



Routledge Critical Studies on Open Access

OPEN ACCESS IN THEORY AND PRACTICE

**THE THEORY-PRACTICE RELATIONSHIP AND
OPENNESS**

Stephen Pinfield, Simon Wakeling, David Bawden,
and Lyn Robinson



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and Openness

Stephen Pinfield, Simon Wakeling,
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Open access

Beginnings and developments

Afoot and light-hearted I take to the open road.

(Walt Whitman (1856). “Song of the Open Road”)

In this first part of the book we want to make some introductory remarks about open access. Here in Chapter 1, we outline some of the key aspects of the past and present of OA. We also make some brief points about possible OA futures. In Chapter 2, we present a more systematic mapping of the main components of OA. Between them, these chapters will be a useful foundation on which we build our understanding of the theory in the OA domain and its relationship with practice.

Our aim in this chapter is to identify the main contours of the OA landscape. We will do this only briefly, bearing in mind the voluminous literature now available on the topic, including several significant book-length overviews (Anderson, 2018; Bartling & Friesike, 2014; Eve, 2014; Fyfe et al., 2017; Herb & Schöpfel, 2017; Regazzi, 2015; Suber, 2012; Willinsky, 2006). However, it is important we provide an initial summary to set the scene for the rest our investigation. We start this chapter by looking at the beginnings of OA, at its key characteristics, and potential benefits. We then discuss its growth since the beginning of the 21st century. We go on to discuss the market within which OA exists, and the enablers of and barriers to change in this market. We finish the chapter discussing possibilities for the future.

Open access beginnings

At the outset, it is worth reminding ourselves that open access is an approach (or set of approaches) aimed at improving the communication of research outputs in order to improve the research endeavour as a whole. Its advocates believe OA can enable significant enhancements to scholarly communication – the ways in which researchers exchange information about their findings with their peers and others. Communicating the outcomes of research is a critical part of the research process itself, one without which research cannot deliver its value. Researchers need to be able to access, read, test, augment, refine, and refute each other’s work – that is

the way research moves forward. Other people beyond the research community can also make various uses of the research literature, not least to inform practice of different kinds. Research communication has traditionally been achieved through a variety of channels, including books, conference papers, and notably, journal articles. All of these different types of research outputs are usually quality controlled in a range of ways, the most important of which is peer review. This process, where experts in a field assess the outputs of others in order to ensure and improve the quality of the work, is not without its problems, but it is still commonly seen as foundational to academic publishing. Peer-reviewed journals, sold to readers (or their libraries) through subscriptions, are the mainstay of traditional formal scholarly communication in most disciplines. Open access potentially disrupts key aspects of that *status quo* but does so in a way which its advocates argue improves the process of communicating research results, and in so doing improves the way research as a whole is conducted.

Open access (under various labels) can be traced back as least as far as the 1980s (Moore, 2019), but it started to gather real momentum at the turn of the 21st century. At its heart was the argument that academic content should be freely and openly available for all users: in a form which is “digital, online, free of charge, and free of most copyright and licensing restrictions” (Suber, 2012, p. 4). Statements, such as the Budapest Open Access Initiative (BOAI), released in early 2002, helped to raise awareness of the possibilities of OA to a wider audience. BOAI is often seen as marking the beginning of OA as a credible mainstream approach to scholarly communication. The BOAI statement (BOAI, 2002) encapsulated much of the then current thinking around OA, and has often been a touchstone in subsequent discussion on openness. The fact that the statement was composed with a certain rhetorical élan meant that it had resonance at the time of its publication and has captured imaginations since. It is still commonly deployed in advocacy and debate.

The BOAI did at least three things. First, it played an early role in establishing the terminology of “open access”. Second, it defined the main implementation routes of OA. Third, it summarised some the main arguments in favour of wider adoption of OA.

The first of these (defining OA), like Suber’s definition quoted above, built both “free to read” and “free to reuse” into the concept of OA:

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.

(BOAI, 2002)

This bipartite understanding of what constitutes OA is still crucial and has become more important in the last decade as the possibilities of machine-processing of content have increased, widening as it does the potential of reuse. It constitutes

a radically different approach to ownership and control, allowing content to be widely distributed and also repurposed. It has led to a favouring of open licences, such as those offered by the Creative Commons, as the basis of publishing and sharing content, since these licences have access and reuse built into them.

On the second point (the routes to OA), the BOAI outlined what are still seen as the two main “roads” to OA: OA publishing in academic journals (now often called “Gold” OA), and depositing copies of outputs in OA repositories (“Green” OA). The relationship between Green and Gold is still at the heart of debates around OA today. The BOAI called them “complementary strategies”, but it was true even then that there were tensions between solutions proposed by Green advocates and Gold advocates. Those tensions have not gone away – quite the opposite, in fact. They continue to underlie much of the OA discourse, and have arguably weakened the leverage of the OA movement, and blurred the focus of OA policy, over a lengthy period.

On the third issue (the benefits of OA), the BOAI sets out the potential of openness. OA, it states, will,

accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it can be, and lay the foundation for uniting humanity in a common intellectual conversation and quest for knowledge.

(BOAI, 2002)

These are lofty claims, which identify benefits both within and beyond the academy. Most of the arguments in favour of OA have concentrated on the former, with OA likely to widen access to research outputs, for the broadest possible range of academic institutions and their members globally. The levelling of the playing field (as it is seen), between richer and poorer institutions, within and between countries (including those in the Global South), is often emphasised in the OA discourse (Barbour, Jones, Jones, Norton, & Veitch, 2011). The impact potential of publications is thus maximised, meaning the research communication can become most effective and research itself is improved by, for example, avoiding unnecessary duplication and even speeding up research. Most studies show that open research is used and cited more than non-OA research (SPARC, 2016). Moreover, for the academy as a whole, OA it is argued will fix systemic problems in the journal publishing market, where large global suppliers exercise oligopolistic power in the market, charging high prices and maintaining unusually large profit margins, syphoning money out of the research system.

Benefits are also often claimed to extend beyond the academy. OA has the potential to benefit a whole range of groups: clinicians, commercial research scientists, lawyers, teachers, journalists, policymakers, citizen scientists, amongst others (Elsabry, 2017). The argument is frequently made that academic research is a common good which is publicly funded and therefore ought to be in the public domain. This argument has been developed as a “moral” case for OA (Bacevic &

Muellerleile, 2018; Peters & Roberts, 2012; Willinsky, 2006). Scherlen and Robinson (2008) make the case for OA based on social justice philosophy. Others have argued the case for the economic benefits of OA (Houghton & Sheehan, 2009), although less work has been done actually demonstrating benefits to those beyond the academy than might be expected.

