

6 Ecologies of (Open) Access: Toward a Knowledge Society

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Introduction

New forms of networked participation and open access in education and scholarship offer great opportunities to expand learning and growth. At the same time, they must flourish and compete in a world of great inequality that is fraught with contradictions. Open access in itself cannot solve the issues of unequal representation in science and scholarship; nor can it solve the tensions between the market and the commons that are inherent in the fluid and unstable global knowledge ecosystem, both of which are compounded by divisions between the Global South and Global North. In fact, this chapter argues that some innovations in openness, such as open access to scholarly publishing, can actually exacerbate those very tensions and inequalities in the system.

The geopolitics of knowledge are characterized by deep fissures and inequalities between the Global South and Global North. These are caused partially by differential resources, but also by historical power relations and determinants of legitimacy. In the academic domain, knowledge patterns reflect physically based geopolitical realities where knowledge from the Global South is treated as peripheral while knowledge from the Global North maintains dominance in terms of all the conventional metrics (Beigel 2014; Czerniewicz, Goodier, and Morrell 2016; Canagarajah 2002; Florida 2005; King 2004). The patent and citation maps produced by Florida (2005) highlight this relationship, showing peaks of these measures of innovation and knowledge clustered almost exclusively in the Global North, with the vast majority clustered in the United States and Europe. The one significant shift since Florida's 2005 description has been the dramatic rise of China in the citation rankings (Jia 2017). Aside from China's rise, however, northern dominance remains. At the same time, these knowledge realities are vigorously contested, and also powerfully fueled in higher education today by networked technologies (e.g., Internet and mobiles) in research and education, as well as new forms of scholarship, with new ecologies of access coming into existence.

Widening income disparity around the world, according to the World Economic Forum (2013), is a top global trend and a growing concern. In higher education, inequality is exacerbated by reduced state spending on higher education. For example, between 2005 and 2011, two-thirds of countries who were member countries of the Organisation for Economic Co-operation and Development (OECD) decreased their proportion of public expenditure devoted to education (OECD 2014), and more than half of developing countries reduced their spending on education between 2008 and 2012 (Seery and Arendar 2014, 91). Research funding across developed and developing countries is also inequitable. The gross domestic spending on research and development for the United States in 2012, for example, was 2.76 percent of the gross domestic product (GDP), while for South Africa, it was only 0.73 percent of GDP.¹ Declining funding has led to what can only be understood as the ironically termed *cost sharing* (i.e., sharing the costs of higher education with students and parents, a much criticized phenomenon).

In this fragile terrain, openness (featuring open content and open scholarship in particular) is often promoted as one means to level these inequalities. Yet ironically, these fissures may actually be intensified by the ways that openness is structured and regulated in the knowledge domains. Of interest in this chapter are the consequences of inequality for educational and scholarly resources. The cost of books, for instance, has risen dramatically—starkly so in developing countries when considered as a proportion of income (Liang 2009).² A related concern is that educational resources are generally not easily accessible to those in the Global South (Trotter et al. 2014).

This crisis in scholarly resources is playing out in a broader context of an increasingly commercialized and financialized education. Of particular concern to the access ecosystem are the threats posed by increased intellectual property (IP) rights, privatization, commodification, corporatization, lack of governmental and corporate transparency, and loss of privacy and overall disempowerment (Hess 2013).

It is in this context that digital technologies and openness are often promoted as one means to decrease inequality. The networked age also promises global digital cultures with flattened power relations, given the affordances of information and communication technologies (ICTs) to collapse distance, enable easier cross-country collaborations, and create new opportunities for knowledge production and sharing (Castells 1996).

The possibilities of the digital world have fueled demands for openness, transparency, creative contribution, and more egalitarian knowledge production and dissemination policies and practices, coupled with a greater consciousness about how knowledge is produced, by whom, for whom, and for what purpose (Comaroff and Comaroff 2012). New formations that have come into existence make it possible for those previously

marginalized by infrastructural and physical constraints to participate in global education and scholarship; indeed, networked environments provide potentially hospitable places for collaboration and communication (Trotter et al. 2014). The counternarrative lies in the affordances of the Internet to change the nature of networks by making them more inclusive and easy to participate in (Castells 1996).

