"This is an Author's Original Manuscript of an Article submitted to the journal : *Australian Academic and Research Libraries (AARL). Special Issue - 'Research support services in academic and research libraries'* available online at <http://www.tandfonline.com/>"

Paying for publication: issues and challenges for research support services – REVISED

Author

Dr Danny Kingsley

Visiting Fellow, Australian National Centre for the Public Awareness of Science

e: danny.kingsley@anu.edu.au

p: +61 (0) 413 101 197

Abstract

Payment for publication is an increasingly prevalent component of the scholarly publishing landscape, and librarians have a professional requirement to be aware of the current situation. This paper explores this phenomenon, including an analysis of what is being charged for publication. Comparisons between the different types of open access publishing, in fully open access and in hybrid journals, show the considerably higher costs of hybrid open access. Despite this discrepancy there remain issues with the discoverability of some hybrid open access articles. Payment for publication is changing

the funding base for scholarly publication therefore broadening the administrative areas responsible for management of the system. New relationships between players across the sector need to be developed and fostered. To participate in this changing landscape librarians need a knowledge of the source of institutional and government funds for article processing charges and these funding bodies' approaches to funding hybrid. New offerings from publishers, such as membership schemes and mega journals further complicate the situation, not helped by challenges in obtaining data about what is being spent in this area. This increasingly complex situation potentially expands the role of libraries within institutions into the future, which is preferable to becoming irrelevant.

Keywords

Open access, hybrid journals, article processing charges, scholarly publishing, libraries

MAIN TEXT

Introduction

This paper explores some of the issues relating to payment for publication, particularly in relation to providing open access to research. It has been argued that as libraries are seen as the primary resource at academic institutions for information on scholarly publishing issues, librarians should be prepared to answer questions from researchers on this topic (Fruin and Rascoe 2014). This paper has two goals. First to provide comprehensive background information on the payment for publication landscape as it currently stands to assist libraries with providing information to researchers. Second to explore the management aspects of publication payment.

To that end the paper is written in two halves, with the first exploring the current landscape of payment for publication including what is being charged for publication, with comparisons between the different types of open access publishing. Open access publishing can be in a fully open access journal or in a journal that charges to make a particular article open access while the remainder of the journal is only available through a subscription, referred to as a hybrid journal. The paper will then consider what payment for hybrid open access actually provides. The second half of the paper will explore the management aspect of publication payment, and how libraries can be involved in the process, first considering current practices to support paid open access, such as through publisher membership schemes. The focus will then move to the source of funds for article processing charges (APCs) within institutions and funding bodies and their approach to funding hybrid publishing before considering the difficulty of obtaining information about what is being spent in this area. Finally the challenges that the management of APCs elicit across the research sector will be discussed.

Section 1 – the payment for publication landscape

Open access is defined in this paper as “the free, immediate, online availability of research articles, coupled with the rights to use these articles fully in the digital environment” (SPARC n.d.). Open access to research outputs is commonly described as achievable in one of two ways – by placing an author copy of the final reviewed and corrected paper in an online repository (referred as ‘green’ open access) or by publishing the article open access (called ‘gold’ open access).

Many open access journals are ‘free to publish, free to read’ because they are subsidised by an institution or society as a contribution to the global corpus of open access scholarly

literature. A 2011 study showed that, in 2010, fewer than 27% of all journals listed in the Directory of Open Access Journals (DOAJ) charged APCs (Solomon and Bjork 2012). This figure has not changed much in the past three years, as evidenced by a 2013 study of over 9,000 journals in the DOAJ, concluding that only 28% charged an APC (Kozak and Hartley 2013). A 2010 study found that over 50% of authors who had made work open access had done so without incurring a charge, noting that many of these may have made their work open access by placing a copy in a repository (Mark Ware Consulting 2010).

A subset of gold open access is 'hybrid' open access, which almost invariably incurs an APC. There has been some confusion in the sector about the term 'gold' open access, with many understanding it to mean 'paid' open access. The rise of hybrid open access and the use of the incorrect term 'hybrid open access journal' have contributed to this confusion. Hybrid journals provide open access to specific articles in an otherwise subscription journal. They are not open access journals. This paper makes the distinction between fully open access journals and hybrid journals as a means to achieve open access.

Funding bodies worldwide are increasingly requiring funded research to be available open access. These policies vary considerably in what they require, with differences in the method by which open access is achieved (green, gold through a fully open access journal or hybrid) and differences in the reuse requirements attached to the open access version. They differ too in whether data must also be made available, what the funder will provide in terms of monetary support and acceptable embargo periods within the policy (AOASG 2013). In response to these policies, commercial publishers have expanded their offerings to both include a larger number of fully open access journals and adding a hybrid open access option in a larger percentage of their otherwise subscription journals. In both instances there are costs to the author, or their institution or funder, to publish.

This paper is specifically looking at those instances where publishing in an open access journal incurs an APC for publication and at hybrid open access, which almost always charges an APC.

Different types of publication charges

Payment for publication has existed in some disciplines well before open access options arose. Colour charges and page charges are still levied in certain disciplines for subscription-based journals (Sharman 2012). The *Plant Journal* colour charges are GBP150 [approx. AUD273] for the first colour figure and GBP50 [approx. AUD91] for each subsequent figure (Wiley Online Library n.d.) and the Ecological Society of America (n.d.) charge USD75 [approx. AUD80] per printed page and USD360 [approx.. AUD380] per colour photograph or figure. There can also be copyright reuse charges which are paid from the researcher's budget.

Researchers in disciplines with a history of page charges are more accepting of the idea of paying article processing charges: "Biology researchers appeared to be quite familiar with page charges and did not consider article processing charges for OA journals excessive" (Nariani and Fernandez 2011, p.187). This aligns with the finding that journals in biomedicine had the highest article processing charges of any discipline. However for those researchers unfamiliar with such payments, article processing charges can be a barrier to open access publishing.

A relatively recent type of charge is a submission charge, where authors are required to pay a fee to cover the cost of peer review. Paying for the peer review process occurs in some open access and some subscription based journals. The fees that are charged in this

situation are generally non-refundable and seem to range from USD50 [approx. AUD53] to USD400 [approx. AUD424] but hover about the USD75 [approx. AUD80] mark (Mark Ware Consulting 2010). The rationale for charging to peer review is that it is a service provided to authors who want to be published. Authors are using a service when their article is reviewed (even if it is rejected). It seems fair that those who benefit from this service (authors, their institution or funder) should pay a portion of the costs.

There have been some studies to look at the average costs of open access journals that do charge APCs. Respondents to a 2010 study who had paid for open access most commonly spent in the price band of EUR501-1000 [approx. AUD725-1445] (Mark Ware Consulting 2010). A large study of APCs paid for over 100,000 open access articles published in 2010 showed the average cost to be USD906 [approx. AUD960] (Solomon and Bjork 2012). It is also worth noting that many open access publishers will also waive the fees for researchers who cannot afford them (PLOS Public Library of Science 2014).

The 'hybrid' option

Hybrid open access options were first offered in 2004 with Springer's Open Choice product charging USD3000 [approx. AUD3200] per article (Springer 2004). A decade on the price has not changed (Springer 2014). Wiley Online Open's trial began the same year, charging USD2500 [approx. AUD2600] (Blackwell Publishing 2005). In 2014 this price has risen to USD3000 (Wiley Publishing 2014). Oxford Open launched in 2005 (Oxford University Press 2012), and in 2006 Elsevier Open Access (Elsevier 2012) and Sage Choice (SAGE 2012) began. In 2007, Taylor & Francis Open Select (Taylor and Francis 2012), Cambridge Open (Cambridge University Press 2012) and Nature Publishing Group began (Nature 2012). Even the youngest programs have existed for seven years, with early programs celebrating their first decade in 2014.

There are interesting trends when considering how the charges for hybrid compare to those of fully open access publishers. A 2013 comparison of eight hybrid programs notes that hybrid journals charge APCs between USD2620 – 5000 (with the average being USD3000) [approx. AUD3200] (Emery 2013). This conclusion was supported by numbers released by the Wellcome Trust on their expenditure on open access publication fees in 2012/2013. In that year over USD6.5 million [approx. AUD6.9 million] was spent on 2,127 articles, averaging USD3055 [approx. AUD3245] per article (Neylon 2014). This is considerably higher than the average cost for an open access journal.