The growth of OA

In the period since the BOAI was launched, and as the arguments in favour of OA have gained wider acceptance, the growth of OA has become apparent. The first major area of growth has been in the number of OA options available to authors. With regard to Gold OA, the number of journals offering authors OA publication has grown markedly. New OA publishers, such as Public Library of Science (PLOS) and Frontiers, have entered the market offering new fully OA journals. Existing publishers have also launched numerous new OA titles. Many OA titles have been based on a new business model, charging fees for publication (so-called, article-processing charges or APCs), rather than subscriptions. A large number of publishers have also introduced a hybrid approach, where particular articles in established subscription journals can be made OA on payment of an APC for that paper. Still other Gold OA journals do not charge an APC at all, but rather obtain funding from other sources, such as sponsorship from institutions and research funders. All of these options, and others, have been developed as publishers have begun to embrace OA (albeit, with varying degrees of enthusiasm). In the period between 2000 and 2009, the number of OA journals listed in the international Directory of Open Access Journals (DOAJ) rose from 741 to 4,767 (Laakso et al., 2011). By 2019, the number of journals on DOAJ was 13,168. For just those journals indexed in Scopus database, which focuses on established predominately English-language titles, the proportions of journals offering immediate Gold OA rose over the short period between 2012 and 2016 from 49% to 60% (Jubb et al., 2017).

At the same time, the availability of Green OA options has also grown. The number of OA repositories has increased substantially. OpenDOAR (Directory of Open Access Repositories) listed 691 OA repositories worldwide at the beginning of 2007 and this had risen to 3,820 at the beginning of 2019. The majority of repositories are run by institutions to house the outputs of their own members. There are also a substantial number of other repositories of different types, notably those run by specific disciplines. Institutional repositories (IRs) vary in size but tend to be relatively small compared with subject repositories. One of the largest subject repositories is arXiv, established as early as 1991, covering a number of sub-disciplines in several branches of physics, computer science, and mathematics, which now contains over 1.5 million papers. arXiv was originally set up to share “preprints” (versions of articles prior to peer review), but has now become a widely used venue for sharing both preprints and “postprints” (the versions of articles after acceptance by a journal). Other disciplines have set up their own repositories over a long period but, interestingly, there has been an acceleration in

the numbers of preprints servers set up since 2013. This apparent second wave of preprints servers is a potentially important trend (Chiarelli, Johnson, Pinfield, & Richens, 2019).

However, populating repositories, particularly IRs, has not always been easy, with the notable exception of servers like arXiv. Depositing papers has become even more challenging as publishers have introduced policies making the conditions of deposit more restrictive. Since 2010 in particular, in an effort to protect the conventional subscription business model, many publishers have imposed increasingly restrictive conditions in their contracts with authors on how, when, and where published articles in their journals may be shared. Such embargoes often mean that articles cannot be made available on repositories until 12 or even 24 months following publication, thus blunting the usefulness of repositories and dampening enthusiasm to contribute to them (Gadd & Troll Covey, 2016).

Despite this, it is evident that take up of OA options by authors has risen in the last 20 years. This is the second aspect of the growth of OA (complementing the first, in the growth of OA options and venues) which has been clearly shown by a number of studies. Different studies use different data sources and methods, but all consistently show a rise in outputs being made OA. In their large scale analysis of OA in all of its forms, Piwowar et al. (2018) found that the proportion of the scholarly literature that is OA has been “growing steadily over the last 20 years”. In the most recent year of their study, 2015, the proportion was as high as 45%. In another study focusing on papers indexed in Scopus, Jubb et al. (2017) showed that in 2014, 25% of articles were available in an OA form within 12 months of publication; by 2016, this had risen to 32% (including Gold and Green OA). Looking at Gold OA articles in particular, Wang, Cui, Xu, and Hu (2018) tracked the growth of OA articles from 7.5% in 1990 to 25.4% in 2015.

Adding to the growth of OA options and the growth of take up, the third aspect of the growth of OA is that of usage. Although evidence is a little more difficult to come by on usage, what *is* available shows growing use of OA materials, relative to non-OA materials. Jubb et al. (2017), whose report sets out evidence for these three aspects of the growth of OA particularly for the UK (OA options available to authors, the take-up of those options, and use of OA resources), identify several sources of evidence indicating a clear growth in usage of OA resources. Downloads of OA articles from publishers’ websites, for example, are on average between twice and four times higher than non-OA material.

The growth of OA is not evenly spread, however. There are, first, significant differences between disciplines; second, there are differences between countries. Differences across disciplines are marked. A large-scale analysis of articles accessible via Google Scholar in 2014 found 60% in the area of medical and life sciences were available in an OA form, whereas for law, arts, and the humanities it was as low as 32% (Martín-Martín, Costas, van

Leeuwen, & Delgado López-Cózar, 2018). At a more detailed, disciplinary level, the differences were even wider, with astronomy and astrophysics at 88% OA, and literature only 14%. OA for astronomy and astrophysics is mostly Green OA, delivered through arXiv. Other disciplines, such as the medical and life sciences, have been less ready to share versions of papers on repositories, but have historically favoured OA publication in journals, that is, Gold OA (Science-Metrix, 2018). The cultural differences of different disciplines have been used to explain differences in the adoption of OA (Fry, Spezi, Proberts, & Creaser, 2015), although there is still more work to do in this area. Some of the disciplinary differences relate to different conventions in publishing formats. Traditionally, for example, most disciplines in the humanities and many in the social sciences have favoured the book as a form of scholarly communication. Books have traditionally been produced using quite different business models compared with journals and may even involve author royalties (which is not the case for journals). Whilst there has been some movement in developing OA models for monograph publishing (Crossick, 2016; Eve, 2014; Lyons & Rayner, 2016), it remains a considerable challenge.

