Serials Review

Across the Pond: Alternative ways of obtaining scholarly articles and the impact on traditional publishing models, from a UK/European perspective

--Manuscript Draft--

Manuscript Number:	
Article Type:	Column
Section/Category:	COLUMN - Across the Pond
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Across the Pond

Alternative ways of obtaining scholarly articles and the impact on traditional publishing models, from a UK/European perspective

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Abstract

This column examines the growth and impact of open access (OA) with emphasis on a UK/European perspective. It considers the various colors of OA, the impact on authors, institutions, and funders, and speculates on the future of traditional academic publishing. The author considers the pros and cons of a variety of OA methods--including the so-called 'guerrilla OA' services and sites-- and discusses the current mandates in place for the UK's upcoming Research Excellence Framework exercise, which will report back on the research outputs produced in universities between 2014-2020.

Keywords

scholarly publishing; open access; publishing models; academic freedom

1. Introduction

The state of scholarly publishing has been in a state of crisis for some years (Modern Language Association, 2002). Although this originally referred to the perceived over-pricing

of academic journals in the science, technology, engineering, and mathematics (STEM) fields, it quickly expanded from the 1990s to eventually include the growth and impact of the open access movement.

In the UK, there has been a steady groundswell of support in some subject areas in favor of open access (OA); with the advent of the arXiv repository in 1991, BioMedCentral in 2000, and the Public Library of Science (PLoS) in 2003. Although publishers have attempted to present a range of pricing models including pay-per-view access to articles not available on subscription, alternative means of access have continued to grow, whether legitimate forms of OA such as gold, green, diamond, or bronze, or the less respected black OA of pirate sites such as Sci-Hub.

Open access itself has become the preferred access model of choice mandated through many major funders, following recommendations made in the Report of the Working Group on Expanding Access to Published Research Findings (popularly known as the Finch Report) in June 2012. The Finch Report set an expectation that open access would largely follow the paid gold route, and although this has become the norm in the larger, research-intensive universities, even they are now finding that the high charges set by publishers are becoming unsustainable, with an average article processing charge (APC) of between £1,500 and £2,000 per article.

The increase of OA publishing and deposit has steadily increased (Gargouri et al., 2012; Jump, 2014; Else, 2017). Over the past two years, this increase has been assisted by the Higher Education Funding Council for England (HEFCE) policy on open access in the post-

2014 Research Excellence Framework (REF) (HEFCE, 2014). This allows participation in green OA, by means of uploading full-text of journal articles into a subject or institutional repository (IR). Publisher embargoes have started to decrease or even disappear to allow research to be shared in this way, and major publishers have been encouraged to engage with the idea of OA as a concept, with Elsevier, Springer, Wiley, Sage, Oxford University Press (OUP), and Taylor & Francis all initiating schemes of their own. Despite this, there are still some dissenting voices who maintain that open access, rather than being a force for academic freedom, restricts it under the guise of government-supported regulations (Poynder, 2015). Fully OA publishers such as Hindawi and BioMedCentral have continued to grow in stature and reputation, while authors have become more aware of the value of their own intellectual property in the form of their research and its accompanying data.

In this column, the current landscape will be considered, encompassing the rainbow of OA, plus their impact on traditional publishing both now and in the future.

2. The open access movement

2.1. History and evolution

Open access as a generally understood concept dates from the Budapest Open Access Initiative (2002). This has been subsequently followed by a set of recommendations issued on the Initiative's tenth anniversary which set a new goal of "achieving Open Access as the default method for distributing new peer-reviewed research in every field and in every country within ten years' time", which the United Kingdom (UK) interprets as 2020 (Khomami, 2016; and Budapest Open Access Initiative, 2012).

We are now at the halfway point in that ten-year span, and in some countries in the world, this target looks increasingly unachievable due to the lack of OA engagement at the governmental or institutional level. However, associated recommendations such as the development of OA infrastructure, standards of professional conduct, and the development of OA policies in institutions have started to be acted upon seriously (e.g. at Massachusetts Institute of Technology (MIT)). At a national level, we have the Scholarly Communications License, which has been spearheaded by Imperial College in the UK, and new open access strategies in both France and Germany during late 2016 (Monaghan, 2016). The British government, in the person of the Minister responsible for universities, also seems positive about OA: "I am confident that, by 2020, the UK will be publishing almost all of our scientific output through open access" (Johnson, 2016).