A 2012 study showed fully open access journals charge between GBP500-2000 [approx. AUD911-3644] regardless of impact factor. The hybrid journals on the other hand tend to charge more than GBP1500 [approx. AUD2734] even when they have very low impact factors. At the high end of the impact factor range – at about 16 – OA journals charge between approximately GBP1250 and GBP1550 [approx. AUD2280 - 2820]. Hybrid journals APCs start at GB2400 rising to just under GBP4000 [approx. AUD4370 - 7280] (Andrew 2012). This pattern is replicated in a 2013 graph which demonstrates that hybrid journals tend (with a couple of exceptions) to start their article processing charges at USD3000 [approx. AUD3200] and go upward from there. The vast majority of the open access journal APCs do not reach that level, and only one exceeds it (Van Noorden 2013).

This huge price variance for APCs has provoked comment including the observation that “whatever the reason, hybrid OA tends to be sensationally expensive” (Poynder 2013b), and the conclusion that:

This almost certainly means that the price paid for the APCs is already not directly linked to the costs of production, but rather to what the market will bear (even

taking into account varying costs associated with the different article rejection rates of different journals). As authors still want to publish in the high-impact-factor journals, what is to stop those journals charging excessively high APCs knowing that authors will still pay up? (Pinfield 2013)

Possibly because of this high cost, and despite some hybrid programs being a decade old, the uptake of these hybrid options have been minimal, with some publishers reporting that hybrid accounts for about 1% of their publishing output, and the most successful programs, Nature, Sage and Oxford in the Life Sciences, reporting 10% of their output (Emery 2013). According to their website, in 2013, Elsevier (2014) published 2,000 articles in "journals that publish both subscription articles and open access articles". This represents only 0.6% of the over 330,000 new articles published that year. It appears longevity in the hybrid market does not translate to uptake.

However, the RCUK open access mandate (Research Councils UK 2013) appears to be having an impact on these figures. The mandate requires funded authors to publish their articles in a journal with "immediate and unrestricted access to the final published version of the paper, which should be made available using the Creative Commons Attribution (CC BY) licence" (Research Councils UK 2013). This policy came into force on the 1 April 2013. Wiley reported in October 2013 that "in the first quarter of this financial year, the number of open access articles published by Wiley was more than 4 times that at the same point last year" (Burley 2013). While this statement does not identify whether this increase was in their hybrid journals or fully open access journals, in July 2013 "Submissions to Wiley's hybrid journals (Online Open) have tripled in the last year, and from informal conversations with colleagues at other publishing companies, they are seeing a similar pattern" (Meadows 2013).

Addressing the 'double dipping' charge

Concerns about the relatively higher expense of APCs in a hybrid journal compared to an open access journal can be further exacerbated by the perception that publishers offering hybrid open access are 'double dipping' – that is, receiving payment to make an article open access and receiving a second payment for the same article in the form of a subscription to the remainder of the journal. Many publishers respond that they reduce the cost of subscriptions in proportion to the number of articles they have published open access under their hybrid scheme.

For example, the average price increase during 2007-2008 across all Oxford Journal titles was 6.9% whereas the average price increase for Oxford Open titles (with open access uptake in 2006) was 1.7%. Eight Oxford Open titles saw an absolute reduction in price from 2007 to 2008 (Kiley 2008). In April 2013 the Royal Society published its Transparent Pricing Mechanism stating that they noted the percentage change in the number of non open access published over two three year periods. If that percentage drops they will adjust the price accordingly. Each year they publish the percentages and articles counts on their web site (Royal Society Publishing 2013). On 28 March 2013, Wiley's released its Subscription Pricing for Hybrid Journals. This states they will exclude articles published as Open Access following payment of an article publication fee in their subscription prices. They state they will also vary the price of titles proportionately for any shift from subscription-funded articles to gold open access articles (Wiley Online Library 2013).

Elsevier has a No Double Dipping Policy which "is not to charge subscribers for open access articles and when calculating subscription prices only to take into account subscription articles – we do not double dip." Elsevier states that they "do not count open

access articles when setting subscription prices for titles. Subscription prices are therefore not affected by the volume of open access articles published in the journal.” They make the distinction between individual subscriptions and payment for Collections. The no dipping policy for Collections is less clear (Elsevier 2014). Private correspondence from Elsevier has noted that in 2014 they have adjusted the list prices of 27 titles downwards. These include *Molecular and Biochemical Parasitology*, where they have reduced the list price by 3.7% in 2014, due to a decline in the number of subscription articles and a subsequent increase in open access articles in this journal.

However there are some issues with verifying these claims by publishers. The 2013 UK House of Commons Business Innovations & Skills (BIS) Committee report (2013) on open access made some observations about the issue of secrecy in the publishing industry, noting the non-disclosure clauses in subscription contracts which prevent subscribers from disclosing the terms and conditions of their arrangements with publishers. These clauses prevent universities from negotiating better subscription rates, The BIS report recommended “genuine price transparency from publishers” (par 78).

It has been noted that it is impossible for anyone to verify these ‘no double dipping’ policies due to the secrecy around the subscriptions paid by any given library and the reality that almost all libraries subscribe as part of a ‘Big Deal’ (Poynder 2013b). The Big Deal refers to the way libraries subscribe to journals, where a large number of titles are included in the subscription price, so there is no delineation of cost per journal title. Another argument is that hybrid gold open access is one in a series of ‘market distorting prices’ in the scholarly publishing landscape. Issues include site licensing which forces an institution to make uniform decisions for a large and diverse group, and the non-disclosure clauses that these licenses are held under. Bundling of journals into large deals

which subsidise new and marginal journals is also an issue, which means: “All of these practices make it impossible to assess prices” (Van de Velde 2013).

But there are many who argue that the issues are more nuanced. Even if we accept that the no-double dipping policy is in place and being enacted, the benefit is not felt by the institution publishing the work. That institution pays the full cost for the publication, but shares the reduced fees with all other institutions subscribing to that journal, so receives only a tiny fraction of the benefit. The long-range outcome of a fully gold open access solution to scholarly communication is that institutions with a high research output will end up supporting the scholarly publication system for the remainder of the world.

There are some models in place that experiment with the linking of discounts on APCs to subscriptions within an institution. The *Proceedings of the National Academy of Sciences* (PNAS) is tying an APC discount to 2014 site licenses – the discounted open access fee is USD1000 [approx. AUD1060] (compared to the regular fee of USD1350 [approx. AUD1433]) (PNAS 2014). It is worth noting that *PNAS* charges between USD1800 [approx. AUD1910] and USD2400 [approx. AUD2550] for publication in the subscription journal, and makes these publications available six months after publication (PNAS 2013). *PNAS* also archives the works in PubMed Central, so the appeal of the open access discount offer would appear to be limited. Similarly, the American Chemical Society (ACS) offer a discounted price on article processing charges for authors at subscribing institutions and a further discount for ACS members. So authors who are members of the ACS and who are working at an institution that subscribes to their journals can pay as little as USD1500 [approx. AUD1590] for the article processing charge, compared to the basic rate of USD4000 [approx. AUD4250] (American Chemical Society 2013).

Not all hybrid is equal

One of the apparent outcomes of the RCUK policy is the fragmentation of hybrid options from publishers. One example of multiple hybrid options is offered by the ACS which ‘expanded their offerings’ under their hybrid scheme, in operation since 2006. This expansion allows authors: “Immediate or embargoed (after 12 months) open availability of the final published article, Open access options as low as USD750 [approx. AUD795] for ACS members at subscribing institutions and Creative Commons licenses available with ACS AuthorChoice” (American Chemical Society 2013). At the lower end of the scale an author can pay USD2000 [approx. AUD2120] to make the work available 12 months after publication without a CC license. It is worth noting that ACS authors may deposit their accepted manuscript within 12 months to their funder, institutional, or governmental repository to comply with open access mandates.

