Chapter 3: 'Openness' and contemporary open movements

The two previous chapters have examined the historical development of the institutions and processes that are involved in creating and distributing academic research. This has helped to contextualise the main topic of this thesis, open access, by showing where the impetus for a new way of doing things has come from and demonstrating what open access is a reaction against. Before going into detail about the political and policy side of open access in subsequent chapters, this chapter builds on the introduction to open access given in the introduction by thoroughly examining just what is meant by the 'open' part of the term open access. The importance of *access* does not disappear from this discussion, not least due to the sometimes exclusionary nature of participation in open movements, as discussed below. However, since openness is a term with a variety of meanings and connotations, it is important at this stage of the thesis to have a clear understanding of the origins and meaning of openness in the particular sense used by the open access community.

To begin this discussion of openness, a natural starting point is free and open source software (F/OSS). The use of the word *open* in later movements[1] (open access, open data, open education etc.) originates here and the shape and rhetoric of contemporary open movements draws heavily on advocacy for openness of software. It is in the free and open source software movement[2] that we first encounter the importance of copyright and licensing to creativity in the digital age; the distinction between free and open, and the sometimes antagonistic arguments surrounding these terms; and the formation of strong global communities of advocates connected by the digital technologies that make open possible in the first place. As Kelty argues in *Two Bits*, it is not the software itself that is culturally important but the practices involved – of 'sharing source code, conceptualizing openness, writing copyright (and copyleft) licences, coordinating collaboration, and proselytizing for all of the above' (Kelty 2008: x) – which represent a 'reorientation of power with respect to the creation, dissemination, and authorization of knowledge' (Kelty 2008: 2). Kelty's book focuses extensively on the 'modulation' of free software to other domains, and in the later part of this chapter the relationship between F/OSS and open access will be outlined in detail.

This chapter will primarily address the nature of openness, and the politics of openness will be at the forefront throughout. By understanding the history of openness – *how* and *why* it developed into an identifiable concept with widespread support – it becomes clear that it cannot be understood without reference to the political. The extent to which openness can be placed within the liberal tradition provides a crucial backdrop to Chapters 4-6 that examine neoliberalism and its

1 By 'later' I mean they were *self-understood as movements* later (e.g. the Open University was founded in the 1960s, but open education came into its own as a movement in the 2000s).
2 Using the term 'movement' is discussed by Kelty (2008: 98, 113–15) who sees its birth in 1998.

effect on open access policy.

Free and open source software

The origins of the free and open source software (F/OSS) movement can be traced back to the 1980s and the work of Richard Stallman. By this time, software development was a well-established domain of activity, as digital computing had been progressing for several decades. Much of the work done to create software was undertaken in universities, as well as in some private companies. It was from within the culture of UNIX development – an operating system created by the researchers Dennis Ritchie and Ken Thompson at Bell Labs[3] – that ideas about sharing software were established, as in the early days of computing openness was often assumed. Seen in this light, Stallman's work was a reaction against what he saw as an encroaching enclosure of source code. Although Stallman's perspective on many issues is far from typical (even among software developers), there is no doubt that a tension existed between the culture of programmers and the commercial imperatives of business that owned and sold software. Histories of F/OSS are often centred around two key facets: firstly, the practice of sharing source code under open licenses (with discussions on the history of copyright and political arguments around intellectual property); and secondly, new decentralized methods of organising labour outside of market incentives or hierarchical organisational structures. For instance, Weber (2004) discusses the interplay of a new intellectual property regime based on permissions rather than exclusion, and the new collaborative organisational structures that both arise out of and create a new mode of governance.

To clarify the meaning of free and open source software, and explore the difference between free and open in this context, it is useful to look at definitions of free software and open source. The Free Software Definition was originally written by Richard Stallman and is maintained by the Free Software Foundation, a non-profit organisation that he founded in 1985:

> A program is free software if the program's users have the four essential freedoms:
>
> - The freedom to run the program as you wish, for any purpose (freedom 0).
> - The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
> - The freedom to redistribute copies so you can help your neighbor (freedom 2).
> - The freedom to distribute copies of your modified versions to others (freedom 3). By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.
>
> (Free Software Foundation 2015)

The first Free Software license was the GNU General Public License (GPL) created by

3 Bell Labs was the research division of the telecoms company AT&T.

Richard Stallman (Kelty 2008: 15; 189). Perhaps even more so than his considerable work as a coder, Stallman's key innovation was 'hacking' copyright to create copyleft. Stallman created a license – the GPL – that builds on existing copyright law by allowing creators to give extra permissions in the use of their work – permission to use, reuse, and modify the code – so long as the same conditions are maintained in subsequent copies and modifications (Kelty 2008: 182; Moody 2002: 26–27). If copyright is 'the right to exclude and control' (Coleman 2012: 1), then copyleft aims to give permission to act freely. This inversion of the traditional intellectual property regime has been analysed by Weber in political economic terms [...] (Weber 2004: 4–5 [also 182–83]). A wide variety of other software licenses have been created since the GPL, such as the even more permissive BSD (Berkeley Software Distribution) license and MIT License. These allow people who use or modify the code to use it however they wish, including within proprietary software.

