

CHAPTER 3

Open Access Publishing

One must be prepared to fight for one's simple pleasures and to defend them against elegance and erudition and all manner of glamorous enticements.

—Amor Towles

Introduction

In Chapter 1 the argument was put forward that we have witnessed the transition of openness from peripheral interest to mainstream approach in higher education. This transition brings with it a new set of tensions and issues, as was seen in the analogy of political revolutions and the green movement. Having explored the concept of openness in more detail in the previous chapter, the next 5 chapters represent the core of the argument set out in Chapter 1. Each chapter will take an aspect of open education and detail how it has been successful and the key challenges it now faces. This commences in this chapter with a very successful aspect of open education, namely open access publishing.

In the battle for open, open access (OA) publishing is probably the area with the longest history. It's worth looking at the issues that are arising here before considering other aspects of open

education, as it exhibits the characteristics of the battle for openness that were set out in Chapter 1. For example, there is considerable money involved in the industry. Reed Elsevier reported revenue of over £6 billion in 2012, of which over £2 billion was for Science, Technical and Medical publishing. It's an area where openness has 'won', to a large extent, with mandates from research funders, government and institutions which make open access publishing compulsory. And yet at the time of victory, open access advocates are also beset with doubt and conflict.

The Gold route is to make journals open access, so any reader can access the content free of charge. The focus of the Gold route is on using journals as the means to share content. There are different ways that such journals can be funded; for example, a university or professional society might fund the journal itself. If it is a journal published by an existing publisher, then the usual route is that of Article Process Charges (APCs), where the author (or the research funder) pays a charge for making the article open. The Gold route is favoured by many mandates, but with APCs, it may well end up costing more both financially and in terms of opportunity, as will be explored below.

An open access 'sting' operation published in *Science* (Bohannon 2013), where an obviously flawed, fake article was accepted by 157 OA journals, demonstrated that this pay-to-publish model may create a tension in the relationship with the publisher. This sting was revealing with regards to the battle for open for two reasons. Firstly, it demonstrated again that 'openness' has market value as a term, and so dubious journals have entered the marketplace offering open access publishing. Secondly, the incumbents (many of whom published the article) may not have a vested interest in making OA a success. If OA is perceived as lower quality, then it reinforces their market

position and the position of the existing library subscription model. This illustrates the danger of trying to let commercial interests shape the direction of openness. Before we consider this, however, let us look first at how open access publishing has been so successful.

The Success of Open Access

Open Access publishing began in the 1990s, as we have seen, taking its inspiration from open source communities, and also by realising that digital, networked content changed the nature of publication. Open Access is usually interpreted to mean ‘free online access to scholarly works’, although the Budapest Open Access Initiative (2002) gives a more formal definition, which encompasses not only free access in terms of cost, but free from copyright constraints also:

By ‘open access’ to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

This echoes the distinction between free cost and free reuse that Stallman sought to make with regards to software. While the definition of open access is not as contentious as other terms we

will encounter, the route to it is. There are two main methods by which open access is realised:

- The Gold route, where the publishers make a journal (or an article) open access. For commercial publishers, fees received through the proprietary model from library subscriptions must be recouped, so an APC is levied. A study of 1,370 journals published in 2010 found the range to be between US\$8 and US\$3,900 with an average APC of US\$906 (Solomon & Bjork 2012). The Gold route need not require APCs, however. That is just one model of making it viable.
- The Green route, where the author self archives a copy of the article, either on their own site or on an institutional repository.

With Gold, the emphasis is on the journal, and with Green, on repositories. To these a third option is sometimes added, termed the ‘Platinum route’, whereby the journal does not make any APC and publishes open access, but this could be seen as a variant on the Gold route. Such journals are usually operated by societies or universities, where financial return is a lower priority than dissemination.

But there is further complexity to this picture also. With regards to the Green route, what constitutes ‘green’ can vary. Many publishers will place an embargo for a set period, meaning that an article cannot be self-archived until this has passed, which can range from six to eighteen months. In its open access mandate, the US Office of Science and Technology Policy (OSTP) allows a 12 month embargo (Holdren 2013), while Science Europe (2013) advocates only 6 months. The Gold route can be used in hybrid mode, whereby certain articles in a journal are open access, but not all of them. In this model, publishers still charge the subscription

fee for the journal overall, although this may be lowered, as well as receiving APCs for individual articles. This is seen as a model for transition to open access, but others argue it is simply a means of gaining revenue twice for the same journal (Harnard 2012). Science Europe takes an unequivocal stand against the hybrid model, stating 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.’ Regarding rights, it is still possible for an article to be openly available, but the definitions of open access stress that reuse is required, so the use of Creative Commons licences is the norm.

