Parasite, Pirate, and Robin Hood: Sci-Hub is Disrupting the World of Academic Publishing

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Abstract
Sci-Hub is an illegal repository of pirated academic publications which has emerged into the scholarly world as a divisive entity. Sci-Hub is both lauded as a Robin Hood-like figure for granting access to scholarly communications to those that cannot afford them and despised as a thief causing profit losses to academic publishers. These opinions are irrelevant to the fact that Sci-Hub has disrupted the traditional publishing model of scholarly content, which has long caused issues of affordability for academic libraries resulting in the Serials Crisis, as well, as ensuring access difficulty for those unable to afford the high costs of journal subscriptions. Closed access publishing models are floundering because of Sci-Hub and this has quickened moves to adopt new academic publishing models.

Keywords: academic publishing, open access, repositories, Sci-Hub, Serial Crisis, Big Deals

The advent of the internet has forever altered how academic scholarship is accessed. Quickly, print editions of journals have become a largely defunct process as digital access to new and old articles is deemed not only critical, but expected. Electronic access has expanded the reach of scholarship whilst becoming a costly burden on academic library systems. Most academic librarians must negotiate a so called “Big Deal” in which hundreds to thousands of journals are categorized into packages by the publisher who then sells subscriptions to such packages to academic libraries. These subscriptions provide access to a vast number of journals, but is also an increasingly large strain on library budgets as the price of the subscriptions are always rising (Esposito, 2017). For an academic librarian to step away from these ‘Big Deals’ often means spending even more money for a lesser amount of information, as it decreases access to a variety of journals for the users of their library (Esposito, 2017). Some academic libraries have made the decision to individually select a limited number of journals despite the raises in cost and loss of variety as a rejection of Big Deals such as the University of Montreal (Esposito, 2017).
Librarians are trapped between providing as much access as possible for their users and not being able to afford to do so. This phenomenon is called the Serials Crisis.

The Serials Crisis is also caused, in part, by the business model that academic publishers traditionally use. Strielkowski (2017) argues that academic publishers operate on a unique basis in which “the buyer pays twice for what the seller has to offer” (p. 541). In the traditional, closed access model of academic publishing the researcher is paid to do their research, publish their research for free, and then the institution the researcher works for must pay to obtain the published research (Strielkowski, 2017). This model is unsustainable from an economic point of view as the scholar must submit their work for free, often with the loss of copyright ownership, only to have to pay to retrieve it afterward (Strielkowski, 2017). Academics must publish to advance and maintain their career therefore they want their publication to appear in specific journals which relevant to their field. To do so, scholars require access to such journals to keep up-to-date with their field, thus academic publishers can get away with continuously inflating the price of these packages (Shapiro, 2013). To even begin unsubscribing from Big Deal packages, academic libraries ideally must convince their community, the researchers and students of their institutions, of the unjustness of these business. The University of Montreal was able to convince their user community of the issues with Big Deals, but without the support of the libraries’ user base, other institutions will be unable to follow suit for the high price of these subscriptions are beyond the budget of those with small budgets. Sci-Hub is a symptom of an unsustainable business model and the rising costs of journal subscriptions.

Sci-Hub was created by a student named Alexandra Elbakyan; she was born in 1988 in Kazakhstan and honed her hacking skills at a Kazakh university. Elbakyan moved to Moscow where she worked in computer security until she could afford to attend the University of Freiburg in Germany in 2010 (Bohannon, 2016a). Later, Elbakyan managed to obtain a US visa securing an internship at the Georgia Institute of Technology. Once her visa expired, Elbakyan returned to Kazakhstan. Access to academic scholarship in Kazakhstan is limited and Elbakyan became increasingly frustrated with the cost of accessing the academic publications she needed for her research. Elbakyan recounts that she needed access to hundreds of articles for her research, each of which would have cost her around thirty dollars, an unaffordable expense when amassed over time (Warning shots: Scientific piracy, 2017).