Although OA as a concept was not really discussed prior to the Budapest Initiative, there were freely available journals such as Postmodern Culture as far back as 1990 (Hagemann, 2012). However, these were generally non-profit and published in a newsgroup setting rather than as a regular journal. During the 2000s, there was a 900% increase in the number of articles published as OA (Björk, 2011). With the adoption of Creative Commons licensing in 2002 (following on from the Open Content Initiative in 1998), it is now estimated that over 1 billion works now benefit from licensing which may allow re-use, sharing, and adaption of copyrighted works for non-commercial purposes (Newton, 2015).

The open access movement is now accepted to sit within the free culture movement, which was founded on creative objections to the Sonny Bono Copyright Terms Extension Act in

1998, claiming that such restrictive copyright laws are "an obstacle to cultural production, knowledge sharing, and technological innovation" (Lessig, 2004). The free culture movement also encompasses the remix and hacker cultures, the copyleft movement, and the Access to Knowledge (A2K) movement.

2.2. Gold OA

2.2.1. Interpretation

Gold open access has been popularly termed 'author pays', but that is too simplistic a definition. To be classed as gold, a piece of research must be made available in its final form for free without any embargo period through a journal website. It should have been granted a license intended to maximize re-use, such as Creative Commons Attribution (CC-BY). A payment to publish may be required, which is known as an APC.

Gold OA at its inception was regarded with some suspicion. As Tenopir et al. report: "researchers were…uneasy about the author pay model that underpins gold OA…There was some concern that you could pay your way into publishing, so undermining rigorous review…[W]ith OA articles being treated more leniently by reviewers because of the income generated…[there were] concerns that academics…might have to publish in OA journals …[rather than] subscription journals" (Tenopir, 2013).

2.2.2. Fully-free journals

There are an increasing number of journals which are freely available and do not require an APC from authors or institutions for publication. These may have some funding from other

sources (such as an optional library subscription), but all articles are available for anyone to access wherever they are in the world.

2.2.3. Impact of the Finch report

The Finch report's major recommendation was "a clear policy direction in the UK towards support for 'Gold' open access publishing, where publishers receive their revenues from authors rather than readers (or libraries), and so research articles become freely accessible to everyone immediately upon publication" (Finch, 2014).

On the same date as the publication of the report, Research Councils UK (RCUK) launched their new OA policy relating to block grants to support the funding of APCs, which are managed internally by each higher education institution in the UK. However, some of the more teaching-intensive universities do not benefit from block grants and often rely on other routes to meet their OA obligations.

By 2015, following the publication of results from REF2014, HEFCE had launched its new policy on open access which did not fully embrace the Finch recommendations. Perhaps this was in recognition that the smaller universities without a proven research track record would struggle to place budgets aside to fund gold OA APCs and would have very small block grants, if any.

2.2.4. Predatory journals

It has been suggested that a proportion of the journals publishing within the gold OA model are of questionable quality, with no robust peer-review process and unqualified or fictional editorial boards (Beall, 2008). Beall's list of Potential, possible, or probable predatory scholarly open-access publishers listed hundreds of publishers which allegedly meet a set of criteria including: no formal editorial or review board, insufficient information about author fees (APCs), advertising a fake impact factor, a P.O. Box address in a Western country, and evidence that no proof-reading or quality control is in place at the article submission (and eventual publication) stage.

Although it does seem likely that some supposedly OA journals are more questionable than others, the scale of the problem may have been overestimated. Some publishers named on the list acted to have their details removed, leading to the eventual deletion of Beall's original list and associated documentation. It has since reappeared on the Weebly platform, while a new 'blacklist' service set up on a commercial basis by Cabell's has been in place since July 2017. There has recently been some discussion about low-quality articles starting to appear in PubMed, popularly regarded as a reliable index of research in medicine (Anderson, 2017a).