However under the ACS hybrid scheme, immediate open access under a CC license (what is required by the RCUK policy) is more expensive. It costs twice as much to make the published version available immediately than it does to make it available after 12 months. In addition, CC licenses cost an extra USD1000 [approx. AUD1060] for non-members and USD500 [approx. AUD530] for members. So for an author under an RCUK mandate who is not an ACS member but is publishing in an ACS journal will need to pay USD5000 [approx. AUD5300] to make their work immediately available with a CC license – very much at the highest end of hybrid charges.

The ACS is not alone in this model of distinguishing between different type of licenses. Nature Publishing Group’s press release in November 2012 lists the costs for different titles. The premium offered, and what is required under RCUK policy, is an immediate CC-BY open access license which attracts the highest charge. The differentiation in these

examples is around the GBP300-400 mark [approx. AUD546-729]. For example *Bone Marrow Transplantation* charges GBP2500 [approx. AUD4556] for CC-BY-NC-ND or CC-BY-NC-SA but GBP2800 [approx. AUD5096] for CC-BY (Nature Publishing Group 2012). This is considerably less price discrimination than ACS, but the pricing strategy is the same – authors pay more for what is required under the RCUK mandate. The market has adjusted to the most profitable position given the mandate. These complex publication options do little to increase transparency in publishing costs.

Anecdotally there have also been some issues with the availability and discoverability of hybrid open access articles. In some cases authors have complained that where an APC has been paid to make an article open access under a hybrid scheme, the published article does not differ from any other article in the otherwise subscription journal by stating that it is available open access (Murray-Rust 2013a). In other instances a user clicking on one of these articles hits a paywall (Murray-Rust 2013b). There are also continued issues with Elsevier charging for access to CC-BY articles (Murray-Rust 2014). There are also issues related to clarity about the licensing that is attached to a particular article where an APC has been paid. In March 2012 one blogger noted that a ‘free’ to read Elsevier article still had a Permission’s link which, when followed, charged to download the work (Taylor 2012a).

There are also discoverability issues with some hybrid articles. Some publishing contracts state that authors should link to the article within the online journal rather than depositing a pdf into their own repository. This can be an issue for ensuring the work is being indexed by search engines because in some cases publishers don’t always have data available about the access conditions of individual articles. A blog about this issue notes:

In many cases, [publisher] discovery and link-resolution systems describe access terms only at the journal level, so OA papers that are published in hybrid journals might not be made visible to patrons because of the systems' presumption about access (Carpenter 2012).

An item is not open access if it is only available on a publisher's 'platform' but not indexed by search engines.

Hybrid – a transition

A final word about hybrid. So far this discussion has looked at the practices of commercial publishing companies and their hybrid open access programs. In many cases the hybrid options offer an alternate income stream and a way to transition their operations and cost bases to open access business models while maintaining commercial viability. Hybrid can offer smaller publishers a way to transition to an open access model. Some learned societies are using it as a way of 'testing the water' as they consider a move from subscription-based to open access publishing.

One such society journal, *International Surgery* from the International College of Surgeons, has used this model, transforming from print to online in 2012. The subscription to the journal is a modest USD500 [approx. AUD530]. They have transitioned to a hybrid model as a stepping stone to a pure open access journal, having adopted a hybrid model with permission of the BMJ, charging USD1500 [approx. AUD1590] for article processing charges. All content that is not paid open access is available 12 months after publication (International College of Surgeons n.d.).

It appears the hybrid option has benefitted some learned societies. Indeed commentators were suggesting this route for society journals in July 2012 (Taylor 2012b). However by June 2013 the same commentator had concluded that hybrid journals are not the solution for learned societies (Taylor 2013).

Section 2 - the role of the library

This paper has been exploring issues relating to the costs of payment for publication to provide background for those in a position of advising researchers on publication issues. The second half of the paper will explore the management aspect of publication payment, and how libraries can be involved in the process, first considering current practices to support open access, such as through publisher membership schemes. The focus will then move to the source of funds for APCs within institutions and funding bodies and their approach to funding hybrid before considering the difficulty of obtaining information about what is being spent in this area. Finally the challenges that the management of APCs elicit across the research sector will be discussed.

Membership options providing discounts on open access publishing

Over a decade ago, BioMed Central, one of the first fully open access publishers, began its membership model as a way for institutions to participate in their new publishing venture. This model has changed format over the years, but currently has several forms including 'Prepay' – covering the whole cost of publishing, 'Shared support' – with publishing costs split between authors and institutions, and 'Foundation' – available at no cost to eligible institutions from developing countries. Supporter Memberships provide a 15% discount on article processing charges (BioMed Central n.d.).

In the last couple of years a series of new membership models have arisen addressing the cost of open access. These increase the complexity of the subscription and licensing options available to libraries. A few different examples are listed here to demonstrate the variation between the offerings, but the list is in no way comprehensive.

The *Social Sciences Directory* and the *Humanities Directory* are offering institutional membership that would allow an unlimited number of submissions to be made for an agreed period of twelve months. This is for the equivalent cost of an average APC for a single article in a hybrid commercial journal (Social Sciences Directory n.d.).

Jisc is now a registered charity that champions the use of digital technologies in UK education and research but it began as the Joint Information Systems Committee of the UK Higher Education Funding Council over a decade ago. PeerJ has come to an arrangement with Jisc to allow UK universities to centrally fund their researchers' publication plans. The arrangement is that institutions pre-pay for publication plans and individuals take advantage of that pre-payment when they come to publish (Alderson 2014). An alternative is individual membership – researchers who join PeerJ for a nominal fee can then publish for free 'forever'.

Sometimes the model can become very complex. The Canadian open access *Journal of Medical Internet Research* charge all authors a USD90 [approx. AUD95] submission fee – which must be paid before the article is reviewed. Authors of accepted articles must then pay an APC of approximately USD2,000 [approx. AUD2120] – unless their institution has a membership. However, there are about 15 different levels of membership and the cheaper membership options do not include the APC waiver. An institution has to sign up to a three

year membership for USD5,000 [approx. AUD5311] to have one APC waiver per year (JMIR Publications n.d.).

It is not just open access publishers running a membership model. In January 2014, arXiv started implementing their new membership model – with 173 members in 22 countries: “the membership program aims to engage libraries and research laboratories worldwide that represent arXiv’s heaviest institutional users. Each member institution pledges a five-year initial funding commitment to support arXiv” (Rieger 2014).

There are other variations on the concept of institutional membership of a publisher scheme for a discount on APCs. The Austrian Science Fund, the Austrian Academic Consortium and the Austrian Central Library for Physics at the University of Vienna have embarked on a three year pilot with Institute of Physics (IOP) Publishing which brings two funding agreements – for hybrid open access publication and for access to a portfolio of journals – together (IOP Publishing n.d.-a).

Learned societies are also offering discounts on APCs for members. An example is the *New Journal of Physics* (NJP) which offers individual members of the related societies a 5% discount to the article charge when they publish in NJP (New Journal of Physics n.d.). The IOP has introduced a reviewer reward programme which offers referees a 10% credit towards the cost of publishing on a gold open access basis when they review an article. This is to “help recognise the contribution made by reviewers to the peer-review process” (IOP Publishing n.d.-b).

Paying for membership for a discount on the APCs does raise an issue when the volume of articles published from one institution means the amounts paid in APCs start to equate to

what that institution would be paying in a subscription if the journal were subscription based. Allowing for this, being a member of a fully open access publisher does at least support open access publication. It is worth noting that PLOS – another fully open access publisher – recently changed its membership options, retiring its Institutional Membership Program in October 2013 (PLOS n.d.-b). It has since launched the Institutional Accounts Program which allows institutions to pay the full article processing charge on behalf of its authors (PLOS n.d.-a). This appears to be an attempt to ease the administrative burden of managing APCs.

