

## 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--

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<b>Corresponding Author:</b>	Louise Penn University of West London London, UNITED KINGDOM
<b>First Author:</b>	Louise Penn
<b>Order of Authors:</b>	Louise Penn

1 Across the Pond  
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6 Alternative ways of obtaining scholarly articles and the impact on traditional publishing  
7 models, from a UK/European perspective  
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10 Louise Penn, Column Editor  
11

12 *Head of Resources and Technology, Paul Hamlyn Library, University of West London, St*  
13 *Mary's Road, Ealing, London, W5 5RF; UK; email [louise.penn@uwl.ac.uk](mailto:louise.penn@uwl.ac.uk); ORCID 0000-*  
14 *0002-2629-5973*  
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17  
18 Abstract  
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21 This column examines the growth and impact of open access (OA) with emphasis on a  
22 UK/European perspective. It considers the various colors of OA, the impact on authors,  
23 institutions, and funders, and speculates on the future of traditional academic publishing. The  
24 author considers the pros and cons of a variety of OA methods--including the so-called  
25 'guerrilla OA' services and sites-- and discusses the current mandates in place for the UK's  
26 upcoming Research Excellence Framework exercise, which will report back on the research  
27 outputs produced in universities between 2014-2020.  
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42 Keywords  
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45 scholarly publishing; open access; publishing models; academic freedom  
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52 1. Introduction  
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55 The state of scholarly publishing has been in a state of crisis for some years (Modern  
56 Language Association, 2002). Although this originally referred to the perceived over-pricing  
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1 of academic journals in the science, technology, engineering, and mathematics (STEM)  
2 fields, it quickly expanded from the 1990s to eventually include the growth and impact of the  
3 open access movement.  
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10 In the UK, there has been a steady groundswell of support in some subject areas in favor of  
11 open access (OA); with the advent of the arXiv repository in 1991, BioMedCentral in 2000,  
12 and the Public Library of Science (PLOS) in 2003. Although publishers have attempted to  
13 present a range of pricing models including pay-per-view access to articles not available on  
14 subscription, alternative means of access have continued to grow, whether legitimate forms of  
15 OA such as gold, green, diamond, or bronze, or the less respected black OA of pirate sites  
16 such as Sci-Hub.  
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32 Open access itself has become the preferred access model of choice mandated through many  
33 major funders, following recommendations made in the Report of the Working Group on  
34 Expanding Access to Published Research Findings (popularly known as the Finch Report) in  
35 June 2012. The Finch Report set an expectation that open access would largely follow the  
36 paid gold route, and although this has become the norm in the larger, research-intensive  
37 universities, even they are now finding that the high charges set by publishers are becoming  
38 unsustainable, with an average article processing charge (APC) of between £1,500 and  
39 £2,000 per article.  
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55 The increase of OA publishing and deposit has steadily increased (Gargouri et al., 2012;  
56 Jump, 2014; Else, 2017). Over the past two years, this increase has been assisted by the  
57 Higher Education Funding Council for England (HEFCE) policy on open access in the post-  
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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).