The term *open source* was coined in 1998 by Christine Peterson – president of the Foresight Institute, a nanotechnology non-profit (Moody 2002: 167; Open Source Initiative 2012) – and popularised by libertarian developer Eric Raymond to distance the movement from Stallman's ideological prioritisation of freedom and to explicitly make F/OSS software more attractive to commercial users (Weber 2004: 114). (The Open Source Definition is published by the Open Source Initiative (2007).) Raymond makes his attraction to free market capitalism explicit in his writing (2001: 52–54, 107) and makes the analogy that free software collaboration and free markets are both self-organising systems:

> The Linux world behaves in many respects like a free market or an ecology, a collection of selfish agents attempting to maximise utility, which in the process produces a self-correcting spontaneous order more elaborate and efficient than any amount of central planning could have achieved. (2002: 52)

Raymond's allusions to self-organisation have been critiqued by Weber (2004: 131–133) who argues firstly that the term is used as a kind of 'black box' to sidestep the need to provide more detailed explanations of *how* organisation arises out of individual actions, and secondly that self-organisation is claimed as a 'natural' process which should not be interfered with[4] – a claim which conveniently aligns with Raymond's political perspective. If organisation is seen as spontaneously and naturally arising then scrutiny of power relations is deemed unnecessary; Raymond attempts to back up this stance by claiming that the only kind of power is overt coercive power so in voluntary free software development power relations simply do not exist (Raymond 2001: 51). This is an argument often used in right-wing rhetoric which ignores the diversity of meanings of power (Cairney 2012: 48–49).

> The group solved this problem through a process of linguistic reframing (Lakoff 2004), replacing the term free software with open source. They wanted the word open

4 Raymond uses naturalistic claims throughout his writing, for instance arguing that the 'gift culture' used by hackers is the 'optimal social organization for what they're trying to do, given the laws of nature and the instinctive wiring of human beings' (Raymond 2001: 107).

> to override the ethical messages and designate what they were touting simply as a more efficient development methodology. They knew, however, that creating a new image for open source would "require marketing techniques (spin, image building, and re- branding)" (Raymond 1999, 211)— a branding effort that some of the participants were more than willing to undertake. Eric Raymond, who had recently written what would become an influential article on free software, "The Cathedral and the Bazaar," took it on himself to become the mouthpiece and icon for this new open- source marketing strategy.
>
> Although Raymond's goal was to bring free software into the business world, like Stallman, he was also deeply engaged in the politics of cultural revaluation (Coleman 1999). While Stallman felt that a certain type of commercial incursion (in the form of intellectual property law) threatened the values of hacker culture, Raymond wanted to bring open source to the market to improve the hacker cultural experience. If hackers could gain a respectable foothold among Fortune 500 companies, he argued, it would allow them to reap enough social capital so that they could escape a cultural ghetto of marginalized nerdiness.
>
> (Coleman 2012: 79)

The terminological distinction between *free software* and *open source* highlights the ideological difference between the two approaches. Free software is used to highlight the 'freedom' aspect, and Stallman has been perhaps the most vocal and persistent advocate for its use. The forking of free software and open source occurred in 1998 (Kelty 2008: 99) when open source was coined as a 'non-political' alternative term which de-emphasised the freedom aspect. One of the key early proponents of open source, Eric Raymond, 'emphasize[d] the centrality of the novel forms of coordination over the role of novel copyright licenses or practices of sharing source code' (Kelty 2008: 109). However, the F/OSS divide between 'moral and utilitarian logics' is usually blurred (Coleman 2009).
[see Moody (2002: 259) for more on the pragmatist/idealist divide, and p.256 for a conjecture that the tension between the two camps has actually been essential for driving progress.]
[difference between means and ends – Kelty (2008: 148).]

Coleman explicitly places the ethos of F/OSS within the liberal tradition. In particular, the community focuses on the importance of free speech ('code is speech'), since the 1990s when 'the link between free speech and source code was fast becoming entrenched as the new technical common sense among many hackers' (Coleman 2012: 2–3, 9). Although Coleman argues that the hacker critique of intellectual property was a critique of neoliberalism, a close ideological cousin of neoliberalism – libertarianism – also has a strong presence in the internet social imaginary (see Mathew 2016), as demonstrated by Raymond's political views. Libertarianism is a political philosophy that advocates absolute minimal involvement of government in individual's lives (Brennan 2012[5]).

