

STRATEGIC CHALLENGES AND POTENTIAL BENEFITS OF OPEN ACCESS PUBLISHING – LESSONS FOR SENIOR MANAGEMENT

© Françoise Rentier-Delrue



Bernard Rentier

Former Rector, University of Liège (2005-2014)
 Vice-President, Belgian Science Policy Office

The objective of the Open Science movement is to allow everyone to access freely the results of all (fully or partly) publicly-funded research in all disciplines, country and year, including raw and processed data.

These results are currently published in peer-reviewed journals owned by publishing houses, just as they have been for over three centuries. Researchers and their institutions must buy, at ever increasing prices, the scientific literature they contribute to produce, often depending again on public funding. From a global perspective, public funds are seen as being used twice for each publication.

The current system makes less and less sense with the development of the internet. Many researchers are willing to recover control of their articles and their research data and to make them available freely. It should also be stressed that researchers review their peers' papers on a voluntary basis. With this in mind, new technical and economic models are being designed that will prevail sooner or later.

The first and currently most advanced innovation of Open Science is Open Access (OA), which consists ideally of an immediate access for everyone to publications, free of financial and technical barriers (for a recent review on the money-saving aspects of OA.⁵

There are several ways for researchers to achieve OA, among which the most common are:

- The **"Gold Road"** when a publication is online immediately and at no cost, neither for the author nor for the reader, regardless of the publishing procedure; it should be considered as "pure Gold OA"
- The **"Green Road"** when, in a traditional publication format, the author makes his/her "paper" available online in manuscript form, immediately after the publisher's acceptance of the article for publication.

Other mechanisms have also been proposed, all of them being variations on the 'Gold OA' theme.

- The **"APC-Gold OA"** model (APC referring to article processing charges) was developed by publishers when they realised that they could not resist the OA movement much longer. The idea was that if publishers were to prevent researchers from communicating freely among themselves, they first had to adapt to OA with a profitable option. This meant proposing their support in the dissemination of their work, which scientists sometimes and strangely consider as a chore, and therefore tempting the researcher into profiting from the journal's prestige and pretending that the publisher alone could guarantee the quality of the peer review process. In this perspective, they require the author to pay APCs, which are usually proportional to the length of the article. Since APCs are now steadily increasing in value according to the prestige of the journal (evaluated by their impact, i.e. the average number of citations per article during the previous two years), there is a growing demand by universities to respect a rule of "Fair Gold", in other words "reasonable" APC rates.
- The **"Hybrid OA"** model is an intermediary scheme developed by some publishers to present OA as a "choice": the publication is processed in the traditional way but, if the author so wishes,



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it can be made available immediately online at the author's expense. Thus the same article benefits the publisher twice, a scheme often referred to as "double dipping".

Is "Pure Gold OA" utopic?

Although the economic model appears to be unrealistic at first glance (unless the whole process is operated by researchers as part of their job), several publishers have developed it successfully. They have built business models based either on funding organisations or on a "freemium" model where free Gold OA is offered but premium options are available such as reviews, commentaries, news, etc. The latter solution is definitely less profitable but it provides a real service, with no one being forced to buy it and gain access to the original publications. The freemium model appears today as the most promising strategy for new initiatives and for publishers' reconversion.

HOW SHOULD UNIVERSITY MANAGEMENT BE PREPARED TO FACE THE CHALLENGES OF OA?

The first and most important investment for universities is in the setting-up of an Institutional Repository (IR). If it were not for OA, the IR would still be an indispensable tool for university managers providing them with full information on their institution's research production, needed for good management practice.

The IR is also, at the best of its technological development, a very efficient tool to promote the university's researchers worldwide. It increases their visibility, as confirmed by the number of visits, downloads and, most significantly, citations which do increase by 20% to 100% according to several studies.

However, setting up an IR is barely useful if it does not include all the institutional production.