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3 We are now at the halfway point in that ten-year span, and in some countries in the world,  
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5 this target looks increasingly unachievable due to the lack of OA engagement at the  
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7 governmental or institutional level. However, associated recommendations such as the  
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9 development of OA infrastructure, standards of professional conduct, and the development of  
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11 OA policies in institutions have started to be acted upon seriously (e.g. at Massachusetts  
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13 Institute of Technology (MIT)). At a national level, we have the Scholarly Communications  
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15 License, which has been spearheaded by Imperial College in the UK, and new open access  
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17 strategies in both France and Germany during late 2016 (Monaghan, 2016). The British  
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19 government, in the person of the Minister responsible for universities, also seems positive  
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21 about OA: “I am confident that, by 2020, the UK will be publishing almost all of our  
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23 scientific output through open access” (Johnson, 2016).  
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34 Although OA as a concept was not really discussed prior to the Budapest Initiative, there  
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36 were freely available journals such as Postmodern Culture as far back as 1990 (Hagemann,  
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38 2012). However, these were generally non-profit and published in a newsgroup setting rather  
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40 than as a regular journal. During the 2000s, there was a 900% increase in the number of  
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42 articles published as OA (Björk, 2011). With the adoption of Creative Commons licensing in  
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44 2002 (following on from the Open Content Initiative in 1998), it is now estimated that over 1  
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46 billion works now benefit from licensing which may allow re-use, sharing, and adaption of  
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48 copyrighted works for non-commercial purposes (Newton, 2015).  
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57 The open access movement is now accepted to sit within the free culture movement, which  
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59 was founded on creative objections to the Sonny Bono Copyright Terms Extension Act in  
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1 1998, claiming that such restrictive copyright laws are “an obstacle to cultural production,  
2 knowledge sharing, and technological innovation” (Lessig, 2004). The free culture movement  
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4 also encompasses the remix and hacker cultures, the copyleft movement, and the Access to  
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6 Knowledge (A2K) movement.  
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## 10 11 2.2. Gold OA

### 12 13 2.2.1. Interpretation

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15 Gold open access has been popularly termed ‘author pays’, but that is too simplistic a  
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17 definition. To be classed as gold, a piece of research must be made available in its final form  
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19 for free without any embargo period through a journal website. It should have been granted a  
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21 license intended to maximize re-use, such as Creative Commons Attribution (CC-BY). A  
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23 payment to publish may be required, which is known as an APC.  
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33 Gold OA at its inception was regarded with some suspicion. As Tenopir et al. report:  
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35 “researchers were...uneasy about the author pay model that underpins gold OA...There was  
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37 some concern that you could pay your way into publishing, so undermining rigorous  
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39 review...[W]ith OA articles being treated more leniently by reviewers because of the income  
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41 generated...[there were] concerns that academics...might have to publish in OA journals  
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43 ...[rather than] subscription journals” (Tenopir, 2013).  
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### 52 2.2.2. Fully-free journals

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54 There are an increasing number of journals which are freely available and do not require an  
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56 APC from authors or institutions for publication. These may have some funding from other  
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1 sources (such as an optional library subscription), but all articles are available for anyone to  
2 access wherever they are in the world.  
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### 8 2.2.3. Impact of the Finch report 9

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11 The Finch report's major recommendation was "a clear policy direction in the UK towards  
12 support for 'Gold' open access publishing, where publishers receive their revenues from  
13 authors rather than readers (or libraries), and so research articles become freely accessible to  
14 everyone immediately upon publication" (Finch, 2014).  
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25 On the same date as the publication of the report, Research Councils UK (RCUK) launched  
26 their new OA policy relating to block grants to support the funding of APCs, which are  
27 managed internally by each higher education institution in the UK. However, some of the  
28 more teaching-intensive universities do not benefit from block grants and often rely on other  
29 routes to meet their OA obligations.  
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41 By 2015, following the publication of results from REF2014, HEFCE had launched its new  
42 policy on open access which did not fully embrace the Finch recommendations. Perhaps this  
43 was in recognition that the smaller universities without a proven research track record would  
44 struggle to place budgets aside to fund gold OA APCs and would have very small block  
45 grants, if any.  
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### 56 2.2.4. Predatory journals 57 58 59 60 61 62 63 64 65

