3-11-2019

Ten Myths around Open Scholarly Publishing

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Ten myths around open scholarly publishing

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Abstract

The changing world of scholarly communication and the emergence of ‘Open Science’ or ‘Open Research’ has brought to light a number of controversial and hotly-debated topics. Yet, evidence-based rational debate is regularly drowned out by misinformed or exaggerated rhetoric, which does not benefit the evolving system of scholarly communication. The aim of this article is to provide a baseline evidence framework for ten of the most contested topics, in order to help frame and move forward discussions, practices and policies. We address preprints and scooping, the practice of copyright transfer, the function of peer review, and the legitimacy of ‘global’ databases. The presented facts and data will be a powerful tool against misinformation

across wider academic research, policy and practice, and may be used to inform changes within the rapidly evolving scholarly publishing system.

Introduction

Scholarly publishing invokes various positions and passions. For example, authors may spend hours struggling with diverse article submission systems, often converting document formatting between a multitude of journal and conference styles, and sometimes spend months waiting for peer review results. The drawn-out and often contentious societal and technological transition to Open Access and Open Science/Open Research, particularly across North America and Europe (Latin America has already widely adopted 'Acceso Abierto' for more than 2 decades now; Alperin and Fischman 2015) has led many Open Science advocates and defenders of the status quo to adopt increasingly entrenched positions. Much debate ensues via social media, where echo chambers can breed dogmatic partisanship, and character limits leave little room for nuance. Against this backdrop, spurious, misinformed or even deceptive arguments are sometimes deployed, intentionally or not. With established positions and vested interests on all sides, misleading arguments circulate freely and can be difficult to counter successfully.

Furthermore, while Open Access to publications originally consisted of a grassroots movement born in scholarly circles and academic libraries, a new prescribing role in the area of (open) scholarly practices is increasingly played by policy-makers and research funders (Ross-Hellauer, Schmidt, and Kramer 2018; Vincent-Lamarre et al. 2016; Union 2019). This adds new stakeholders who introduce topics and arguments relating to career incentives, research evaluation and business models for publicly funded research. 'Plan S' and AmeliCA[1] (Open Knowledge for Latin America) seem to have catalysed a new wave of debate in scholarly communication, bringing old and new tensions to the surface (Johnson 2019). While such discussions are by no means new in this ecosystem, this highlights a potential knowledge gap regarding key components of scholarly communication and the need for better-informed debates.

Here, we address ten key aspects which are vigorously debated, but where a number of pervasive myths often derail, undercut, or distort discussions (**Figure 1**). We aim to develop a basic level of common understanding concerning core issues. This can be leveraged to advance discussions on the current state and best practices for academic publishing. We summarise the most up-to-date empirical research, where available, and providing critical commentary. 'Myths' were identified through a discussion on Twitter[2] and then distilled into the ten most prevalent by the authors of this article and presented in no particular order of importance. We, the authors, come at this from a range of backgrounds, as an international group with a variety of experiences in scholarly communication (e.g., publishing, policy, multiple

[1] AmeliCA.
[2] Original tweet that inspired this article.

research disciplines, editorial and peer review, technology), and are writing in our personal capacities.