Researchers may decide to accept such lists at face value but tools such as Think-Check-Submit are also available to point prospective authors in the direction of quality OA titles. Many of these titles are listed in Directory of Open Access Journals (DOAJ), are from a publisher that belongs to the Open Access Scholarly Publishers' Association (OASPA), or are hosted on a recognized platform, such as International Network for the Availability of Scientific Publications (INASP)'s network of sites for developing countries or African Journals Online (AJOL).

2.3. Green OA

2.3.1. Interpretation

Green OA is the process by which authors archive their final, peer-reviewed version of their article or research in a subject or institutional repository, where it will eventually be freely accessible to all following the expiration of any publisher embargo. No additional charges are needed to publish in this model as the research is behind a paywall or subscription for the duration of the embargo.

2.3.2. Embargoes

An embargo is usually put in place by a traditional publisher to protect their revenue, and prevents the full text of published research from being made legally available for free until after a certain date has passed. This means that commercial services such as ResearchGate and Academia.edu, which encourage the uploading of full-text, are potentially carrying a lot of copyright-infringing material on their servers, available to anyone who signs up for an account.

On October 5, 2017, the Coalition for Responsible Sharing--which brought together the American Chemical Society, Brill, Wiley, Wolters Kluwer, and Elsevier--issued a statement which outlined ResearchGate's rejection of a proposal that it works in tandem with publishers to legally display content. The Coalition asserted that the only option open to them was to issue a large number of take-down notices, but that it "would like to make clear that our

measures are not directed at researchers, but at ResearchGate, a for-profit company funded by commercial investors and venture capital" (Coalition for Responsible Sharing, 2017).

However, Emerald and the Royal Society have recently led the way in removing all embargoes on their content, with a caveat that content may only be shared in limited ways, including institutional repositories but excluding the likes of ResearchGate.

2.3.3. HEFCE policy on open access in the post-2014 REF

The HEFCE policy on open access was launched on March 28, 2014, with a further update in July 2015. The key points of interest in this mandate relate to the requirement that "certain research outputs should be made open-access to be eligible for submission to the next Research Excellence Framework (REF)…[This] will apply to journal articles and conference proceedings accepted for publication after 1 April 2016" (Higher Education Funding Council for England, 2014). This applies to all English higher education institutions.

The policy allows publisher embargoes to be respected (i.e., via the green OA route) and for the relevant material to be freely available in a subject or institutional repository. It also allows a limited range of options where a journal publisher does not allow OA, but where that journal is the most suitable place for the research to be published. It concentrates on the free sharing of full-text content following an embargo expiration, rather than a link to content behind a paywall. Open access is, after all, about the removal of barriers.

The HEFCE policy represents a significant change in the working practices of academics and has meant that additional staffing resources (mainly within libraries) has had to be put into place to support researchers who are aiming to submit work to the next REF (which is now being referred to as REF2021). REF2021 will report back on the research outputs produced in universities between 2014 and 2020. It has been particularly challenging to promote the OA rationale within some disciplines who have previously not been involved such as arts and humanities, law, and business.

Curry set out a somewhat light-hearted contrast between his 'laws of publishing', which dictate that one should publish in a journal with a high impact factor for high credit, and in a mega-journal or OA outlet for speed (Curry, 2015). Clearly the two are contradictory, and the concept of the impact factor is still a very real preoccupation in the academy.

2.3.4. Subject and institutional repositories

The rise of subject repositories can be traced from the creation of arXiv in 1991. This was an initiative at Cornell University which concentrated on the sharing of e-prints (mainly pre-prints) in the early days, but now includes updated versions, post-prints, and some final publisher versions where journals allow, whilst retaining access to all previous versions which have been uploaded.

arXiv provides access to over 1 million e-prints across subjects mainly in science and mathematics, and is probably the best-known subject repository in these areas. Others of note include RePEc (Research Papers in Economics), Cogprints (psychology, linguistics and computer science), and PubMed Central (biomedical and life sciences). However, the number

of repositories restricted to a particular discipline or set of disciplines is much less (305) than those within institutions (2,952), according to the Directory of Open Access Repositories (OpenDOAR), suggesting that they may be of less importance than they were originally planned to be.

