## The current system of knowledge dissemination isn't working and Sci-Hub is merely a symptom of the problem

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That Sci-Hub's activities are illegal is not disputed. However, according to Iván Farías Pelcastre and Flor González Correa the issue at the core of the debate is the current publishing and knowledge dissemination system and how it widens socioeconomic inequalities in academia and constrains its collective progress.



The widespread use of Sci-Hub, the world's "first pirate website" for research papers, has fuelled one of the most important cross-disciplinary debates in academia in recent times. Since it emerged in 2011, academics, librarians, and publishers have expressed varied opinions about Sci-Hub, a website which currently provides free access to more than 51 million scientific academic papers and articles and claims to be "challenging the status quo" of academic publishing.



Many experts have looked to disentangle the various threads that make up the discussion on Sci-Hub. Despite their best efforts, however, they are yet to agree on the exact nature of the problem they are discussing and (arguably) trying to address. In our view, no one has satisfactorily answered to date the question of what exactly is the real problem at the core of the Sci-Hub debate?

The task is more complicated than it might first appear. First, according to some specialists, the debate around Sci-Hub has been overstated. To some academics, Sci-Hub is just a technical (albeit ethically questionable) solution, to a long-standing logistical problem in academia. That is, sharing scientific literature with the widest possible audience. To some scholars, the website simply makes information more accessible than it could ever be through the current academic publishing and knowledge dissemination model. Under the current model, the ability of researchers to access scientific articles is determined by their individual or institution's economic capacity to pay for such access, rather than by the needs or requirements of their research. Providing free access to scholarly journal articles archived behind a paywall infringes upon copyright laws. At first glance, then, the problem with Sci-Hub seems to be its illegality.



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However, not everyone seems to agree with this view. While some librarians agree that the website's activities are "probably illegal and definitely contract-violating", many of them do not consider such activities as "necessarily unethical"—or even revolutionary as the website itself portrays them to be. Instead, they regard Sci-Hub and other similar projects, such as LibGen, as yet another initiative compelling them to diverge their attention from maximising access to information to enforcing copyright laws. Surprisingly, scholars and librarians rarely appear to claim that Sci-Hub is "a mass-piracy criminal enterprise [...] trying to be the WikiLeaks of scientific information" or "the Pirate Bay of research", as other pundits often claim. Yet, such claims appear to be at the core of the debate over the website.

According to Sci-Hub's creator, Alexandra Elbakya, and other researchers and librarians, the actual problem to be addressed is not the website itself. It is instead the structure of the current academic publishing and knowledge dissemination system that led to the creation, popularisation, and widespread use of Sci-Hub.

Under the current system, the financial burden of research is mostly borne by governments, or other public or private research institutions. In general, publishers do not monetarily compensate authors and reviewers for their editorial or published work. Instead, scholars are expected to give out their work for free (or a token payment) to academic publishers, in exchange for their help in disseminating the scholar's findings across the scientific community. The primary incentive for authors or reviewers is, then, the dissemination of their research. Dissemination enhances the researcher's reputation, and their prospects of maintaining or improving their position in the academic job ladder. It also increases their impact on the scientific community.

As Marcia McNutt, former Editor-in-Chief of the *Science* journals, and Elsevier, the world's largest academic publisher, have explained, the rationale for the existence of academic publishers is enabling individual and collective advancement in scientific research through the review, validation, archiving, and dissemination of knowledge, and the maintenance of accuracy, consistency, and clarity in scientific communication. To financially and logistically sustain the publication and dissemination of knowledge, publishers charge fees to research users –usually via their institutions— to access content published in their journals, and so the research cycle starts again. Few people would object to publishers continuing to provide these services to academics.

However, numerous scholars and librarians have raised questions over whether academic publishers are now

pursuing their profit-making interests at the expense of their role as knowledge disseminators. Elbakya, other scholars, and a number of librarians argue that by building paywalls around scientific works, and constantly lobbying governments for stricter enforcement of copyright laws, publishers are doing a disservice to the scientific community. These activities foster economic discrimination and increase the socioeconomic inequalities already existing in academia, hence constraining its collective progression. In our view, this is the issue at the core of the Sci-Hub debate.