1 It has been suggested that a proportion of the journals publishing within the gold OA model  
2 are of questionable quality, with no robust peer-review process and unqualified or fictional  
3 editorial boards (Beall, 2008). Beall's list of Potential, possible, or probable  
4 predatory scholarly open-access publishers listed hundreds of publishers which allegedly  
5 meet a set of criteria including: no formal editorial or review board, insufficient information  
6 about author fees (APCs), advertising a fake impact factor, a P.O. Box address in a Western  
7 country, and evidence that no proof-reading or quality control is in place at the article  
8 submission (and eventual publication) stage.  
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23 Although it does seem likely that some supposedly OA journals are more questionable than  
24 others, the scale of the problem may have been overestimated. Some publishers named on the  
25 list acted to have their details removed, leading to the eventual deletion of Beall's original list  
26 and associated documentation. It has since reappeared on the Weebly platform, while a new  
27 'blacklist' service set up on a commercial basis by Cabell's has been in place since July 2017.  
28 There has recently been some discussion about low-quality articles starting to appear in  
29 PubMed, popularly regarded as a reliable index of research in medicine (Anderson, 2017a).  
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44 Researchers may decide to accept such lists at face value but tools such as Think-Check-  
45 Submit are also available to point prospective authors in the direction of quality OA titles.  
46 Many of these titles are listed in Directory of Open Access Journals (DOAJ), are from a  
47 publisher that belongs to the Open Access Scholarly Publishers' Association (OASPA), or  
48 are hosted on a recognized platform, such as International Network for the Availability of  
49 Scientific Publications (INASP)'s network of sites for developing countries or African  
50 Journals Online (AJOL).  
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3 2.3. Green OA  
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10 Green OA is the process by which authors archive their final, peer-reviewed version of their  
11 article or research in a subject or institutional repository, where it will eventually be freely  
12 accessible to all following the expiration of any publisher embargo. No additional charges are  
13 needed to publish in this model as the research is behind a paywall or subscription for the  
14 duration of the embargo.  
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25 2.3.2. Embargoes  
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29 An embargo is usually put in place by a traditional publisher to protect their revenue, and  
30 prevents the full text of published research from being made legally available for free until  
31 after a certain date has passed. This means that commercial services such as ResearchGate  
32 and Academia.edu, which encourage the uploading of full-text, are potentially carrying a lot  
33 of copyright-infringing material on their servers, available to anyone who signs up for an  
34 account.  
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48 On October 5, 2017, the Coalition for Responsible Sharing--which brought together the  
49 American Chemical Society, Brill, Wiley, Wolters Kluwer, and Elsevier--issued a statement  
50 which outlined ResearchGate's rejection of a proposal that it works in tandem with publishers  
51 to legally display content. The Coalition asserted that the only option open to them was to  
52 issue a large number of take-down notices, but that it "would like to make clear that our  
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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.

1 The HEFCE policy represents a significant change in the working practices of academics and  
2 has meant that additional staffing resources (mainly within libraries) has had to be put into  
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4 place to support researchers who are aiming to submit work to the next REF (which is now  
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6 being referred to as REF2021). REF2021 will report back on the research outputs produced in  
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8 universities between 2014 and 2020. It has been particularly challenging to promote the OA  
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10 rationale within some disciplines who have previously not been involved such as arts and  
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12 humanities, law, and business.  
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21 Curry set out a somewhat light-hearted contrast between his ‘laws of publishing’, which  
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23 dictate that one should publish in a journal with a high impact factor for high credit, and in a  
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25 mega-journal or OA outlet for speed (Curry, 2015). Clearly the two are contradictory, and the  
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27 concept of the impact factor is still a very real preoccupation in the academy.  
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#### 31 32 33 2.3.4. Subject and institutional repositories 34 35