Of the 2,952 institutional repositories, just under 10% are based in the United Kingdom, over 50% in the whole of Europe, 20% across North America (United States (US), Canada, Mexico), and 2% in Australasia (Australia, New Zealand) (OpenDOAR search engine). A cursory look at some sample IRs in the US suggests that the dissemination of OA articles in these services is much lower than within the UK and Europe, possibly due to the mandates that affect those regions and their scholarly communication policies.

Some IRs work in partnership across different universities (such as the White Rose Consortium), but this remains rare, and although a useful by-product of IRs is the free dissemination of OA papers either via gold funded models or by green following embargo expiries, the main focus remains to showcase the research and scholarly outputs of a particular institution.

2.4. Bronze / delayed OA

This classification encompasses a range of OA types, including delayed OA journals, open editorial content, one-off articles or issues made open by journals, and non-DOAJ indexed journals, otherwise known as ‘Hidden Gold’.

One major distinction about the bronze OA journals is that they do not generally offer re-use rights beyond reading (i.e. gratis OA rather than libre), and often provide access to material for promotional purposes. Bronze OA is also not guaranteed, and sometimes disappears behind paywalls, although "a lot of these delayed OA journals submit their free-to-read articles–after the embargo period–directly to PubMed Commons to archive" (Regier, 2017).

A preprint made available earlier this year analyzed data from 2015 and reached the following conclusion: "notably, the most common mechanism for OA is not Gold, Green, or Hybrid OA, but rather an under-discussed category we dub Bronze: articles made free-to-read on the publisher website, without an explicit Open license" (Piwowar, 2017).

2.5. Diamond/Platinum OA

Diamond OA has been defined as "a relatively recent model similar to Gold Open Access, but with the important innovation that there is no fee for authors" (Kelly, 2013). The term has only recently gained currency, sometimes interchanged with the term platinum OA. Journal funding is achieved through means other than APCs, for example from advertising, grants, or support from University departments or libraries. Even so, the costs remain fairly high, so this is not a particularly sustainable way to develop OA titles (Wexler, 2015).

2.6. White OA

This definition first gained currency during the SHERPA (originally standing for Securing a Hybrid Environment for Research Preservation and Access) RoMEO (Rights Metadata for Open Archiving) project, which attempted to collate publisher OA policies and present them

in a user-friendly way. This project now forms part of the central services provided by JISC (Joint Information Systems Committee) to their members in higher and further education. White OA simply means that a particular journal or publisher has not engaged with OA in any way, and all their content is kept behind paywalls. It is included here as it remains important within the OA movement in the UK to identify titles and publishers which remain resistant to more progressive models, but which may be the most appropriate journals for maximum REF credit.

2.7. Black / guerrilla OA

Black OA refers to the various means by which articles or other research can be shared by means which could be described as peer to peer (P2P). Some recent studies have implied that this flavor of OA is the biggest threat to traditional publishing models (Mohdin, 2015; Bohannon, 2016; Himmelstein, 2017; McKenzie, 2017). Black OA can encompass a variety of activity, including requesting a copy via an institutional repository link from the author of an embargoed article, sharing logins for subscribed content with someone not authorized to access, requesting someone to source an article using the Twitter hashtag #icanhazpdf, and more sophisticated pirate sites such as Sci-Hub, LibGen and r/scholar, which are often supported by commentators in the free culture movement as a matter of solidarity (Barok et al., 2015).

For a quick yet detailed overview of the black OA landscape, the American Library Association (ALA) Copy Talks recording by Gardner and Gardner from 2017, is an excellent primer on both crowdsourcing techniques and pirate libraries, putting them in the historical context of access to information.

The likes of ResearchGate and Academia.edu, both of which are commercial networking sites, also fall into this category, as does Google Books. It is interesting to note that publishers and author associations have reacted in very different ways to these services, while some authors see them as valuable space in which to engage with fellow researchers (Martin-Martin et al., 2016).

2.7.1. ResearchGate

ResearchGate covers itself against infringement by putting the responsibility of checking whether an article can be shared on the depositor. However, major publishers have made it quite clear that responsible sharing only applies to material which has been made available via a Creative Commons license, and that even an OA article with a CC-BY-NC-ND (Attribution – Non-Commercial – No Derivatives) license would not be acceptable to upload to networking platforms of this type due to their commercial nature (Science Direct, 2017).