The adoption of OA also differs between countries. Martín-Martín et al. (2018), based on a study of literature in the Web of Science index, placed Scotland as having the highest proportion of material freely available (in 2014), at 73%, followed by Brazil at 72%, and the Netherlands at 71%. These countries compare with Russia at 44%, Iran at 45%, and China at 46%. Studies which encompass a broader range of literatures than those covered in Scopus and Web of Science (which both focus on English-language journals published by Western publishers) have shown widespread adoption of OA in countries in Asia, South America, and Africa, often using national journals and publishing platforms. One 2019 report based on data from the OA service, Unpaywall, put Indonesia, Colombia, Bangladesh, Brazil, Croatia, and the UK as the top six countries for OA availability of their research for 2017 (Van Noorden, 2019). 81% of articles by Indonesian authors were openly available, compared with 60% for the UK. The global average was 41%. In a large-scale study of the biomedical literature, Iyandemye and Thomas (2019) found “a strong negative correlation between country per capita income and the percentage of open access publication”, meaning authors from low-income countries were more likely than others to make their work OA.

Such differences point to corresponding differences in national policy environments. In some countries, such as the Brazil and the Netherlands, there have been policies and centrally supported infrastructures in place from government research funding agencies for some time, encouraging and enabling the adoption of OA. The SciELO network in South America, a large-scale publishing platform providing about 10,000 journals, mainly in Portuguese, Spanish, and English, was set up as a pilot as early as 1998, but came to be adopted in the policies of a number of South American funding agencies in the years that followed (Packer, Cop, Luccisano, Ramalho, & Spinak, 2014). Policies were introduced in Europe as early as 2003 by

the Max Planck Society in Germany, which released the so-called “Berlin Declaration” that year, which called for widespread open access to “scientific knowledge” and “cultural heritage” resources (Max Planck Society, 2003). In 2005, the NIH (National Institutes of Health) in the USA also launched an OA policy to accompany their still relatively new OA repository PubMed Central, launched in 2000 (Lasthiotakis, Kretz, & Sá, 2015). In the UK, the Wellcome Trust pioneered OA, establishing a formal policy mandating its grant holders to make their outputs OA as early as 2006. It also sponsored the development of infrastructure, such as the large-scale disciplinary repository, Europe PubMed Central (Lasthiotakis et al., 2015), and more recently, the publishing platform, Wellcome Open Research.

Many funders in other countries have followed suit, with policies and infrastructures becoming more robust over time. Such policies clearly make a difference – rising rates of OA adoption typically follow introduction of mandates (Larivière & Sugimoto, 2018). What this represents is a general trend since 2000 of funders becoming more interventionist in the scholarly communication process, to maximise the value of their investment in research, as they see it. A recent aspect of this has been a more determined attempt to coordinate policies between different funders and even across countries, particularly in Europe, in the form of Plan S.

Markets and models

OA represents a major shift in scholarly communication models, and so any insight of the dynamics that enable such a shift, and the inertias that resist it, requires an understanding of what the movement towards OA is trying to change – the established subscription-based publishing system. Research publishing is, of course, based on the needs of researchers, in their capacity as both the producers and consumers of most research outputs, and so understanding researchers’ attitudes and behaviours, and the forces that give rise to them, is crucial. This has been a leitmotif of wider discussion and debate on OA.

Key here is the fact that researchers work in a “reputation economy” (Fecher, Friesike, Hebing, & Linek, 2017). Rather than obtaining any royalties from their work, they accrue recognition from their colleagues, and this in turn leads to status in their subject community and institution, and then, indirectly, tenure and promotion. Bourdieu’s work on the sociology of science (which we discuss in more detail later, in Chapter 4) emphasises “recognition” as a key factor in this space (Bourdieu, 2001). The quality of a researcher’s work, and therefore the recognition that comes from it, is often judged using proxies, prominent among which is publishing in the most prestigious, selective, and highly cited peer-reviewed journals. The “impact factor” of such journals – essentially, “the average number of citations of the publications of a journal” (Waltman, 2016) – has become a widely used indicator of the quality of articles published by these journals, despite a long tradition of debunking its validity for that use (Larivière et al., 2016; Seglen, 1997). In this system, researchers are strongly incentivised to behave in conventional ways with regard to publishing their results (an activity in

which traditionally they have been given a high degree of autonomy), favouring established high-IF journals which have strong brand recognition amongst their peers. On the other hand, the incentives to make their work OA are rather weak for researchers from most disciplines. One of the widely discussed challenges associated with OA development, therefore, is how to incentivise participation. Although, as we have seen, mandates play an important role, they are for most part a stick, with very little carrot involved.

The incentives in the scholarly communication environment have contributed to what we described earlier as systemic problems in the market in the sale of subscription journals. Journals are unique products – every research article they contain reports new findings, and will normally have been validated by peer review as being a novel contribution to knowledge. That means that any market for journal articles suffers from a lack of substitutability – consumers are not normally able to find alternatives to the particular articles they want. When journals become established as brands of quality, and bearing in mind they are publishing unique content, demand for them becomes relatively price inelastic. Publishers can raise the price knowing the journal will still be in demand. Price insensitivity is reinforced since in this market the consumers of the product (researchers) are not normally the purchasers of the product (librarians). Researchers usually don't care (and are often not even aware of) how much journals cost – they don't have to pay for them. But they do regard using journals as essential to their work, and therefore tend to put pressure on librarians to maintain subscriptions, even when prices are rising. Prices *have* risen in this an environment – journal price inflation is typically much higher than inflation for other consumer goods (Bosch, Albee, & Romaine, 2019).

Rising prices (and profit margins) and such reliable sales tend to cause concentration in a market, and that is exactly what we have seen over the last 40 years in journal publishing. The position of the existing players in the system is strengthened by the fact that in the subscription market there are high barriers to entry – it takes time and investment to establish a respected journal. The journals market is now dominated by four large multinational commercial publishers: Elsevier, Springer-Nature, Wiley, and Taylor & Francis. Although a long tale still exists, Larivière, Haustein, and Mongeon (2015) are right to characterise the market as an “oligopoly”. Often concentration comes from acquisition, large commercial publishers taking over smaller ones. However, another trend (at its height in the last two decades of the 20th century) has been small publishers, such as learned societies, outsourcing publication of their journals to large commercial publishers knowing that this will create a reliable income stream for their societies to fund their activities, secure in the knowledge that their title is being looked after by a large player in the market. Learned societies, whether or not they have outsourced their publishing, have often become reliant on subscription income. Whilst it might have been expected that they would be at the vanguard of OA, bearing in mind they usually have a mission to disseminate research in their domain, learned societies have in fact often historically been amongst its slowest adopters.