The uptake of open access has been very successful. Laakso et al. (2011) plot the growth of OA journals and articles since the 1990s, as shown in **Figure 1**.

Similarly, the University of Southampton’s ROARMAP project (Registry of Open Access Repositories Mandatory Archiving Policies) plots the number of open access policies at institutional, funder and thesis level. The pattern here is delayed somewhat from that seen with OA journals, as policies only came into place once OA was an established practice, but they show the same pattern of substantial growth from 2003 to 2013 (**Figure 2**).

The trends from both appear to be in one direction, and there is no immediate reason to suppose they will plateau or decline. A recent report from Wiley found that 59% of authors had published in OA journals, the first time the proportion has exceeded half (Warne 2013). Open access publishing is not a minority pursuit any more, reserved for those with a particular zeal for it; it has moved into mainstream practice. This follows the pattern set out in Chapter 1.

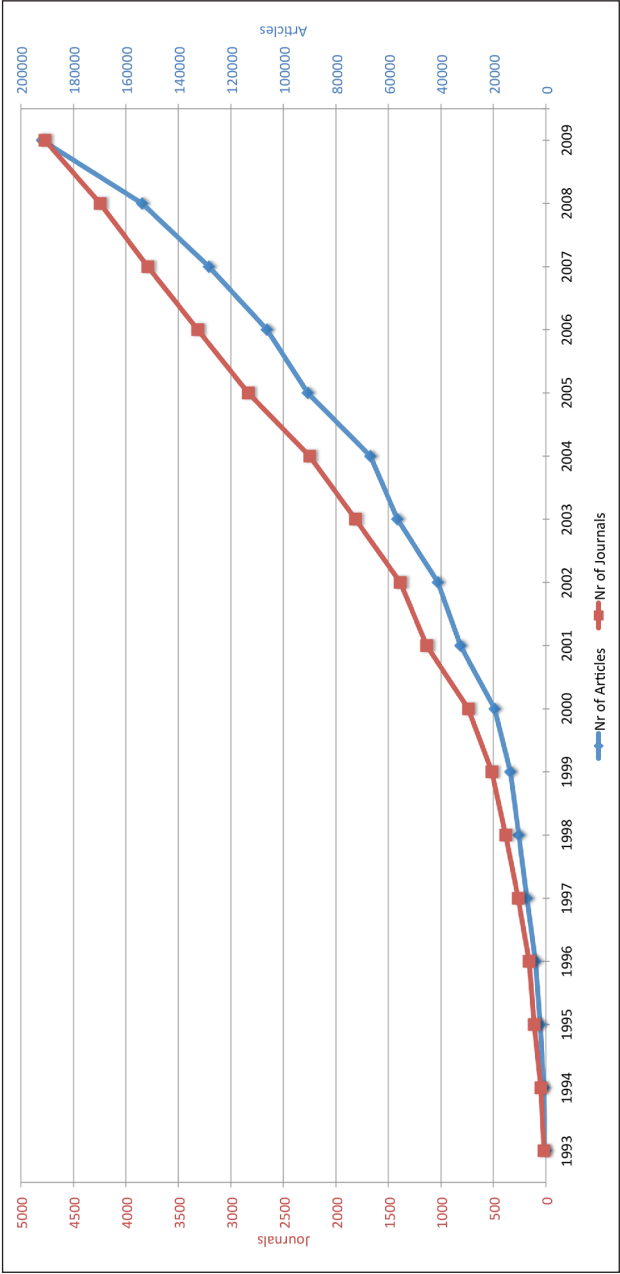


Figure 1: Open access journals and articles, 1993–2009.

Source: Laakso et al. 2011. Published under a CC-BY license.

