA.

The Finch Report correctly recognised that there is no simple or unique solution to the OA problem. It specifically included discussion of the challenges that OA provides to learned societies such as the IMA who presently derive significant proportions of their income from subscription journals. The report also encouraged innovation and sought a 'best-fit' solution that would not suit anybody perfectly (though few glum publishers could be spotted at the ACSSIF conference). Most importantly of all, the Finch Report recommended a mixed economy of subscription and APC models, shifting over time towards an APC model and thereby eventually achieving universal gold OA.

On 16 July 2012, the Government announced that it accepted the Finch Report recommendations – a move interpreted by many as 'officially sanctioning' a transition to gold OA, and the level of debate immediately reached a new crescendo. A key aim of the Finch Report, namely to stimulate discussion and raise awareness, had certainly been accomplished and Dame Janet's own description of OA as 'a broad church with evangelical wings' neatly expresses the divergence of opinions.

In the wake of the Finch report many further OA pronouncements were made: the Royal Society report on science as an open enterprise, statements from both HEFCE and RCUK (see below) and a policy document from the Wellcome Trust formed just a part of the overall response from organisations scrambling to adopt an official position on OA. Finally, the Finch Group reconvenes in summer 2013 to review progress a year after the Report's initial publication: their final report may prove to be the ultimate statement on the whole OA issue.

### 4 Current progress towards implementing the Finch Report

Where are we right now regarding publishing and green/gold OA? Compared with the overall aspiration of the Finch Report, the answer is 'not very far'. About 3 million articles are submitted every year to over 30,000 journals run by something approaching 2,000 publishers. Roughly half of these are eventually published. If for simplicity we limit ourselves to Web of Science publications, then in 2010 just over 85,000 papers were published by UK academics, of which about 5% appeared in gold OA journals. About another 35% of these outputs were made OA by the green route. One eye-watering sum is immediately obvious: even if we (probably) underestimate and assume that an average gold OA output APC would have been around £1,000, the total 'all gold' bill for 2010 would have been somewhere between £50m and £100m. In theory, funding for this would have been available, for journals would have been free and subscription money could have been used to pay APCs. Unfortunately however it is most unlikely that the rest of the world would have all gone 'all gold' (worldwide, about 3% of all articles were gold OA in 2003 – this had risen to only 12% by 2011). Our libraries, already at the mercy of journal bundling deals, would be 'double dipped' (see below) and we would end up paying twice for gold OA.

### 5 What are we forced to do by mandate?

Many will incorrectly tell you that the Finch report demands all sorts of precipitate actions, but what actually *is* mandated? First, HEFCE are clear that the Finch Report will have no effect on outputs for REF 2014. They favour a move to gold OA, believing that the fruits of public funding should be accessible to the UK taxpayer. Their initial position paper states:

*As a first step, we would like to make clear that institutions can use the funds provided through our research grant to contribute towards the costs of more accessible forms of publication, alongside funding from other sources.*

Put another way: 'no extra funding for gold OA'. HEFCE's position on REF 2020 (should there be one) is that they will consult early in 2013 and reach a final position some time after that. The issue of whether a given output should be OA at the time of its publication (as opposed to the REF census date) will no doubt be a key point of discussion, but there seems little doubt that the OA rules for REF 2020 will be based largely on the recommendations of the Finch Report. The consultation needs to be resolved swiftly though as some disciplines are already publishing outputs aimed for submission to REF 2020.

The current RCUK position is much more concrete: their OA mandate applies to all research papers (the status of outputs that are not 'research papers' is unclear) submitted for publication after 1 April 2013 that have resulted from work either fully or partially funded by RCUK. Specifically, such papers

- Must be published in journals which are compliant with Research Council policy on Open Access.
- Must include details of the funding that supported the research, and a statement on how the underlying research materials (e.g. data, samples or models) can be accessed.

More details may easily be Googled, but essentially, the RCUK mandate currently insists that papers must either enjoy gold OA status, or be green OA with an embargo of 12 months (AHRC, ESRC funded work) or 6 months (all other Research Councils). The RCUK position is that they have funded this mandate by

supplying each University with a block grant (a spreadsheet is available). Accordingly, no OA funding may be included in grant applications after the April date above. RCUK have also noted that their position (and embargo periods) may soon change, and they may also give further guidance on whether different rules may apply if your institution has already spent its block grant.

## 6 The problem of 'double dipping'

Inevitably much heated discussion at the ACSSIF conference revolved around the vexed 'double dipping' question. The problem is easily explained: if we fund researchers for APCs in all-gold OA journals we can be sure that we will never pay a subscription. Unfortunately there are currently very few all-gold journals and far more 'hybrid' journals where one pays APCs only if one wishes. Though the publishers promise subscription reductions for journals that have carried papers for which one's institution has paid APCs, these will inevitably be hard to track and calculate, will (at least initially) involve only a very few articles and will only apply retrospectively. It seems inevitable that with hybrid journals one will essentially end up paying twice – once for the APC and again for the library subscription. Worse, many publishers propose to operate a system where gold OA articles in a journal decreases the subscription on a worldwide basis, thus inevitably rendering the *slowest* possible adoption of gold OA optimal. Finally, other nations who have paid no APCs but can now access our own gold OA papers may also argue that they are getting 'fewer papers for their money' and also demand further subscription reductions. The 'double dipping' problem therefore appears insurmountable, and most will surely be tempted to follow the green OA route.

