2017

# Communication or Piracy? Library Values, Copyright, and Cloud Computing

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## Introduction[1]

Advances in computing in the twenty-first century has shifted the late twentieth century model of computers that act as independent processing machines, back to the more archaic model of terminals that have processing done by a larger, centralized network. This shift has come about because of the growth of Cloud computing, which, for this chapter, will be defined as a model of computing as infrastructure. Whether the drive to Cloud solutions was driven by the limited resources of mobile devices, or the need to collectively share and store data across multiple platforms, or even a desire to offload software itself onto a Cloud system, the result has been the establishment of Cloud computing as an infrastructure akin to electric or telecom utility systems. As a vital infrastructure, issues related to the growth, management, and regulation of "the Cloud" will have many repercussions, some of which librarians have a direct stake in addressing, such as privacy, market changes, dependability, and granularity of service. This chapter will focus on one particular issue: scholarly communication and the openness of information. This will require that we touch on issues related to copyright law and piracy, and how these relate to librarians' professional values of access, democracy, and the Common Good.

Librarians will have to come to terms with the importance of their profession outside of its traditional boundaries, particularly as librarians engage with and relate to emerging technologies. Technologies will be disruptive, but the application of technologies, and how we apply our values to the new technologies, will be the moment upon which we decide how best to live our professional lives authentically. The distributed nature of Cloud computing blurs the lines between access and copy, and thus between the movement of information and the ownership of that information. There will be no simple answers to resolve the disruptions caused by the growth of computing power across the world, but unfortunately that does not mean there are not people who are in search of them. Sometimes those people have the ear of governments and push policies that are wholly uncritical of the changing nature of information flow. These policies are not simply benignly misguided, but have destroyed lives. It is critical that we as library workers take a deep and perhaps unsettling look at our assumptions--even our values themselves, if we want to appreciate the complexity of the interconnected nature of our position in the distribution of knowledge with questions of human rights, freedom, and dignity. Having taken that critical approach, we then must decide what is the most effective means of crossing beyond our own specifically library-focused advocacy, and into the larger political advocacy networks that promote our values at the local, national, and international scale.

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## Defining Cloud Computing

First, we should define terms. This chapter will draw from the concept of Cloud computing recently put forward in the 2015 volume edited by Yoo and Blanchette: *Regulating the Cloud: Policy for Computing Infrastructure*. Much traffic is conceptualized as client/server, such as watching something on Netflix. But there are other processes, such as peer-to-peer networking, where multiple users share the burden of distributing files. This does more than promote illegal file sharing. For example, the SETI@Home project takes donated processing power from ordinary users to help it analyze data from its narrow-bandwidth radio telescopes.[2] This is a combination of both distributed processing power, as well as peer-to-peer networking capabilities.

The "Cloud-as-infrastructure" concept focuses our attention on the distributed and collective nature of all computing's aspects, such as remote processing (which helps less powerful computers like smartphones perform), email storage, digital file backups like iCloud, Microsoft One, and Google Drive, and user-generated content, predominately known as social media, like Twitter. This means we can frame Cloud computing issues in non-technical ways, such as a strategic or economic viewpoint. Thus, it is possible to make analogies to non-computing "Clouds," such as the economics of taxis compared to owning a car. Weinman uses the example of taxis as an on-demand service that uses a pool of resources, compared to the ownership of a car, which is only usable by the owner and not a shared resource. Chain stores give us a physical model of distribution, and roads give us a physical manifestation of networks (with their attendant infrastructure costs).[3]

The distributed nature of computer storage and processing means that many of these functions can take place on any network on the web. Librarians may be aware of the #icanhazpdf phenomenon, in which Twitter users add this tag to a post with a doi and an email address. This alerts other users to get access to the paywalled article, and email it to the address. The proper protocol is for the first user to then delete the original Tweet, to prevent duplication of labor, and presumably cover their tracks. Were there to be a crackdown on this behavior on Twitter, the tagging and emailing could move to any other website with little interruption, as it requires only a very simple network that relies on coordinating around a very popular hashtag that is discoverable by both links and search engines.[4]

This ease of illicit copying means that a central issue brought to the fore by Cloud computing for librarians is the access and distribution of scholarly content. Librarians tend to have this conversation mostly in the context Open Access, which is a legal and worthy project that is a natural extension of the reduced cost of copying and hosting scholarship. But Open Access is not the solution to many problems currently faced by scholars. First, the process is far too slow to accommodate the needs of researchers. Second, it does nothing to address copyright as it currently stands, which involves international laws that, among other things, influence carceral politics (the politics of detention and imprisonment as punishment for a crime). This means that librarians will have to join the fight concerning the enforcement and severity of

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copyright infringement that negatively impacts scholarly communication and education, and destroys lives through the pointless and extreme punishment meted out by governments in the name of protecting (what I hope to show to be) debatable property interests.

### Access Won't Come Fast Enough: Copyright and Academic Piracy

The issues surrounding access and Open Access (OA) can become very complicated very quickly. But at a minimum, most academics can appreciate the need for OA in terms of the ALA's core value of the public good: it encourages contributions to the intellectual commons under limited copyright which allows access to new information in a speedy and egalitarian manner. Many can also articulate how the ease of access and duplication facilitates the creation of new knowledge. The problem is that there are significant economic interests at play that inhibit the turn to OA infrastructure, which are not limited to the profits of large academic publishers. OA does not necessarily mean there will be a disruptive or material change in the way scholarship is created or treated.[5] OA, by its nature, does not necessarily change the way we view authorship, copyright, communities, or the intellectual commons. It does not mean we will suddenly approach scholarship in a more radical way, one that acknowledges the debt current scholarship owes to its predecessors, and, as will be explored below, the historical flexibility of these concepts when the spread of knowledge was deemed more valuable than authors' rights.