In the past year, possibly in response to the RCUK open access policy there has been a sharp increase in the number of institutional membership schemes offered by publishers with a hybrid option (Research Councils UK 2013). For example Wiley's Open Access Accounts "enable institutions and funders to pay upfront for open access articles published by authorized authors." This is for both Wiley's open access journals and their hybrid titles (Wiley Open Access n.d.). The Royal Society's Open Access Membership Programme enables participating organisations to decrease the cost of the article processing charge to their authors by 25% (Royal Society Publishing n.d.). The Royal Society of Chemistry 'Gold for Gold' program offers all RSC Gold subscribing institutions "voucher codes to publish OA articles at no cost". This program has been extended nationwide in Germany where under the DFG-RSC Gold licence agreement for 2014, more than 87 institutions in Germany, plus all Max Planck and Fraunhofer Institutes, can access RSC publications and "benefit collectively from more than 900 Gold for Gold voucher codes" (Royal Society of Chemistry n.d.).

While it might seem at first glance that institutions obtaining a discount is a good thing, one problem is this type of discounting masks the cost of publishing. The initial outlay in

any of these membership programs requires the institution's authors publish a certain number of articles each year in order to recoup the investment of the membership. This is potentially an issue for two reasons. One is that it is quite possible the institution won't reach that target (which results in the remainder of the initial investment being pure profit for the publisher). But the second, more concerning, issue is that by joining a membership program for any publishing model commits the institution to publishing with that specific publisher in the hybrid model. This last point is a problem given the 'double dipping' accusation levelled at hybrid publishing.

In the UK, it appears that many of the recipients of the block APC grants from the RCUK have spent their grants on membership packages from the biggest four publishers – Elsevier, Springer (both SpringerOpen and BioMed Central), Taylor & Francis and Wiley (Harris 2013a). This has been described by some commentators as “reinventing the Big Deal” (Poynder 2012).

As the publisher membership landscape becomes more complex and varied, when making decisions to support particular membership options, it is important for libraries to be mindful of the implications of doing so.

Sources of funding to support article processing charges

There is no doubt that paying for the publication of open access through APCs has been increasing steadily over the past decade and in some disciplines is becoming a mainstream scholarly publishing activity. The numbers are not trivial, one of the largest fully open access publishers, PLOS, recently published their 100,000th article (prometheus 2013).

A cursory consideration of the management of APCs shows all players in the publication system are affected, including the researchers, funding bodies, publishers, libraries and

other institutional administration (such as research offices). Many of the relationships between players in scholarly publication need to be reconfigured, or in some cases developed, in this new environment.

Libraries have traditionally had a relationship with publishers through subscriptions, and in some instances it might seem obvious that libraries should therefore take responsibility for the payment of article processing charges. But often the 'bucket of money' in an institution that pays for institutional subscription is not the same one that supports open access publishing. If the payment of article processing charges is coming from funding grants then this money will often be managed by the research office.

The money to support open access publication comes from several different sources. As government, funding body and institutional open access policies increase, funds for the payment of APCs are becoming more prevalent, particularly in the UK and Europe (AOASG 2013). Authors have reported a larger percentage of funding for publication compared with the previous year: "Over half of responding authors received grant funding (24% full funding, 29% partial funding) to cover Article Publication Charges (APCs), an increase of 43% from 2012" (Wiley Open Access 2013).

The UK 2013 Report of the Working Group on Expanding Access to Published Research Findings (known as the Finch Report) recommended that "a clear policy direction should be set towards support for publication in open access or hybrid journals, funded by article processing charges, as the main vehicle for the publication of research, especially when it is publicly funded" (Finch 2012, p.7). As a result, block grants from the Research Councils in the UK have been established to pay for this activity (Research Councils UK 2013).

The Netherlands has also adopted this position, with the Dutch State Secretary, Minister of Education, Culture and Science stating: “I am going for the Golden Road” (Dekker 2014). The Netherlands Organisation for Scientific Research (NWO) has an ‘Incentive Fund Open Access’. Elsewhere, there is the ‘Open Access Publishing’ programme from the German Research Foundation (DFG) (Deutsche Forschungsgemeinschaft 2013). Some funding bodies also commit to paying for open access charges, such as the Wellcome Trust (2013). In Australia, while neither the Australian Research Council or the National Health and Medical Research Council open access policies refer to payments for article processing charges, both organisations do allow some of their grant allocation to be directed to publication costs (Australian Research Council 2014, National Health and Medical Research Council 2014) .

One band of thought on this issue is that universities should treat publication fees as a strategic issue for the institution, not the library. There is certainly plenty of advice available for those considering setting up a fund (Research Information Network 2009). Analyses of business models for open access also exist, including a study looking at two institutions which have a fund for the payment of open access charges (Friend 2011). SPARC developed a web resource called “Campus-based Open-access Publishing Funds” in 2012 for institutions seeking advice in this area. It states it is not an advocacy document, rather it is an attempt to: “better understand why Funds are being launched, what decisions go into their creation, and how they are being managed” (SPARC 2012).

Despite this, the percentage of institutions with a central fund to pay publishing charges appears to be small. Surveys in the UK in found that in 2009 14% of responding institutions had central funds (8 out of 55) (Pinfield 2010) and that had risen to 15% (7 out of 52) in 2011 (Pinfield and Middleton 2012). In Australia and NZ an unpublished

survey undertaken in 2012 found that at the time there were only two universities in Australia with a central fund, and there were none in NZ. The only Australian fund listed on the Open Access Directory list of OA journal funds (Open Access Directory 2014b) is the open access policy at QUT (QUT Library 2012).

Any funding body must specify what those funds support. A recently published report lists proposed minimum quality standards for eligibility for funding, either institutional or grant body, including indexing in the DOAJ, meeting the Principles of Transparency and Best Practice in Scholarly Publishing and disclosing to the funder the average APC paid for a specific journal, amongst other recommendations (Björk and Solomon 2014).

Institutions that offer a central fund usually have some criteria for what is supported or not from within the fund (University of Manitoba 2013). Often these rules will exclude publications that have another form of funding available to them, and be specific about the affiliation and career status of the lead (or) all author(s). In some cases specific publishers or journals are identified as being within scope. Many of these criteria are also imposed by libraries on the publications that are eligible to take advantage of discounts offered through memberships with some publishers (Australian Catholic University 2011).

One specification of what is supported by a fund relates to hybrid publishing. For example, the University of Calgary and the University of Utah state their funds support hybrid journals only where there is a commitment by the publisher to proportionally reduce their subscription fees (University of Calgary 2014, University of Utah 2013). However there are significant challenges to determining if a journal is reducing its subscription charges, so this clause would be difficult to enact. In this instance, according to private correspondence, for the most part, the University of Calgary has taken publishers at their word regarding subscription reductions though this is being reviewed.

Several large funders specifically do not support hybrid open access. For example, the 2013 Science Europe Position Statement states that:

The Science Europe Member Organisations ... stress that the hybrid model, as currently defined and implemented by publishers, is not a working and viable pathway to Open Access. Any model for transition to Open Access supported by Science Europe Member Organisations must prevent 'double dipping' and increase cost transparency (Science Europe 2013).

The 2013 Business Innovation & Skills Committee report into open access (2013) recommended: "If the preference for Gold is maintained, the Government and RCUK should amend their policies so that APCs are only paid to publishers of pure Gold rather than hybrid journals to eliminate the risk of double-dipping" (par 77). Similarly, the Policy of the Compact for Open-Access Publishing Equity (COPE) notes in its question about which journals are eligible for funding support that:

...., journals that require a supplemental payment for open access on an article-by-article basis, so-called hybrid open access journals, would not be expected to be eligible. Other factors affecting eligibility might include quality of the journal and fee-waiver policies of the journal (COPE 2012).

A brief analysis of the list of open access journal funds from the Open Access Directory was undertaken by the author in February 2014 (Open Access Directory 2014a). The list contained details of 81 funds worldwide in early 2014 and 39.5% of the funds (32 funds) state they do not support hybrid journals. Only 13.5% of the funds (11 funds) state they support hybrid journals outright. A further 13.5% support hybrid journals with conditions attached – either by providing less funding for hybrid journals than fully open access

journals (seven funds), or by specifying that hybrid journals without embargoes are supported. Of the 27 funds that do not mention hybrid, nine specifically state the funds 'support OA journals' and in all probability this means non-hybrid journals, as is clarified in the University of Manitoba's eligibility criteria (University of Manitoba 2013). Without a full analysis of all of these funds, it is not clear how many do not include hybrid – but this potentially increases the number of funds that specifically do not support hybrid to half.