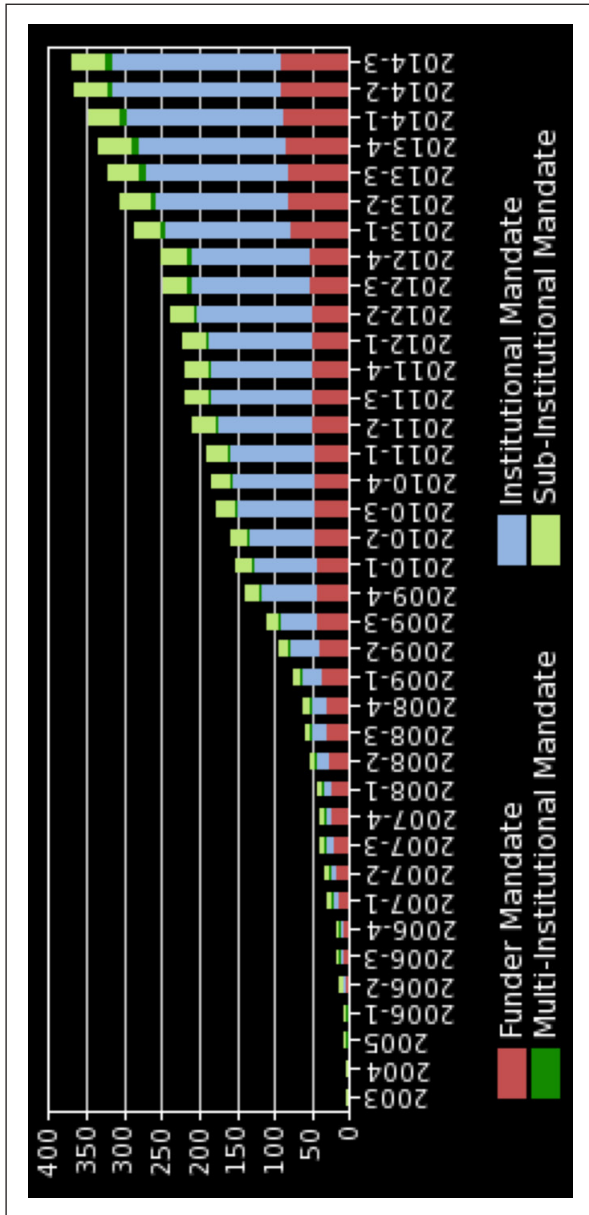


Figure 2: Uptake of open access policies, 2003–2013.

Source: ROARMAP. Published under a CC-BY license.

Before examining the issues that OA now faces, it is worth considering why it has seen such positive uptake. The arguments for open access fall broadly into two camps, which reflect those of the free and open source movements – it is an effective mode of operation, and it has a strong ethical basis.

It can be seen as effective from the perspective of the author who wants their work to be as widely read and cited as possible. It would seem logical that articles which are published without any access restrictions would receive greater attention than those published in proprietary databases, which need to be accessed through libraries (or purchased on an article by article basis). From the web 2.0 influence on open education, we know there is an expectation that content will be free, and so any reader encountering an article that requires payment will simply look elsewhere. Social media can also be seen to impose an open access pressure on articles. In order for resources to be shared effectively via Twitter or other means, the article has to be openly available. It is of little use sharing a link to an interesting article if it then requires others to pay US\$50 to access it.

Even if the majority of readers are academics, their host institutions may not always have access to that particular journal. Since 2001 (Lawrence 2001) there has been a growing body of evidence that openly available articles have higher downloads and citations than those in proprietary databases, as Gargouri et al. (2010) summarise: ‘This “OA Impact Advantage” has been found in all fields analyzed so far – physical, technological, biological and social sciences, and humanities’. The Open Citation Project (2013) has a comprehensive bibliography of studies that demonstrate this effect. Some studies report that citations are not increased, but the number of downloads are, often by substantial percentages, for instance Davis et al. (2008) found 89% more full-text downloads for open access articles.

In examining the motivations academics have for publishing in peer reviewed journals, Hemmings et al. (2006) suggest three categories of factors: incentive, pressure and support. Incentive was the most salient of these and could take intrinsic forms, such as sharing findings, and extrinsic forms, such as increased chances of promotion. Given that academics are very rarely paid for contributions, then the open access impact advantage benefits this motivation of incentive – whether the main appeal is to increase interest in the area or to improve an individual's profile, then increasing the number of downloads and citations of an article will likely benefit these aims. This is only countered by the prestige of publishing in certain journals, whether they are open or not.