In August of 2016, several Peruvian academics in the medical field published an ethical quandary facing physicians in their country. Because Peru, since 2012, has not qualified for benefits from initiatives to provide healthcare literature to low and middle-income countries (such as HINARI), physicians who are not affiliated with select research institutions are not able to access current medical literature. The authors, along with the subject of the essay, the anonymous "Dr J," argue that this has an immediate impact on physicians' ability to provide quality healthcare. These physicians then turn to academic pirate libraries, such as Sci-Hub, to get up-to-date information for their practice. After acknowledging the growth of OA, they conclude their letter: "Nevertheless, there is still a long way to go before clinicians worldwide have access to the papers and information they need to care for a growing and diverse set of patients. Meanwhile, many of the world's physicians, like Dr J, will continue to face this ethical dilemma to access information every day."[6]

### Copyright and Academic Piracy

Copyright is a tool, not a moral stance in itself. This is well-attested in the historical and current legal literature as a plain and widely-accepted reading of the U.S. Constitution's Copyright Clause, which reads: "To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." Library workers have to be willing to critically examine copyright policy, rather than accepting it as a natural or moral imperative.

The public perception of piracy has been focused on the copying of entertainment, most notably music and movies. This has led to a narrative epitomized by the near-universally ridiculed "Piracy, it's a crime" anti-piracy ads that equated unauthorized copying with stealing a

car.[7] But piracy goes beyond copyright, and it's important to get past the surface layer of piracy dialogue. In 2016, Gardner and Gardner surveyed users of peer-to-peer (P2P) exchanges, such as #icanhazpdf, Reddit Scholar, and Facebook concerning demographic information, frequency of use, and motivations for participating in these exchanges, both in providing and obtaining scholarly information.[8]

To start, the nature of P2P networks needs some explanation. P2P networks have been modeled by anthropologists as "non-monetary gift economies,"[9] the function of which we are all familiar with in everyday life, but not necessarily cognitively aware. For instance, Carol Tenopir, working with Elsevier, estimated that one downloaded article would be shared 11 times on average, mostly shared through email. This sharing was often a matter of collegiality and convenience. As one subject in Tenopir's research stated: "If I have got it, I will just share it. It is easier than having them go track it down, even if I have got the citation. . . . It saves them the trouble."[10] The extent to which this happens, and the blasé attitude the quoted subject projects, both belie the real threat posed to academics. As will be shown, even the banal sharing of materials among academics has destroyed lives via overzealous copyright protection campaigns that are clearly contrary to the values (and interest) of the scholarly community.[11]

Email is the most prominent method of sharing articles, but other Cloud storage options like DropBox or Google Drive are used in conjunction. One interesting aspect of Cloud systems is their decentralization, and thus the impossibility of finding one target to hit. While pirate platforms like Sci-Hub and The Library Genesis (LibGen) receive all the publicity, it is really the daily sharing of materials between academics that seems to be the most common form of infringement. This doesn't compare the volume of sharing between informal means and shadow libraries, and it may well be that the large, centralized platforms do more sharing than the armies of academics who share pdfs with each other, however unlikely that may seem. In fact, any numbers concerning illegally-shared scholarly articles are likely to be skewed, as Tenopir et al. found that many of their participants saw sharing articles as a good, though many balked at sharing books, fearing of cutting into sales revenue.[12]

Gardner and Gardner (2016) also show the difficulty of stopping piracy where the participants are aware they're breaking copyright law. Much like the day-to-day sharing mentioned above, which may have varying levels of awareness of copyright, the communities that are created on social media explicitly to share scholarly materials know exactly what they are and how they violate copyright. The Gardners' previous research in 2014 on #icanhazPDF requests indicated that embargoes may have a role in generating requests for articles, along with difficulty of finding a particular publication.[13]

Unlike informal emails between colleagues, these groups exist between strangers trying to share research in hopes that they will receive the same benefit when needed. However, like the sharing between colleagues, these groups are decentralized, and thus are very hard to shut down. Even if any one group, forum, chat, or hashtag were to be neutralized in some way, the need would simply move to another platform. Those uploading content seemed particularly attuned to

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the moral aspects of their participation, and even consider it protest against intellectual property regimes. They may take inspiration from Aaron Swartz, who felt that the publication of information that the public could not access was a moral wrong, and for his efforts to "liberate" that information from the libraries of MIT, he was hounded to the point of suicide by the US administration.[14] The ethics of sharing are important to the discussion of piracy and will be examined in the next section.