The oligopolistic characteristics of the market have been reinforced in the digital era. Journals are now usually sold in bundles, so-called “big deals”, consisting of large numbers of titles – hundreds in the case of some large publishers, who typically fold all of their titles into a single big deal, something that has been common since the turn of the 21st century (Bergstrom, Courant, McAfee, & Williams, 2014; Stoy, Morais, & Borrell-Damián, 2019; Strieb & Blixrud, 2014). Such deals have considerably enlarged the numbers of titles available to customers, since pricing models will typically charge a percentage mark-up on previous subscriptions being paid to the publisher for a selection of its titles, but now all of its titles are included in the bundle. However, price inelasticity in these conditions is reinforced, since it becomes almost unthinkable to cancel an entire big deal. Subscribers become locked in. The market is hampered from working with any meaningful competition in the domain since there is a lack of transparency around pricing. Publishers sell their big deals for different prices to different customers based on separate negotiations, but crucially, customers (typically library consortia) are often legally prevented from sharing the amount they are paying with others because of confidentiality clauses built into contracts with the publishers. Unlike most markets this creates the counter-intuitive situation where publishers can actually increase their market share by *raising* their prices. Normally, suppliers increase their market share by reducing prices (or improving their product compared with competitors), but in the journals market, if an already dominant supplier raises its prices, it can squeeze out smaller competitors from the market. Libraries, working with relatively fixed budgets, may have to cancel smaller publishers’ titles or packages in order to continue to buy those of the large publishers. Large publishers may then be able to buy up titles from other smaller publishers or even buy the whole company. Concentration in the market continues to be reinforced and prices continue to rise.

In many respects, OA was designed to address these systemic problems. Different OA business models aim to lower barriers to entry, create competition, enable transparency, lower prices, and so on (Björk, 2017). The APC business model, for example, lowers barriers to entry and tends to dampen prices through competition (Pinfield, 2013). However, some have started to argue that at least some of the fundamentals of the market in journals have been transferred into the OA environment. For some established publishers, OA has undoubtedly been seen as an opportunity to open up new income streams. The hybrid business model is often criticised as allowing “double dipping”, where publishers who already receive income from subscriptions also now receive income from APCs for the same content (Pinfield, Salter, & Bath, 2017). Policymakers and groups of customers have initiated various attempts to address such apparent problems with the market, notable among which are so-called “transformative” or “read-and-publish” deals, where customers pay both OA publication charges and access charges in a single bundle, with the balance between the two shifting over time towards a fully OA model in the medium term (Jisc, 2019). Nevertheless, such approaches have often been seen as

effectively massaging rather than transforming the system as a whole. They do not show any immediate signs of addressing problems of high prices, for example.

This is not a universal picture, however. It applies in many Western countries, particularly North America, Western Europe, and Australasia. It applies especially to the English-language scientific literature and it has been reinforced in recent years by the drive in some countries, notably China, to contribute to that literature as part of its (increasingly successful) policies to grow the importance of its participation in global science. However, even in countries of the Global North there are now numerous initiatives to change the system more fundamentally, from new journals to preprints servers. It should also be recognised that in other regions of the world scholarly communication has traditionally been done differently. As we saw in the discussion on differences of OA uptake and policy development, different models have emerged across disciplines and between countries. The platforms created for publication in South America, notably SciELO, are prominent examples of quite different approaches to OA, and crucially they are based on different pre-existing models of publishing. The predominant model there was based more on institution-supported community-managed journals. These formed the basis of what might now be called a “knowledge commons” approach to OA scholarly communication, as opposed to the Western “knowledge market” model we have seen.

These two models represent different major strands of thought about openness that in fact underlie much of the discourse on OA, although they are often not made explicit in discussions. The first strand of thought is what Peters and Roberts (2012) refer to as the “open market society” model, based on foundations such as Popper’s (1945) idea of the “open society”, Western liberal democracy (in contrast to “closed” totalitarian societies), and Hayek’s (1944) free market society, based on market capitalism and free enterprise. It is this Popper-Hayek idea of openness that prompted George Soros to found the Open Society Institute, the main sponsor of the BOAI. It contrasts with a commons approach, which places greater emphasis on communal solutions and “collective action” in managing common-pool resources (Hess & Ostrom, 2007; Ostrom, 1990). The commons approach, because of its accent on managing the sharing of resources in a sustainable way, has a different conception of private property rights, in the case of a knowledge commons, intellectual property rights (hence Creative Commons licences). Its advocates observe that online information is particularly conducive to sharing as a common good because it is non-excludable (one person’s use of it does not prevent another’s simultaneous use) and non-depletable (one person’s use of it does not subtract from the resource for a subsequent user). In fact, information is cumulative – it improves with sharing, as different items of information can be added to others to enhance their value. In the case of information produced as a result of academic research this is particularly the case since the scientific system needs to be open in a wider sense. Ideas need to be shared in order for them to be tested

and improved. This is fundamental to scientific progress and arguably makes open access to research results even more compelling than other forms of information.

Interestingly, there are some de facto compromises between these models – Wellen (2013) has observed that even neoliberal governments may often promote academic knowledge as a commons in order to maximise the return on public investment in research, ensure unimpeded scientific development, and enable effective knowledge transfer. In this case, an academic knowledge commons might exist within an otherwise essentially market-driven economy. Nevertheless, the two are likely to sit rather uneasily together.

Inertia and change

Changing the traditional system of scholarly publishing is a classic collective action problem (Neylon et al., 2019; Wenzler, 2017). In the case of researchers, changing their behaviour and stepping outside the norms of the reputation economy, when most of the incentives point them in the direction of working within it, is not in their interests. And yet it is clear that that is exactly what many researchers feel they are being asked to do in engaging with OA. This has led to scepticism or outright opposition to OA from researchers as OA has started to impinge on their consciousness, often through funder mandates or OA advocacy in their institutions. It is noticeable that this has often come to be couched by researchers as support for OA “in principle” but opposition to the ways it is being implemented. Many researchers may be concerned that OA threatens the “tried and trusted” system of publication that they value and on which they may have built their careers. There is often a strong association in the minds of many researchers of OA with low quality. This perception is reinforced by “predatory” journals, which have sprung up in the second decade of the 21st century in particular, and which accept and publish articles with few if any quality controls, in order to make money from APCs. Predatory journals are a negative consequence of the lowering of barriers to entry to the market by the APC model.