## 7 Complications of the green route

Talking of the 'green route', what can be legally posted and what might earn you a summons? A general view (not yet backed by any case law) has emerged that publicly displaying the preprint is completely safe, and this is often what you see on researchers' personal websites (and some institutional repositories). Few preprints are accepted however, so your readers may see a paper that is substantially different to the final reprint. What of the postprint? For mathematics, of course, the potential complications are worse than for other subjects: most journals supply a very detailed TeX or LaTeX journal style file, and the postprint may look very much like the reprint. Some authors display the faithful journal PDF reprint, but with the journal livery and page numbers 'whited out' using a free online utility like PDFescape (Google it). Some display the postprint but with small changes made to the journal style files to make it 'look different'. Which would stand up in a court of law if the publishers decided to crack down? We don't know. Probably a publisher would be unlikely to sue a single author as the reputational risk would be too great, but they may take formal action against (say) an IR. We know that conversations along the lines of 'take them off the repository or you'll hear from our people' have already taken place between certain publishers and Vice-Chancellors.

A final complication of green OA is that every journal seems to have different rules for what can and cannot be displayed. SHERPA's helpful RoMEO page tries to keep a list of what can and cannot be displayed, but the metadata needs constant checking and confusion abounds. Recently the IMA received a communication from academics representing another learned society publisher. Full of reforming zeal, they complained that IMA journals operated restrictive embargo policies and recommended that their own enlightened rules should be followed. Unfortunately on

further examination it transpired that they had not read the fine print carefully enough, and in reality the IMA's policy proved far more generous than their own.

## 8 Who cares anyway?

As mentioned above, the Finch Report was careful to remember Learned Societies in its recommendations, and this was wise, because for the IMA the OA debate is a very big deal indeed, and may mean the difference between survival and extinction of the society in its current form. Matters are somewhat different for individual authors. They care about impact and influence, and know that gold OA is likely to boost their citation numbers. Most academics that I know also care deeply about the general health of their subject and genuinely want everybody to have access to the scholarly work that they need, so they care about (and approve of) the general idea of OA. They also care about academic freedom though, and the thought of having to bid for funding to pay APCs fills most of my colleagues with horror.

The publishers care deeply as many are commercial organisations, but the Finch Report evidently gives them the least to fear. Whether universities use an APC model or continue to subscribe to journals, it's still the case that university research funding will continually be siphoned off into the pockets of publishers' shareholders. This in itself is not necessarily a sin: we are happy (for example) to use EPSRC funding to buy a supercomputer from a company with shareholders. The difference is that neither IBM nor Microsoft expects us to provide free labour to build the computer. Worse, since very few universities can make any sort of case that research pays for itself, it seems inevitable that some of the £9,000 fee that we now charge will find its way into the coffers of corporate profit, leaving us with more awkward answers to find to our debt-laden undergraduates' completely rational and justifiable questions.

## 9 Gold Open Access for other subjects

Mathematics has a proud reputation for altruism, so how will gold OA work for Humanities, Social Sciences and other non-STEM disciplines? If one of our historians publishes a key monograph, can I simply demand a free copy under the auspices of OA? It's not clear how this would work. Print runs for monographs constantly dwindle, and it is entirely possible that in a very few years most such outputs will only appear electronically. Social Scientists at the ACSSIF conference agreed that the research monograph was in terminal decline: they also felt that they had been 'bounced' (their words) into an untenable position by the Finch report and STEM subjects in general. Also, not all researchers work in universities. Much research in the Arts and Humanities is not publicly funded in any way, and its originators often have no connections with a University Department. Gold OA could price them out of the market completely. Professional research authors would lose their livelihood, and an unfortunate parallel to the music industry (where artists are can no longer make money by selling their music) would emerge. Will we end up with an uncomfortable two-tier system where STEM subjects enjoy gold OA status but a traditional model still applies for other subjects?