Libraries are in a strong position to provide advice and direction within institutions on the issue of central funds for publications. This changing landscape offers an opportunity for libraries to take leadership in this area and bring together the various stakeholders in order to determine the most appropriate approach to payment for publication within the context of the overall budget for their own institution.

How much is being spent on publication?

The current scholarly publication environment appears to be shifting as payment for scholarly publication moves from readers to the producers of the work. This would not necessarily be problematic if the situation were where a fixed amount of funding was distributed between payment of subscriptions and payment for publication. This is the type of scenario envisaged by UK Minister for Universities and Science, the Rt Hon David Willetts MP (2014) who noted: "Publishers have an opportunity to incentivise early adoption of Gold OA by moderating the total cost of publication for individual institutions". In other words determining charges based on the combination of expenditure by an institution on subscriptions and hybrid publishing.

However, so far this has not been how the landscape is evolving. Instead of the amounts redistributing, there are increased numbers of payments for publication while subscriptions continue unabated. The APC market is growing at about 30% per year,

with overall revenue for APCs estimated to be USD128 million [approx. AUD136 million] in 2012, currently growing at about 34% per year (Björk and Solomon 2014). It can be argued that as part of their knowledge transfer role librarians should be “cognizant of the frequency at which faculty and researchers are publishing in gold OA publications that charge a fee and the available options for covering those costs” (Fruin and Rascoe 2014, p.243).

The question of what institutions are spending on publication of research is broader than simply understanding one’s own institutional expenditure. It is naive to think that there can be an effective strategic conversation about the future of scholarly publishing without understanding what we are spending in the research sector:

The absence of coordination and dedicated institutional capacity to engage strategically with where our academics are publishing and what we are paying for makes us particularly vulnerable to exploitative financial practice on the part of the publishing industry (Poynder 2013a)

Institutions (universities, funding bodies and government) cannot make any strategic decisions about future publication policies if vital information about where research is being published and what is being paid for it are absent from the conversation. It would be sensible to consider ways that this information could be more easily collected and aggregated. Researchers, grant management offices, libraries, institutions and funders all have a role to play to increase our knowledge in this area. The need to quantify this expenditure is recognised by scholarly communication specialists around the globe. In March 2014, the Research Information Network (2014) published a report which proposed (amongst a raft of ideas) that:

Aggregate data should be gathered annually from a stratified sample of universities on their expenditure on APCs and other publication charges, and the numbers of articles for which they have been paid. (p.4)

There are several ways to approach the question of how much a given country's publicly funded researchers (or their institutions) are spending on open access publication costs: searching OA journals for that country's authors, determining how much is being spent from grants, using publisher's aggregator systems and using the research reporting systems of individual institutions. None of these currently provide us with the required answers. One issue is that in all cases the best we can do is identify articles that have an author with an institutional affiliation of the country in question. There is no simple way to determine who paid for an APC – many, many articles are co-authored often by an international team, and the payment for the open access charges may have been made by any of those authors. This means any assessment is a guess at best.

In addition it is almost impossible to determine how much is being spent on hybrid publication, as paid open access articles in subscription journals are not necessarily clearly identified as open access. It is, in theory, possible to establish (using sophisticated tools) that work is published in open access journals and calculate the expenditure on article processing charges from there. However there is no known way (within the literature) to calculate how much research by those with a given country's affiliation is being published in hybrid journals, and therefore how much we are spending on this. A substantial 2013 international study was able to track articles published in open access journals but was unable to distinguish between open access articles which had been made available in repositories and those made open access articles from payment for publication in hybrid journals (Archambault et al. 2013).

An estimate of the Netherlands' expenditure on open access publication found the total costs for gold OA publishing for the Netherlands (as covered by journals indexed in Web of Science) was just over EUR4 million [approx. AUD5.8 million] in 2013. This number does not separate payments for fully open access journals and hybrid payments. The concluding comment was: "Some research in this area is badly needed" (Gerritsma 2014).

Other researchers are also starting to collect information. The University of Ottawa has had an Author Fund for several years, and as part of their regular workflow they check the APCs asked for by the researcher against the amount posted on the journal website and record this amount. One of their researchers is starting a project on tracking open access APCs and has released the data openly (Hatherill 2013).

Again, libraries have an opportunity to open discussions about this issue within institutions. Expenditure on publication is additional to the expenditure on subscriptions already being made through library negotiation. It is beneficial to the whole institution that these figures are collected and analysed together in order to make strategic decisions about scholarly publication investments.

Managing the money

The challenges associated with establishing the amounts being spent on open access publishing is one of the factors that make the management of APC payments so complex, but there are many other issues. A cursory glance at the University of Leeds' APC workflow in their Case Study demonstrates this admirably (Jisc 2014c). Indeed, a roundtable of librarians held by Sage and Jisc in the UK in October 2013 found that managing APCs is a 'huge headache' for librarians – or at least promises to be when volumes increase. Some

single transactions have taken three to four hours of librarian time to complete (Harris 2013b).

There are two primary models for managing APCs, to have centralised management or to leave the payment in the hands of the researchers. Examples of institutions administering their own APCs include the University College London (Jisc 2014b), the University of London (2013) and Oxford University (Open Access Oxford 2013).

However concerns about the complexity of APC management have sparked the argument for intermediaries in managing the payment of APCs (Research Information Network 2012). Not surprisingly, several intermediary services have already started up, many responding to the increased uptake of paid open access options as a result of the RCUK open access policy. An early starter in this field has been Open Access Key: which asks: “Do you need a payment platform which carefully consolidates your organisation’s publication charges and enables you to structure payments and budgets which save you time, effort and expense?” (Open Access Key 2013).

The Jisc APC management service pilot is running two ‘strands’ – one exploring key issues and challenges in a gold open access environment offers an ‘online administration platform’ for the payment of article processing charges. The service includes: “holding funds for institutions, making timely payments to publishers and providing the financial reports designed to help manage funds effectively, as well as publisher engagement through a range of options for participation” (Jisc 2014a). This service addresses the issue of reporting requirements on the part of funding bodies in the UK. Libraries are typically not responsible for the reporting of institutional outputs, and publishers are not

necessarily collecting information about supporting funds in a way that can generate these reports.

There is some argument that centralising payments removes the transparency authors have with the costs of publishing under an APC system. Under the subscription model, from a researcher perspective it is 'free to publish' and 'free to read'. It is often surprising to realise how few researchers are aware of the huge subscriptions paid by their institutions for access. Given that the majority of researchers in institutions access all work seamlessly online it is understandable that many have stated "research is already open access" when asked about access to subscription material (Kingsley 2008).

However the increase in the payment of APCs has awoken many researchers' awareness of the costs of publication. An author's reaction of surprise to the request for a USD3000 [approx. AUD3180] APC when they are contacted by a publisher provides an opportunity for the library to discuss the costs associated with publication. There is an argument that as payment for publication at an article level becomes more prevalent, it gives the researcher an opportunity to determine value for money and in some arguments this means that scholarly publishing would be a more functional market (Pinfield 2013). This is then one of the disadvantages of having centralised management of APCs – it once again quarantines the researcher from the cost of publication, returning the status quo between libraries/institutions and publishers. On the other hand, if the process of paying APCs is too complex, it is quite possible researchers will become frustrated with the process and simply give up on open access, supporting the argument for centralising the payments.

There are some benefits from centrally managing APCs, for example the ease of accounting. When payments are left to the individual or department, rather than managed

by the library or a broker, it becomes difficult to determine the amounts being paid out by the institution as a whole. Clearly there is still much to be teased out in this area, but the discussion has begun. In November 2013 members of the library and funder community from Germany, the Netherlands, Sweden and the United Kingdom met with colleagues from open access publishers held a Forum and Workshop in Berlin under the title ‘Towards an Efficient System for Managing APCs’ to identify possibilities to gain system-wide efficiencies in administering article processing charges. The “informal core group of people” have come together to launch “Efficiency Standards for Article Processing Charges” which has the goals of addressing the challenges associated with the management of Open Access article charges, starting the discussion on efficient workflows involving all parties such as funders, libraries, authors, standardization initiatives, and publishers; and to propose good practices and proven workflows (ESAC n.d.).