Recent European statistics⁶ demonstrate that an IR, where depositing is not mandatory contains on average, 7% of the institutional production. If a mandate makes the deposit obligatory it reaches 17%. However, when the mandate is enforced by an internal rule stating that only the articles in the IR are eligible for evaluation (grants, promotions or any other institutional support), it may climb up to an average of 87%.

Such a strong mandate is generally referred to internationally as "the Liège Model", named after the Belgian university where it was pioneered but very few institutions already use it to the full extent.⁷

Visibility is an outstanding goal and it may suffice, but it is easy to understand that on a global scale, in order to free universities from the heavy burden of the publication costs, it is of utmost importance for the progress of science that all scholarly production becomes ultimately accessible without financial or technical restrictions.

Green OA is by far the easiest and surest way to reach this goal. Mandates at the national governmental level are very helpful to

support institutional resolutions towards researchers from the inside and publishers on the outside, and these should be suggested or encouraged. University authorities should also press their governments to modify laws in order to prevent scholars from abandoning their author and property rights obtained with the support of public funding to private publishers.

Publicly-run repositories should always be preferred to private ones, which promise sustainable preservation but which at times have proven unreliable or fragile in the face of commercial acquisitions. There are public repositories at regional, national, thematic or disciplinary levels and scholars should also be able to deposit there if they wish, although not at the expense of their own IR. Depositing in different places is perfectly acceptable and does no harm: repetitiveness is beneficial for visibility and has a positive effect on citations. However, multiple deposits should not add to the workload of the researcher who should file only once. Therefore, interoperability between repositories should be designed. This requires reinforcement of data exchange standards⁸ between repositories to facilitate collection of data. Large search engines such as BASE,⁹ developed by the University of Bielefeld should make data mining possible.

To facilitate all electronic handling of bibliographies, researchers should be encouraged to apply for a unique ORCID identification.¹⁰ This would definitively avoid confusion among homonymous authors.

According to the "stick and carrot" principle, mandate should not be the sole incentive for scholars to deposit their manuscripts in the IR: a user-friendly interface must be developed which provides customised and permanently updated lists of publications, easy imports from external databases, full legal and technical online help, a call centre for permanent support, a convivial deposit form with contextual help, regular training and information sessions, statistics of visits, downloads and citations (cleaned for spiders and bots) and a permanent surveillance of the referencing by external search engines with an active policy of improved referencing. All this contributes to a considerable professional evolution of the librarians' competencies, skills and training.

In spite of all these constraints, the cost of setting up a performing IR remains low compared to the subscription prices or the future APC Gold prices. Green OA is definitely a transitional solution but nowadays it contributes to the coming evolution of OA while retaining characteristics required by scholars since they can still publish in their preferred journals. In the long run, Green OA will bring the traditional publishing model to an end while Gold OA is being built up as an alternative for publishers. University authorities should ensure new financial drift based on prestige is not encouraged. As long as evaluation remains linked to publishers' prestige, there is indeed little hope that the whole system will evolve towards a more objective and fair reward mechanism. Meanwhile, Green OA fills the gap.

Investment in highly-skilled librarians also prepares our universities to what science communication will definitely become in the future: it should be considered as providing safe and careful advice.

⁶Swan, A., Gargouri, Y., Hunt, M., & Harnad, S. (2015). *Working Together to Promote Open Access Policy Alignment in Europe. Work Package 3 report: Open Access Policies*. PASTEUR4OA. Retrieved from: <http://pasteur4oa.eu/sites/pasteur4oa/files/deliverables/PASTEUR4OA%20Work%20Package%203%20Report%20final%2010%20March%202015.pdf>

⁷OECD (2015). *Making Open Science a Reality. OECD Science, Technology and Industry Policy Papers*, No. 25, OECD Publishing, Paris, p. 76. Retrieved from: <http://dx.doi.org/10.1787/5jrs2f963zs1-en>

⁸Such as OAI-PMH: <https://www.openarchives.org/OAI/openarchivesprotocol.html>