5 [check reference]

Hackers insist ‘on never losing access to the fruits of their labor— and indeed actively seeking to share these fruits with others [...] free software developers seek to avoid the forms of estrangement that have long been nearly synonymous with capitalist production’ (Coleman 2012: 15).

F/OSS collaboration can be viewed as a change in the mode of governance [expand] so we can consider whether this is related to neoliberal governance. *Governance* in this sense refers to ‘setting parameters for voluntary relationships among autonomous parties’ (Weber 2004: 172) – so in a neoliberal mode of governance, the prioritising of market logic means that all social relationships are imagined as *market* relationships [although thinking of these in terms of ‘voluntary’ relationships might be a bit of a stretch] (see Chapter 2). In F/OSS coordination, ‘adaptability is privileged over planning’ (Kelty 2008: 222), a phrase which echoes the opposition to planning found in the writings of Hayek (see Chapter 2). F/OSS ideology values ‘what works’ over planning and the lack of goals is considered a virtue. If open access, as a forking of F/OSS,[6] is based out of this same social imaginary, then the ‘non-political’, ‘non-ideological’ rhetoric is at the forefront. This is what is facilitating the slippage away from the social justice ideals of those more politically engaged open access advocates. However, Kelty argues that free software represents ‘an imagination of how to change an *entire market-based governance structure* – not just specific markets in things – to include a form of public sphere, a check on the power of existing authority’ (Kelty 2008: 308). Under this mode of governance, the consent of the governed relies on allowing the governed to create and modify the system of governance themselves. Self-governing communities existing within markets is closer to Hayek's theoretical economic ideal than to what neoliberal governance has now become (see Chapter 4 for more on the anti-democratic nature of contemporary neoliberalism).

[Notes on Weber:
- ensuring no-one has monopoly control over the means of production
- says nothing about how surplus is distributed
- first paragraph p.225
- difference between creating software and research: the end goal of each software project is a single thing which many people contribute to; in research the equivalent end goal of a particular process is the individual article itself without *necessarily* needing to think deeply about its place in the overall system in terms of functionality and compatibility (this does occur but is not as highly prioritised perhaps).
- free riding is not a problem in F/OSS, it enhances the product.
- price mechanism as a ‘thin’ metric which leaves out so much information; an uninteresting remnant of low-bandwidth thinking? pp.256-57.]

6 [I realise this needs some explanation.]

Understanding openness

The term ‘open’ has now been applied to numerous domains, including open source, open access, open education, open data, open government, open science, etc. In this section, the commonalities between these different areas are explored in order to move towards a more thorough understanding of just what is meant when people use the word open in this sense. As will become clear, the term is a complex one that evades simple definition. Weller makes this explicit and accepts that ‘it is a vague term, with a range of definitions, depending on context’ and prefers to consider a range of motivations for openness: increased audience, increased reuse, increased access, increased experimentation, increased reputation, increased revenue, increased participation (2014: 29–30). This breadth of motivations for openness goes some way to explaining the divergent approaches to achieving it. For instance, those who have attempted to define open rigidly have often taken a *content-driven* perspective. This is particularly clear in the the Open Definition (see Open Knowledge International [n.d.]) which was created by Open Knowledge, formerly known as Open Knowledge Foundation (OKFN), an organisation which is involved in all of the areas discussed in this chapter. Summarised as ‘Knowledge is open if anyone is free to access, use, modify, and share it — subject, at most, to measures that preserve provenance and openness’, the definition makes frequent declarations of what an open work *must* do. It also states that ‘this essential meaning matches that of “open” with respect to software as in the Open Source Definition and is synonymous with “free” or “libre” as in the Free Software Definition and Definition of Free Cultural Works.’ The fact that it the Open Definition claims to be the same as the definitions for both free software and open source software shows just how much a content-centric definition leaves out – as shown in the following section, while free software and open source may often reach the same result at a practical level, they have highly divergent meanings. Since relying on a static definition for openness written by self-appointed experts at a particular moment in time is problematic, especially given that openness to participation is generally regarded as central to the concept, the rest of this section will look to a range of different thinkers in different domains to provide a more expansive view of openness.

Peters and Roberts in *The Virtues of Openness* (2012) discuss the meanings and motivations for openness at length

Openness is closely related to the legal ownership status of works. Licenses – legal documents that assign certain rights or permissions to determine what people are allowed to do with a work – are an essential part of all open movements, and often form a central part of open definitions. As with so many aspects of openness, it was in the F/OSS movement that the first open licenses were developed (see below) and by the turn of the twentieth century software developers often had to be legal experts on intellectual property (Coleman 2012: 63, 86–88). The most important development in licensing for the spread and harmonisation of open movements was the founding of Creative Commons and its suite of licenses. Founded in 2001 by legal scholar Larry Lessig, Creative Commons released its first set of copyright licenses in

2002 (Creative Commons [n.d.]) and these have now been through multiple iterations.[7] They are based on the principle of 'some rights reserved', which means that they build on top of the 'all rights reserved' position of copyright by allowing additional permissions (Lessig 2004: 283).