Open access publishing operates as an efficient, pragmatic model for disseminating research findings, which is the primary function of academic publishing. It also has a strong ethical, or ideological, argument, since much of the funding for the research that is published in journals comes from public sources. This forms a central tenet of most open access mandates; for example, the Wellcome Trust (n.d.), a charity which funds medical research, states that it 'believes that maximising the distribution of these papers – by providing free, online access – is the most effective way of ensuring that the research we fund can be accessed, read and built upon.'

The US OSTP policy (Holdren, 2013) states that 'the direct results of federally funded scientific research are made available to and useful for the public, industry, and the scientific community'. There is a straightforward argument here that if the public are paying for research, then they should have access to it. There is also a more general argument that research progresses by making it available to as many as people as possible, and that access to any

research (regardless of who the funder is) should be made as available as possible. Mike Taylor (2013a) puts it bluntly: ‘Publishing science behind paywalls is immoral.’

The combination of these practical and ethical arguments has made the existing practices and profits of academic publishers increasingly difficult to justify and maintain. As we shall see with other aspects of openness, the argument becomes irresistible. This is when the real battle for open begins, as we shall now see.

The Finch Report

The Finch report was the result of a working group set up by the UK government to make recommendations regarding open access publishing, led by Dame Janet Finch. The group published their report in July 2012, recommending a transition to an open access environment and backing the Gold route to publish (Finch Group 2012). The report’s recommendations were accepted by the Government, although a later Short Inquiry was held to examine some of the implementation details. A fund of £10M was made available to help universities transition to Gold route open access.

Although it is UK-focused, the Finch report represents a microcosm of some of the issues in open education, and so is worth considering in detail, as it is a pattern seen elsewhere. At first glance it looks like a remarkable success for the open access advocates. Not only has the recommendation come down strongly in favour of open access, but the Government has accepted this and even made funds available to support it. But a closer analysis of the report and implementation raises a number of concerns.

The first concern is the caution inherent in the project. The report acknowledges that some repositories such as arXiv (the physics pre-publication repository) have been successful but

concludes they are not a viable model on their own, stating that there is a:

widespread acknowledgement that repositories on their own do not provide a sustainable basis for a research communications system that seeks to provide access to quality-assured content; for they do not themselves provide any arrangements for pre-publication peer review.

Rather, they rely on a supply of published material that has been subject to peer review by others; or in some cases they provide facilities for comments and ratings by readers that may constitute a more informal system of peer review once the material has been deposited and disseminated via the repository itself.

However, this is a statement of the current position. If a national initiative is being proposed, then a repository (or collection of repositories) may well be a viable approach. The recommendation to move to Gold open access means that effectively the taxpayer will be funding publishers, since the money will come from research bodies. Viewing this money as possible expenditure to be allocated to open access then it could be usefully spent on a national, interdisciplinary arXiv. Green OA advocate Harnad (2012) argues that Green OA is free, and that the Finch report's Gold OA will cost £50–60M annually to implement, and criticises Finch for not backing this model.

The second concern is the lack of demand the report places on publishers. The report suggests that it would be good for publishers to link data with publications, but does not mandate it:

In an ideal world, there would be closer integration between the text and the data presented in journal articles, with seamless links to interactive datasets; a

consequent fall in the amount of supplementary material; and two-way links, with interactive viewers, between publications and relevant data held in data archives. The availability of, and access to, publications and associated data would then become fully integrated and seamless, with both feeding off each other.

The report could recommend funding universities to directly publish OA journals (as set out below), where an author would get the 'basic' package, and commercial publishers can add value to this. Without mandating what is required for the Gold route or what is a reasonable fee to charge, it creates a financial situation that may be worse for universities and funders than the current model.

The Finch report has one further problem, which is the strong influence of publishers in establishing the recommendations. Maintaining the economic viability of the academic publishing industry as it stands is a key objective. For example, the report states:

arrangements must be in place to enable publishers (whether they are in the commercial or the not-for-profit sector) to meet the legitimate costs of peer review, production, and marketing, as well as high standards of presentation, discoverability and navigation, together with the kinds of linking and enrichment of texts ('semantic publishing') that researchers and other readers increasingly expect. Publishers also need to generate surpluses for investment in innovation and new services; for distribution as profits to shareholders ...

