

# Open Access: Moving from Theory to Practice

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► The debate on open access has raged fiercely for many years and has recently become more intense still.

Proponents of open access commission study after study to show the benefits that would accrue from open access to research papers. We have now seen such studies for Denmark, Germany, the Netherlands and the UK, largely based on academic research with little or no input from publishers. They make quite extraordinary claims for the enormous economic and social benefits that even a small increase in access via open access would bring. There have even been calls for the 'elimination' of STM publishers, an indication of the extreme emotions which the debate is capable of generating.

Germany, where this article is being published, and the UK, where it is being written, are hot spots in the debate, with a wide range of organisations strongly advocating open access: in Germany, the Max-Planck-Gesellschaft and the Deutsche Forschungsgemeinschaft are both enthusiastic supporters of open access, as are a number of universities; in the UK, the Joint Information Systems Committee, the Higher Education Funding Council for England, the Research Councils, RLUK representing the larger academic research libraries and several universities are calling loudly for open access, while the Wellcome Trust is not just calling for it but is practising and funding it. There is strident lobbying of both national governments and of the European Union which itself is also strongly promoting open access. There are, of course, advocates of open access in many other countries, including other parts of Europe and North America; support in the developing world appears somewhat more equivocal.

Defenders of the status quo – publishers in the main – also commission their studies to show that there is little or no problem with access and they issue dire warnings of the dangers to scholarship of any fundamental change to the current models.

Then there is the 'silent majority' of researchers who in general express little or no support for open access and who continue to seek to publish in those journals which they believe will most effectively present their

*In der hitzigen Debatte um Open-Access liegt der Fokus mehr auf den Auswirkungen – universaler Zugriff, Mehrfachnutzung, Wissenschaftsleistung – und weniger auf den Eingaben, den Geschäftsmodellen, die den weltweiten Zugriff ermöglichen, während Kosten für Peer-review und Publikation gedeckt werden müssen. Open Access ist leider häufig unzureichend erklärt und bruchstückhaft definiert worden. Green Open Access verfehlt das Ziel seiner Befürworter, denn es stellt begutachtete Artikel frei zur Verfügung und trägt somit nicht zur Deckung der entstehenden Kosten in den Verlagen bei. Green Open Access bietet kein tragbares Geschäftsmodell. Gold Open Access demgegenüber beinhaltet ein solch nachhaltiges Geschäftsmodell. Hier bezahlen Autoren und ihre Förderorganisationen für Peer-review und Publishing anstelle der Bibliotheken. Gold Open Access hat durchaus das Potential, Forschern und Wissenschaften Vorteile zu beschern. Damit Gold Open Access jedoch mehr verbreitet werden kann, müssten Verlage Maßnahmen zu seiner Unterstützung entwickeln, Förderorganisationen müssten es den Autoren erleichtern, die Artikelgebühren aufzubringen, und Bibliotheken müssten sich auf eine neue Rolle einrichten. Alle Beteiligten an dieser Diskussion müssten sich weg von der Konfrontation hin zur Kooperation bewegen.*

*In the heated debate on open access there is often far more focus on the outcomes – universal access to, and re-use of, research outputs – than on the inputs – the business models which enable universal access while continuing to pay the costs of peer review and publishing. Open access is often poorly or partially defined. Green open access almost certainly fails to achieve its proponents' objectives, as it seeks to make peer-reviewed papers freely available while making no contribution to the costs of peer review and publishing; it lacks a business model. By contrast, gold open access is supported by a business model – one in which authors and their funders pay for peer review and publishing, rather than libraries – and if implemented widely has the potential to deliver benefits to the research community. For gold open access to be implemented widely, however, publishers will need to put in place the processes to support it, funding agencies will need to make it easy for authors to pay publication charges and libraries must play a new role. All participants in the debate will need to move from confrontation to collaboration.*

work to their scientific community and will most successfully aid them in gaining tenure, promotion and further research funding. They are far less interested in the underlying business models of the journals than in their Impact Factors and their relevance to their disciplines.

The debate tends to generate more heat than light and it is important to sift through the claims for and against open access to understand what the real benefits of it might be.

For example, it is claimed that open access will significantly improve access for academic researchers but this seems unlikely, given the extent to which the 'big deal' has already done this. Any future extension of access in the academic environment is likely to be small. Indeed, the big deal has so enormously increased access over the last ten or fifteen years – the data on this topic from ARL in North America and SCONUL in the UK are absolutely compelling – that the social and economic benefits which economists like John Houghton (<http://www.jisc.ac.uk/publications/reports/2009/economicpublishingmodelsfinal-report.aspx>) claim for wider access should already be clearly evident to anyone who looked for them. We would not need theoretical exercises to show the potential value of open access; we would have real data to study from the growth in access brought about by the big deal.

So what claims can be made for open access?