The term *open access* was originally defined in 2002 by the Budapest Open Access Initiative, which opened with the memorable line: 'An old tradition and a new technology have converged to make possible an unprecedented public good' (Chan et al. 2002). This statement highlights the role of technology as an enabler while simultaneously proclaiming the ethical and social nature of open access. The Budapest Declaration was followed by two further declarations – the Bethesda Statement on Open Access Publishing (Brown et al. 2003), and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003). These three declarations – referred to by Peter Suber as the 'BBB definition' (Suber 2012: 7) – helped to define open access as a 'movement'[8] and provide a common touchstone to conceptualise it. Eve draws on these definition, and the work of Suber, to claim that 'regardless of the nuances and complexities […] 'open access' can be clearly and succinctly defined. The term 'open access' refers to the removal of price and permission barriers to scholarly research' (Eve 2014: 1). This does indeed provide an accurate definition, though only if the ambiguity of the term 'removal' is accepted; there has been vigorous debate within the open access movement as to whether the absolute removal of *all* permission barriers is necessary before a state of open access is reached and the term can be used, or whether a removal of some in a process of 'opening' in acceptable. This has resulted in some open access advocated arguing that if a work is not licensed under a Creative Commons Attribution license (CC BY) then it is not open access, which would unfortunately include the vast majority of works in open access repositories.

The commonalities between open source and open access show that openness, in this sense, has a coherent meaning which can transcend cultural boundaries. This can be seen in the proliferation of other contemporary open movements in recent decades, such as open data and open education. There is not space in this thesis to discuss these areas in any detail, but it is worth noting some of the common features – in theory and practice – that position them in close relation to the openness of F/OSS.
A useful way of distinguishing between different instances of the word open is the typology of openness used by Corrall and Pinfield (2014) – open content, open process, and open infrastructure. This typology may help to clarify links between different open movements. [Content refers to 'stuff' (whether physical or digital) and its availability. Process includes

7 The six licenses, in descending order of permissiveness, are the Creative Commons Attribution license (CC BY), Creative Commons Attribution ShareAlike license (CC BY-SA), Creative Commons Attribution Non-Commercial licence (CC BY-NC), Creative Commons Attribution NoDerivatives license (CC BY-ND), Creative Commons Attribution Non-Commercial ShareAlike license (CC BY-NC-SA), and the Creative Commons Attribution Non-Commercial NoDerivatives license (CC BY-NC-ND). They also provide the Creative Commons Zero (CC0) Public Domain waiver – this is not a license, but a legal waiver to all rights to a work in order to release it directly into the public domain.

8 See Kelty (2008: 98, 113–15).

openness to participation. It may be more difficult to define what counts as infrastructure.]

Open education encompasses a variety of practices broadly centred around open content (such as Open Educational Resources (OER) and open textbooks) and open process (such as open pedagogy), although these divisions are often blurred. For instance, MOOCs (Massively Open Online Courses) are distance-learning courses delivered online with no formal barriers to participation that use open course materials (Weller 2014: 4–7).[9]
Wiley's 5Rs of Reuse ([n.d.]):

1. Retain - the right to make, own, and control copies of the content (e.g., download, duplicate, store, and manage)
2. Reuse - the right to use the content in a wide range of ways (e.g., in a class, in a study group, on a website, in a video)
3. Revise - the right to adapt, adjust, modify, or alter the content itself (e.g., translate the content into another language)
4. Remix - the right to combine the original or revised content with other material to create something new (e.g., incorporate the content into a mashup)
5. Redistribute - the right to share copies of the original content, your revisions, or your remixes with others (e.g., give a copy of the content to a friend)

Like other open movements, open education has attracted significant attention from the tech industry. This is most strongly evident with the hype surrounding MOOCs and their potential to 'fix' a 'broken' education system, in what Weller has termed the Silicon Valley narrative (Weller 2014: 117–133). Online distance-learning start-ups such as Udacity and Coursera are for-profit organisations that aim to 'disrupt' traditional education, following Christensen's ideas on 'creative disruption' (Christensen 1997). The dangers and failures of this model have been outlined by Watters (2017; see also Selwyn 2015), who is particularly scathing of the suitability of hyper-capitalist organisations such as Uber as a model for education. While the hype surrounding MOOCs may have faded somewhat since 2014,

The content-focused and profit-driven nature of such enterprises contrasts strongly with the ethical drivers described by Jhangiani and Biswas-Diener (2017):

> The open education movement offers one possible, partial remedy to educational inequality. The most obvious benefit of open education is in its low cost. The word 'open,' in this sense, means 'allowing access to' although it is also often equated with 'free of cost.' In fact, most open education resources are freely available and even in cases where they are low cost, they still help to drive the market toward a lower price point. By removing or substantially reducing the expense normally associated with