## 10 Gold is not the answer

As we have seen, the Finch Proposals have both advantages and disadvantages, as has each flavour of OA that has been discussed. Gold OA has many natural benefits and from a philosophical point of view many of us favour it. If money was unlimited then gold OA would be much more attractive. Sadly through reality is harsher

and it is hard not to be drawn to an inevitable conclusion that gold OA is not the answer, principally for the following reasons:

- UK IRs that provide free green OA via funder and institutional self-archiving mandates have ensured that the UK enjoys a worldwide lead in this branch of OA. Why throw this advantage away for another, far more expensive system?
- The costs simply do not appear to add up. It seems inevitable that, as the 'first adopters', the UK will be mercilessly double-dipped. Why spend a huge amount of extra research money on publishers' gold OA fees and *still* pay subscriptions for many of the journals where your gold OA articles are published? Conspiracy theorists suggest that the Finch report recommendations are designed to ensure the health of the large publishing houses. The careful constitution of the Finch group defies such dark theories, but it does seem that we are in real danger of going bankrupt long before we ever enjoy the fruits of the UK's brave strike out into the new land of open access.
- 'UK going for gold' does not seem to challenge the current business model that we all object to so much. Only 1% of the world's researchers are UK-based – far too few to worry the large publishing houses. The RCUK mandate does not mandate gold OA, and is satisfied by the green route.
- Under the proposed transition plan, vexed questions of 'academic freedom' will inevitably arise. The funding gap means that in every institution researchers will end up having to bid for gold OA funding, and somebody (whether PVC, Associate Dean or Finance Officer) will have to decide who gets the money. This cannot fail to lead to researchers being told where they can and cannot publish. Will we deny OA funding for something that's 'only a 2\* paper'? One only has to spend a moment discussing this with colleagues before all sorts of unfortunate hares start to run amok around the Department.
- Some regard gold OA as a threat to peer review. Under a subscription system the publishers earn a predictable amount for each journal. An APC system inextricably links more papers with more profit. At present peer review decides what gets published and what gets rejected, but might the lure of extra cash encourage journals to change their policies? Tellingly, the acceptance rate of PLOS one is currently about 70%, but its supporters point to the emergence of a new model of post-publication peer review, where the community's reaction to the article is of primary importance.
- If the whole world suddenly adopted the gold OA model, then the Finch Report recommendations would be right for the UK. Unfortunately we are a small global player, dwarfed by the USA and China (by a large margin the world's largest publishers). If evidence exists that these two giants are about to follow our headlong rush into gold OA then it is well hidden.

- The RCUK mandate introduces extra problems. RCUK estimate that the block grant will only pay 45% of the real costs: where will the rest come from in straitened times? Further, the mandate directly conflicts with the Finch report's recommendation that green OA should be via journal-specific embargoes. This will inevitably limit researchers' freedom to publish where they wish – for 'non-compliant' journals are banned. Finally, there may be timing problems: until HEFCE have decided the full OA rules for REF 2020 outputs institutions may 'bank the block grant' to optimise its use for the next REF.
- Copyright issues are also problematic. The intention seems to be that gold OA outputs will be available under a so-called Creative Commons 'CC-BY' copyright arrangement, thereby allowing work to be used by anybody, possibly with redrafting and other alterations and possibly for commercial gain. This directly contradicts the current guidelines followed by most IRs, where articles are archived under an essentially non-commercial licence that prohibits 'rehashing'. Organisations such as Authors' Licensing and Collecting Society and the British Copyright Council therefore argue that gold OA leaves authors shorn of most of their rights.
- The publishing houses have astute business brains, and may simply acquire profitable OA journals. Independent OA journals may eventually suffer the same fate as independent record labels in the 1970s and 80s.
- Finally, we all know that 'when times are hard, cash is king'. As the holder of an institutional research budget that is under constant pressure in times of economic gloom, why would I ever want to fund an author for gold OA when they could self-archive and go green for free?

The end result is that, despite both the complications mentioned above and the many good points made in the Finch Report it seems sheer folly to recommend anything else but green OA.

## 11 Envoi

Finally, this article is a personal view. If you disagree with parts of it, then perhaps it's done its job. I'm acutely aware that as an active researcher, a PVC (Research) and an IMA Councillor I am terminally conflicted. Clearly more debate is needed – and some of our colleagues do not seem to understand the real issues. It's completely unclear how things will all play out in the end, and nobody knows how many journals will be truly Open Access in say 10 years' time. I propose no simple solutions and no magic bullets – but I sincerely hope that in 10 years' time I will not still be working free for the publishers' shareholders and simultaneously paying them twice for my papers.

Alistair Fitt CMath FIMA, CSci  
PVC (Research & Knowledge Exchange)  
Oxford Brookes University

## Investigation of International Mathematical Cultures

Do you have experience of the education system in another country as a member of staff? If so, I need your help. I am carrying out a project funded by the Higher Education Academy to investigate the different international cultures surrounding mathematics education. The purpose of the project is to identify the key differences and then to produce a guide, in the form of a short booklet and a supporting website, that will provide a summary of the mathematical cultures of a range of the main international suppliers (of staff and of students) to mathematics in UK HE.

If you have experience of mathematics education in other countries then you have valuable information to contribute to this project. I would be grateful if you would complete the online questionnaire available at <http://tinyurl.com/IIMCquestionnaire>

This questionnaire contains 12 substantive questions and should take no more than 10–15 minutes to complete. All the information that you provide will be treated in confidence. If you would like further information about the study, please contact Dr Aiping Xu (Tel: 024 7688 7590, or email: [aiping.xu@coventry.ac.uk](mailto:aiping.xu@coventry.ac.uk)).