Most recently, in September 2017, the International Association of Scientific Technical and Medical Publishers (STM), wrote to the operators of ResearchGate via their lawyer to present a proposal that reads part cease and desist and part demand for legal compliance (Scollo Lavizzar, 2017).

2.7.2. Academia.edu

Academia.edu has also had its fair share of challenges, notably via Digital Millennium Copyright Act (DMCA) takedown notices. In 2013 it was speculated that such for-profit

services could be forced out of business by IRs, subject repositories, or non-commercial pre-print services (Clarke, 2013). This has not happened, although some academics have suggested that sharing of work in a commercial product is not desirable (Bond, 2017; Corker, 2017; Fitzpatrick, 2015, Schwarz, 2015). Academia.edu continues to thrive under its model of 'Share Research', which leaves institutions and libraries having to fill the gap of understanding by launching advice centers and services which guide researchers to more legitimate routes of depositing their work. In IRs, there is now functionality which displays similar content from other repositories which use the same host software (such as ePrints), although searching across IRs via a common interface is still a long way off.

2.7.3. Google

Google Scholar and Google Books fall into a grey area which has faced several legal challenges. In April 2016, an action in the US Supreme Court to appeal against a decision which went in Google's favor rather than the Author's Guild, declined to class the Google digital library as copyright infringement, instead describing it as fair use. In the UK, the definition of fair dealing is not directly congruent with the US definition of fair use, which means that Google Books and related acts of reproduction "are likely to constitute a prima facie infringement of copyright under English law" (Woodhead, 2014). However, it is interesting that no comparable cases have been actioned in the UK Courts.

In Europe, the Rome II Regulation dictates that "protection in the country of origin is subject to its law", regardless of the country of production (Xalabarder, 2014). In the case of Google Scholar, the service relies on the publisher/rights-holder of infringing content asking for it to

be taken down under the DMCA, which is a very similar approach to that taken by most IRs and their takedown policies.

2.7.4. Sci-Hub

Sci-Hub was created in 2011 and has the taglines that it "breaks through academic paywalls" and "removes barriers in the way of science" (Sci-Hub, n.d; Sci-Hub home page, n.d). Operating via a succession of mirror sites across the globe, in a similar way to The Pirate Bay (which facilitates decentralized sharing of film and music), the service claims it provides access to tens of millions of research papers, and indeed, in a recent article in Science, it was surmised that the size of the repository was so great it presented a real threat to big subscription journals (McKenzie, 2017).

The main points of the argument seem to be that legal challenges from publishers have helped Sci-Hub by giving it free advertising and promotion, increasing Google searches, and ensuring that the service can fulfil 99% of requests (Russon, 2017). It continues to thrive despite numerous attempts to shut it down, and at the 2016 UKSG (originally United Kingdom Serials Group) conference closing plenary talk, a show of hands demonstrated a latent support for the service, even if few would openly recommend it. Librarians are often caught in the middle of piracy and publishing, whether they want to be or not (Peet, 2016; Russell and Sanchez, 2016; Ruff, 2016).

2.7.5. LibGen

LibGen, also known as Library Genesis, is a similar but smaller-scale pirate repository which carries in excess of 52 million articles from over 50,000 publications. As with the examples above, publishers have taken legal action against the site with some success, but it endures via various mirror sites within peer to peer protocols.

In May 2015, the UK Publishers Association issued many takedown notices to LibGen on behalf of their members, and internet service providers (ISPs) across the country acted to block the domain, as well as similar sites such as Bookfi and Freshwap (Kamen, 2015). Despite this apparent victory it might be argued that it was the loss of value-added tax (VAT) to the UK government (e-books and e-journals being subject to the tax) that colored the court's decision, rather than representing the rights of the publishers.

2.7.6. #icanhazpdf

The Twitter tag 'icanhazpdf' was first set up in 2011 and has been described as piracy (BBC Trending, 2015). However, it could be argued that publisher policies do vary, and that this method--having no commercial focus and not operating via traditional P2P technologies--cannot be classed in the same way as Sci-Hub and similar black OA services.