This openness is expressed in changing roles and emergent new practices in higher education for all stakeholders forming part of the access ecosystem. For scholars and students, the confluence of the digital with the globalization of education and the mainstreaming of open access (at least in the Global North) has seen reshaped and digitally mediated scholarly practices emerging. At every stage and level of scholarship, new ways of doing research have merged, and boundaries between the old and the new have become increasingly blurred. Within this shifting terrain, openness has been a central characteristic and an emergent practice. Open practices feature increased visibility, more collaboration, and earlier access to research. Ideas and resources have become easily shareable and more granular. New modes, methods, and genres have come into existence, and audiences have become more diverse. Forms of engagement have become multifaceted, and participation more smoothly enabled.

Publishers are also reimagining their positions and contributions to the ecosystem. Until recently, publishers would have known that their core business was concerned with content and that their business model, entrenched for centuries, was lucrative, clear, and understood by all. Now they are moving into the larger field of learning delivery and support, becoming full-spectrum service providers for classroom learning and research; encroaching on tasks performed by libraries, bookstores, teachers and administrators, and technology providers; and incorporating a variety of other student support services. Increasingly, educational publishers understand their competition not as other publishing companies, but as telecommunications companies, software companies, and information-retrieval providers (Gray and Czerniewicz 2018).

What this means for open access in education and scholarship is that assumptions have been profoundly challenged regarding content, its production, and its role in the access ecosystem. The status quo sees traditional and emergent models coexisting and jostling for dominance and legitimacy. The evolving transition to new services and licensing models is not fully understood in terms of who benefits and whose interests are being served. Also, it is clear that the role of openness in this nascent terrain is not yet settled, given the unresolved tensions in the ecosystem of access.

In this chapter, three tensions within the open access ecosystem are identified and discussed: (1) the inclusive versus exclusive nature of openness, (2) digitally open versus free content, and (3) copyright versus open content. Following that, the argument

is made that the IP system itself requires rethinking if openness is to be structured in a manner that produces more equitable outcomes.

Tensions of Openness in the Access Ecosystem

Tension 1: Open as Abundant and Exclusionary?

Openness is associated with availability, with access, and indeed with abundance. It is widely agreed that with networked technologies, digital affordances, and granular multilayered provision, there has been a shift from a *scarcity* model of education to an *abundance* model. This has led to what has become known as the “age of abundance” through digital distribution and an end to content scarcity (Colombani and Videlaïne 2013); indeed, the total amount of data on the Internet is estimated to be in excess of 7,900 exabytes (Gantz and Reinsel 2011). As the marginal cost of digital products has decreased to essentially zero, perfect digital copies can be produced at no extra cost, making copying essentially free (as well as extremely easy), with profound implications—and opportunities therefrom. There has simultaneously been an explosion in user-generated content. For example, as of May 2019, there are roughly 500 hours of video uploaded to YouTube every minute (Clement 2019). It is the end of the age of scarcity and the models of scarcity on which traditional access systems are founded. Scarcity models are by definition exclusionary, while abundance models promise inclusion. The question is whether they deliver on that promise.

Networked technologies have made the costs of distribution negligible. The ubiquity of open content now offers much to universities, and this is especially compelling given universities’ otherwise resource-constrained circumstances. At a time when a key question has been what can be handed over to technology to save costs, improve efficiency, create opportunities, and derive other benefits, open education and open content would seem to be promising viable solutions, bringing together a set of values and assumptions about shareable knowledge and enabling technology diffusion (see, e.g., Smith and Casserly 2006; Smith 2013). In addition to these efficiencies, the opportunities align with the missions of public universities to serve the public good and the needs of civil society. Thus, there is a clear alignment with the intentions of the famous Budapest Open Access Initiative (BOAI) and the Cape Town Open Education Declaration (CTOED), which both address the Internet’s potential to be an “unprecedented public good” (BOAI 2002) and serve a “collaborative, interactive culture” (CTOED 2007).

However, abundance is not equally distributed and collaboration is unlikely to be equitably experienced. An overt example of these divisions is in the ways that openness does not necessarily serve scholars and students from the margins, such as from the

Global South (see Chan and Gray 2013; Rohs and Ganz 2015). There is nothing intrinsically open about the so-called digital sphere, and, therefore, it cannot be assumed that because it enables equitable openness and abundance, it determines or creates it. Rather, it often seems that because the digital educational ecosystem echoes and feeds into the power dynamics of those in the material sphere, it likely reflects those values and indeed may exacerbate or create new forms of exclusion.