Generating profits for publishers and shareholders should be seen as a side effect of providing a useful service, but it should not be a *goal*. The goal is to effectively disseminate research.

The danger of this influence is that it creates an economically unviable model, where much of the money flows to shareholders, or creating systems that gain competitive advantage. Neither of these are concerns for disseminating research. A Deutsche bank report (cited in McGuigan and Russell 2008) stated that:

We believe the publisher adds relatively little value to the publishing process. We are not attempting to dismiss what 7,000 people at the publishers do for a living. We are simply observing that if the process really were as complex, costly and value-added as the publishers protest that it is, 40% margins wouldn't be available.

The conclusion of the Finch report (and the subsequent update does not substantially change it) does nothing to address this, and indeed could make the situation worse. It also loses an opportunity to think of more radical methods through which that principle aim of disseminating research might be achieved, because the stability of the existing approach is assumed.

The Gold Route

One of the criticisms of Finch is its support for the Gold route to open access publishing. As mentioned, advocates of the Green route argue that this is both surer and cheaper. However, the Gold route is not inherently flawed; it is more a matter of which economic model is adopted and the price and freedom the model offers. As such, the debate around the Gold route provides an example of the finer details around openness that only come into focus once the initial open approach has been accepted. One reason for this disquiet around Gold OA is that it is a method being

determined by the publishing industry and not by academics themselves. This may have a number of unintended consequences.

Ironically, openness may lead to elitism. If an author needs to pay to publish, then, particularly in times of austerity, it becomes something of a luxury. New researchers or smaller universities won't have these funds available. Many publishers have put in waivers for new researchers; PLoS for example, has a 'no questions asked' waiver and has no fee for developing countries. There is, however, no guarantee of these, and if Gold OA funded by APCs becomes the norm, then it may be in conflict with commercial publishers' need to maximise profits. If there are sufficient paying customers, then it's not in their interest to grant too many waivers. It also means richer universities can flood journals with articles. Similarly, those with research grants can publish, as this is where the funding will come from, and those without may find themselves excluded. This will increase competition in an already highly competitive research funding regime. Open access could increase the 'Matthew Effect', whereby the same authors publish more articles (Anderson 2012). It would indeed be a strange irony if open access ended up creating a self-perpetuating elite.

Another potential issue with Gold OA funded through APCs is that it may create additional cost. Once the cost of publishing is shifted to research funders, then the author doesn't have a vested interest in the price. There is no strong incentive to keep costs down or find alternative funding mechanisms. The cost for publication is shifted to taxpayers (who ultimately fund research) or students (if it comes out of university money). The profits and benefits stay with the publishers who continue as before but with perhaps even less restraint.

The final reservation I have regarding Gold OA as it is commonly interpreted is that it doesn't promote change. In *The*

Digital Scholar (2011), I discussed how a digital, networked and open approach could alter our interpretation of what constitutes research and that much of our current perception was dictated by existing output forms. So, for instance, we could see smaller granularity of outputs than the traditional 5,000 word article; greater use of post-review instead of pre-review; and adoption of different media formats, all of which begin to change our concept of what constitutes research. But a Gold OA model that reinforces the power of commercial publishers simply maintains a status quo and keeps the peer-reviewed article as the primary focus of research that must be attained.

It is still too early to know if any of these scenarios will come to pass, but they are entirely feasible, and if they did arise then it would be difficult to portray open access as having realised any form of victory. However, it does not necessarily follow that Harnad's view that Green OA is the only route is correct. Rather we should view the current debate around Gold OA as being symptomatic of changing relationships with publishers.

The Publisher Relationship

In 2008, Cambridge University Press, Oxford University Press and Sage took a court action against Georgia State University for using their content unlicensed in 'e-reserves' for its students, claiming this went beyond fair use. In 2012 over 14,000 academics joined a boycott of publisher Elsevier, protesting about their 'exorbitantly high' charges and practices, which they saw as limiting the free exchange of knowledge (Cost of Knowledge 2012). In 2013 Elsevier sent 'take-down notices' to the academic social media site Academia.edu, demanding that copies of articles that were shared on academic profiles on the site be removed (Taylor 2013b).