The large platforms, Sci-Hub and LibGen, are the ones who receive all the major press and headlines. They too rely on Cloud systems, but on a much more organized scale. In fact, Sci-Hub has built a system so efficient that it outperforms library discovery systems that have legal access to materials--the most intense use of Sci-Hub comes from campuses of U.S. and European universities.[15] Without going into too much detail, Sci-Hub is a pirate library that was created by Alexandra Elbakyan, a computer science researcher from Kazakhstan. It draws on the database of pirated articles housed in Lib-Gen but also uses a combination of donated, or possibly phished, credentials from people with access to major scholarly databases, so that if a request for an article comes through Sci-Hub and is not found in LibGen, Sci-Hub will use the credentials to access the article, and then maintain a copy of it.[16] The easiest way to target a website is to seize the site's domain. Elsevier sued in December 2015 and was able to have the Sci-Hub domain taken down, whereupon it immediately sprang up again at another domain. And then another. Sci-Hub also maintains a direct server to access, and a hidden Tor website, which are notoriously hard to take down. Mirrors and other websites can also maintain the life of a persecuted domain.[17]

Of course, all of these attacks simply generated more interest in Sci-Hub. One suspects that managers at Elsevier did not consider Wikipedia a reputable resource, and thus never looked up the "Streisand Effect." Librarians do worry about the effects of Sci-Hub, particularly as it pertains to interlibrary loans.[18] But even those librarians trying to do the right thing by setting up open access institutional repositories (IR) that house preprints of journal articles are facing intransigent publishers who will not allow authors to publish their preprints. If the author has this fear and gives the preprint over to the IR beforehand, the publisher could even claim this as a previous publication, and thus not eligible for publication in one of their journals.[19] These provocations will push academics into forms of civil disobedience, especially where it concerns questioning the value of copyright.

One interesting development has been the release of an article by Hamid Jamali detailing how as many as half of the articles uploaded by individual authors on the ResearchGate website may be inappropriately uploaded. For those unaware, ResearchGate is a social network for academics to share their OA articles, preprints/postprints of publications, and other authorized copies of their research. It's similar to an individualized institutional repository. It boasts 100 million articles, despite only a fraction of those articles are from OA journals. However, it seems that many of these copies are in fact publisher pdfs. This was in spite of the fact that most of the journals that published the articles sampled allowed their authors to self-archive their work.

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Either through ignorance or confusion, researchers were essentially uploading pirated copies of journal articles to a resource that is so large, that this proportion of improperly uploaded articles could be equal to the total number of articles hosted by the pirate library Sci-Hub.[20] This has struck many commentators as ironic, considering that while Sci-Hub was sued by Elsevier, ResearchGate recently received $52.6 million in funding from sources like the Gates Foundation and Wellcome Trust, and has its holdings linked to by Google Scholar.[21] With so little a difference between the holdings of Sci-Hub and ResearchGate, what importance do researchers actually put on copyright when they seem to treat it as an irrelevance?[22]

### Sci-Hub, Civil Disobedience, and Morality in Law

Kevin Smith offers up some "radical thoughts about Sci-Hub."[23] Radical, a term that comes from getting to the root, is what modern copyright is forcing many librarians to do. Smith reiterates a point made above: copyright is a tool, not a moral right. Smith makes the distinction between two types of illegal acts: those that are "wrong in themselves" (*malum in se*) and those that are "wrong because prohibited" (*malum prohibitum*). Copyright infringement is the latter, as the Copyright Clause in the US Constitution makes perfectly clear that exclusive rights are for the promotion of arts and sciences. Copyright granting is a decision "about the distribution of resources, and it can be changed without causing the collapse of human society."[24] Smith continues: "Copyright law is an instrumentality, not a good in itself. [Its] role in our legal system is to encourage creativity and the production of knowledge. When it ceases to do that it deserves to be challenged and changed."[25] When entire countries begin to challenge copyright, the action becomes markedly more potent. As of late 2016, several countries announced boycotts of Elsevier for its rising costs, business model, and intransigence in creating deals where publicly funded papers are made Open Access.

CONCERT, based in Taiwan and represents more than 140 Japanese institutions, cited Elsevier's business model as "controversial," as well as the high and increasing costs of subscriptions. With the decision being made not to renew under Elsevier's terms, CONCERT acknowledged that the delay would impact researchers, and turn them to Google Scholar, interlibrary loans, or accessing resources through "an academic community network to ride out the storm."[26] One can imagine what these "academic communities" might be in this particular case, but the next case provides little doubt. Elsevier has granted temporary continuing access throughout January 2017, but no deal has been reported at the time of writing.[27]

Germany, Peru, and Taiwan (and through CONCERT, Japan) found themselves in a fight with the publishing giant Elsevier at the close of 2016. The DEAL consortium for state-funded universities and research organizations was at loggerheads with Elsevier over costs, spokesperson Horst Hippler informed *Nature*. "We just cannot accept what Elsevier has proposed so far," he continued. As librarians, we are aware of rising costs and cut corners, but it is odd to see this drama play out on a national scale, much less a multinational one. It's even more shocking to see that neither massive consortium, DEAL or CONCERT, gave in. A year prior to this, the Netherlands also had an issue with Elsevier's rejection of an open access clause

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that would make all Dutch publications open access. In addition to costs, DEAL spokesperson Hipper said that Elsevier refused to put an open access clause in their contract as well. Hippler ran with the standard argument for OA: "Taxpayers have a right to read what they are paying for. . . Publishers must understand that the route to open-access publishing at an affordable price is irreversible."[28]

Peru has a different story with Elsevier. Unlike wealthy countries, Peru has limited access to alternatives for Elsevier. As mentioned above, Peru received health science articles until 2012 based on its national income. In 2017, Peru is set to lose Elsevier due to a lack of government funding. Scientists in Peru have been more blunt with the issue. One plant biologist is reported to have said "I'm not worried. Downloading papers is rather easy now with Sci-Hub," Due to the loss of HINARI benefits, Peruvian researchers have been familiar with Sci-Hub, and deal with the situation out of pragmatism.[29]

Civil disobedience by information users goes far beyond breaking, ignoring, or rejecting the claims of copyright so that knowledge might be free. There are far more direct effects of Cloud computing on the academic (and non-academic) world concerning copyright, especially as it concerns the ease and near non-cost of reproduction of materials. With the rise of copyright throughout the second half of the twentieth century, the United States has thrown aside its previous concerns about the Berne Convention and other such copyright laws, and embraced the protection of authors' rights (well, to be more specific, copyrights owned by large corporate influences). This has had the added effect of the United States, which has the highest per-capita rate of imprisonment of any country to export carceral culture abroad, and push forward the role of imprisonment in enforcing copyright law.