9 [Read Farrow 2015, Peter and Diemann 2013]

> software, textbooks, and course fees, education becomes more accessible to more people. The open education movement can also help raise the quality of education for all students because instructors are better able to share and build on one another's pedagogical innovations. It is here, in the second sense of 'open,' meaning customizable by and shareable among instructors, that we have the potential to design more engaging, locally relevant, interactive, and effective teaching resources.
>
> It is for precisely these reasons that open education often seems like a crusade. It is a values-based and mission-driven movement every bit as much as it is practical and technological. The voices of open advocates and champions are often impassioned in the way typical of people who are in the throes of rapid and successful social change.
>
> (Jhangiani and Biswas-Diener 2017: 4–5)

Open data is hard to define without resorting to tautology – it is about opening up data, with 'open' used in the same sense as throughout this chapter, and 'data' referring to a set of quantitative or qualitative facts, measurements, or statistics. Different categories of open data, such as open research data, open government data, open financial data, or open health data, often overlap. In terms of research, open data (see Moore 2014) can be seen as a corollary to open access – one is about providing access to research publications, and the other is about providing access to the data that is produced, collected, and analysed in the process of conducting research. Open data plays a key role in the broader 'open science' or 'open research' movement.

Open government data is itself part of a broader open government movement working on a range of issues, including access to law, Freedom of Information, and increasing levels of democratic participation.[10] The umbrella term *open government* includes both open content (e.g. data government data) and open process (e.g. open policy-making) (see Corrall and Pinfield 2014).
The relationship between open government data and neoliberalism has been explored by Bates (2013), whose work will be returned to in Chapter 6 in the discussion on neoliberalism and openness.

[Peter & Diemann. Ties between movements:
- all rely on open licensing for legal grounding.
- use of open source software in government, research, and open data tools
- open government relies on open data
- open access should be followed by open research data]

[Open standards]

10 [citation needed]

The term ‘open’ has often been used in a political sense, especially within the liberal tradition. Openness does not fit neatly into traditional political binaries such as left/right, or collectivist/individualist. However, it is still a deeply political concept, because it is fundamentally an issue of ownership and control. There are also some clear boundaries that define what openness is *not*; as Kelty says, ‘The opposite of an “open system” [is] not a “closed system” but a “proprietary system”’ (2008: 149). Issues around legal rights to access and modify ‘intellectual property’ are at the core of the open/proprietary binary. So openness is closely related to freedom, and the relationship between freedom and openness is

The term *openwashing*, a play on greenwashing (whereby corporations pay lip service to environmentalism rather than actually implementing practices to minimize environmental impact, see Dahl 2010), was popularised[11] by Audrey Watters (2012;[12] see also Wiley 2011) to describe the process whereby proprietary practices are given an open spin. Kelty (2008: 149) describes the same practice occurring in the software industry with regards to open systems in the 1980s.

The exclusionary nature of participation in open movements (Dryden 2013; Reagle 2013).
[Kelty 2008. Recursive publics. To what extent is open access a recursive public? (see p.113, 302–04, 309–10) Or – is the academic community a public, and through open access it becomes recursive?
Kelty (2008: 54) discusses how the development of the read/write culture of the internet has altered our relations to the public sphere; the gatekeepers of culture have less power to decide who is able to speak. This points to one of the potential roles of open access.]

[more about change in mode of governance in open source; ability to participate]

Parallels between open source and open access

Open source and open access are related (Willinsky 2005). There are parallels between arguments around *free* versus *open* in F/OSS, and free versus open access to research (i.e. free-to-view versus openly licensed). This is especially true with regards to whether advocates use ethical and/or utilitarian logics in their arguments; but, as with F/OSS, use of these differing logics does not always fall neatly in opposing camps. The Free Software movement emphasises freedom and open source proponents emphasise software development models (Kelty 2008: 109); similarly, some open access advocates focus on social justice issues, whereas others are more concerned with doing ‘better science’.[13]
[repetition of earlier stuff]

It is notable that in open access, compared to F/OSS, there is an inversion of the terms free

11 Is it not clear who first coined the term; it is often attributed to Watters but the earliest reference online is Thorne (2009).
12 This tweet was deleted in March 2017 (see Watters 2017a).
13 [citation needed]

and open. In F/OSS, free refers to the freedom to do what you like with the software. But for academic research, it is the term open access that refers to work that is openly licensed with liberal permissions, whereas ‘free access’ is used to refer to publications that are free-to-view online but not openly licensed.

The question of whether it matters that we use either instrumental or ethical arguments to achieve open access if the practices are the same, is also seen in similar arguments within F/OSS (disparate political positions result in identical practices in terms of software creation [re. Stallman, ‘Why free software is better than open source’]) (Kelty 2008: Ch.1).