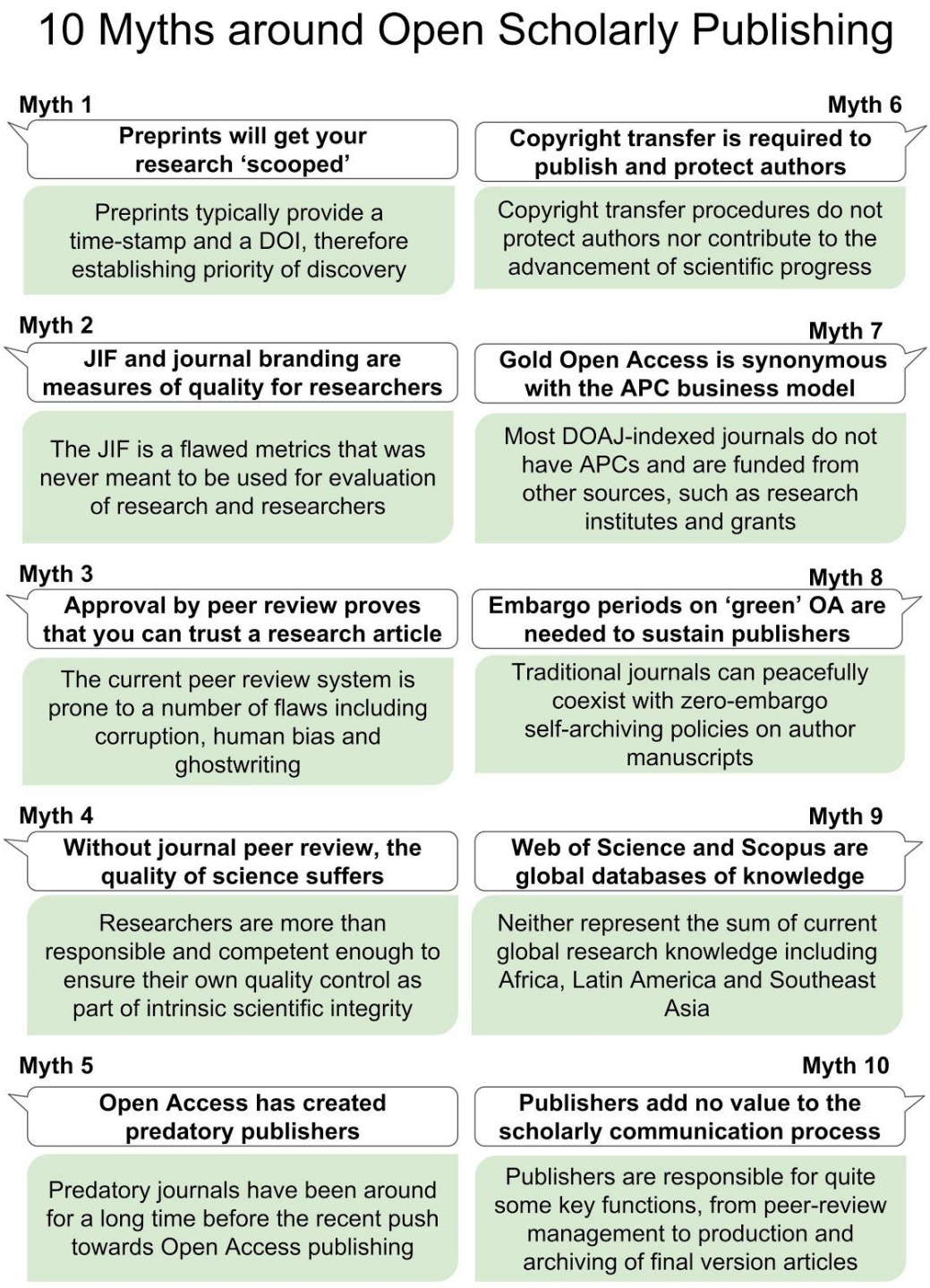


Figure 1: The ten myths discussed in this article.

Ten myths to address

Myth 1: Preprints will get your research ‘scooped’

A ‘preprint’ is typically a version of a research paper that is shared on an online platform prior to, or during, a formal peer review process (Ginsparg 2016; Tennant et al. 2018; Neylon et al. 2017). Preprint platforms have become popular due to the increasing drive towards open access publishing and can be publisher- or community-led. A range of discipline-specific or cross-domain platforms now exist (Balaji and Dhanamjaya 2019).

A persistent myth surrounding preprints is the concern that work may be at risk of being plagiarised or ‘scooped’ - meaning that the same or similar research will be published by others without proper attribution to the original source - if publically available but not yet associated with a stamp of approval from peer reviewers and traditional journals (Bourne et al. 2017). These concerns are often amplified as competition increases for academic jobs and funding, and perceived to be particularly problematic for early-career researchers and other higher-risk demographics within academia.

However, preprints in fact protect against scooping (Sarabipour et al. 2019). Considering the differences between traditional peer-review based publishing models and deposition of an article on a preprint server, ‘scooping’ is less likely for manuscripts first submitted as preprints. In a traditional publishing scenario, the time from manuscript submission to acceptance and to final publication can range from a few weeks to years, and go through several rounds of revision and resubmission before final publication (Powell 2016, see **Figure 2**). During this time, the same work will have been extensively discussed with external collaborators, presented at conferences, and been read by editors and reviewers in related areas of research. Yet, there is no official open record of that process (e.g., peer reviewers are normally anonymous, reports remain largely unpublished), and if an identical or very similar paper were to be published while the original was still under review, it would be impossible to establish provenance.