**Open Access is not fast enough for 'Others': Carceral politics and putative damages**

When the United States began enforcing copyright internationally, it also exported its particular brand of "penalization" (which usually includes the use of a literal penal system). In addition to the names of Aaron Swartz and Alexandra Elbakyan in the story of copyright defiance, we can add Diego Gomez. This time the target did not come in the form of a shadow librarian or liberator of knowledge, but an ordinary academic we know solely because of the harsh measures international copyright puts on nations to punish infringers. Gomez is a recent biology graduate from a small university in Colombia. Like many other small universities, Gomez's didn't have access to all the research he needed, so he took part in the communities of scholars who shared information, in this case using Facebook. In 2011, he shared a master's thesis, which resulted in the author suing Gomez for violating his author's rights (*derechos patrimoniales*). For this crime, from which Gomez made no profit and at no demonstrable loss to the author, he faces four-to-eight years in prison. Now, Gomez is another promising academic who faces the same legal obstacles and pressures that drove Swartz to suicide. The oddity in this case is that the suit was not brought by publishers, but by the author of the master's thesis himself.[30]

However, it was industry lobbying groups that pushed for more stringent criminal laws in

Colombia. Heather Joseph of the Scholarly Publishing and Academic Resources Coalition told *Newsweek* that these lobbying groups tend to conflate commercial media with academic content. The conflation is counter-productive, as Joseph says "the research has no value if you can't share it."[31] The origin of these stringent laws came from a 2006 trade agreement between Colombia and the United States. This trade agreement required Colombia to tighten its criminal copyright laws, yet did not modify the exceptions to this law, which were drafted in a pre-Internet age.[32] Oddly enough, this comes from the very Berne Convention that encourages stronger copyright around the world which the United States was loathe to join for many years.[33] The laws that Diego has been charged with violating remain in place, and his case seems to have sparked no change in the approach of the United States in pursuing intellectual property protections internationally.

Needless to say, there is a concern about a chilling effect on academia. Given the scope of casual sharing of information, and the demonstrable needs of many countries and researchers, copyright is clearly standing in opposition to the spread of information. Current political attitudes continue the trend towards industry-friendly copyright laws. The Trans-Pacific Partnership (TPP), like most deals hailed as "free trade agreements," has very little freedom when it comes to trade or regulation. In fact, like the 2006 free trade agreement between Colombia and the United States that tightened criminal laws on copyright, the TPP seems to be continuing in the same vein, but on a larger scale.[34] Politics move quickly, and the beginning of the Trump administration meant the US abandoned the TPP. However, this does not end the discussion on expanded copyright powers.

In any case, the US President is likely to pursue policies put forward by the major music and publishing industries. On December 13th and 15th, respectively, these groups took the time to write letters pushing Trump for federal support in rewriting the Digital Millennium Copyright Act (DMCA). Particularly Section 512, which deals with "safe harbors". These "harbors" are not actual places, but are a frame in which the limitations on liability are framed. These are the limits on prosecution of Internet intermediaries that inevitably will have infringing content on them (due to the interconnected nature of the Web), and are particularly important to our discussion on Cloud computing. Without getting into the specifics of their demands, the music industry is most interested in forcing Internet service providers (ISPs) to filter and shut down infringing uploads, something that ISPs are ill-equipped to do.[35]

What was more interesting than the desire to influence the president was the stridency and targets of the Association of American Publishers' letter. In just the second paragraph of its section on calling for ISP cooperation, the AAP directs its ire at "the conduct and rhetoric of … the library, education, and archival communities, who share a common self-interest in continued advocacy to *minimize* the effectiveness of copyright protection and enforcement [emphasis original]."[36] Strange as this may seem, especially considering that copyright as framed by the Constitution should be in line with the promotion of access, it is actually in keeping with an emerging persona the AAP is developing for itself, which includes harassing librarians who dare

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to mention pirate libraries at academic conferences.[37]

 That leads us to a series of important questions. Does the punishment that copyright holders seek for the violation of copyright holders' rights actually promote "the Progress of Science and useful Arts" anymore? Especially when we see it as a weapon utilized by the state in the interest of large corporations? Does criminal punishment address the issues of sharing and access that Cloud computing presents? Hopefully, we may find some answers by looking back into the history of copyright.