Developing efficient workflows for the management of scholarly output within an institution, including the management of and possibly funding of any APCs, will be crucial to the smooth transition towards a more open publication landscape into the future. Libraries have traditionally been central to the management of scholarly literature within universities and by embracing the challenges offered by the new publishing landscape they will remain vital to the scholarly endeavour.

Conclusion

Payment for publication is becoming a established fixture in the scholarly publishing landscape and is likely to increase in proportion as time progresses. For this reason it is important for librarians to understand the issues involved in the decisions by researchers to make work available through payment, and the challenges associated with managing

that process. Hybrid open access costs more and sometimes offers less than fully open access journals and these factors should be considered whenever advising researchers about publication options. It also needs to be considered in any funding policies that an institution or funder has for the payment of APCs. In addition it is important that institutions and funders become aware of the level of expenditure on open access charges at an institutional and country level in order to strategically plan and manage the changing landscape. New relationships need to be forged within institutions and between publishers, funders and institutions so the challenges of this moving landscape can be met in an intelligent and sustainable manner into the future.

References

- Alderson, Carolyn. 2014. *Peer J - Affordable, open access, publishing now available to biological and medical science researchers*. JISC Collections, 24 January 2014 2014 [cited 28 May 2014 2014]. Available from <http://www.jisc-collections.ac.uk/News/Peer-J---Affordable-open-access-publishing-now-available-to-biological-and-medical-science-researchers/>.
- American Chemical Society. 2014. *ACS Author Choice* 2013 [cited 3 May 2014 2014]. Available from <http://acsopenaccess.org/acs-authorchoice/>.
- Andrew, Theo. 2012. Gold Open Access: Counting the Costs. *Ariadne* (40), <http://www.ariadne.ac.uk/issue70/andrew>.
- AOASG. 2014. *Statements on OA in Australia & the world*. Australian Open Access Support Group, March 2014 2013 [cited 17 April 2014 2014]. Available from <http://aoasg.org.au/statements-on-oa-in-australia-the-world/>.
- Archambault, Eric, Didier Amyot, Philippe Deschamps, Aurore Nicol, Lise Rebout, and Guillaume Roberge. 2013. Proportion of Open Access Peer-Reviewed Papers at the European and World Levels—2004-2011. Science-Metrix Inc.
- Australian Catholic University. 2014. *Open Access Article Processing Charges Policy*. ACU 2011 [cited 17 April 2014 2014]. Available from http://library.acu.edu.au/about_the_library/library_policies/library/open_access_processing_charges_policy.
- Australian Research Council. 2014. *ARC Discovery Projects Funding Rules for Funding Commencing in 2015* 2014 [cited 17 April 2014 2014]. Available from http://www.arc.gov.au/ncgp/dp/dp_fundingrules.htm.
- BioMed Central. 2014. *About Membership* n.d. [cited 28 May 2014 2014]. Available from <http://www.biomedcentral.com/libraries/membership>.
- Björk, Bo-Christer, and David J Solomon. 2014. Developing an Effective Market for Open Access Article Processing Charges. Wellcome Trust.
- Blackwell Publishing. 2005. *Online Open - a new open access journals service from Blackwell Publishing* [Press Release] 2005 [cited 12 March 2005]. Available from <http://www.blackwellpublishing.com/press/pressitem.asp?ref=272&site=1>.
- Burley, Rachel. 2014. *UK Open Access mandates, six months on*. Wiley, 23 October 2013 2013 [cited 17 April 2014 2014]. Available from <http://exchanges.wiley.com/blog/2013/10/23/uk-open-access-mandates-six-months-on/>.
- Business Innovation & Skills Committee. 2013. Business, Innovation and Skills Committee - Fifth Report: Open Access. Business, Innovation & Skills Committee.
- Cambridge University Press. 2014. *Open Access Content*. Cambridge University Press 2012 [cited 17 April 2014 2014]. Available from <http://journals.cambridge.org/action/openAccessContent?sessionId=0A1D632AE37ED813CEFFB02501DFA88D.journals>.
- Carpenter, Todd A. 2014. *As Hybrid Open Access Grows, the Scholarly Community Needs Article-level OA Metadata*. Scholarly Kitchen blog 2012 [cited 28 May 2014 2014]. Available from <http://scholarlykitchen.sspnet.org/2012/12/05/as-hybrid-open-access-grows-the-scholarly-community-needs-article-level-oa-metadata/>.
- COPE. 2014. *Compact for Open-Access Publishing Equity* 2012 [cited 3 May 2014 2014]. Available from <http://www.oacompact.org/faq/>.
- Dekker, Sander. 2014. *The end of the paywall*. Science Online, 28 January 2014 2014 [cited 17 April 2014 2014]. Available from <http://www.scienceguide.nl/201401/the-end-of-the-paywall.aspx>.

- Deutsche Forschungsgemeinschaft. 2014. *Information on the Open-Access Publishing Programme*. DFG 2013 [cited 17 April 2014 2014]. Available from http://www.dfg.de/en/research_funding/programmes/infrastructure/lis/funding_opportunities/open_access_publishing/index.html.
- Elsevier. 2014. *Open Access Articles*. Elsevier 2012 [cited 17 April 2014 2014]. Available from <http://www.elsevier.com/about/open-access/sponsored-articles>.
- Elsevier. 2014. *No double dipping policy* 2014 [cited 17 April 2014 2014]. Available from <http://www.elsevier.com/about/open-access/open-access-policies/no-double-dipping-policy>.
- Emery, Jill. 2013. Mining for gold: identifying the librarians' toolkit for managing hybrid open access. *Insights: the UKSG journal* 26 (2): 115-119, <http://uksg.metapress.com/content/v757245422x57833/fulltext.pdf>.
- ESAC. n.d. *Efficiency and standards for Article Processing Charges* [cited 12 July 2014]. Available from <http://esac-initiative.org/background/>.
- Finch, Janet. 2012. "Accessibility, sustainability, excellence: how to expand access to research publications. Report of the Working Group on Expanding Access to Published Research Findings."
- Friend, F 2011. Open access business models for research funders and universities. In *Knowledge Exchange Briefing Paper*. Copenhagen: Knowledge Exchange.
- Fruin, Christine, and Fred Rascoe. 2014. Funding open access journal publishing: Article processing charges. *College & Research Libraries News* (75): 240-243, <http://crln.acrl.org/content/75/5/240.full.pdf+html>.
- Gerritsma, Wouter. 2014. *The costs of going for Gold in the Netherlands* 6 March 2014 2014 [cited 1 June 2014 2014]. Available from <http://wowter.net/2014/03/05/costs-going-gold-netherlands/>.
- Harris, Sian. 2013a. "APCs add complexity to librarian role." *Research Information News*, 26 September 2013.
- Harris, Siân. 2013b. Implementing Open Access APCs: the role of academic libraries. SAGE.
- Hatherill, Jeannette. 2014. *Dataset: OA Publication rates*. University of Ottawa 2013 [cited 1 June 2014 2014]. Available from <http://www.ruor.uottawa.ca/en/handle/10393/24935>.
- International College of Surgeons. 2014. *International Surgery - Official Journal of the International College of Surgeons* n.d. [cited 28 May 2014 2014]. Available from <http://www.internationalsurgery.org/>.
- IOP Publishing. 2014. *New open access funding pilot for Austria*, 05 February 2014 n.d.-a [cited 28 May 2014 2014]. Available from <http://iopublishing.org/newsDetails/Austria-open-access>.
- IOP Publishing. 2014. *Questions and Answers for Referees*. IOP Publishing n.d.-b [cited 28 May 2014 2014]. Available from <http://iopublishing.org/newswire/questions-and-answers-for-referees>.
- Jisc. 2014. *Jisc APC pilot project* 2014a [cited 17 April 2014 2014]. Available from <http://www.jisc-collections.ac.uk/Jisc-APC-project/>.
- Jisc. 2014. *University College London: A Case Study* 2014b [cited 17 April 2014 2014]. Available from <https://http://www.jisc-collections.ac.uk/Jisc-APC-project/Case-studies/University-College-London-A-Case-Study/>.
- Jisc. 2014. *The University of Leeds: A Case Study* 2014c [cited 17 April 2014 2014]. Available from <http://www.jisc-collections.ac.uk/Jisc-APC-project/Case-studies/The-University-of-Leeds-A-Case-Study/>.
- JMIR Publications. 2014. *Support & Membership* n.d. [cited 28 May 2014 2014]. Available from http://www.jmir.org/cms/view/Support_%26amp%3B_Membership.