Regardless of quality concerns, a large number of researchers say that APC-based publishing is unaffordable to them, as they do not have access to funds. Some have gone further and expressed objection to the principle of having to “pay to publish”, claiming it is a limitation of their academic freedom. In other cases, researchers have observed that OA business models do not work for certain disciplines (such as SSH) and for certain formats (particularly books). Mandates to deposit items in repositories are often seen as an unreasonable demand on researchers’ time as well as on their autonomy. Navigating the complexities of copyright transfer agreements with publishers, deposit embargoes, and repository licences is often confusing. In any case, many researchers just don’t like being *told* to do anything!

Despite this, some researchers, albeit a minority, have supported, even championed, OA over a number of years. They have set up new OA journals, they have advocated depositing in repositories, they have made the case for policy

change. Some have worked in all sorts of ways to promote OA, often within their own particular disciplinary communities, and in developing their own favoured solutions. OA was in its beginnings in many respects a “grass roots” movement amongst researchers (Schöpfel, 2015). Many of the original signatories of the BOAI were academic researchers, and it has often been the influence of people like them that persuaded policymakers to engage in OA.

At the same time, of course, publishers have engaged with change, albeit with different levels of intensity and enthusiasm. There is no doubt some publishers have opposed OA: in some cases, openly making the case against OA (or at least particular OA initiatives), or, more commonly, quietly resisting OA developments. As we have seen, in some cases, some publishers have responded to OA by opening up new income streams whilst maintaining much of the pre-existing subscription system. However, there have also been a large number of different publishing and business innovations introduced into an increasingly complex environment in the last 15 years. There has been extensive work done, for example, in the area of peer review: from “soundness-only” peer review (focusing on a paper’s technical rigour, rather its novelty, significance, or “interest”), or portable peer review (allowing peer review reports to be ported from one journal to another) to open peer review (making reviews and the review process openly available). Publishers have also experimented with different approaches to preprints, in some cases even setting up preprint services themselves, or working closely with preprint servers.

Academic institutions have also both responded and contributed to an increasingly complex environment of differing funder policies, varying publishing options, and shifting researcher expectations. New systems (such as IRs), new policies (governing approaches to openness), and new processes (including workflows to pay APCs), have been set up by many institutions. Much of this activity has been coordinated by librarians, who have traditionally supported open access, often in response to the ever-increasing prices of journals and the lock-in created by “big deals”. Librarians have typically driven OA agendas in their institutions. They have championed new policies, technologies, and processes to support OA. They have also taken responsibility for advocacy to academic colleagues and supporting them through the morass of an ever-changing OA environment. At consortial level, librarians have often been responsible for pushing for new approaches to big deals, many involving offsetting APCs against existing subscription payments, most recently formalised as transformative deals. Such deals are still controversial and their impact still little understood. They are, nevertheless, ambitious since they aim to achieve the “flipping” of journals to OA at scale. At the same time, some institutions and their libraries have also set up university presses or publishing platforms to support new community-oriented initiatives in scholarly communication. In North America and some other globally high-income countries, there has been a rapid growth of mostly small university presses publishing OA books and journals since 2010. They are often hosted in the library. In many middle and lower income countries, there has also been a drive to publish research in an OA form by setting up new or flipping established journals, or establishing new publishing

platforms, often funded separately, making payment of APCs unnecessary. Again, it is librarians often driving many of these initiatives.

Possible futures of OA

Whilst the growth of OA over the last 20 years is clear, the long-term trajectory of scholarly communication remains less so. However, it does seem likely that research will become more open – that OA will become the default, at least for many disciplines, and also that OA will increasingly develop within a broader context of “open science” or “open research”. Open research consists of “open content” (published outputs, data, educational resources etc.), “open process” (open peer review, citizen science, open educational practice etc.), and “open infrastructure” (open standards, open repositories etc.) (Corrall & Pinfield, 2014). Such a context is likely to create an environment within which AI (artificial intelligence) technologies can be increasingly deployed, transforming the dissemination, discovery, analysis, and quality assessment of research materials. Network-level content venues are likely to transform dissemination, increasingly personalised retrieval agents will transform discovery, text and data mining are likely to transform analysis, and machine-based quality review is set to transform quality assessment – to name just a few possibilities, all of which become more powerful in an open environment (Priem, 2013). Other developments, such as the creation of a wide range metrics and indicators of quality and impact, and challenges, such as the long-term preservation of the scholarly record are likely to become more apparent.

The artefacts of scholarly publication are also likely to change. The article published in an issue of a journal, the central vehicle of scholarly communication at the beginning of the 21st century is a mode of communication derived from the paper-based world. Its fixedness and flatness look rather outdated. The potential now exists for scholarly communication to become more of a flow, with sharing of outputs at different stages of their maturation and combined with continually updating data, simulations, and visualisations, as well as commentary and interpretation. The functions of scholarly communication, identified by Roosendaal and Geurts and others and commonly said to comprise “registration” (claiming responsibility for findings), “validation” (quality control), “dissemination” (distribution of content), and “preservation” (creating a permanent record) of findings (Priem & Hemminger, 2012; Roosendaal & Geurts, 1997; Roosendaal, Huibers, Geurts, & van der Vet, 2003) are likely to be recombined in different ways and in different venues. There is no reason in principle, for example, that the peer review process (validation) has to be managed by the same agency as the one carrying out dissemination (currently a journal). The idea of scholarly communication being “de-constructed” and its functions being “de-coupled” (Priem & Hemminger, 2012; Smith, 1999) underlie many current experiments in change. Many of the possibilities are only just beginning to be explored, but the potential is enormous.

Part of the flow of scholarly communication is likely to include increasing amounts of interaction, not just broadcast. This is already being seen with developments such as social media platforms and academic workflow support software, enabling scholarly interaction. Social media and social-media-like technologies are becoming more important in scholarly communication, and this shows no sign of abating.

The roles of and relationships between the different actors in scholarly communication are also likely to change. The extent to which publishers will continue to be providers of content as opposed to the enablers of activities is, for example, an interesting question. Many publishers have recently extended their activities (either by in-house innovation or acquisition) into new areas of service provision, such as academic workflow services, as well as new areas of content, such as data (Campfens, 2019; Kramer & Bosman, 2016). As with any market, the extent to which the existing players can adapt to (as well as contribute to) the new conditions in which they find themselves will vary, with some existing providers doing so successfully and others falling by the wayside. The implications for the shape of OA could be profound depending on how this develops. Whether a system in which OA is increasingly prominent is designed and implemented by pre-existing publishers or new entrants is likely to have significant impact on what OA looks like in the future.