## The History of Emerging Technologies, Analog "Clouds," and Distribution

> What Elbakyan is doing – ignoring foreign copyright – was official US government policy for more than a century. As a result, books were much cheaper than in Europe and literacy skyrocketed. When the US finally caved, in 1888, the editors of 'Scientific American' thundered that "The extension of copyright monopoly to foreigners will enable them to draw millions out of the country" and that it would turn US customs officers into "pimps and ferrets for these foreigners."[38]

 It has not escaped the notice of the shadow librarians and their supporters that for a very long time it was the official policy of the United States to ignore the intellectual property claims of other nations in the name of free trade, monopoly denial, and access to knowledge (even though a great amount of popular fiction was also pirated). The peculiar exception to this general trend was the Confederate States of America, which passed an international copyright law to garner British support and nationalistically reject "pirated Yankee" works.[39] In the twentieth century, it was the Soviet Union that took up the mantle of the pirate nation, as documented in a fascinating study on the Russian shadow libraries by Balázs Bodó, and the values that continue to make Russia home to the greatest shadow libraries of the Internet.[40]

 Pierre-Carl Langlais traced the history of academic copyright in two articles published in the *Sciences Communes* in 2015. Langlais's question is a simple one, and stated clearly in the first article's title: "When did scientific articles cease to be common?"[41] Langlais sets a solid date, 1908 at the Berlin conference which revised the 1886 Berne Convention, which had been a source of modern copyright law.[42] But the nineteenth century had a great deal of scholarship before the Berne Convention, and it bears on this conversation to take a quick historical detour.

 The earliest copyright or authors' rights laws in the eighteenth century, such as the Statute of Anne (1710) and later French Republic laws, were explicitly created for artistic works. Yet their language allowed for a broad reading, which in the twentieth century would win out in French law. They were typical monopolistic laws that protected the interests of cultural industries. Other industries, such as newspapers, relied on the free sharing and reprinting of materials. Scientific and intellectual journals worked on the same assumption: copies could be made without the authors' knowledge or consent being necessary, as a means to maximize the scope of the readership. Long quotation was also necessary to preserve the intent of the author. But one major difference between newspapers and scientific journals existed, and still persists

today: the "informal moral right" of citation and attribution of ideas.[43]

Denying perpetual copyright to authors was even a key example given by Adam Smith in *The Wealth of Nations* as the type of monopoly that harmed the public good.[44] Smith was even an advisor to the Scottish court in *Hinton v Donaldson* (1773), in which an Edinburgh bookseller pleaded against English copyright by appealing to the civil law tradition of Scotland, which recognized no such intellectual property.[45]

Between 1852 and 1908, there existed a period of open licensing between France and England. This 1852 treaty served as a template for other bilateral treaties in Europe during the second half of that century, and it contained a provision for newspapers and periodicals. All newspapers and periodicals could be printed and translated freely, except in cases where the author claimed a right to translation in a "a conspicuous manner in the journal or periodical in which such articles have appeared, that they forbid the republication thereof."[46]

> Articles of newspapers or periodicals published in one of the countries of the Union may be reproduced, in original or in translation, in other countries of the Union, unless the authors or publishers have expressly refused permission. For collections, it may be sufficient that the prohibition be made generally at the head of each issue of the collection. In no case shall this prohibition apply to articles of political discussion or to the reproduction of news of the day and of miscellaneous information.[47]

In 1908, the Berlin Congress removed this exemption, leaving only newspapers as exempt. This seemed to be a compromise offered by smaller European countries that wanted to maintain the newspaper exemption.[48]

However, scholarly journals continued to perpetuate themselves with few restrictions. Informal arrangements for copying remained the norm through the first half the twentieth century. The post-war period saw massive subsidies for the research fields, and promoted the dissemination of knowledge as cheaply as possible. The scientific societies and small publishers gave way to publications by public institutions, thus making their content technically an intellectual property, but also a public good that depended on subsidies from the government.[49]

As subsidies declined after the post-war boom, there were two major economic forces that increased the enforcement of copyright. First was the need for economic monopoly over copying rights due to reduced subsidies. The second was the change in economic model of journal publishing, in which companies began to control large bundles of journals and created artificial scarcity. Companies like Elsevier struggled at first, but eventually gained a monopoly on highly-specialized literature that could not survive on its own meager readership. The combination of this monopoly coupled with the editorial model of intellectual property control is what cemented large publishing companies' control over scholarly production (and reproduction). It was not until the rise of the Internet, when copying costs moved toward zero, that academic publishing began to push back against this model, and reassert its editorial control via the Open Access movement.[50]

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As seen above, one part of the shift towards stricter copyright control is the growth and domination of a native scholarly community. When smaller European countries pushed for a continued exemption for newspapers in 1908, they were expressing the same need for information that is seen today in developing countries. When aaaarg.org (and its subsequent manifestations) was sued in Quebec by an anonymous publisher in January 2016, Rochelle Pinto made a case for the importance of access to scholarly information. Pinto emphasized the nature of scholarly production, in which academics are alienated from their labor, and have their writing sold back to their institutions (who supported and subsidized their work) at extortionate rates.[51]

This argument is not unfamiliar to people within the discussion of Open Access. But its ubiquity has made it a target for various rebuttals. To be very daring and attempt to summarize them into a common theme, they all center around the transactional nature of property rights. Yes, academics must publish (for free) in highly respected journals, but there are operational costs involved, and this does not nullify the copyright interest of the corporations who own those journals. These arguments are accompanied by the traditional capitalist level of empathy for those left behind. The difficulty, then, is the contradiction between what we have noted is a non-moral law (copyright), and a moral imperative (the spread of information). One side has legitimacy granted by states, the other does not. The question then becomes: can this situation be reversed?