The current subscription model established and mostly supported by academic publishers, exacerbates disparities in access to knowledge. These include the uneven distribution of funding, human, and institutional resources existing between developed and developing countries, private and public-funded universities, large and small research institutions, and established researchers with access to large research grants, early-career or independent academics with limited or no funding of their own, and so on. Such economic discrimination puts researchers at opposite ends of the spectrum of possibilities for contributing to the world's scientific progress, which is made dependent on their institutional or individual capacity to access monetary resources, rather than in their individual research abilities.



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Some scholars consider that, by removing barriers to access to knowledge, Sci-Hub is actually promoting the widest possible dissemination and use of academic research for the benefit of the entire scientific community. For instance, Masoud Shahnazar, Iran-based independent literary researcher, states that "we Iranians really owe [Sci-Hub] a lot" for providing access to the materials Iranian scholars require for their research. How researchers are able to access paywalled papers in a country faced with economic sanctions which prevent international payments is one of many questions that the current model cannot effectively answer.

By providing such ready access to millions of journal articles to anyone in the world who might be interested in accessing them, however, Sci-Hub is challenging the written and unwritten rules of the current publishing system. In our view, many of these rules should be subject to a comprehensive review. For instance, to ensure that universities, research centres and academic libraries continue to pay the high prices currently charged for access to journal articles, Elsevier and other publishers have established confidentiality agreements with academic libraries which prevent them from disclosing the amount that the company charges for access to its journals. David Tempest,

Director of Access Relations at Elsevier, for instance, has argued that if libraries were to know the amount Elsevier charges to others for access, "everybody would drive down, down and down" prices and that would mean that users would pay less for accessing these materials (!). And lower prices for access seem to be unacceptable to publishers.

The contradictions of the current academic publishing model are clear. Some scholars and academic publishers point to the allegedly resource-intensive nature of the publishing process. For instance, Eric Zuelow, Associate Professor at the University of New England argues that "publishers do a service at great expense". He estimates that the costs associated with the publication of an academic monograph (e.g. copyediting, production, printing) amount to around US\$30,000. In his view, while most academic books will only return a fraction of that, most journal articles will cost "thousands of dollars, with an even smaller return". However, other academics argue the cost of publication of a journal article is closer to US\$300.

Likewise, academic publishers justify their business models and hefty price tags on access to journal articles based on the rising costs of publishing and dissemination. McNutt argues that the current publishing system covers the costs journals incur to disseminate knowledge across the international scientific community. She claims that "the costs of scientific publishing are increasing worldwide, driven by the expansion of content, which includes more contributions from the developing world". However, representatives of other academic publishers have explicitly rejected such a claim. For instance, according to Tempest, "the cost per use [of scientific papers published by Elsevier] has been dropping dramatically, year on year."

Moreover, even if publishers were facing increasing costs for disseminating knowledge, they have still managed to build a system that keeps growing in revenue and profit margins. In 2015, the academic publishing industry (in the English language only) reported total revenues of US\$25.2 billion –comfortably surpassing the US\$23.5 billion reported in 2011. Elsevier alone reported earnings of £2 billion in 2014, which resulted mainly from its ample operating profit margin of 34 per cent (almost four times the average profit margin of the FTSE 100 firms). The self-reported increasing revenues of academic publishers, and their ample profit margins of 25-40 per cent, make it difficult to accept claims that the industry is facing economic difficulties resulting from the operation of online repositories (or pirate websites).