However you view these events individually, they seem symptomatic of an increasingly dysfunctional relationship between academics and publishers. This wasn't always the case; what had been a mutually beneficial relationship has begun to feel more exploitative. As Edwards and Shulenberger(2002) put it: 'Beginning in the late 1960s and early '70s, this gift exchange began to break down. A few commercial publishers recognized that research generated at public expense and given freely for publication by the authors represented a commercially exploitable commodity.'

Why did this happen? Part of the reason was the shift to digital. In the last chapter I stressed that the digital, networked nature of open education was fundamental. The open access publishing field demonstrates why it is so important. In theory, the same restrictions existed previously under the print model, but when academics had no real control over the distribution channel, it didn't matter in any practical sense. Signing copyright forms with publishers meant surrendering film or merchandise rights, but Hollywood rarely came calling for academic authors, so it had no practical impact. Authors were free to distribute photocopies on request or to use them in their own teaching. Given the barriers to distributing copies, this had no impact on the publishers, so author and publisher could exist in a reasonably mutually beneficial relationship. But once the content became digital and could be freely distributed, the nature of this relationship changed and the interests of each party became antagonistic. The author now wants to retain the right to freely distribute as before, but now that the barriers to doing so have been removed, the damage to the business of the publisher is more substantial.

In each of the examples of conflict I stated at the beginning of this section, it is the digital, networked nature of the publishing approach that is at the heart of the dispute. The takedown notices

issued to Academia.edu by Elsevier offer a revealing example of how this has changed the relationship. Creating a profile on Academia.edu can be seen as one route to establishing an online identity for an academic (we will look at identity in more detail later). An academic's publications form a key part of that professional identity. In a digital, networked context it makes sense for the individual academic to use this site to construct a central hub for their online identity, including access to all their publications. From Elsevier's perspective, this means Academia.edu is acting as an unlicensed distributor of their content, potentially damaging their revenue. If we see the establishment of an online identity as now an essential part of what it means to be an academic (as I argue in Chapter 7), then these two demands are now in conflict in a way they weren't previously.

In addition to conflicts with existing publishers, open access has led to new entrants who are deemed 'predatory'. These journals often seek contributions and then charge high APCs, and have low academic standards. Beall (2010) characterises them as follows: 'They work by spamming scholarly e-mail lists, with calls for papers and invitations to serve on nominal editorial boards... Also, these publishers typically provide little or no peer review. In fact, in most cases, their peer review process is a facade' On his website, Scholarly Open Access (<http://scholarlyoa.com>), Beall provides a list of predatory journals and also criteria for determining these. Another practice that has arisen is that of 'journal hijacking', where an old, existing journal is used to create a false online version to lure potential contributors, again using the Gold OA method to extract money.

So with existing publishers on one side demanding high fees for open access, whilst also continuing with subscription models, and predatory journals seeking to swindle money from authors

on the other, it can feel to many authors that open access has not improved the practice of publishing at all. This is a reminder of the lessons we saw from other victories in Chapter 1 – victory doesn't feel like victory should. However, it isn't always this way, and there are examples of good practice, as well as a range of opportunities, which will be explored next.

New Models of Publishing

A number of publishers have sought to redefine (or reset) the relationship with academic authors to a more cooperative one. The traditional model of physical printing meant that part of the contract was about the creation of a product. In a digital environment where templates can be used to easily create an online journal, the focus shifts away from the product and more to the services the publisher offers.

Publishers such as PLoS and Ubiquity offer Gold OA, but at relatively low cost, and with waivers for those who cannot afford to pay. Such publishers often use open source software (reinforcing the influence of that domain in open education), such as Open Journal Systems (OJS) or Ambra. The use of such software over bespoke, proprietary systems developed by commercial publishers offers considerable financial benefits (Clarke 2007) and also gives access to a community of developers.

The fee paid to such publishers is essentially to cover a set of services, including copyediting, administration and dissemination (for example registering journals with databases). This allows universities to make a clear decision as to whether the cost of these services is reasonable compared with publishing themselves. This brings us onto a second model: that of the university press.

University presses were established to distribute books and journals where the commercial interest was not deemed strong enough. Oxford University first published in 1478 and the US Cambridge Press in 1640. Givler (2002) says the motivation for founding modern university presses was that ‘to leave the publication of scholarly, highly specialized research to the workings of a commercial marketplace would be, in effect, to condemn it to languish unseen.’ There was a regular growth in presses, with one a year opening from 1920 to 1970 (Givler, 2002). The university press survived well to the beginning of the 21st century, when increased competition from commercial publishers impacted their viability. This competition was driven partly by significant hedge fund investment making it difficult for university presses, with limited funds, to compete. They were caught in a pincer movement of decreasing financial support from universities dealing with the financial crisis and increased competition from commercial publishers for their business (Greco and Wharton 2010).