36 The rise of subject repositories can be traced from the creation of arXiv in 1991. This was an  
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38 initiative at Cornell University which concentrated on the sharing of e-prints (mainly pre-  
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40 prints) in the early days, but now includes updated versions, post-prints, and some final  
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42 publisher versions where journals allow, whilst retaining access to all previous versions  
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44 which have been uploaded.  
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51 arXiv provides access to over 1 million e-prints across subjects mainly in science and  
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53 mathematics, and is probably the best-known subject repository in these areas. Others of note  
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55 include RePEc (Research Papers in Economics), Cogprints (psychology, linguistics and  
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57 computer science), and PubMed Central (biomedical and life sciences). However, the number  
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1 of repositories restricted to a particular discipline or set of disciplines is much less (305) than  
2 those within institutions (2,952), according to the Directory of Open Access Repositories  
3 (OpenDOAR), suggesting that they may be of less importance than they were originally  
4 planned to be.  
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13 Of the 2,952 institutional repositories, just under 10% are based in the United Kingdom, over  
14 50% in the whole of Europe, 20% across North America (United States (US), Canada,  
15 Mexico), and 2% in Australasia (Australia, New Zealand) (OpenDOAR search engine). A  
16 cursory look at some sample IRs in the US suggests that the dissemination of OA articles in  
17 these services is much lower than within the UK and Europe, possibly due to the mandates  
18 that affect those regions and their scholarly communication policies.  
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32 Some IRs work in partnership across different universities (such as the White Rose  
33 Consortium), but this remains rare, and although a useful by-product of IRs is the free  
34 dissemination of OA papers either via gold funded models or by green following embargo  
35 expiries, the main focus remains to showcase the research and scholarly outputs of a  
36 particular institution.  
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#### 48 2.4. Bronze / delayed OA 49

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51 This classification encompasses a range of OA types, including delayed OA journals, open  
52 editorial content, one-off articles or issues made open by journals, and non-DOAJ indexed  
53 journals, otherwise known as ‘Hidden Gold’.  
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1 One major distinction about the bronze OA journals is that they do not generally offer re-use  
2 rights beyond reading (i.e. gratis OA rather than libre), and often provide access to material  
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4 for promotional purposes. Bronze OA is also not guaranteed, and sometimes disappears  
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6 behind paywalls, although “a lot of these delayed OA journals submit their free-to-read  
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8 articles–after the embargo period–directly to PubMed Commons to archive” (Regier, 2017).  
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14 A preprint made available earlier this year analyzed data from 2015 and reached the  
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16 following conclusion: “notably, the most common mechanism for OA is not Gold, Green, or  
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18 Hybrid OA, but rather an under-discussed category we dub Bronze: articles made free-to-read  
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20 on the publisher website, without an explicit Open license” (Piwowar, 2017).  
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## 29 2.5. Diamond/Platinum OA

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32 Diamond OA has been defined as “a relatively recent model similar to Gold Open Access,  
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34 but with the important innovation that there is no fee for authors” (Kelly, 2013). The term has  
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36 only recently gained currency, sometimes interchanged with the term platinum OA. Journal  
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38 funding is achieved through means other than APCs, for example from advertising, grants, or  
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40 support from University departments or libraries. Even so, the costs remain fairly high, so  
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42 this is not a particularly sustainable way to develop OA titles (Wexler, 2015).  
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## 52 2.6. White OA

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55 This definition first gained currency during the SHERPA (originally standing for Securing a  
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57 Hybrid Environment for Research Preservation and Access) RoMEO (Rights Metadata for  
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59 Open Archiving) project, which attempted to collate publisher OA policies and present them  
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1 in a user-friendly way. This project now forms part of the central services provided by JISC  
2 (Joint Information Systems Committee) to their members in higher and further education.  
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4 White OA simply means that a particular journal or publisher has not engaged with OA in  
5 any way, and all their content is kept behind paywalls. It is included here as it remains  
6 important within the OA movement in the UK to identify titles and publishers which remain  
7 resistant to more progressive models, but which may be the most appropriate journals for  
8 maximum REF credit.  
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## 21 2.7. Black / guerrilla OA