> If two radically opposed ideologies can support people engaged in identical practices, then it seems obvious that the real space of politics and contestation is at the level of these practices and their emergence. These practices emerge as a response to a reorientation of power and knowledge, a reorientation somewhat impervious to conventional narratives of freedom and liberty, or to pragmatic claims of methodological necessity or market-driven innovation. Were these conventional narratives sufficient, the practices would be merely bureaucratic affairs, rather than the radical transformations they are.
>
> (Kelty 2008: 117)

The open access social imaginary is similarly heterogeneous as that of F/OSS.
[The talk of ‘layers’ in Kelty (2008: 235) is related to Bilder, Lin, & Neylon's infrastructure position. If there is freedom within one layer, but it is reliant on a non-free layer below, then is the freedom compromised? Within scholarly publishing, the freedom to publish any *ideas* (academic freedom) is reliant on a communication layer (journals) which is not entirely free. That communication layer itself rests upon deeper levels of infrastructure with varying degrees of freedom.]

The progress of open access has been consistent but slow, with an annual growth of an estimated one percentage point a year for gold open access ([Science-Metrix]). And despite decades of progress and adoption in the policy environment (through mandates etc.) there is little chance of a 100% open access scholarly communication system in the near future; proclamations such as Austria’s 2015 announcement that they are aiming for 100% gold open access by 2025 (Bauer et al. 2015) or the OA2020 initiative which sets a date of 2020 for the same goal (EU2016 2016) are aspirational, and not a realistic goal. There are valuable lessons to be drawn from the F/OSS world; after 30 years, Linux servers dominate the web infrastructure and Linux-based Android dominates mobile, but there is still a mixed economy of open and proprietary software with both simultaneously existing and prospering (Weber 2004: 37). There is no ‘natural’ best way of creating software because it depends on the creator’s priorities; it is possible for open source communities to prioritise important features better than a proprietary product, and vice versa (Tamary and Feitelson 2015).

[Weber (2004: Ch.5 [esp. 153–56]) has a discussion about individual motivations for participation in F/OSS that is relevant for thinking about motivation/collective action w/r/t open access.]

The key difference between open source and open access is that open source is first and foremost a development methodology, a means of organising labour. While elements of this are seen in open scholarship more broadly, open access is much more strongly focused on content. ‘Open science’, or open research, is the name given to the attempt to make the entire scientific process more open at every stage such as using open lab notebooks, preprints, and open data.

References

Adcock, Joanna and Edward Fottrell. 2008. 'The North-South information highway: case studies of publication access among health researchers in resource-poor countries', *Global Health Action*, 2008(1) <http://dx.doi.org/10.3402/gha.v1i0.1865>

Alperin, Juan Pablo. 2014. Open Access indicators: Assessing Growth and Use of open Access Resources from Developing Regions: The case of Latin America. In: Alperin, Juan Pablo, Dominique Babini, and Gustavo E. Fischman (eds.). 2014. *Open Access Indicators and Scholarly Communications in Latin America* (Ciudad Autónoma de Buenos Aires: CLACSO; Buenos Aires: UNESCO) <http://biblioteca.clacso.edu.ar/clacso/se/20140917054406/OpenAccess.pdf>

Archambault, E., Amyot, D., Deschamps, P., Nicol, A., Provencher, F., Rebout, L. and Roberge, G. 2014. *Proportion of Open Access Papers Published in Peer-Reviewed Journals at the European and World Levels—1996–2013*. Brussels: Science-Metrix; European Commission. <http://www.science-metrix.com/files/science-metrix/publications/d_1.8_sm_ec_dg-rtd_proportion_oa_1996-2013_v11p.pdf> [accessed 18 July 2016].

Bates, Jo. 2013. 'The Politics of Open Government Data: A Neo-Gramscian Analysis of the ‘Open Government Data’ Initiative in the United Kingdom' (doctoral thesis, Manchester Metropolitan University) <http://www.e-space.mmu.ac.uk/e-space/bitstream/2173/303783/1/Jo Bates - Final Thesis – 250413.pdf>

Bauer at al. 2015. *Recommendations for the transition to open access in Austria*. DOI: http://dx.doi.org/10.5281/zenodo.34079

Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities. 2003. <http://openaccess.mpg.de/Berlin-Declaration> [accessed 18 December 2015]

Brennan, J. 2012. *Libertarianism: What Everyone Needs to Know* (Oxford: Oxford University Press)