Those working on the edges of the law, and creating new structures of information dissemination and creation, can only legitimate themselves by their own actions. It will be the response of "respectable" society to determine their legitimacy, and some aspects of scholarly communication has already shifted to different models of production, such as Creative Commons.[52] Pirate libraries and peer-networked sharing are legally questionable activities to be sure, but they result not from ill-will, but a legal system and moneyed interest that is contrary to the librarian's professional values. The punishment for violating copyright law, which only is valid so far as it promotes the interest of the public, is extreme and beyond all proportionality of harm caused. Advocating against the expansion of the carceral state is just as much a part of defending academic freedom, or perhaps more so, than promoting new modes of production that emphasize Open Access and information sharing.

Librarians and technologists should always be wary of the "inevitability" argument concerning emerging technologies. But it is clear that Cloud computing's decentralized nature will make enforcement of strict copyright laws that aim to create artificial scarcity will be impossible, especially with the weight of the moral arguments behind the open sharing of knowledge and data. As copyright interests create enemies among the very people who produce their products, there will be an accompanying increase in distrust and rebellion against those structures.

Understanding the scale of the resistance to paywalls helps explain their disruptive potential. Guillaume Cabanac studied LibGen in 2016; one of the largest pirate repositories and the major source for Sci-Hub. Cabanac compared the 25 million documents on LibGen against

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CrossRef by DOI, and found that 36% of all DOI articles are available on LibGen. What is less surprising is that when controlling for major publishers (Elsevier, Springer, and Wiley) the percentage goes up to 68%, indicating that paywalls are indeed a motivating factor for pirating articles. LibGen also covers 78% of all journal titles. While most of the articles come from massive dumps of articles, dubbed "biblioleaks," the collection also grows daily with contributions from Sci-Hub's proxy usage, as well as individual requests for articles on Reddit Scholar. Cabanac concludes that this does not take into account the reasons or scale of people using these resources, and thus we cannot draw confident conclusions about the impact of these platforms.[53] But the availability and persistence of pirated articles does lead to a realization that distributed storage systems and networks will likely be able to outmaneuver any attempts to shut down particular platforms or silos.

## Considering the Nature of Scholarly Communication in the Cloud, Should We Return to a pre-1908 License System?

Langlais characterized the pre-1908 system as the equivalent of CC-BY for all.[54] This, arguably, is achievable via legislation at least as far as it concerns publically-funded research. New journals are started up with the express purpose of disseminating quality information to people in their field. When they give their materials to a large publisher and fees become too exorbitant for their potential readers, what has become the point of that journal? As mentioned above, this argument has not been lost on activists and scholars alike. It has, however, been lost on the major publishing companies like Elsevier. When Elsevier won its injunction against Sci-Hub in 2015, which had its domain taken down, it succeeded only in changing the domain from which Sci-Hub was accessed, and in the process raised the visibility of Sci-Hub tremendously. In her defense against the suit, Elbakyan argues that Elsevier's interest is only in maintaining its ownership of high-impact journals which scholars must submit their work to in order to raise their academic profile. Copyright has no role in promoting this research other than to maintain Elsevier's market dominance.[55]

Why do academics publish, edit, and review for free? And why do universities promote and subsidize this behavior? Following commercial logic, it makes no sense. Academia encourages the tradition of personal creation and credit for original contributions to the literature of a field, which form the basis of a prestige economy. While the loss of government subsidies after the post-war boom meant that specialist journals could be kept afloat by the model of copyright enforcement that companies like Elsevier created, the model no longer makes sense in a Cloud infrastructure. Now, academics yearn to copy and distribute work at near-zero cost, but the monopoly granted by copyright creates serious legal ramifications for doing so.

Is there a rational basis for the level of punishment copyright breaking entails? Librarians should seriously consider how their values affect their policy positions, and what that means not just for legislation affecting intellectual property, but also fines, fees, and incarceration. Especially when it is fellow academics being imprisoned. Whether openness comes from OA movements, or continued piracy, the scholarly community is acting as though it wants a pre-1908

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system. Why not try to create one for the twenty-first century?

The problem is, although much of academia is of the opinion that information should be widely available for free, this is still difficult to get past the major publishers. The deference academics and librarians show in the form of "the law is the law" approaches to copyright should at this point be seen for what they are: a shallow smokescreen meant to frame copyright law as a moral law, rather than as an expedient to the outcome of shared information. An expedient that has now been corrupted and co-opted into a model of profit.

Academic publishers seem to be coming to the sense that libraries, despite being a major part of their revenue streams, are a possible threat to their market dominance. Despite the fact that copyright, as a tool to promote the exchange and dissemination of information, lines up perfectly with library values, there is somehow a "tension," as was specifically indicated by the AAP's letter to President Trump.

> Why is this? And why is it focused at librarians who dare to question copyright as it now stands? The blogger known as the Library Loon wrapped the issue up succinctly:
> Why point this effluent at librarians specifically rather than academe generally? Because publishers are not stupid; libraries are their gravy train and they know that. The more they can convince librarians that it is somehow against the rules (whether "rules" means "law" or "norms" or even merely "etiquette," and this does vary across publisher sallies) to cross or question them, the longer that gravy train keeps rolling. Researchers, you simply do not matter to publishers in the least until you credibly threaten a labor boycott or (heaven forfend) actually support librarian budget-reallocation decisions. The money is coming from librarians.[56]

The *Encyclopedia of Ethics* defines "common good" as a concept that not only applies to "goods in which people have a common interest", but also suggests that the pursuit of these goods can exist without creating conflicting parties.[57] Political science aficionados will recognize that the issue of copyright is not one of positive liberties, or those actions a state takes to empower its population, but a negative liberty, a restriction on state action for the benefit of the governed. Copyright is a monopoly granted for the Common Good, but when that is no longer the case, government should limit its power to grant that monopoly.