One of the problems with the finances was that printing and distributing paper journals was an alien business for universities to be in. It involved equipment and logistics which were costly to maintain and seemed increasingly detached from the everyday business of the university. But the almost wholesale shift to online journals and print-on-demand (POD) books has now seen a realignment with university skills and functions. Universities do run websites, and they are the places people look to for information. The experience the higher education sector has built up through OERs (the subject of the next chapter), software development and website maintenance now aligns beneficially with the skills they’ve always had of editing, reviewing, writing and managing journals. So now could be the time for the

rebirth of the university press as a place that runs a set of open access online journals.

Running journals on an *ad hoc* basis across universities is inefficient. By centralising resources in website maintenance and administration, a university could support several journals. The other main roles are those that are currently performed by academics for free anyway – reviewing, managing and editing the journal, organising special editions, etc.

The same universities are currently paying a considerable sum to publishers through libraries. By withdrawing some of this expense and reallocating it to internal publishing, then the university could cover these costs. In addition, the university gains kudos and recognition for its journals and the expertise and control is maintained within the university. If enough universities do this, each publishing four or more journals, then the university presses can begin to cover the range of expertise required.

This is, of course, happening at many universities, but it's a piecemeal approach, often operating in the spare time of people with other jobs. One has only to look at the list of journals currently using OJS to see that it's an approach that is growing. Universities may outsource the 'back-office' functions to a publisher like Ubiquity, while still maintaining control of the editorial function of the journals.

Frances Pinter of Knowledge Unlatched (n.d.) is seeking to create a library consortium to pay for the creation of open access publications (<http://www.knowledgeunlatched.org/about/how-it-works/>). This model takes a global view and reflects that libraries are currently purchasing material produced by academics from third-party publishers, so a redefinition of this approach would be for the libraries to allocate those funds directly to the publication

of the content under an open access licence (which they or others then do not need to purchase).

In the US in particular there has also been a movement to create Open Textbooks, through initiatives such as OpenStax. These aim to create open access textbooks for core subjects such as statistics, and thus remove the considerable cost of buying text books for undergraduate students. Open textbooks overlap with OERs, so we will look at them in more detail in the next chapter.

This is not to suggest that any of these approaches is the ‘correct’ path to pursue but rather to illustrate possible models of open access publishing. What all these approaches have in common is that openness is central to their approach, it is not an attempt to (often begrudgingly) graft open access onto existing practices, with the aim of disturbing these as little as possible.

Conclusions

The intention of this chapter was not to provide a comprehensive account of open access publishing models, licences and economics, but rather to illustrate how open access demonstrates many of the key characteristics of the battle for open. The first of these characteristics is the considerable victory of the open access approach with it being mandated in several countries, and increasingly popular amongst academics. The second is that these changes are driven by the general principles of openness we saw in the previous chapter, such as the freedom to reuse digital, networked content, ethical arguments for openness and openness as an efficient model.

The third characteristic is the downside of this victory, with new areas of tension and conflict, as represented by debates around

the Gold OA route, embargoes for self-archiving, and predatory entrants into the market. Lastly, the importance of engagement and ownership of the process by academics is highlighted by the potential models that open practices offer.

In his book *What Money Can't Buy*, Sandel (2012) explores the increasing market-based approach to much of society. His examples include paying homeless people to queue in line for others and a nursery that when it started charging fees for late collection of children, found that the late collections increased. Behaviours that had been ruled by social conventions became monetised and could be purchased. Sandel might well have added the changing nature of the relationship with academic publishers to his list. Once authors start paying publishers directly to publish, as is the case with Gold route, then as Sandel argues, this fundamentally changes the nature of the relationship. Academic publishing is a practice that is at the core of academic identity, and as such, this fundamental change in its nature illustrates the impact of openness, and the importance of engaging with its future direction.

If open access publishing is the most established area for open education, then open educational resources runs a close second and offers a comparative study of a movement being owned largely by universities themselves. This will be the focus of the next chapter.