Brown, Patrick O., Diane Cabell, Aravinda Chakravarti, Barbara Cohen, Tony Delamothe, Michael Eisen, Les Grivell, Jean-Claude Guédon, R. Scott Hawley, Richard K. Johnson, Marc W. Kirschner, David Lipman, Arnold P. Lutzker, Elizabeth Marincola, Richard J. Roberts, Gerald M. Rubin, Robert Schloegl, Vivian Siegel, Anthony D. So, Peter Suber, Harold E. Varmus, Jan Velterop, Mark J. Walport, and Linda Watson. 2003. *Bethesda Statement on Open Access Publishing* <http://www.earlham.edu/~peters/fos/bethesda.htm> [accessed 18 December 2015]

Cairney, Paul. 2012. *Understanding Public Policy* (Basingstoke: Palgrave Macmillan)

Chan, Leslie et al. 2002. *Budapest Open Access Initiative*. <http://www.budapestopenaccessinitiative.org/read>

Christensen, Clayton M. 2003. *The Innovator's Solution: Creating and Sustaining Successful Growth* (Boston, MA: Harvard Business School Press)

Coleman, Gabriella. 2009. 'Code is Speech', *Cultural Anthropology*, 24(3): 420–54. <http://dx.doi.org/10.1111/j.1548-1360.2009.01036.x>

Coleman, Gabriella. 2012. *Coding Freedom: The Ethics and Aesthetics of Hacking* (Princeton and Oxford: Princeton University Press)

Corrall, Sheila and Stephen Pinfield. 2014. 'Coherence of "Open" Initiatives in Higher Education and Research: Framing a Policy Agenda', *iConference*, University of Sheffield, 2014. <http://hdl.handle.net/2142/47316>

Creative Commons. [n.d.]. *History*. <https://creativecommons.org/about/history>

Dahl, Richard. 2010. Green Washing: Do you know what you're buying? *Environmental Health Perspectives*, 118(6):A246–A252. DOI: https://dx.doi.org/10.1289%2Fehp.118-a246

Dryden, Ashe. 2013. The Ethics of Unpaid Labor and the OSS Community. <https://www.ashedryden.com/blog/the-ethics-of-unpaid-labor-and-the-oss-community>

EU2016 (2016) *All European scientific articles to be freely accessible by 2020*. <http://english.eu2016.nl/binaries/eu2016-en/documents/press-releases/2016/05/27/all-european-scientific-articles-to-be-freely-accessible-by-2020/press-release-all-european-scientific-articles-to-be-freely.pdf>

Eve, Martin. 2014. *Open Access and the Humanities* (Cambridge: Cambridge University Press) <http://cambridge.org/martineve>

Farrow, Robert. 2015. Open education and critical pedagogy. *Learning, Media and Technology*, 42(2): 130–146. http://oro.open.ac.uk/46662/

Free Software Foundation. 2015. *Free Software Definition*. <https://www.gnu.org/philosophy/free-sw.en.html> [accessed 16 December 2015]

Jhangiani, Rajiv S. and Biswas-Diener, Robert. 2017. Introduction to Open. In: Jhangiani,

Rajiv S. and Biswas-Diener, Robert (eds). *Open: The Philosophy and Practices that are Revolutionizing Education and Science* (London: Ubiquity Press)

Kelty, Chris. 2008. *Two Bits: The Cultural Significance of Free Software* (Durham, NC; London: Duke University Press)

Laakso, Mikael. 2014. 'Measuring Open Access: Studies of Web-Enabled Innovation in Scientific Journal Publishing' (doctoral thesis, Hanken School of Economics). <https://helda.helsinki.fi/bitstream/handle/10138/45238/268_978-952-232-225-8.pdf?sequence=1>

Lessig, Lawrence. 2004. *Free Culture* (New York: Penguin)

Mathew, Ashwin J. 2016. The myth of the decentralised internet. *Internet Policy Review*, 5(31). DOI: https://doi.org/10.14763/2016.3.425

Moody, Glyn. 2002. *Rebel Code: Linux and the Open Source Revolution*, 2nd edn (London: Penguin)

Moore, Sam A. 2014. Editor's Introduction. In: Moore, Sam A. (ed.) *Issues in Open Research Data*, pp.1–9. (London: Ubiquity Press). DOI: http://dx.doi.org/10.5334/ban.a

Open Knowledge International [n.d.] *Open Definition 2.1*. <http://opendefinition.org/od/2.1/en/> [accessed 5 June 2017]

Open Source Initiative. 2007. *Open Source Definition*. <https://opensource.org/osd> [accessed 16 December 2015]

—— 2012. *History of the OSI*. <http://opensource.org/history> [accessed 21 December 2015]

Peter, Sandra and Markus Diemann. 2013. 'On the Role of Openness in Education: A Historical Reconstruction', *Open Praxis*. <http://openpraxis.org/index.php/OpenPraxis/article/view/23> [DOI:]

Peters, Michael A., and Peter Roberts. 2012. *The Virtues of Openness: Education, Science, and Scholarship in the Digital Age* (Boulder, CO: Paradigm Publishers)