An example helps to illustrate this point. The many open access research policy mandates across Europe and North America have led to increased access and availability for scholarship from the Global North, while actually decreasing the visibility of scholarship from the Global South. Without resources (in the form of infrastructure and expertise), scholars on the margins are not able to curate their scholarship in ways that make it openly visible and discoverable. Increasingly, if it cannot be found online, it does not exist. This invisibility and discrepancy are not trivial, given that what is found online feeds into the formation of knowledge production and therefore shapes what comes to be known everywhere (Czerniewicz and Goodier 2014). While access may appear to be more widespread and models seemingly provide abundance, representation and voice are unevenly constituted in new, digitally afforded ways.

Tension 2: Open as Digital, Free, and Legal?

In a climate of abundance, there is a widespread assumption that *digital* equals *open* and *open* equals *free*. However, it is important to note that digital can also afford closed systems and analog resources (i.e., paper) sometimes can offer affordances that can be more open than a particular piece of digital resource might be. The move to digital content is a move from tangible to intangible, and often from ownership to license and digital rights management (the practice of imposing technological restrictions that control what users can do with digital media). In other words, these new digital systems are not neutral. Whether or not they lead to open or closed content is a function of value-laden decisions made by people who impose specific legal and technological frameworks.

Within these new legal and technological frameworks, a complex ecosystem of access is emerging, which exists on continua from analog to digital and from legal to illegal. Legal and open licensed content is only one option in this new ecology. New cultural practices have arisen, including piracy cultures; for many, these are considered both open and free, despite the fact that they are not legally open. Castells and Cardoso (2013, 6) have noted that “All over the world, we are witnessing a growing number of people building media relationships outside [of] institutionalized sets of rules,” and that “a very significant proportion of the population is building its mediation through alternative channels of obtaining content.” They also observed that “piracy cultures

have become part of our everyday life in the network society, sometimes even without us fully acknowledging them as such,” and they go so far as to say that “the pirates are more often than not all of *us*” (Castells and Cardoso 2013, 6). The culture has also been described as an “affective economy,” which introduces an emotional aspect: as has been observed, “filesharing has emerged as one of the most popular dimensions of the new affective economy, in which it simply feels good to share and then it feels even better to embellish, remix, and share again” (Fleming 2012, 685).

There has been what might be called a *quiet encroachment*. Informal practices are becoming mainstream and acceptable as the blurring of boundaries and the breaking of rules have become the norm. These informal access practices constitute a global phenomenon that are not only limited to the developing world,³ where common misconceptions imagine them to be neatly aligned to deficits of availability. Thus, a narrow view of openness, limited to copyrighted or legally licensed, is not an accurate reflection of the practices and understandings, even by scholars and students (Smith and Seward 2017). This conflation of *digitally* and *freely available* with *legal* is a central tension in nascent ecologies.

Research undertaken under the auspices of research on open educational resources for development (ROER4D) illustrates this tension (see chapter 12 of this volume). It revealed that educators are often unaware of the difference between an openly licensed open educational resource (OER) that can be reused legally and copyrighted material that can be downloaded from the Internet. Educators often assume that online resources are legally available for their educational use (*fair use*, in legal terms). Less than a third of university lecturers surveyed across nine countries in the Global South said that they had shared their teaching materials with an open license.

Similarly, another study, of 1,000 university students in South Africa, showed a blurring in their understanding of legal and illegal practices and a view that copyright should serve educational imperatives rather than the other way round. Students distinguished between plagiarism, with the author’s right to be attributed, and copyright, which they associated with monetary gains that might be made at the expense of their right to education. The students argued that access to education must be the primary right (Czerniewicz 2017).

Tension 3: Open as Bureaucracy?

In an era where *open* generally means removing barriers, the legal sphere is one of the few areas where barriers are being added and where the terrain is becoming more complex. Legally, *open* means specifying permissions, adding layers of bureaucracy, and ironically, perhaps engaging more closely with copyright, rather than less so. This is happening at a time when the general discourse around copyright is about serious criminal actions—piracy, illegal downloading, and file sharing. Copyright is fraught,

disabling, enclosing, and bureaucratic. Making copyright better through permissions processes may inadvertently make it more opaque and inaccessible, adding layers of bureaucracy instead of easing access.