Well, this will depend greatly on what we mean by open access, in particular whether we mean green or gold open access. Too many proponents of open access fail to distinguish between green and gold though they are quite different. For example, IFLA's three-page statement on open access (<http://www.ifla.org/files/hq/news/documents/ifla-statement-on-open-access.pdf>), with a fourth page of footnotes, makes no distinction between green and gold. It states that 'open access is the now known name for a concept, a movement and a business model' without at any point attempting to define that 'business model', beyond the requirement that the research material be made both freely accessible and free to re-use. Frankly, this isn't good enough. Open access alone is not a business model, and those who call for its implementation must set out how they think it will be made to work. Other proponents of open access are fiercely committed to either the green or gold model, in some cases so fiercely committed that they squabble with each other like medieval religious sects.

### Green open access

Green open access – by which we mean the placing of research materials in an open repository such that they can be freely accessed by anyone with an Internet connection – can certainly play a role. University repositories can help to showcase the research of their academic staff. Subject repositories can facili-

tate the discovery of research in a specific discipline and in the case of a subject repository like arXiv can be a workflow tool for researchers within particular research areas and a means of fast communication of research results and draft papers. But they cannot replace formal publication in a recognised journal after rigorous peer review. Physicists do not place their pre-prints and accepted manuscripts in arXiv in order to bypass formal publication; they see posting in arXiv and formal publication as wholly complementary.

Green open access makes no contribution to the costs of the services which publishers provide: the management of peer review (in the case of IOP Publishing, we also undertake a substantial amount of preliminary peer review in-house – we call it pre-refereeing – using our own expert editorial staff), the development of strong journal brands which further validate the quality of the research they contain, the maintenance of online platforms which enable the easy discovery, use and linking of research papers, and so on. Green open access can only work if there are embargoes on access to the published research papers and restrictions on re-use. In its 'Richtlinien für Allianzlizenzen' for its 2011 licence negotiations the DFG sought to limit embargoes to no more than one year and to require the deposit of final published versions in a repository. One might ask what research the DFG has undertaken to determine that an embargo of one year is sufficient for the publisher to earn back its investment in the publication services that it provides; and how it might demand that the final published version of the article be placed in the repository without making any contribution to the costs of its production?

The PEER project (<http://www.peerproject.eu/>) is showing quite clearly that deposit in repositories does not work unless the publisher undertakes the deposit on behalf of the author. Publishers are unlikely to deposit articles on behalf of funders if it undermines their ability to earn a return on their investment in their services and products.

A single embargo period will also not work. In very fast-moving disciplines an embargo of one year might not lead to any loss of subscriptions; the half-life of a research paper, ie the period during which an article sees half of its usage, will be relatively short. The half-life of an article in physics is closer to eighteen months and a one-year embargo would most likely be insufficient. In mathematics, a very slow-moving discipline, the half-life is more than five years. An embargo of one year would also be insufficient in humanities disciplines such as philosophy or Germanistik. Embargoes must be set at discipline or journal level.

Green open access simply doesn't achieve what its proponents claim to want. At best it provides free access to an inferior version of the article – the accepted manuscript after peer review but before editing, typesetting, linking and all the functionality that the publisher's platform provides – after a period of embargo, with no rights of re-use and no easy ability to text-mine. It seems to me that this would be a very poor outcome after so many years of fierce debate.

### Gold open access

Gold open access does potentially achieve what its proponents want. It provides immediate universal access to the final published version of the article, with all the functionality provided by the publisher and the wider publishing industry, for example in services like CrossRef; and most likely it grants a right of re-use of the article, as most gold open access publishing is done under a Creative Commons licence. Gold open access is, however, more difficult to implement. It can't simply rely on grand statements and a mandate from a funding body or academic institution. It requires funding bodies, academic institutions, librarians, publishers and researchers to work together to implement new business models, in particular new

funding flows, and in some cases to accept that their roles will change with these new models.

The Wellcome Trust is perhaps the best example of a funding organisation making a firm commitment to a gold open access model and to making it work effectively. Wellcome takes the view that publication is a part of the research process and that the costs of publication must be met, in exactly the same way that the other costs of research must be met – the cost of materials, laboratories, equipment, labour, travel and so on. It estimates that publication costs just 1.25% of the total cost of the research it funds. In return for paying for the costs of publication it expects the publisher to make the final published article freely available, under a Creative Commons licence, and to deposit the article in the PubMedCentral repository. This seems entirely reasonable to me. The research funder is paying the publisher for its publishing services. The publisher and the funder are free to agree a price for those services. In the transition from library pays to funder pays the benefits of open access can be realised. While IOP Publishing felt unable to accept the DFG's requirements for green open access, we will be happy to cooperate with the DFG, MPG and other German funders on a gold open access basis,

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both in our pure open access journals and our hybrid journals.