### The Copyright Office and Dr. Carla Hayden

There is no pretending that copyright and librarianship are two clear, distinct fields of advocacy. Right now, a proxy battle is taking place between those who view copyright in its original form, as a tool to promote the distribution of knowledge, in line with the mission of the library, and those who view copyright as a means of controlling information for market dominance. That proxy battle, of course, is the issue of the removal of the Copyright Office from the Librarian of Congress's oversight. This is especially poignant now that we have a librarian with a forward and willful determination to move the Library of Congress (LoC) into line with the library community's values. Librarians are not trusted by the copyright interests, and

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attempting to move the Office of Copyright, despite its limited legal powers in applying copyright law, is an important step in completing the framing of copyright as a technocratic property interest that does not concern the values of librarianship.

This framing is blatant and unavoidable. The Register of Copyrights, Maria Pallante, resigned after being reassigned by Dr. Hayden to an advisory position within the LoC. Ralph Oman and Marybeth Peters, two Registers of Copyright who immediately preceded Pallante, wrote to the relevant House and Senate committees that:

> [T]he competing missions and differing priorities of the Library and the Copyright Office have increasingly emerged as a source of tension. . . . [T]hey are inevitable given the divergent roles of the two organizations. Stripped to its basics, the choice is stark: Does Congress want **modernization** and independent copyright advice straight and true from the **expert** agency, or does it want copyright administration and advice filtered through the lens . . . of the **head of the national library**?[58] [emphasis added]

One would hope that librarians would have a resounding answer to this question. Note the terminology used by the former Registers: modernization and expertise on copyright are assumed to be something outside the purview of the *head of the national library*. Previous Librarians of Congress have indeed not been professional librarians with expertise on this subject. Dr. Hayden, on the other hand, is exactly the kind of competent professional who can give advice and leadership on the issue of copyright. It seems this is unacceptable to some people, and this puts librarians squarely in the middle of a conflict over competing values.

It is therefore not surprising that fifteen weeks after her departure from the Copyright Office, Pallante became the head of the Association of American Publishers.[59] If this is a vision of things to come, then an independent Copyright Office might be nothing more than a revolving-door agency for corporate lobbyists to take turns weakening the oversight of the government, and strengthening the monopolies of intellectual property giants.

Librarians should follow the example set by Duke Libraries in their response letter to Congress:

> The solution for the Copyright Office is not less oversight from the Library of Congress but more. Leadership from an experienced administrator such as Dr. Hayden who can guide the Office back to a position of impartiality and to a focus on its core function is a welcome development for Duke Libraries and for the public that has been so often ignored by the Office in favor of the content industry.[60]

However, even discussing the battle over copyright and the impact of pirate libraries can land a librarian in hot water. Gabriel Gardner discovered this in July 2016, when Thomas H. Allen, president of the Association of American Publishers, sent a letter to Gardner's dean rebuking Gardner for discussing Sci-Hub at an ALA panel on emerging technologies and interlibrary loan.

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Gardner is a librarian at California State University, Long Beach, and has written on the topic of Sci-Hub and pirate libraries in the past. Gardner's dean, Roman Kochan, responded with an excellent rebuttal to Allen, rehashing the arguments over copyright's Constitutional role, and the unsustainable model of academic publishing.[61]

In an email correspondence, Gardner counted himself lucky to have received the support of his institution against the attempts of the AAP to get him fired. Gardner expects that the AAP will continue to press its commercial efforts in the future. He also relayed rumors that this was not the first time AAP had intimidated researchers, but did not elaborate. Given the position taken by the AAP in its letter to the incoming Presidential administration in December 2016, it seems this approach would be in character with the AAP's view of librarianship.

Reform of the Copyright Office is not only an issue for academic scholarship, but it also affects creators of all levels. A report from the Copyright Office in 2011 highlighted the inaccessibility of the courts to small claims, with only sums around $350,000 being the median cost. The Copyright Office, if properly restructured, could be an alternative to federal court, and arbitrate small claims of no more than $30,000. The claimants and defendants could also sort out DMCA-related issues such as takedowns, fair use, and counterclaims. This restructuring was recommended by the Copyright Office itself in response to a Senate request for a report on how to make copyrights more accessible.[62] The only serious attempt at making this adjustment was the Copyright Alternative in Small-Claims Enforcement Act of 2016 (CASE Act), which was viewed as highly problematic and a potential tool for copyright trolls rather than legitimate claimants. It is precisely the values of librarianship that could mitigate the most abusive aspects of the DMCA as it would be applied in this case, and provide adequate protection *from* copyright trolls, including a rejection of the right to discovery in this mediation, which would protect the privacy of the parties involved.[63]

**Library Workers, Professional Organizations, and Community Groups: UNITE!**

How can we bring this conversation back to the local level? As mentioned above, library values will require an intersection with other political issues that are not traditionally considered "library" issues. But these issues take place on a local, state, and national level, and effective advocacy builds on all of these levels. Be active in professional organizations, but also reach out to others. Library workers are embedded in their communities, and have a special place in American public service. Andy Woodworth gave some practical advice to library folk advocating for their values:

> Last, and this falls to my peers, it's to organize ourselves. The ALA can't politically advocate in the manner that is required here, so it is up to the individual to do so. Make your own contacts and networks to call, fax, email, and/or march to protest and make your voices known. I wouldn't impose a mandate on what level of involvement, but I know that some of my peers are community organizers who can get people together while others work better in smaller groups of active voices. Find your activity level and embrace it.[64]

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Librarians should take a close look at the material relationships of how we work as academics, realizing that acting authentically within our values will be what shapes technology and its application. While emerging technologies will have a profound effect on our profession, we are the ones who create meaning in how our profession changes, and in turn, have a chance to change the modes of scholarly communication, education, and publishing into something more equitable. Technologies are disruptive, but it is people who decide what will change.

Before concluding, it seems wise to add a disclaimer concerning how people might respond to the information above. Given the arguments concerning the inability for copyright to maintain its monopoly in a Cloud-sharing world, it may occur to some people to attempt to hasten the end via direct action: the intentional breaking of copyright. As a rule, the author cannot in good conscience recommend this practice. Not because there is a grave social danger in breaking copyright: the people who should be most interested in breaking copyright should be legislators who care about the Common Good. But because, as shown in the cases of Aaron Swartz, Diego Gomez, and many unnamed others who have been intimidated by copyright interests, the disproportionate legal punishments for breaking copyright are too great a consequence for the good that would be achieved in defying that law.

## Conclusions

Emerging technologies related to distributed (Cloud) computing will be disruptive of the processes surrounding information distribution, creation, and academic discourse. Librarians should seize on the opportunity to open up positive dialogues about alternative models of publication. Libraries are not anti-copyright: it is the change of copyright from the promotion of knowledge to its restriction that has put libraries in "conflict" with market forces, more than a conflict with copyright itself.

The disruption caused by these technologies also creates backlash from copyright interests. Librarians should be aware that they are not limited to utilizing emerging technologies to reshape their discipline, but also have an obligation to address the ethics surrounding their use. The legal and commercial responses to disruption of copyright has led to expansions of international law that grow the carceral state, and librarians will have to expand their advocacy to include issues surrounding law, fines, imprisonment, and globalized intellectual property enforcement. While copyright law may be black and white, the ethics surrounding the utilization of technology on the fringes remains up to us to assess. Bad laws will be written, and harmful punishments will be meted out with little regard to the effect on democratic values that librarians hold, such as access to information and the Common Good.

Because of the growing international scope of these issues, librarians must advocate on local, state, national, and international levels. The ALA will not be enough. Librarians should engage with other advocacy organizations to build a broader coalition that confronts the potential harms that are the result of bad policy, bad laws, and sloppy assumptions about the nature of information in a world where computing has become a global meta-infrastructure.

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Librarians should fight for the Copyright Office to remain in the Library of Congress, and frame their arguments in both a strict constitutionalist sense (the promotion of the arts and useful sciences) and as a means of promoting the public interest in having access to information that is largely subsidized by public institutions of higher education, who pay for researchers to take time to publish their research that they are in turn not compensated for.

The unpredictability of changing technologies means that individual circumstances will shift quickly. Library folk must build their awareness of library values. Read critical histories of technology, and how technological "inevitability" is often a way to shut down conversations that critically examine the effects of emerging technologies. Often, the change is not actually disruptive or "new", but merely unregulated, and as such can skirt current regulations that are in place to empower and protect workers. Study the philosophy of technology, not just its application. Take the time to focus on what you do believe, not just what you are against. Hold your values foremost in your mind, and apply them critically to changing political and technological landscapes.

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Notes

1. Privacy disclosure: all links have been directed to either the Internet Archive or Perma.cc via the Google URL Shortener (goo.gl URLs). Goo.gl URLs collect some data on who uses the shortened link, and this was intentionally chosen by the author as a means of collecting counts on uses of references. Goo.gl URLs click analytics are public for anyone to view by adding ".info" to the end of the URL.

2. Anderson et al., "SETI@home: an experiment in public-resource computing."

3. Joe Weinman, "Cloud Strategy and Economics." In *Regulating the Cloud: Policy for Computing Infrastructure*, eds. Christopher S. Yoo and Jean-François Blanchette (Cambridge: The MIT Press, 2015), 21.

4. Gardner and Gardner, "Bypassing Interlibrary Loan Via Twitter: An Exploration of #icanhazpdf Requests."

5. Hall, *Pirate Philosophy*, 4.

6. Bendezú-Quispe et al., "Sci-Hub and Medical Practice: An Ethical Dilemma in Peru," par. 3.

7. Intellectual Property Office of Singapore, "Be HIP at the Movies," July 27, 2007, https://goo.gl/d5TVvW.

8. Gardner and Gardner, "Fast and furious (at publishers): the motivations behind crowdsourced research sharing."

9. More information on the nature of gift economies can be found in Giesler, Markus. "Consumer Gift Systems," *Journal of Consumer Research* 33, no. 2 (2006): 283-90.

0. Tenopir et al., ""To Boldly Go Beyond Downloads: How Are Journal Articles Shared and Used?" 9.

1. See section "Open Access is not fast enough for 'Others': Carceral politics and putative damages."

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3. Gardner and Gardner, "Fast and Furious (at Publishers)."

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