- Kiley, Robert. 2014. *Mandating open access: the view from the Wellcome Trust*, October 2008 2008 [cited 3 May 2014 2014]. Available from <http://www.slideshare.net/wellcome/mandating-open-access-wellcome-trust-presentation>.
- Kingsley, Danny A. 2008. *The effect of scholarly communication practices on engagement with open access: An Australian study of three disciplines*. PhD, Centre for the Public Awareness of Science, Australian National University, Canberra.
- Kozak, Marcin, and James Hartley. 2013. "Publication fees for open access journals: Different disciplines—different methods." *Journal of the American Society for Information Science and Technology* no. 64 (12):2591-2594.
- Mark Ware Consulting. 2010. Submission Fees – a tool in the transition to open access?: Summary of report to knowledge exchange. Bristol: Mark Ware Consulting Ltd.
- Meadows, Alice. 2014. *Open access - Keeping it real* 2013 [cited 17 April 2014 2014]. Available from <http://scholarlykitchen.sspnet.org/2013/06/13/open-access-keeping-it-real/>.
- Murray-Rust, Peter. 2014. *Does ACS label its APC #openaccess adequately? I navigate the complex options ... NO*. 2013a [cited 4 May 2014 2014]. Available from <http://blogs.ch.cam.ac.uk/pmr/2013/08/13/does-ac-label-its-apc-openaccess-adequately-i-navigate-the-complex-options-no/>.
- Murray-Rust, Peter. 2014. *Elsevier charges 3000 USD APC and then retains all rights; is this #openaccess?? No, they then put it behind paywall, 32 USD*, 14 August 2013 2013b [cited 4 May 2014 2014]. Available from <http://blogs.ch.cam.ac.uk/pmr/2013/08/14/elsevier-charges-3000-usd-apc-and-then-retains-all-rights-is-this-openaccess-no-they-then-put-it-behind-paywall-32-usd/>.
- Murray-Rust, Peter. 2014. *Elsevier are still charging THOUSANDS of pounds for CC-BY articles. IMMORAL, UNETHICAL, maybe even ILLEGAL*, 9 March 2014 2014 [cited 4 May 2014 2014]. Available from <http://blogs.ch.cam.ac.uk/pmr/2014/03/09/elsevier-are-still-charging-thousands-of-pounds-for-cc-by-articles-immoral-unethical-maybe-even-illegal/>.
- Nariani, R, and L. Fernandez. 2011. "Open Access Publishing: What Authors Want." *College and Research Libraries News* no. 73 (2):182-195.
- National Health and Medical Research Council. 2014. *NHMRC's Policy on the Dissemination of Research Findings* 2014 [cited 17 April 2014 2014]. Available from <http://www.nhmrc.gov.au/grants/policy/nhmrc-open-access-policy>.
- Nature. 2014. *Open access option*. Nature Publishing Group 2012 [cited 17 April 2014 2014]. Available from http://www.nature.com/ncomms/open_access/index.html.
- Nature Publishing Group. 2014. *NPG expands Creative Commons Attribution license options*. Nature Publishing Group, 7 November 2012 2012 [cited 28 May 2014 2014]. Available from http://www.nature.com/press_releases/cc-licenses.html.
- New Journal of Physics. 2014. *Article charge*. IOP Science n.d. [cited 28 May 2014 2014]. Available from <http://iopscience.iop.org/1367-2630/page/Article> charge.
- Neylon, Cameron. 2014. *Wellcome Trust Article Processing Charges by Article 2012/13* 2014 [cited 3 June 2014 2014]. Available from http://figshare.com/articles/Article_Processing_Charges/964812.
- Open Access Directory. 2014. *OA journal funds*, 22 February 2014 2014a [cited 3 May 2014 2014]. Available from http://oad.simmons.edu/oadwiki/OA_journal_funds.
- Open Access Directory. 2014. *OA journal funds* 2014b [cited 17 April 2014 2014]. Available from http://oad.simmons.edu/oadwiki/OA_journal_funds.
- Open Access Key. 2014. *Open Access Key: Connecting the Open Access Publishing Community* 2013 [cited 17 April 2014 2014]. Available from

- <https://http://www.openaccesskey.com/default.aspx?load=main&data=partners&typeid=3>.
- Open Access Oxford. 2014. *Applying for funding from Oxford's RCUK Open Access Block Grant*. Oxford University Press 2013 [cited 17 April 2014 2014]. Available from <http://openaccess.ox.ac.uk/applying-for-funding-from-oxfords-rcuk-open-access-block-grant/>.
- Oxford University Press. 2014. *Oxford Open*. Oxford University Press 2012 [cited 18 April 2014 2014]. Available from <http://www.oxfordjournals.org/oxfordopen/>.
- Pinfield, S. 2010. Paying for open access? Institutional funding streams and OA publication charges. *Learned Publishing* 23 (1): 39-52, <http://www.ingentaconnect.com/content/alpsp/lp/2010/00000023/00000001/art00008>.
- Pinfield, S, and C Middleton. 2012. "Open access central funds in UK universities." *Learned Publishing* no. 25 (2):107-114. doi: <http://www.ingentaconnect.com/content/alpsp/lp/2012/00000025/00000002/art00005>.
- Pinfield, Stephen. 2013. Is scholarly publishing going from crisis to crisis? *Learned Publishing* 26 (2): 85-88, <http://eprints.whiterose.ac.uk/75285/>.
- PLOS. 2014. *PLOS - Get Involved, Institutional Account Program*. PLOS n.d.-a [cited 27 May 2014 2014]. Available from <http://www.plos.org/get-involved/institutional-account-program/>.
- PLOS. 2014. *PLOS - Institutional Membership Program*. PLOS n.d.-b [cited 27 May 2014 2014]. Available from <http://www.plos.org/institutional-membership-program/>.
- PLOS Public Library of Science. 2014. *PLOS publication charges*. PLOS, 2014 2014 [cited 17 April 2014 2014]. Available from <http://www.plos.org/publications/publication-fees/>.
- PNAS. 2014. *Procedures for Submitting Manuscripts*. National Academy of Sciences, October 2013 2013 [cited 3 May 2014 2014]. Available from <http://www.pnas.org/site/authors/fees.xhtml>.
- PNAS. 2014. *Open Access Option*. National Academy of Sciences of the United States of America, February 2014 2014 [cited 3 May 2014 2014]. Available from <http://www.pnas.org/site/subscriptions/open-access.xhtml>.
- Poynder, Richard. 2014. *Open Access in the UK: Reinventing the Big Deal*, 1 October 2012 2012 [cited 2 May 2014 2014]. Available from <http://poynder.blogspot.com.au/2012/10/open-access-in-uk-reinventing-big-deal.html>.
- Poynder, Richard. 2014. *Michelle Willmers on the state of Open Access: Where are we, what still needs to be done?*, 30 October 2013 2013a [cited 2 May 2014 2014]. Available from <http://poynder.blogspot.co.uk/2013/10/michelle-willmers-on-state-of-open.html>.
- Poynder, Richard. 2014. *Open Access: Where are we, what still needs to be done?* Mike Taylor, 1 July 2013 2013b [cited 2 May 2014 2014]. Available from <http://poynder.blogspot.fi/2013/07/open-access-where-are-we-what-still.html>.
- Prometheus. 2014. *PLOS Celebrates Milestone*. PLOS 2013 [cited 17 April 2014 2014]. Available from <http://www.plos.org/plos-celebrates-milestone/>.
- QUT Library. 2014. *QUT Library Collection Development Manual 3.1.5. Open Access*, 8 September 2012 2012 [cited 17 April 2014 2014]. Available from http://www.library.qut.edu.au/about/planning/documents/POL_CDM_3.1.5.Open_Access_FIN.pdf.
- Research Councils UK. 2014. *RCUK Policy on Open Access* 2013 [cited 17 April 2014 2014]. Available from <http://www.rcuk.ac.uk/research/outputs/>.