22 Black OA refers to the various means by which articles or other research can be shared by  
23 means which could be described as peer to peer (P2P). Some recent studies have implied that  
24 this flavor of OA is the biggest threat to traditional publishing models (Mohdin, 2015;  
25 Bohannon, 2016; Himmelstein, 2017; McKenzie, 2017). Black OA can encompass a variety  
26 of activity, including requesting a copy via an institutional repository link from the author of  
27 an embargoed article, sharing logins for subscribed content with someone not authorized to  
28 access, requesting someone to source an article using the Twitter hashtag #icanhazpdf, and  
29 more sophisticated pirate sites such as Sci-Hub, LibGen and r/scholar, which are often  
30 supported by commentators in the free culture movement as a matter of solidarity (Barok et  
31 al., 2015).  
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52 For a quick yet detailed overview of the black OA landscape, the American Library  
53 Association (ALA) Copy Talks recording by Gardner and Gardner from 2017, is an excellent  
54 primer on both crowdsourcing techniques and pirate libraries, putting them in the historical  
55 context of access to information.  
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1 The likes of ResearchGate and Academia.edu, both of which are commercial networking  
2 sites, also fall into this category, as does Google Books. It is interesting to note that  
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4 publishers and author associations have reacted in very different ways to these services, while  
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6 some authors see them as valuable space in which to engage with fellow researchers (Martin-  
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8 Martin et al., 2016).  
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### 11 12 13 14 15 16 17 2.7.1. ResearchGate

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20 ResearchGate covers itself against infringement by putting the responsibility of checking  
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22 whether an article can be shared on the depositor. However, major publishers have made it  
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24 quite clear that responsible sharing only applies to material which has been made available  
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26 via a Creative Commons license, and that even an OA article with a CC-BY-NC-ND  
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28 (Attribution – Non-Commercial – No Derivatives) license would not be acceptable to upload  
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30 to networking platforms of this type due to their commercial nature (Science Direct, 2017).  
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39 Most recently, in September 2017, the International Association of Scientific Technical and  
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41 Medical Publishers (STM), wrote to the operators of ResearchGate via their lawyer to present  
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43 a proposal that reads part cease and desist and part demand for legal compliance (Scollo  
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45 Lavizzar, 2017).  
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### 53 2.7.2. Academia.edu

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56 Academia.edu has also had its fair share of challenges, notably via Digital Millennium  
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58 Copyright Act (DMCA) takedown notices. In 2013 it was speculated that such for-profit  
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1 services could be forced out of business by IRs, subject repositories, or non-commercial pre-  
2 print services (Clarke, 2013). This has not happened, although some academics have  
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4 suggested that sharing of work in a commercial product is not desirable (Bond, 2017; Corker,  
5  
6 2017; Fitzpatrick, 2015, Schwarz, 2015). Academia.edu continues to thrive under its model  
7  
8 of ‘Share Research’, which leaves institutions and libraries having to fill the gap of  
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10 understanding by launching advice centers and services which guide researchers to more  
11  
12 legitimate routes of depositing their work. In IRs, there is now functionality which displays  
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14 similar content from other repositories which use the same host software (such as ePrints),  
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16 although searching across IRs via a common interface is still a long way off.  
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### 25 2.7.3. Google

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28 Google Scholar and Google Books fall into a grey area which has faced several legal  
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30 challenges. In April 2016, an action in the US Supreme Court to appeal against a decision  
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32 which went in Google’s favor rather than the Author’s Guild, declined to class the Google  
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34 digital library as copyright infringement, instead describing it as fair use. In the UK, the  
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36 definition of fair dealing is not directly congruent with the US definition of fair use, which  
37  
38 means that Google Books and related acts of reproduction “are likely to constitute a prima  
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40 facie infringement of copyright under English law” (Woodhead, 2014). However, it is  
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42 interesting that no comparable cases have been actioned in the UK Courts.  
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52 In Europe, the Rome II Regulation dictates that “protection in the country of origin is subject  
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54 to its law”, regardless of the country of production (Xalabarder, 2014). In the case of Google  
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56 Scholar, the service relies on the publisher/rights-holder of infringing content asking for it to  
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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