An existing strategy used to avoid paywalls took the form of a slow process and involved asking on Twitter, with the hashtag ‘ICanHazPDF’, for someone with access to share the required article (Bohannon, 2016a). After seeing these interactions, Elbakyan decided scholars needed was a streamlined system that did the same thing as Twitter, but on a larger and more efficient scale. Armed with both her computer skills and contacts with other pirate websites, Elbakyan was able to create Sci-Hub herself (Bohannon 2016a). Since the launch of Sci-Hub in 2011, Elbakyan has been sued for millions of dollars and is now banned from entry to the United States. At present, Elbakyan is enrolled in a history of science master’s program, the whereabouts of which is a secret, working on a thesis fittingly on the topic of scientific communication (Bohannon, 2016a).
Sci-Hub is an online repository of academic scholarship that is not hidden behind paywalls, is easily accessible to anyone that has access to the internet and is constantly adding more articles. Sci-Hub has only been able to achieve this high level of access by pirating these articles, thereby being praised as a Robin Hood-like system for democratising access to scholarly content so that anyone with an internet connection can access it. In contrast, it has also been critiqued as a parasite and a pirate for stealing content and making it illegally accessible for free. Following in the guerilla open access movement, the existence of Sci-Hub is an indication that there is something wrong with the world of academic scholarship. Sci-Hub, whether considered a parasite, pirate or Robin Hood, has been a considerable disruptive force in the world of academic scholarship and has forced conversations regarding new models for publication of scholarly communications to occur.

Sci-Hub is very simple to use and the process it undertakes to obtain scholarly texts is straightforward. As it is not a discovery tool, users must know the exact title, URL, or DOI number of the article that they are seeking to find a digital copy (Hoy, 2017). Once a search query has been entered, Sci-Hub accesses the Library Genesis database, which is a separate database of pirated scholarship that works with Sci-Hub in a symbiotic relationship (Hoy, 2017). If Library Genesis has a copy of the article, then Sci-Hub sends a copy to the user, but if the Library Genesis database does not have a copy of that particular article, then Sci-Hub employs their other proxy credentials until it finds one that can access the requested article. Sci-Hub uses those proxy credentials to obtain a copy of the article, which it sends to the user and uploads a copy to Library Genesis for future use (Smith, 2016).

Access to the articles not yet contained in the Library Genesis database are acquired via username/password combinations that Sci-Hub has obtained, thereby giving them access to institutional subscriptions. There has been debate about how these credentials are obtained, with Elbakyan arguing that the credentials she has were donated to the project. Also, there has been evidence of a phishing scam aimed at stealing these credentials, but Elbakyan denies that she sent out any phishing scams, though it is possible that supporters of Sci-Hub may have undertaken this initiative themselves (Smith, 2016).

Therefore, Sci-Hub is dependent on the current model of academic publishing as it does not offer an alternative to traditional publishing (Hoy, 2017). Traditional publishing in this sense refers to the process in which a library pays a subscription fee to an academic publisher in order to gain access to the papers that have been submitted by scholars. Furthermore, Sci-Hub does not claim to offer an alternative publishing model, but instead institutes a bypass of traditional methods, as it is considered unjust by many, including Elbakyan. If a new model replaces the traditional one, then it is possible that Sci-Hub will become moot. There have been suggestions for numerous alternative publishing models, for example Wadim Strielkowski (2017) supports subscription-based access that would require a monthly subscription fee to be paid at the individual level, much like the model used by Spotify, a company that provides legal access to music. If the next adopted publishing model still does not work for scholars, then Sci-Hub will remain. A total adoption of an open access (OA) publishing model by academic publishers would still not provide access to previously published material, thus it is possible
that Sci-Hub would likely be used as a repository for older articles.

Elbakyan’s actions exist within a larger movement that started prior to the launch of Sci-Hub. In 2008 a “Guerilla Open Access Manifesto” was written by Aaron Swartz, an American programmer, political organizer, and hacktivist (Knappenberger, 2014). On January 6, 2011, the same year that Elbakyan launched Sci-Hub, Swartz was charged with eleven violations of the Computer Fraud and Abuse Act and two counts of wire fraud. The charges carried a maximum penalty of one million dollars in fines and up to thirty-five years in prison (Knappenberger, 2014). Swartz had been systematically downloading academic journal articles from JSTOR at the MIT campus through his own credentials which allowed him access to the content. Swartz’s “Guerilla Open Access Manifesto” was used as evidence in the case against him, claiming it proved Swartz intended to release all this scholarly communication online, making it illegally accessible to anyone. Consequently, in 2013, Swartz committed suicide prior to his trial (Knappenberger, 2014).