This increased bureaucracy is even more problematic given that copyright is now legally the default, as noted by Liang (2005, 105): “Initially, the practices of people operated on the presumption that everything was in the public domain, except where otherwise stated, and copyright did not play much of a role. The history of copyright has centred on a reversal of this presumption to the extent that everything is assumed to be protected unless specifically stated to be in the public domain.”

Thus, openness as a legal solution to the current copyright regime works to legitimize this underlying assumption of automatic copyright—and also undermines the public domain. This adds layers of complexity to a system that previously was more straightforward and presumed openness unless otherwise stated.

Beyond the Tensions: Rethinking Copyright

Given the tensions noted here, it is useful to consider that copyright in its current form may be the problem and requires rethinking. In the digital world, copying is such an essential action, and so bound up with the way that computers work, that control of copying provides, in the view of some, unexpectedly broad powers—in fact, considerably beyond those intended by copyright law (National Research Board, Computer Science and Telecommunications Board, and Committee on Intellectual Property Rights in the Emerging Information Infrastructure 2000).

It is worth looking at the original intentions of copyright—namely, as a necessary evil for the greater good that should be kept to as short a time span as possible. Baron Thomas B. Macaulay noted in 1897, “Copyright is monopoly, and produces all the effects which the general voice of mankind attributes to monopoly.... It is good that authors should be remunerated; and the least exceptionable way of remunerating them is by a monopoly. Yet monopoly is an evil. For the sake of the good we must submit to the evil; but the evil ought not to last a day longer than is necessary for the purpose of securing the good” (Young 1952).

The fostering of a rich and diverse public domain has always been one of the principal rationales for copyright—“the public domain is not an unintended byproduct, or ‘graveyard’ of copyrighted works, but its very goal” (Birnhack 2006, 60). The intention always was to keep works in copyright for as short a time as possible—which is notably of benefit to the producer, not the intermediary—and works always were assumed to be in the public domain unless they specifically were not. The battle for the public

domain remains woefully current, as exemplified by a number of recent disputes over copyright that continue to make headlines—for instance, concerning the works of Sir Arthur Conan Doyle and the “Happy Birthday to You” song.

It is hardly a new argument that knowledge should be free—“as free and general as air or water,” as argued by Lord Camden in 1774, during the court case *Donaldson v. Becket*—though it has become lost in the current era of commercialization. Goethe proclaimed 400 years ago that “everything that I have seen, heard, and observed I have collected and exploited. My works have been nourished by countless different individuals. ... My work is the work of a collective being that bears the name of Goethe” (Frosio 2017). It is a truism to say that knowledge is an accretion, enabled by openness; it was Sir Isaac Newton, in 1676, who famously repeated the maxim of “standing on the shoulders of Giants” [as cited in Turnbull (1959, 416)]. Indeed, scholars cannot produce knowledge without access to other knowledge.

There is presently a serious risk that knowledge, which we could argue based on historical precedent ought to be free and open, is in the “vice grip of commerce,” as “we are in the midst of an enclosure movement in our information environment” (Benkler 1999). Accordingly, it “is caused by the conflicts and contradictions between IP laws and the expanded capacities of new technologies. It leads to speculation that the records of scholarly communication, the foundations of an informed, democratic society, may be at risk” (Hess and Ostrom 2003, 112).

There is a need to rethink the policy environment. The IP frameworks that shape higher education’s engagement with knowledge are anachronistic and outdated, and they are out of sync with the urgent needs of a digitally mediated and extremely unequal world. As discussed previously, it is in part the current IP regime that is shaping the access ecosystem in a manner that tilts the benefits toward those who already hold positions of relative power and voice.

The situation is in danger of getting worse. Many multinational trade agreement negotiations have been vehemently criticized for lack of transparency and the overreaching provisions on IP. The final version of the IP chapter of the now-defunct Trans-Pacific Partnership (TPP), for example, presented these terms: life plus 70-year copyright term (up from 50); toughened rules against circumventing digital rights management (DRM); targeting whistleblowers and journalists with criminal penalties for accessing secrets online; greater liability on Internet intermediaries; and adopting heavier criminal sanctions. Although the TPP, absent the United States, has now become the Comprehensive and Progressive Trans-Pacific Partnership at the time of writing, these proposed rules show the trajectory of IP negotiations. All these proposals are of serious concern.