It is true that most requests are for articles published in recent years (and more likely to be paywalled), so copyrights and institutional licenses for subscribed content are almost certainly being infringed on a daily basis (Gardner and Gardner, 2017). Interactions via public Twitter are not huge (somewhere in the region of 4 to 5 requests per day) but it is possible that some requests using the hashtag are being made through private direct messages

(DMs), and the service is certainly being utilized widely. Charlesworth states that "#icanhazpdf is probably the second age of academic piracy after the cumbersome 'email the author' and before the smooth yet illegal Sci-Hub" (2017).

There is also a huge difference between emailing the author of a paper requesting a copy and asking someone to log into their institutional subscription, download a paper which they did not write, and email it to you. What is interesting is that many of the users of the hashtag publish their own articles in paywalled journals rather than OA ones. Publishing articles OA would remove the need for this kind of piracy at all.

2.8. Legal routes

The adoption of both the Open Access Button and Unpaywall may be argued by publishers to be unethical, by routing browsers away from subscription content to OA versions, but these services are certainly being utilized much more. The Open Access Button was launched in beta format in 2013 and is now in its third version, launched during Open Access Week 2016. In a blog post from the year the service was launched, the co-founders of the project describe their aim as "time to capture individual moments of paywall injustice and turn them into positive change" (Carroll & McArthur, 2013).

The button is added as browser extension and looks for an OA version of the article if a paywall is encountered. Interestingly, the terms of service include the following relating to third-party services: "you acknowledge that Open Access Button is not responsible or liable for the content, functions, accuracy, legality, appropriateness, security or any other aspect of

such websites or resources. The inclusion of any such link does not imply endorsement by Open Access Button" (Open Access Button terms of use).

On October 12, 2017, JISC released the findings of their Open Access Project, examining the feasibility of using the service within the interlibrary loan workflow (Fahmy, 2017). This would reduce the need to request articles through a paid route where an OA copy is freely available, with the button being made available at the requesting stage.

Unpaywall utilizes a database of millions of author-uploaded PDFs. It is less mature than the Open Access Button and does not search for open datasets; instead it relies on services such as PubMed Central, the DOAJ, Crossref (particularly their license info), DataCite, Google Scholar, and BASE (Bielefeld Academic Search Engine). Unpaywall is funded by grants from the National Science Foundation and the Alfred P. Sloan Foundation.

3. Impact on traditional publishing

What is unclear is whether researchers turn to less legitimate models of accessing research due to time constraints or a lack of patience: for example utilizing Sci-Hub or #icanhazpdf rather than logging in through a University authentication system (Borghi, n.d.; Oxenham, 2016). There is anecdotal evidence that researchers do indeed bypass routes such as interlibrary loan when an article is not available and instead ask their colleagues in other institutions to supply the material; also, publishers seem to feel threatened by the proliferation of services which may be classed in that grey area of legality.

However, the issues surrounding the cost of scholarly publishing remain, with some institutions in the UK who pay a premium for APCs accusing the publishers of hybrid journals of double-dipping by requesting payment through both author fees and a library subscription. Consortia within both the UK and Europe have attempted to engage with the major players on this count, and it seems that hybrid journal publishing is not the solution many commentators felt it was (Publishers' Association, 2016). Indeed RCUK have reported some research councils are reluctant to fund publishing in hybrid journals (Research Councils UK, 2015). Additionally, Tickell demonstrated in his report how the rising costs of hybrid journal publishing have impacted smaller publishers and societies, in addition to generating large APC/subscription bills for UK research-intensive institutions (2016).

There have been some instances of journals moving away from commercial publishers to set up as fully-OA concerns, or journal editors resigning en masse to set up a competing OA title (e.g. Lingua, 2015; Journal of Algebraic Combinatorics, 2017). This has been as much a reaction to the perceived high subscription costs of journals as support of the OA movement. Publishers have been more cautious in flipping their titles from a subscription model to full OA, but it has happened even across major publishers such as Wiley. Some commentators have posited that non-profit alternatives to traditional publishing models will become the big names of the future (Pooley, 2017).

During the late 1990s and into the 2000s, there were numerous mergers and acquisitions which reduced the number of journal publishers considerably and made the major players far more wealthy and powerful (Larivière, Haustein and Mongeon, 2015). It may be recalled that

Taylor & Francis, Reed-Elsevier, Springer, and Wiley all expanded their portfolios during this time period.