The “Guerilla Open Access Manifesto” is a call to action for people to provide access to academic scholarship, currently restricted by paywalls, thus democratizing access. Swartz (2008) argued that anyone with access to academic scholarship is privileged and, as such, has a responsibility to share that privilege with others. This belief was important to Swartz, for he believed scholarship should benefit everyone, not just academics.

In his manifesto, Swartz (2008) questioned those that call this activity ‘piracy’, claiming that it is not the “moral equivalent of plundering a ship and murdering its crew”. Swartz concluded the Manifesto arguing that “there is not justice in following unjust laws. It’s time to come into the light and, in the grand tradition of civil disobedience, declare our opposition to this private theft of public culture” (Swartz, 2008). This Manifesto is a galvanizing text that has launched an entire movement of guerilla open access. The Twitter hashtag, ‘ICanHazPDF’, that Elbakyan notes as the inspiration for Sci-Hub, also follows in the tradition of guerilla open access, directly ties in Sci-Hub as a part of this revolution.

Joseph Esposito (2017), a publishing consultant in digital media, claims that negotiations for journal subscriptions between publishers and academic libraries are being directly influenced by repositories such as Sci-Hub. Esposito (2017) notes that no academic librarian would openly advocate for the use of Sci-Hub, but argues that Sci-Hub is impossible to ignore in these negotiations, as it is technically a resource that their patrons are already using. Furthermore, as a result of such discussions, Esposito (2017) highlights the University of Montreal’s rejection of their Big Deal package with Taylor and Francis as an example where Sci-Hub’s existence had major repercussions in the academic in the academic community. Similarly, Esposito (2017) writes of a German consortium of academic libraries who, at the time of publication, were too fighting the high cost of their Big Deal subscription. Notably, since the publication of Esposito’s article, the German consortia have agreed to end their Big Deal subscriptions (Vogel, 2017). The loss of these Big Deals can mean decreased access to journals for these libraries’ patrons, yet, Esposito (2017) argues it is impossible to ignore the reality that these patrons are not left entirely without access. Whether anyone wishes to admit it, Sci-Hub is disrupting even
the Serials Crisis, as it has entered the decision-making process between libraries and publishers.

Wealthier universities are often able to afford these Big Deals, even if it strains their budget. Researchers, scholars, and students at less wealthy institutions do not have the luxury of similar access. For example, various academic publishers now offer access programs for academics in developing countries, but, unfortunately, the access is often of a sub-par standard. One such program is called Share Link, and it requires the researcher to contact authors individually to request URL links to the work, which stop working fifty days after publication (Bohannon, 2016b). These programs greatly limit what scholarship researchers can actually access. Furthermore, researchers at institutions that are deemed not ‘poor enough’ to qualify for such access programs, can simultaneously not afford to purchase such access on their own, thus, as a result, researchers have no legal course of action to continue their research. Both researchers and students in this position often turn to Sci-Hub as a means to continue their work.

Meanwhile, other evidence suggests that affordability is not the only reason driving the users of Sci-Hub. Bohannon (2016b) worked with Elbakyan to obtain information about the users of Sci-Hub. They found that between September 2015 and February 2016 Sci-Hub had over twenty-eight million download requests from all over the world. The United States was the fifth largest downloader, and, in fact, much of Sci-Hub activity seems to occur at university campuses in North American and European countries (Bohannon, 2016b). It seems that researchers who already have access to this content through their institution’s libraries are using Sci-Hub in accordance with Zipf’s “principle of least effort” (Zipf, 1949), or, in other words simply because it is more convenient (Hoy, 2017).