In 2010 just 3.3% of research articles – fewer than 50,000 out of more than 1,500,000 – were published on a gold open access basis. This number will certainly grow in 2011 and 2012 but for it to grow significantly – for real progress to be made from the dominant subscription and licensing model to a gold open access model – then we will need to move on from adversarial debate to cooperation. All parties – funders, publishers, librarians – will need to adopt more collaborative positions and to make significant changes to the way they work.

Publishers need to accept that gold open access is a legitimate business model and to offer it as widely as possible on their journals, both in pure gold open access journals and through the hybrid model on their subscription journals. They need to enable any researchers who wish to publish on a gold open access basis, or whose funding agencies demand that they do so, to publish in the journals of their choice. Authors should not be restricted in the journals in which they publish by the business models of those journals. Nor should they be restricted to journals which practise ‘light peer review’.

Publishers need to put in place the appropriate systems and processes for authors easily to be able to submit papers on a gold open access basis and for authors or others to make payment of publication fees. They need to tag all published papers with metadata on funding bodies and grant numbers to enable funders and others to monitor the research they fund and track its impact. They need to adopt appropriate copyright policies to meet funders’ requirements for re-use, though there is a legitimate discussion to be had about the exact form of such licences, in particular in respect of authors’ rights. They need to work together as an industry to facilitate text-mining (they need to do this across all the content they publish and not just content published on a gold open access basis). They need to work closely with funding bodies, libraries and others to facilitate the smoothest possible working of the gold open access model, always bearing in mind that in the foreseeable future we will have a mixed economy of subscription and licence models, gold and green open access models, transactional and rental models, and so on.

Publishers also need to demonstrate to funders and librarians that in this mixed economy of different business models they are not cynically banking publication fees without taking the revenues from those fees into account when setting subscription and licence charges. This is not nearly as easy as some open ac-

cess proponents believe, who have proposed utterly simplistic models for compensating libraries for open access publication fees, assuming, for example, that the only determinant of cost for a journal is the number of articles it publishes, or that it publishes exactly the same number of articles every year. There is not the space here to address just how complex an issue this is, but publishers, librarians and funders need to work together in good faith to resolve it.

IOP Publishing has been an open access publisher for many years, publishing the *New Journal of Physics* in partnership with the Deutsche Physikalische Gesellschaft since 1998, in addition to six other pure open access journals which it has launched since then. In 2011 we have also introduced a hybrid gold open access option on 23 subscription journals and have made a commitment that we will fully take into account hybrid publication fees when setting our journal prices. We are considering publishing an annual statement on our web site on the number of such articles published in our journals and how we have taken the revenue from them into account. We are open to discussions with funders about how we could satisfy their requirements here without giving away commercially sensitive information on the performance of our individual journals.

Funders need to provide explicit funding for publication fees and to put in place processes which enable researchers funded by them easily to make use of such funding. Too many research funders say that they wish to pay for open access publication but only permit the direct element of the research grant to be used for the payment of publication fees during the life of the grant. In most cases publication occurs after the life of the grant. The researcher is then required to ask his or her parent institution to pay the publication fees from the indirect element of the research grant but few universities hypothecate funding in such a way. Ideally funders would set up separate funds for publication fees on which researchers could draw. This will require the implementation of new tools and processes. Tagging of articles with funder metadata, as suggested above, might help here.

Any significant move from the subscription and licence model to a gold open access model also implies a substantial transfer of funding from libraries to research funders. As journals become wholly open access, or as subscription and licence fees reduce as hybrid journals publish more open access articles, then research funders will bear a larger proportion of the costs of publication than libraries. Of course, libraries could pay publication charges on behalf of research funders but this seems to me to add an un-

necessary layer to the process. I have seen little if any study of this topic. Will librarians support what is effectively a significant transfer of their responsibilities to research funders, with all the implications for librarians' jobs and the role of libraries that such a transfer might imply? This will require the closest collaboration between those organisations which fund libraries and those which fund research. In Germany, given the federal structure, this may be even more complex than in the UK. This is not going to happen quickly, but without a solution to this issue of funding flows it seems to me unlikely that gold open access will grow in the way that its proponents desire.

Gold open access facilitates global access to local research – one university's output available to all. In any transition to such a model we should be careful not to abandon other models like licensing and the big deal which have made global output available locally – the world's output available to a single university. As any transition takes place, at very different speeds in different parts of the world, more than one solution will be needed.

### Summary

In summary, for open access to achieve its objectives all participants in the debate need to stop shoot-

ing at each other, leave their trenches and engage constructively. Publishers need to accept that open access is here to stay and to do all in their power to facilitate gold open access, by accepting articles on this basis in all relevant journals and by putting in place processes and tools to support the business model. Open access proponents need to accept that publishers provide a range of valuable and necessary services to authors and that these must be paid for. Funders need to make funding for publication fees explicitly available and to make it easy for researchers to get access to it. Libraries need to work with funders and publishers to facilitate these changes and to work with funders and governments on funding flows. All participants need to sit down together to work through these issues collaboratively. |



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