1 LibGen, also known as Library Genesis, is a similar but smaller-scale pirate repository which  
2 carries in excess of 52 million articles from over 50,000 publications. As with the examples  
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4 above, publishers have taken legal action against the site with some success, but it endures  
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6 via various mirror sites within peer to peer protocols.  
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13 In May 2015, the UK Publishers Association issued many takedown notices to LibGen on  
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15 behalf of their members, and internet service providers (ISPs) across the country acted to  
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17 block the domain, as well as similar sites such as Bookfi and Freshwap (Kamen, 2015).  
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21 Despite this apparent victory it might be argued that it was the loss of value-added tax (VAT)  
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23 to the UK government (e-books and e-journals being subject to the tax) that colored the  
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25 court's decision, rather than representing the rights of the publishers.  
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#### 31 2.7.6. #icanhazpdf

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35 The Twitter tag 'icanhazpdf' was first set up in 2011 and has been described as piracy (BBC  
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37 Trending, 2015). However, it could be argued that publisher policies do vary, and that this  
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39 method--having no commercial focus and not operating via traditional P2P technologies--  
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41 cannot be classed in the same way as Sci-Hub and similar black OA services.  
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49 It is true that most requests are for articles published in recent years (and more likely to be  
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51 paywalled), so copyrights and institutional licenses for subscribed content are almost  
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53 certainly being infringed on a daily basis (Gardner and Gardner, 2017). Interactions via  
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55 public Twitter are not huge (somewhere in the region of 4 to 5 requests per day) but it is  
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57 possible that some requests using the hashtag are being made through private direct messages  
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(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

1 such websites or resources. The inclusion of any such link does not imply endorsement by  
2 Open Access Button” (Open Access Button terms of use).  
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8 On October 12, 2017, JISC released the findings of their Open Access Project, examining the  
9 feasibility of using the service within the interlibrary loan workflow (Fahmy, 2017). This  
10 would reduce the need to request articles through a paid route where an OA copy is freely  
11 available, with the button being made available at the requesting stage.  
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22 Unpaywall utilizes a database of millions of author-uploaded PDFs. It is less mature than the  
23 Open Access Button and does not search for open datasets; instead it relies on services such  
24 as PubMed Central, the DOAJ, Crossref (particularly their license info), DataCite, Google  
25 Scholar, and BASE (Bielefeld Academic Search Engine). Unpaywall is funded by grants  
26 from the National Science Foundation and the Alfred P. Sloan Foundation.  
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### 37 3. Impact on traditional publishing 38 39

40 What is unclear is whether researchers turn to less legitimate models of accessing research  
41 due to time constraints or a lack of patience: for example utilizing Sci-Hub or #icanhazpdf  
42 rather than logging in through a University authentication system (Borghi, n.d.; Oxenham,  
43 2016). There is anecdotal evidence that researchers do indeed bypass routes such as  
44 interlibrary loan when an article is not available and instead ask their colleagues in other  
45 institutions to supply the material; also, publishers seem to feel threatened by the proliferation  
46 of services which may be classed in that grey area of legality.  
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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

1 Taylor & Francis, Reed-Elsevier, Springer, and Wiley all expanded their portfolios during  
2 this time period.  
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8 Larivière et al. studied the subject area of physics as one example to determine the impact of  
9 OA, but results were inconclusive, representing a decline to Elsevier but a growth for  
10 Springer. It can be surmised that commercial publishers may be less engaged in a field where  
11 there are well-established OA initiatives such as arXiv, SCOAP3 (Sponsoring Consortium for  
12 Open Access Publishing in Particle Physics), and scholarly society publications. However, it  
13 is also noted that there is no umbrella society to take ownership of the publication of research  
14 in social sciences or humanities.  
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#### 29 4. Conclusion 30