Large amounts of what academic publishers sell is being provided online, for free, by Sci-Hub, as such, the site is the cause of profit loss for the publishers of this pirated content (Strielkowski, 2017). A study published in 2017 found that Sci-Hub contains 85.2% of all articles published in closed access journals (Himmelstein et al., 2017). Two large academic publishers, Elsevier and the American Chemical Society (ACS), have taken note that Sci-Hub is making their content freely available resulting in profit loss for their company. (Himmelstein et al., 2017). Both publishers have filed lawsuits against Sci-Hub: Elsevier and ACS both won their suits just this year (Schiermeier, 2017a) (Schiermeier, 2017b), but, even with that success, the publishers are unlikely to ever obtain their money as Elbakyan is outside of the jurisdiction of US courts. The judge covering ACS’s suit also called for “any party ‘in active concert or participation’ with Sci-Hub to ‘cease facilitating’ access to the repository” (Schiermeier, 2017a), which is essentially a call for Internet Service Providers (ISPs) to block access to Sci-Hub. Such a decision is uncommon in the US and sets a precedent that tech giants find uncomfortable (Chawla, 2017). As such, the Computer and Communications Industry Association (CCIA), members including Facebook and Google, have asked the court to limit the suggested measures, though this request was denied on November 3, 2017. As this decision is still unfolding the effect this will have on American Sci-Hub users remains uncertain. These lawsuits provide evidence that Sci-Hub is disrupting the profits of academic publishers.
Sci-Hub’s easy and nearly guaranteed access to closed access articles forces us to consider how long academic publishers will be able to sustain the current publishing model. Even if Sci-Hub is forced to shut down, mirror sites are poised to launch in such an event (Hoy, 2017). The piracy of academic articles will not end with the closure of Sci-Hub. For academic publishers to survive, a switch to an open access model is their only option, as closed access is no longer a viable option, thanks to academic piracy. It costs money to run a publishing company, even a digital one, thus a switch to open access models means that payment shifts from institutions to authors (Strielkowski, 2017). Despite this issue, a switch to open access systems helps to democratize access to academic scholarship, although, as Swartz (2008) mentions in his Manifesto, a switch to open access does not grant open access to previously published materials.

Sci-Hub is undeniably a permanent disruption of the traditional model of scholarly publication. The unsustainable model that these publishers were operating under has not been working for academic libraries, thus Sci-Hub has hastened an evolution that will lead to a new model of academic publishing.

Academic librarians have an important role to play when it comes to Sci-Hub. They have long advocated for the open access movement and may feel conflicted toward the guerilla open access movement, but academic librarians now need to find balance between the academic publishers that they subscribe to and the needs of their patrons (Hoy, 2017). Such scholars may be using Sci-Hub already and it is crucial that academic librarians do not ignore this fact. Rather than attempting to ban Sci-Hub, it is fundamental that librarians inform their users about the potential issues that can arise by using Sci-Hub, as Sci-Hub provides access to pirated material, use of such material can have negative consequences for their careers (Hoy, 2017). As well, it is important to educate users about the danger of donating their credentials to Sci-Hub. Those credentials do not only grant access to their institution’s library, but allows access to much more than journal articles (Anderson, 2016). Beyond education, it is crucial for librarians to keep a monitor of proxy activity to ensure that any vast amount of proxy downloads is reported and investigated, in case a user’s credentials is being used by Sci-Hub (Hoy, 2017). Finally, librarians should also continue to advocate for open access models to increase the democratization of academic scholarship.

Whether considered a hero or a villain, it is difficult to ignore that, as part of the guerilla open access movement, Sci-Hub is disrupting the current academic publishing models. The repository is making it financially unfeasible to continue with closed access models, and, as such, is forcing what is likely to be a quicker adoption of open access models to take its place. Sci-Hub is also now factoring into the Serials Crisis, as it has become an unofficial element in negotiations between publishers and librarians. While the open access movement has been ongoing for some time, it is the guerilla open access movement that is disrupting the current publishing model enough to warrant serious consideration for change. An open access publishing model needs to be seen as a viable business option by academic publishers that have long enjoyed the benefits of an unsustainable publishing model, to have any hope in invoking real change.
References