Prosser, David. 2007. 'Public Policy and the Politics of Open Access', *LIBER Quarterly*, 17(2). DOI: http://doi.org/10.18352/lq.7877

Raymond, Eric. 2001. *The Cathedral and the Bazaar*, 2nd edn (Sebastopol, CA: O'Reilly)

Reagle, Joseph. 2013. "Free as in Sexist?" Free culture and the gender gap. *First Monday*. Available from: http://firstmonday.org/ojs/index.php/fm/article/view/4291/3381

Selwyn, Neil. 2015. Never Believe the Hype: Questioning Digital 'Disruption' and Other Big Ideas. In: Henderson, Michael and Geoff Romeo (eds). *Teaching and Digital Technologies: Big Issues and Critical Questions* (Melbourne: Cambridge University Press), 182–193.

Stallman, Richard. 2009. *Free Software, Free Society: Selected Essays of Richard M.*

Stallman (Free Software Foundation)

Suber, Peter. 2012. *Open Access* (Cambridge, MA; London: MIT Press)

Tamary, Jonathan and Dror G. Feitelson. 2015. 'Rise of Chrome', *PeerJ*. <https://dx.doi.org/10.7717/peerj-cs.28>

Thorne, Michelle. 2009. *Openwashing*. <http://michellethorne.cc/2009/03/openwashing/>

Tkacz, Nathaniel. 2014. *Wikipedia and the Politics of Openness* (Chicago, IL; London: University of Chicago Press)

Veletsianos, George, and Royce Kimmons. 2012. 'Assumptions and Challenges of Open Scholarship', *The International Review of Research in Open and Distance Learning*, 13: 166–89 <http://www.irrodl.org/index.php/irrodl/article/view/1313/2343>

Ware, Mark and Mabe, Michael. 2015. *The STM Report: An Overview of Scientific and Scholarly Journal Publishing*. 4th ed. The Hague: International Association of Scientific, Technical and Medical Publishers. <http://www.stm-assoc.org/2015_02_20_STM_Report_2015.pdf> [accessed 18 July 2016].

Watters, Audrey. 2012. '*Openwashing: n., having an appearance of open-source and open-licensing for marketing purposes, while continuing proprietary practices*'. Twitter. <https://twitter.com/audreywatters/status/184387170415558656?lang=en-gb> [accessed 14 December 2015]

Watters, Audrey. 2017. Driverless Ed-Tech: The History of the Future of Automation in Education. *Hack Education*, 20 March 2017. <http://hackeducation.com/2017/03/30/driverless>

Watters, Audrey. 2017. Tweets Deleted. *Audrey Watters*, 31 March 2017. <http://audreywatters.com/2017/03/31/deleted>

Weber, Steven. 2004. *The Success of Open Source* (Cambridge, MA; London: Harvard University Press)

Weller, Martin. 2014. *The Battle for Open* (London: Ubiquity Press) <http://dx.doi.org/10.5334/bam>

Wiley, David. [n.d.] Defining the "Open" in Open Content and Open Educational Resources. *Open Content*. <https://opencontent.org/definition/>

Wiley, David. 2011. *Openwashing – the New Greenwashing*. <http://opencontent.org/blog/archives/1934> [accessed 14 December 2015]

Willinsky, John. 2005. The Unacknowledged Convergence of Open Source, Open Access, and Open Science. *First Monday*, 10(8). <http://ojphi.org/ojs/index.php/fm/article/view/1265>

--

Davis, P.M. 2009. 'How the Media Frames “Open Access”', *Journal of Electronic Publishing*, 12(1). <http://dx.doi.org/10.3998/3336451.0012.101>

Hall, Gary. 2012. 'Pirate Radical Philosophy', *Radical Philosophy*, 173. <http://www.radicalphilosophy.com/commentary/pirate-radical-philosophy-2>

Kansa, Eric. 2014. 'It’s the Neoliberalism, Stupid: Why Instrumentalist Arguments for Open Access, Open Data, and Open Science are Not Enough', *LSE Impact Blog*. <http://blogs.lse.ac.uk/impactofsocialsciences/2014/01/27/its-the-neoliberalism-stupid-kansa/>

Knox, Jeremy. 2013. The limitations of access alone: Moving towards open processes in education technology. *Open Praxis*, 5(1): 21–29.

Peters, Liu, Ondercin. 2012. *The Pedagogy of the Open Society: Knowledge and the Governance of Higher Education*

Söderberg, J. 2007. *Hacking Capitalism: The Free and Open Source Software Movement*

Stallman, Richard. 2002. *Free Software, Free Society: Selected Essays of Richard Stallman*

Tkacz, Nathaniel. 2012. 'From Open Source to Open Government: A Critique of Open Politics', *Ephemera*, 12(4). <http://wrap.warwick.ac.uk/53295/>