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32 Although the OA landscape is now moving quickly, with changes coming to fruition through  
33 institutional and funder mandates, as well as governmental initiatives and legal challenges, it  
34 seems the long-term momentum is likely to be the sharing of material without subscription  
35 barriers, certainly in the STEM disciplines. As authors engage more fully with whichever  
36 flavor of OA is appropriate to them, they may well start to remove their focus on commercial  
37 journals with high impact, and publishers should not be complacent regarding that trend.  
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51 As far as black OA providers are concerned, it should be noted that similar sites relating to  
52 music and film such as The Pirate Bay (created in 2003) have continued despite attempts to  
53 block them, close them down, or take legal action against them. However, Napster (created in  
54 1999) was eventually sold as a commercial concern and Internet piracy in some areas is  
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1 reportedly declining (Titcomb, 2016). Sci-Hub seems relatively invincible and now claims to  
2 have increased the number of daily requests it receives from 80,000 in 2015 to over 200,000  
3 in 2016 (Bohannon, 2016). The founder, Alexandra Elbakyan, has cited Article 27 (1) of the  
4 United Nations (UN) Declaration of Human Rights “to share in scientific advancement and  
5 its benefits”, to legitimize her service (Henderson, 2016).  
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16 Services such as Sci-Hub are particularly attractive in developing countries, who simply  
17 cannot afford access to commercially-published research (Peters, 2016; Mphahlele, 2017).  
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21 Buranyi and others have stated that academic publishing is viewed as a profitable business  
22 model for publishers, but that it relies on the free labor of researchers to provide content,  
23 editing and peer review (2017).  
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32 In conclusion, the traditional publishing landscape must continue to evolve if it is to survive  
33 well into the 21<sup>st</sup> century, embracing both gold and green types of OA and experimenting  
34 with different pricing models. A one-size-fits-all approach no longer feels appropriate,  
35 although it could be argued that publishers add a certain amount of value (Anderson, 2016).  
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39 Those creating the research that gains the commercial publishers their profits may feel  
40 disinclined to sign away their copyright in the future in favor of publishing wherever they  
41 like (Genovese, 2017).  
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53 In the words of Anderson, “if the promise of open access is not the promise of free access,  
54 then it’s difficult to see what the point is” (Anderson, 2017b). Curry calls for academics to  
55 regain control of the journals in which their content is published, and Chopin champions the  
56 guerilla routes by stating “sharing public science should never be illegal” (Curry, 2017;  
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1 Chopin, 2016). The humanities are quite a different proposition, as publishers in these fields  
2 do not necessarily make big profits and there is less of a professional culture of openness  
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4 (Holcombe, 2015).  
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10 Even so, the wide-ranging report by Fyfe et al. concludes with a recommendation that all  
11 authors keep hold of their copyrights in the context of publishers becoming increasingly  
12 focused on income generation (Fyfe et al., 2017). Harington offers a publisher's view on  
13 copyright which seems rather anti-open access: "one can provide paths to openness, while  
14 being mindful that the extreme conditions of CC-BY ... may be one step too far if we want to  
15 preserve the ability ... to create in the global economy" (Harington, 2017). The academic  
16 view is covered by Kendzior and Pinfield (Kendzior, 2012; Pinfield, 2016).  
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31 Publishers may acquire academic social network sites to better monitor the sharing of their  
32 published content, as Elsevier did with the referencing and sharing platform Mendeley (to the  
33 initial consternation of researchers) (Ingram, 2013). Conversely, the difference between a  
34 post-print refereed article and a version set for publishing may become so insignificant that  
35 there is very little intellectual property (IP) worth protecting. Libraries may finally look at  
36 their shrinking budgets and decide that cancellations are the way to go after all, as the  
37 University of Calgary did at the beginning of 2017 (Fletcher, 2017).  
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53 Open access monographs are next on the agenda, and may yet shake up the accepted order of  
54 the book publishing industry (Collins and Malloy, 2016; Crossick, 2015; Deegan, 2017).  
55 However, that is a topic for another column, another day. Right now, I see a bright future of  
56 many colors, flavors, and ways of accessing material.  
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