Similar challenges affect other players, not least library and information professionals and the services and facilities they support. Once again, a shift towards provision of services rather than custodianship of content is a clear direction of travel for library services, with the interesting question of the optimal locus of services (research group, institutional, consortial, national, network) also creating ambiguity and uncertainty in the future design of library and information services (Pinfield, Cox, & Rutter, 2017).

Conclusion

Open access is then a complex and fast-moving domain. We have seen in this chapter that the beginnings of OA, at least in its current form, were marked by developments such as the BOAI, at the turn of the 21st century. Since then, OA has grown significantly in a number of ways: OA options available to authors have grown, take-up of those options has grown, and use of OA materials has grown. OA has become more widely accepted, including by funders and other policymakers who have developed mandates and other policies designed to promote openness. There are demonstrable benefits for moving in the direction of greater openness, but there are also considerable challenges still. Not least of these is the reputation economy, in which researchers work, and the incentives it creates. At the same time the structure of the market for peer-reviewed journals militates against change (or at least, rapid and radical change). There has also been considerable resistance in the academic community to OA developments – from some researchers, publishers, and learned societies, for example. Nevertheless, all of the

actors in the space have between them engaged in a wide range of OA activities – we have seen the development of new policies, new services, new products, and new ways of working. Such innovation is likely to continue to gather momentum. More transformative change enabled by greater openness is also likely in future, but precisely what it will look like remains to be seen.

Having provided this survey of OA, we now turn in the next chapter to develop a more systematic representation of the environment.

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Conclusion

Open access in theory and practice

“We could have no science at all if we hampered ourselves with the limitations which actual life involves” ... What does this lucid explanation amount to but this, that in theory there is no difference between theory and practice, while in practice there is?

(Benjamin Brewster (1882). *Yale Literary Magazine*, 47(5), 202)

Popularised as, “In theory there is no difference between theory and practice, but in practice there is.”

We began this book by quoting the famous maxim popularised by Kurt Lewin, “There is nothing as practical as a good theory”. As we observed at the outset, this was an appeal to theorists and practitioners to work together more closely, rather than a statement of a widely recognised reality. The appeal is still relevant in many fields relating to the social sciences and humanities, including the one on which we have focused, that of open-access publishing and dissemination of research outputs.

The saying used by Lewin was apparently countering the common assumption that “there is nothing so *impractical* as a ... theory”. He was also implicitly relating the “goodness” of a theory to how “practical” it was. By “practical” he seems to have meant that which has an impact on or use for practice – it can be “applied”, as he put it. As Lewin remarked, both theorists and practitioners need to engage in addressing the theory-practice gap. What this implies is that, on the one hand, theorists need to accept that theory may or even should be “practical”, and then use and, where feasible, communicate their work in ways that reaches practitioners and can inform their practice. On the other hand, practitioners need to engage with theory and be able and willing to deploy it where possible in “practical” situations. In this final chapter, we will review what our research has shown about this in the OA domain.

At the outset of our study, we set ourselves the aim of analysing “the ways and the extent that theory and practice have interacted (and have been perceived to interact) in the development of open-access approaches to

publishing and dissemination of research outputs”, and then exploring “what this reveals about the nature of open-access itself and its future, and the relationship between theory and practice”. Here we will briefly reflect on some of the issues which our research has highlighted in relation to these questions.

We suggested in the introduction several reasons why we believed OA was an interesting case study of the theory-practice relationship; we also want to take the opportunity to discuss these points again now in the light of our findings. They were (in summary) first, that OA has had a wide range of theories applied to it; second, that OA is, nevertheless, an intensely practical challenge; third, that OA at its core involves theorists and practitioners working together to produce outputs; fourth, that OA involves a range of practitioner groups; fifth, that many practitioners in the area of OA might be expected to be open to theory; sixth, that OA has itself been proposed as part of the solution to bridging the theory-practice gap. We will incorporate comments on these points into our discussion below.

Sizing the gap(s)

Our study on OA has shown that much of the literature and the views of many of our interviewees agree that there *is* a theory-practice gap and it could usefully be bridged. We have also seen, however, that the gap is not as simple as some theory-practice discussions might assume. In particular, we have qualified in a number of important ways the idea that researchers, on the one hand, are always confident handlers of theory, and that practitioners, on the other, eschew theory. As far as researchers are concerned, our study has shown that researchers who use theory are often not as certain about the nature of theory and its purpose as might be assumed. Its use is often messier than usually assumed or presented. As far as practitioners are concerned, we have seen that some theory on OA has been developed or used by practitioners. In other words, it is not just researchers who use or develop theory; rather, some prominent authors in the OA domain who use theory are in fact practitioners. Furthermore, we have seen some theory deployed by practitioners unconsciously, where the concepts and language of particular theories seem to have entered into the discourse of practitioners without them being conscious that is what is happening. This has the effect of narrowing the gap between theory and practice. We also see work by practitioners which does not use theory but has a “theory-like” character, in that it involves analysis of a problem and systematisation of thinking about it in order to inform action. The resulting “toolkits” and “checklists” that often emerge from such studies are typically very similar to the theoretical frameworks and models produced by researchers. We have also seen that there is a strong argument that all practice is in fact founded on theoretical bases of various kinds, regardless of whether this is recognised by

practitioners themselves. These factors mean that the theory-practice gap is not as straightforward or as stark as often thought.

There is another point on understanding the gap which needs emphasising. Whilst it is perfectly correct to refer to “the theory-practice gap” in conceptual terms, it is essential to understand the concept in a nuanced way. The reality is one of multiple gaps between different theories and types of theory, and multiple practitioner communities. Our research has shown this complexity clearly – with a wide range of theories and types of theory being applied to OA, and a variety of different related groups of practitioners working in the OA space. This complexity makes the idea of bridging the theory-practice gap daunting, but our research has also helped to indicate areas where useful action might take place.