Larivière et al. studied the subject area of physics as one example to determine the impact of OA, but results were inconclusive, representing a decline to Elsevier but a growth for Springer. It can be surmised that commercial publishers may be less engaged in a field where there are well-established OA initiatives such as arXiv, SCOAP3 (Sponsoring Consortium for Open Access Publishing in Particle Physics), and scholarly society publications. However, it is also noted that there is no umbrella society to take ownership of the publication of research in social sciences or humanities.

4. Conclusion

Although the OA landscape is now moving quickly, with changes coming to fruition through institutional and funder mandates, as well as governmental initiatives and legal challenges, it seems the long-term momentum is likely to be the sharing of material without subscription barriers, certainly in the STEM disciplines. As authors engage more fully with whichever flavor of OA is appropriate to them, they may well start to remove their focus on commercial journals with high impact, and publishers should not be complacent regarding that trend.

As far as black OA providers are concerned, it should be noted that similar sites relating to music and film such as The Pirate Bay (created in 2003) have continued despite attempts to block them, close them down, or take legal action against them. However, Napster (created in 1999) was eventually sold as a commercial concern and Internet piracy in some areas is

reportedly declining (Titcomb, 2016). Sci-Hub seems relatively invincible and now claims to have increased the number of daily requests it receives from 80,000 in 2015 to over 200,000 in 2016 (Bohannon, 2016). The founder, Alexandra Elbakyan, has cited Article 27 (1) of the United Nations (UN) Declaration of Human Rights "to share in scientific advancement and its benefits", to legitimize her service (Henderson, 2016).

Services such as Sci-Hub are particularly attractive in developing countries, who simply cannot afford access to commercially-published research (Peters, 2016; Mphahlele, 2017). Buranyi and others have stated that academic publishing is viewed as a profitable business model for publishers, but that it relies on the free labor of researchers to provide content, editing and peer review (2017).

In conclusion, the traditional publishing landscape must continue to evolve if it is to survive well into the 21st century, embracing both gold and green types of OA and experimenting with different pricing models. A one-size-fits-all approach no longer feels appropriate, although it could be argued that publishers add a certain amount of value (Anderson, 2016). Those creating the research that gains the commercial publishers their profits may feel disinclined to sign away their copyright in the future in favor of publishing wherever they like (Genovese, 2017).

In the words of Anderson, "if the promise of open access is not the promise of free access, then it's difficult to see what the point is" (Anderson, 2017b). Curry calls for academics to regain control of the journals in which their content is published, and Chopin champions the guerilla routes by stating "sharing public science should never be illegal" (Curry, 2017;

Chopin, 2016). The humanities are quite a different proposition, as publishers in these fields do not necessarily make big profits and there is less of a professional culture of openness (Holcombe, 2015).

Even so, the wide-ranging report by Fyfe et al. concludes with a recommendation that all authors keep hold of their copyrights in the context of publishers becoming increasingly focused on income generation (Fyfe et al., 2017). Harington offers a publisher's view on copyright which seems rather anti-open access: "one can provide paths to openness, while being mindful that the extreme conditions of CC-BY … may be one step too far if we want to preserve the ability … to create in the global economy" (Harington, 2017). The academic view is covered by Kendzior and Pinfield (Kendzior, 2012; Pinfield, 2016).

Publishers may acquire academic social network sites to better monitor the sharing of their published content, as Elsevier did with the referencing and sharing platform Mendeley (to the initial consternation of researchers) (Ingram, 2013). Conversely, the difference between a post-print refereed article and a version set for publishing may become so insignificant that there is very little intellectual property (IP) worth protecting. Libraries may finally look at their shrinking budgets and decide that cancellations are the way to go after all, as the University of Calgary did at the beginning of 2017 (Fletcher, 2017).

Open access monographs are next on the agenda, and may yet shake up the accepted order of the book publishing industry (Collins and Malloy, 2016; Crossick, 2015; Deegan, 2017). However, that is a topic for another column, another day. Right now, I see a bright future of many colors, flavors, and ways of accessing material.

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