Lost revenue is not the only reason for which publishers oppose the operation of Sci-Hub. According to the Association of American Publishers (AAP), by providing indiscriminate access to content, Sci-Hub (and by extension LibGen) are making "certain information, regulated for distribution by publishers, available to parties not intended to have this technical know-how." In other words, the AAP argues that access to certain knowledge should be confined to specific groups of researchers. This is by all means a contentious claim, as restricting access to knowledge seems to go against the rationale which ostensibly justifies the existence of academic publishers. All researchers, but especially the least economically empowered in academia and outside it, are disadvantaged by such attitudes towards knowledge dissemination.



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In our view, scholars, librarians, and publishers are bound to lose if the current academic publishing system remains in place for longer. When paywalls "protect" access to knowledge, researchers will find ways (both legal and illegal) to access the information and data they require for advancing their research. Peer-to-peer journal article sharing, LibGen, and Sci-Hub are merely different symptoms of the same underlying problem, which is the current structure of the academic publishing system.

Sci-Hub is by no means the first, or even best, attempt at questioning and providing an alternative to the current system. Alternative models such as those championed by PLOS and eLIFE, better tackle the economic problems associated with subscription journals and are arguably more responsive to deeper concerns of academics, which include lengthy turnaround times and unsupportive editorial feedback.

For example, eLIFE, established in 2012 as an open access scientific journal, commits to make an initial decision on whether or not to publish a manuscript in a few days. This short turnaround time contrasts sharply with many of the so-called top journals, whose editorial decisions often drag for months (and sometimes years) and which often mean research becomes outdated by the time it is published. Moreover, under the eLIFE model, authors have additional publishing and editorial options, such as making their accepted manuscript openly available shortly after receiving a final decision, or being able to request a letter from a senior editor describing the significance of the article. These options are particularly useful for early-career academics and currently unavailable in other publications. Finally, the PLOS and eLIFE models have demonstrated their economic viability as an alternative to the traditional paywalling of journal articles. PLOS, founded in 2001 as an open access publishing project, requires authors to pay a fee per accepted article (between US\$1,495 and US\$2,900 depending on the publishing journal). Under this model, the company became financially self-sufficient in 2010, and by 2016 had already reported US\$25 million in assets.

The PLOS and eLife models are only two of the many possible alternatives to the current system, and it is clear that there is enough room for innovation. Sunil Rodger, doctoral student at Newcastle University, suggests that publishers could adopt the 'iTunes model', where access to journal articles could cost, for example, £0.99. In his view, given that the "cost of [managing and maintaining] e-journals is minimal; such a move would massively

increase the number of 'customers'", potentially giving greater and fairer access to academic knowledge, while still making publishing economically sustainable (and even profitable).

LibGen, and now Sci-Hub, as well as open access projects, alternative publishing models, and organised boycotts by academics on established publishers have all shown scholars' and librarians' discontent with the current publishing and knowledge dissemination system. Such initiatives have slowly but steadily revealed the weak foundations (and irrationality) supporting its existence and prevalence over other models. The illegality of Sci-Hub, however, defiantly stands out among these efforts, hence its prominence in the debate. The emergence and popularity of Sci-Hub have prompted us to think, discuss, and look for options beyond the obsolescent academic publishing system currently in place. But most importantly, it compels us to make a choice between supporting the 'unethical' and 'illegal' dissemination of knowledge, or contributing to the immoral (yet legal) commodification of knowledge.

Note: This article gives the views of the author, and not the position of the Impact of Social Sciences blog, nor of the London School of Economics. Please read our comments policy before posting.

## About the authors

**Iván Farías Pelcastre** is Academic Visitor at the North American Studies Programme, St Antony's College, at the University of Oxford. He conducts research on the policy interdependence and political integration between Canada, Mexico and the US resulting from the operation of the North American Free Trade Agreement, its side and parallel accords and their corresponding institutions. Iván can be followed on Twitter at @ifapel.

**Flor González Correa** is a Research Fellow in Public Policy at the School of Languages and Social Sciences at Aston University. She conducts research on public policymaking in the UK and the influence of regulatory bodies and corporate actors in current UK public health policy. Flor can be followed on Twitter at <a href="mailto:@florgcorrea">@florgcorrea</a>.

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