Nevertheless, the fundamental point remains important: that action is required by both researchers working with theory and by practitioners to address the gap between theory and practice in order to yield benefits to the domain in which they work, in this case, OA. As we suggested, in order for Lewin’s maxim to be realised, theorists (or researchers working with theory), on the one hand, need to accept that theory may or even should be “practical”, and then use and communicate their theory-informed work in ways that reaches practitioners and can inform their practice. On the other hand, practitioners need to engage with theory and be able and willing to deploy it in “practical” situations. We will look at each side of this (that of researchers and that of practitioners) in what follows.

Researchers

Dealing with researchers first, do researchers working with theory in the domain of OA accept that it may be “practical”?

This question relates to why theory is used in the first place. Our study has shown different uses of theory, including theory for analysis, explaining, and understanding. Much of this use of theory implies something “practical”, since it might be expected, for example, greater understanding of a phenomenon enables informed action with regard to it. We have seen a wide range of theories being used in the domain of OA, mostly with the aim of enabling analysis and enhancing understanding. We observed at the outset that this was an interesting ostensible feature of OA studies – the wide range of theories used in the domain – our study has identified an even wider range than we expected, largely because of the use of discipline-specific theory (e.g. Game Theory) published in the literature of those disciplines. This emphasises the multidimensionality of OA, a multidimensionality we have tried to delineate as part of our analysis.

However, we have also seen an interesting issue around how theory is chosen and its “fit” – its “fit”, that is, to the phenomena being analysed and the kind of analysis being undertaken. “Fit” is an elusive idea that emerged from our data. It seems to include disciplinary background (with a tendency to choose theories familiar to the disciplinary community in which a particular

study is being presented, even if the theories do not originate there), personal experience (having used the theory before), world view (theories vary in terms of the fundamental ontological and epistemological assumptions behind them), and convenience (the ease with a theory can be understood, used, and communicated). There is also an emotional element to “fit”, in which it is emotionally satisfying. In the case of discipline-specific theory, it is clear researchers use theoretical tools that are near to hand and familiar – familiar to them and their anticipated readers (from their community). This is often the case both within and beyond LIS, with some researchers making repeated use of particular theories. The vagueness of the idea of “fit” corresponds to the uncertainty we have seen about what theory to use and how to use it, even amongst researchers – uncertainty rarely formally acknowledged. We have also seen numerous pragmatic or contingent reasons for using theory in research on OA, including the expectations of the disciplinary community being addressed, and particularly the (anticipated) expectations of peer reviewers. Some participants reported that there was an expectation that they should use theory in peer-reviewed studies in order to get published. Motivations and methods for selecting theory are still under-researched, we would suggest.

One key aspect of this is theory as a boundary marker which contributes to community identity, in this case, an academic disciplinary identity. The use of theory is in this way a mark of belonging and status (social capital, to use Bourdieu’s term) within that community. The consequence an actor’s use of theory as social capital in a particular research community is that it will be less of a priority for them to ensure understanding beyond that community. The by-product of this can then often be the exclusion of those who are outside the boundary of the community in question. Theory can both “bind and blind” – drawing those within a particular academic community together whilst at the same time excluding those outside. Some theory use classified as being related to understanding, therefore, does raise the question of “whose understanding?”, as we have mentioned (in Chapter 10). It is paradoxical that sometimes the subjects of analysis of theory-informed research on OA, who develop the policies and run the systems under scrutiny, do not have their own understanding enhanced by theory used and developed about them and their work. Interestingly, it is likely that the rhetoric of scepticism about the value of theory may have a similar function – in giving a sense of inclusion, this time in practitioner communities. The view that practitioners “get things done” and therefore don’t need theory, can also act as an important marker of belonging in practitioner communities.

Some practitioners we spoke to were keen that researchers should be encouraged to translate theory-informed work to make it more accessible to them, and to help make the implications for practice of their findings clearer. Teasing out the practice-related implications of theoretically informed research often requires considerable effort and expertise. The translation of research findings into actionable insights happens best as part of a dialogue between researchers and practitioners,

rather than as broadcast by researchers. Engaging in such dialogue requires time and skills. It also does not happen without strategy and resources. Whilst there is evidence of these in particular projects, they remain rare, and translation work of this kind is often ad hoc and based on best efforts. Whilst we have identified some practical ways in which this can be done (in Chapter 9 and summarised below), we recognise that resources to undertake such work are in reality often sparse. The incentives for researchers to engage seriously in such work are currently weak. As we have seen, the priorities and values of the different communities (researcher and practitioner) are often insufficiently aligned in order for such translation work to be undertaken as the norm. Although the impact agenda currently being pursued in a number of countries, which encourage researchers to engage more in ensuring their research has beneficiaries beyond the academy, may go some way to addressing this incentives issue, it remains a significant problem. There are other possible approaches to mitigating such problems which we have discussed (in Chapter 9), such as co-production of research. Our study suggests at least some practitioners want more of a say in setting the research agenda in OA.

Practitioners

This leads us to consider practitioners. As we have seen, in order to realise Lewin's ideal, there needs to be a willingness to engage with theory and readiness to deploy it in practice.

We have found that some practitioners value theory highly, reporting the positive experience of theory casting light on a practice-based problem, for example. Less commonly, we have seen practitioners actively seeking out theory to inform their practice – but this does seem to be unusual. Nevertheless, amongst a good number, there is clearly a willingness to engage with theory in the domain of OA, at least in principle. At the same time, our work has also uncovered considerable scepticism and cynicism about theory in relation to practice. The view that theory is by its very nature impractical (abstract and abstruse) is common. Whilst not a surprise, it is still important to acknowledge this. Even amongst our participants who valued theory, there was often a tendency to talk about theory and practice as oppositional.

Even where theory is accepted as being useful in principle, other problems of engagement remain. These we saw primarily in the three areas of encountering, understanding, and applying theory, as explained in Chapter 9. Encountering theory is the first problem, and it does involve barriers to access. Greater adoption of OA was seen as a positive step in improving the likelihood of encountering theory. However, access itself was less of a priority for the particular practitioner communities we studied in addressing the theory-practice gap, perhaps because many of them work in areas where they often can access literature behind subscription barriers (including informal workarounds, as well as straightforward access). Although improving access itself was seen as

important in principle, it was not enough. Time was perhaps the major problem, with many practitioners in all sectors feeling enormous pressure on their time, with little space to reflect. There was a clear need for communication to them to be succinct, clear, and crucially using channels they used, particularly social media, and specifically Twitter. The growth of social media in general and Twitter in particular as a vehicle for professional (as well as academic) communication is shown clearly in our data.