How can creativity, scholarship, and learning—elements that are protected in the foundational principles of copyright—flourish in an environment of increasing control? There is a growing need for sustainable IP balances, a landscape of privacy with lots of public spaces, and sustainable development for creativity and public access for everyone to use (Aoki, Boyle, and Jenkins 2006). What happens in the copyright IP arena matters profoundly to education, and new kinds of alliances between stakeholders (including educators and public interest lawyers) are essential. At the very least, institutional IP policies need updating to reflect the changing digital environment, and academics and educators should be taking their IP contracts seriously.

Moving from a Knowledge Economy to a Knowledge Society

The tensions regarding openness in shifting access ecosystems that are explored in this chapter are being played out and disputed through fundamental contestations in education and scholarship. At the heart of these dilemmas, and thus in the tensions regarding openness, lie disagreements about the purpose of knowledge itself and the interests it serves. The tensions point to the imperative to reclaim the commons and knowledge as a public good. Here, *the commons* refers to people working together in self-governing groups that govern themselves independent of the state in order to solve problems and share knowledge and resources. While the prevailing dominant imaginary in today's information societies is *market led*, the alternative imaginaries are best described as *open* or *commons-led* (Mansell 2013). Of course, the current dominance of the copyright regime in its current form is one manifestation of the market-led imaginary. Thus, one step to achieving an alternative imaginary is the rethinking of copyright as discussed earlier in this chapter. But there is more to do.

For those wishing to ensure that knowledge remains free, with education that is fully inclusive and scholarship for the purview of all, increased attention needs to be paid to the nature and governance of the commons (specifically the digital commons). The commons are *institutions* that fall between markets and states and are vulnerable to social dilemmas and threats of enclosure (Hess 2013). It is an often-used term, with the knowledge commons or cultural commons forming only one part. Originally, it was applied to the natural commons, and it is important not to conflate the two. In the natural commons, physical resources can be overused, and one encounters depletable and exhaustible participation, rivalry, and scarcity—the so-called tragedy of the commons, wherein individuals acting in their own self-interest deplete the shared commons (Hardin 1968, 1244). In this context, *open access* has very different and negative connotations.

The digital knowledge commons, by contrast, is physical but also intangible, generative and regenerative, wherein peer production is nonrivalrous and offers abundance.

Open access in this context is a very good thing, and, if anything, there is a threat of underuse (Hess 2013). The commons for education places knowledge producers in charge. Here, cocreation and ethical and social benefits become the norm, and the knowledge *economy* shifts to a knowledge *society*. This is not merely a semantic shift; it is actually a profound conceptual shift.

Academic scholarship is premised on collaboration and sharing, and it is an educator's prerogative to reclaim knowledge as a nonrivalrous and nonexclusive public good. Individuals, alone, are not enough to stake this territory. If support for OER does not come from public bodies, such as governments and universities, the OER movement could lead to control of the system residing within a technological elite, a narrow band of activist producers, and a corporate takeover of the business side (Jones 2015).

For equitable openness to be achieved, the state has an important role to play, although not in organizing and managing education in a homogenous way. The state needs to support the 2012 Paris OER Declaration of the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and policy frameworks to enable open education, to invest in the knowledge commons, and to steer the market through light touch interventions and disincentives. Universities play an essential role in owning, controlling, and managing knowledge production and dissemination, and in a digital age, they should be asserting their rights to manage their own assets. They should assert the priority of academics and authors as the agents and owners of knowledge, protect the autonomy at the heart of commons-based structures for knowledge, and develop and support collaborative initiatives in knowledge dissemination. Overall, open education is a means to an end, and it is only one—albeit an important—strategy toward an equitable, democratic, and peaceful world.

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Notes

1. See OECD, "Gross Domestic Spending on R&D," <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>.
2. Liang (2009) provides the example of a dictionary, the actual cost of which is \$47 in South Africa, more than double the \$21.50 cost in the United States; worse, the projected cost is actually \$504.50 when calculated at South African proportions of income.

3. Examples of this in the Global North include the Netherlands, where in 2014, only 10 percent of all ebooks on devices were actually paid for and most digital books were pirated (Kozlowski 2014); the United Kingdom, where up to 76 percent of the fifty most popular textbooks used by students are available as pirated ebooks (Izundu 2013); and Russia, where 92 percent of ebook readers have been found to have obtained their books by illegally downloading them (Indvik 2013).

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