- Research Information Network. *Paying for open access publication charges: Guidance for higher education and research institutions, publishers and authors*. Research Information Network & Universities UK, March 2009. Available from <http://www.rin.ac.uk/our-work/research-funding-policy-and-guidance/paying-open-access-publication-charges>.
- Research Information Network. *The Potential Role for Intermediaries in Managing the Payment of Open Access Article Processing Charges (APCs)*, September 2012. Available from <http://repository.jisc.ac.uk/4949/>.
- Research Information Network. *Monitoring Progress in the Transition to Open Access - Report of a Working Group*, March 2014. Available from <http://www.researchinfonet.org/wp-content/uploads/2013/02/Report-final.pdf>.
- Rieger, Oya Y. 2014. *arXiv Update*. Cornell University, 21 January 2014 [cited 17 April 2014]. Available from <https://confluence.cornell.edu/display/culpublic/arXiv+Update>
- Royal Society of Chemistry. 2014. *Gold to Gold*. Royal Society of Chemistry n.d. [cited 28 May 2014]. Available from <http://www.rsc.org/publishing/librarians/goldforgold.asp>.
- Royal Society Publishing. 2014. *Our Transparent Pricing Mechanism*, April 2013 [cited 3 May 2014]. Available from <http://royalsocietypublishing.org/librarians/transparent-pricing>.
- Royal Society Publishing. 2014. *Open Access Membership* n.d. [cited 28 May 2014]. Available from <http://royalsocietypublishing.org/site/librarians/membership.xhtml>.
- SAGE. 2014. *SAGE Choice*. SAGE 2012 [cited 17 April 2014]. Available from <http://www.sagepub.com/sagechoice.sp>.
- Science Europe. 2014. *Science Europe Position Statement: Principles for the Transition to Open Access to Research Publications*, April 2013 [cited 3 May 2014]. Available from http://www.scienceeurope.org/uploads/Public_documents_and_speeches/SE_OA_Pos_Statement.pdf.
- Sharman, Anna. 2012. *Journals that charge authors (and not for open access publication)*, 8 March 2012 [cited 29 May 2012]. Available from <http://sharmanedit.wordpress.com/2012/03/08/author-charges/>
- Social Sciences Directory. 2014. *Institutional memberships and consortia agreements* n.d. [cited 28 May 2014]. Available from http://www.socialsciencesdirectory.com/index.php/socscidir/pages/view/Institutions_memberships_and_Consortia_agreements.
- Solomon, D, and Bo-Christer Bjork. 2012. "A Study of Open Access Journals Using Article Processing Charges." *Journal of the American Society for Information Science and Technology* no. 63 (8):1485–1495. doi: DOI: 10.1002/asi.22673.
- SPARC. 2014. *Campus-based open-access publishing funds*. SPARC 2012 [cited 17 April 2014]. Available from <http://www.sparc.arl.org/resources/funds>.
- SPARC. 2014. *Open Access*. Scholarly Publishing and Academic Resources Coalition n.d. [cited 3 June 2014]. Available from <http://www.sparc.arl.org/issues/open-access>.
- Springer. 2005. *Springer Open Choice*. Springer-Verlag & Kluwer Academic Publishers 2004 [cited 25 March 2005]. Available from <http://www.lib.utk.edu/mt/weblogs/scholcomm/archives/000300.html>.
- Springer. 2014. *Springer Open Choice*. Springer 2014 [cited 17 April 2014]. Available from <http://www.springer.com/gp/open-access/springer-open-choice>.

- Taylor and Francis. 2014. *Taylor & Francis Open Select and Routledge Open Select*. Taylor and Francis 2012 [cited 17 April 2014 2014]. Available from <http://www.tandfonline.com/page/openaccess/opensselect>.
- Taylor, Mike. 2014. *Pay to download Elsevier's "open access" articles*, 21 March 2012a [cited 4 May 2014]. Available from <http://svpow.com/2012/03/21/pay-to-download-elseviers-open-access-articles/>.
- Taylor, Mike. 2014. *What should society journals do about open access?*, 7 July 2012b [cited 28 May 2014]. Available from <http://svpow.com/2012/07/07/what-should-society-journals-do-about-open-access/>.
- Taylor, Mike. 2014. *Some problems with hybrid open access*, 14 June 2014 2013 [cited 28 May 2014 2014]. Available from <http://svpow.com/2013/06/14/some-problems-with-hybrid-open-access/>.
- University of Calgary. 2014. *Open Access Author's Fund* 2014 [cited 3 May 2014 2014]. Available from <http://library.ucalgary.ca/open-access-authors-fund>.
- University of London. 2014. *Policy for the Administration of the RCUK Block Grant for Open Access to Fund*
- Article Processing Charges* ROYAL HOLLOWAY, University of London, November 2013 2013 [cited 17 April 2014 2014]. Available from <https://http://www.royalholloway.ac.uk/library/documents/policies/rhulapcpolicy.pdf>.
- University of Manitoba. 2014. *Open Access Author's Fund* 2013 [cited 17 April 2014 2014]. Available from http://umanitoba.ca/libraries/services/open_access/.
- University of Utah. 2014. *Open Access Publishing Fund*, May 2013 2013 [cited 3 May 2014 2014]. Available from <http://www.lib.utah.edu/services/open-access-publishing-fund.php>.
- Van de Velde, Eric F 2014. *[GOAL] Re: Hybrid OA/subscription journals — double talk* [Maillist], 3 July 2013 2013 [cited 4 May 2014 2014]. Available from <http://mailman.ecs.soton.ac.uk/pipermail/goal/2013-July/001938.html>.
- Van Noorden, Richard. 2013. "The true cost of science publishing." *Nature* no. 495 (7442):426-429.
- Wellcome Trust. 2014. *Open access at the Wellcome Trust*. Wellcome Trust 2013 [cited 17 April 2014 2014]. Available from <http://www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Open-access/index.htm>.
- Wiley Online Library. 2014. *Subscription Pricing for Hybrid Journals*. Wiley, 28 March 2013 2013 [cited 3 May 2014 2014]. Available from <http://olabout.wiley.com/WileyCDA/Section/id-816521.html>.
- Wiley Online Library. 2014. *The Plant Journal*. Wiley n.d. [cited 1 June 2014 2014]. Available from [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1365-313X/homepage/ForAuthors.html](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1365-313X/homepage/ForAuthors.html).
- Wiley Open Access. 2014. *Wiley Open Access Author Survey*. Wiley 2013 [cited 3 May 2014 2014]. Available from <http://www.slideshare.net/WileyScienceNewsroom/wileys-2013-open-access-author-survey>.
- Wiley Open Access. 2014. *Institutional & Funder Accounts*. Wiley n.d. [cited 27 May 2014 2014]. Available from <http://www.wileyopenaccess.com/details/content/12f25e69a17/Institutional--Funder-Accounts.html>.
- Wiley Publishing. 2014. *Wiley OnlineOpen*. Wiley 2014 [cited 17 April 2014 2014]. Available from <http://olabout.wiley.com/WileyCDA/Section/id-406241.html>.
- Willems, Rt Hon David. 2014. *Progress Review: Implementing Finch Report recommendations*. Dept for Business Innovation & Skills, 23 January 2014 2014

[cited 3 May 2014 2014]. Available from <http://www.researchinfonyet.org/wp-content/uploads/2013/02/BIS-Transparency-Letter-to-Janet-Finch-One-Year-On-Response-January-2014.pdf>.