The second barrier experienced by practitioners, understanding, is the other side of the coin of the use of theory for understanding, that we have already discussed in relation to researchers. The question of “whose understanding?”, we have seen, may not always be answered by the response, “practitioners”. It is a moot point about how this could be addressed. One of our practitioner participants spoke of the need for practitioners to “train” themselves in engaging with theory, but for the most part our data shows, as we have seen, that the assumption was that the responsibility should rest primarily with researchers – that they should frame at least some of their communications in ways that could engage researchers without any such training.

At the centre of the third barrier, the applying barrier, is relevance or perceived relevance of theory. Theory, if it is to be applied in practice, must speak into the specific circumstances of the practitioner. Achieving that translation from the general (that theory will normally represent) to the particular (the specificities of a given practice-based situation) is challenging. The situation is especially complex in the OA domain because of the variety of practitioners involved (an area we noted at the outset was interesting). Our study has included policymakers and funders, publishers, OA service providers, librarians, consultants, and OA advocates as our primary practitioner groups. Between them, these groups form a complex set of interacting roles, perspectives, and interests, both within and between groups. Our analysis has shown such differences to be important in creating boundaries, with additional crucial differences associated with varying contexts: organisations, communities, countries, and regions. We observed that the situatedness of the knowledge being produced, shared, and used, and communities using it, has often not been sufficiently taken into account in studies to date on OA.

Bridging the gap

Our work has helped us to identify other ways in which the theory-practice gap can be addressed. These include the need to engage in meaningful dialogue, ensuring, for example, that conferences and other venues for communication (such as blogs and other online channels) are inhabited by both researchers and practitioners. Regular interaction between practitioners and practitioner educators may also be particularly important. We have placed some emphasis on the role of the boundary spanner in our analysis, reflecting the prevalence of this in our data. The potential of such a role helping to bridge the theory-practice gap, we believe, is

considerable. Boundary spanners can, for example, facilitate dialogue, drawing theorists and practitioners together, and undertake translation work highlighting the links between theoretical insight and practice-based application. However, it is striking that boundary spanner roles are often undertaken by people informally, who are not officially resourced to do it. They typically carry out the role because it interests them and because they believe it to be important, but often as a sideline to their day job.

As with much of our analysis, we believe the importance of boundary spanners and other approaches to bridging the theory-practice gap are likely to apply in other domains in SSH, beyond OA. Whilst our study has focused on the domain of OA in particular, as our work has progressed, it has become clear that our findings are likely to apply to other areas involving the same or similar research and practitioner communities, and indeed in other SSH areas. Consequently, the model we present in Chapter 9, derived from our findings, may have wider applicability. It could, for example, be applied in other open science domains, such as data. More generally in LIS, it may be applicable in an area such as information and digital literacies – another area where theory and practice have often been seen to interact. Beyond LIS, many of the insights our research has generated are likely to be applicable to other fields where there is a theory-practice/theorist-practitioner relationship in play. This might include some of the areas we referred to Chapter 4, such as nursing, education, and management.

Despite the barriers, and partly because of the ways that the theory-practice gap has already at times been bridged, our research has shown clearly where theory may be deployed to inform practice in the domain of OA. Examples have included Innovation Diffusion Theory informing the development of advocacy for an open access institutional repository, Commons Theory used to inform the creation of a new online publication platform, and Disruptive Innovation Theory to inform development of library strategy in relation to OA. We have also seen theory playing a role in enabling understanding of a more general kind, helping practitioners to understand a contextual issue in a new way. That understanding can go on to inform development of strategy and operations. In addition, we have seen pragmatic deployment of theory. For example, to justify a particular policy or service development, albeit often as a way of assisting advocacy in retrospect rather than informing action in prospect. This point, as well as the general academic context within which practitioners are based (the broad “academic community”, as we have defined it) does seem to result in a general openness to the use of theory in practice-based areas. At the very least, the general openness to theory is likely to lead to a receptivity to the work of boundary spanners.

But despite such examples of theory being used in practice-based situations, a great deal more could still be done in enabling theory to relate closely to the practice of OA. In the introduction to this book, we observed that OA was an intensely practical problem (or set of problems), involving a global industry and its millions of consumers. Our interviewees have reinforced this view with

their accounts of large-scale practical challenges associated with OA, some local, some national, some system-wide. However, our analysis also points to a number of areas where significant development could usefully be made in theory which could have a direct bearing on practice.

Specifically, we have identified examples from a range of different OA dimensions where further work at the interface of theory and practice could have a significant impact. Prominent among these is the need to achieve greater development of theory underpinning the principles associated with OA and how these relate to modes of OA being used, particularly in relation to the knowledge market as against the knowledge commons. We have also seen that work at the interface of theory and practice, relating to intellectual property rights is also required. Work on policy development, particularly in addressing the incentives impasse, could have a major impact on practice, as could further work on the functions of scholarly communication in relation to OA. The economics of OA and its impacts within and beyond the academy also need more work. The issue of the benefits of OA beyond the academy is particularly pressing but presents considerable methodological challenges. Further work on infrastructures and processes is also needed. What we have called relational factors also need more work. A key area for development is greater understanding of disciplinary differences and how they relate to OA implementations. Biases and asymmetries need to be investigated and better understood in order to be addressed, including those such as gender, ethnicity, and language. Also included here are those issues associated with the relations of the Global North and Global South in terms of knowledge production and sharing. In addition, the issue of developing notions of trust and how they are signalled in the scholarly communication process are crucial. In relation to the actors involved in OA, we have identified the need already discussed above to see OA in a more situated way, with the richness of context requiring more theorisation and acknowledgement in practice. All of these areas are ones where theory development could have a direct bearing on practice, we believe, and may contribute to an agenda of further research and practice development.

There are no easy answers, of course – either to addressing the theory-practice gap in general, or in furthering OA development through theoretically informed action. However, our research shows that at least some of the potential of OA, and some of the most difficult challenges associated with its implementation, can be informed and enabled by a closer relationship between theory and practice. Some of what we have learned can also help inform wider questions of the theory-practice gap, we believe, particularly in cognate areas, involving the same actor groups. Crucially, we have seen that commitment from the actors concerned is also required, something Lewin observed. In the domain of open access, as in other areas, working to ensure that theory and practice are closely aligned in practice as well as in theory may help both to progress.