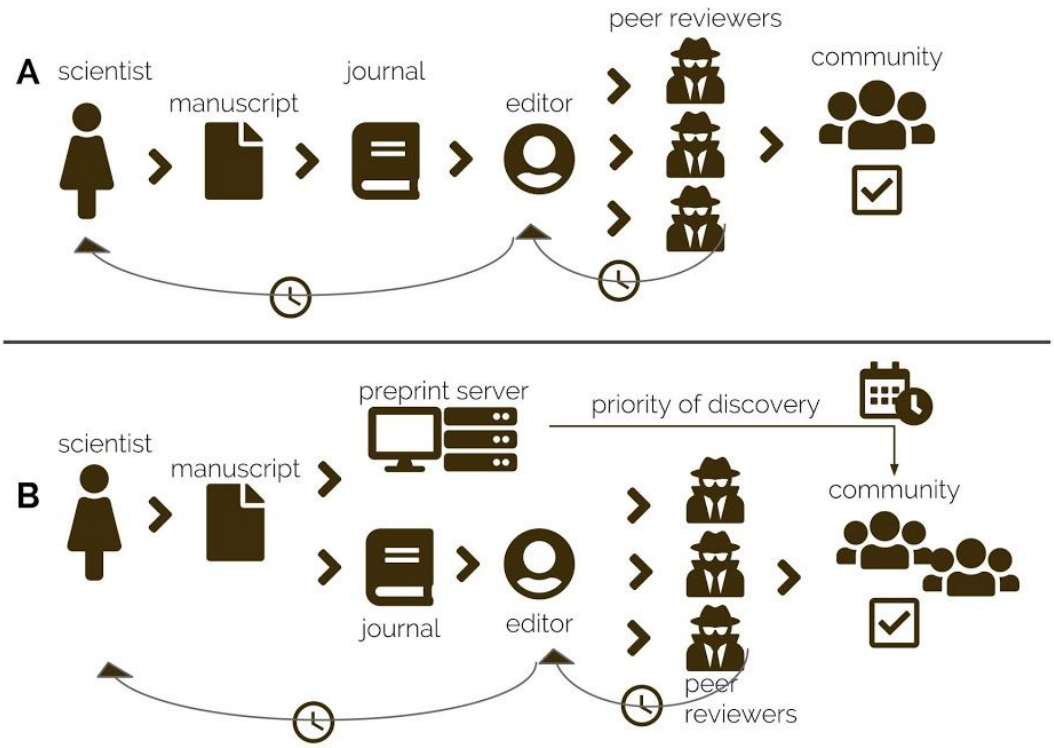


Figure 2: A. Traditional peer review publishing workflow. B. Preprint submission establishing priority of discovery.

Preprints provide a time-stamp at the time of publication, which helps to establish the "priority of discovery" for scientific claims (Vale and Hyman 2016, **Figure 2**). This means that a preprint can act as proof of provenance for research ideas, data, code, models, and results (Crick, Hall, and Ishtiaq 2017). The fact that the majority of preprints come with a form of permanent identifier, usually a Digital Object Identifier (DOI), also makes them easy to cite and track. Thus, if one were to be 'scooped' without adequate acknowledgement, this would be a case of academic misconduct and plagiarism, and could be pursued as such.

To the best of our knowledge, there is no evidence that 'scooping' of research via preprints exists, not even in communities that have broadly adopted the use of the arXiv server for sharing preprints since 1991. If the unlikely case of scooping emerges as the growth of the preprint system continues, it can be dealt with as academic malpractice. *ASAPbio* includes a series of hypothetical scooping scenarios as part of its preprint FAQ, finding that the overall benefits of using preprints vastly outweigh any potential issues around scooping[3]. Indeed, the benefits of preprints, especially for early-career researchers, seem to outweigh any perceived

[3] ASAPbio FAQ.

risk: rapid sharing of academic research, open access without author-facing charges, establishing priority of discoveries, receiving wider feedback in parallel with or before peer review, and facilitating wider collaborations (Sarabipour et al. 2019b).

Myth 2: Impact factor and journal branding are measures of quality for authors

The journal impact factor (JIF) was originally designed by Eugene Garfield as a metric to help librarians make decisions about which journals were worth subscribing to, as the JIF aggregates the number of citations to articles published in each journal. Since then, the JIF has become associated as a mark of journal 'quality', and gained widespread use for evaluation of research and researchers instead, even at the institutional level. It thus has significant impact on steering research practices and behaviours (Lariviere and Sugimoto 2018; Curry 2018).

However, this usage of the JIF metric is flawed: by the early 1990s it was already clear that the use of the arithmetic mean in its calculation is problematic because the pattern of citation distribution is skewed. **Figure 3** shows citation distributions for eight selected journals (data from Lariviere et al. 2016), along with their JIFs and the percentage of citable items below the JIF. The distributions are clearly skewed, making the arithmetic mean an inappropriate statistic to use to say anything about individual papers within the citation distributions. More informative and readily available article-level metrics can be used instead, such as citation counts or 'altmetrics', along with other qualitative and quantitative measures of research 'impact' (Hicks et al. 2015; Priem et al. 2010).

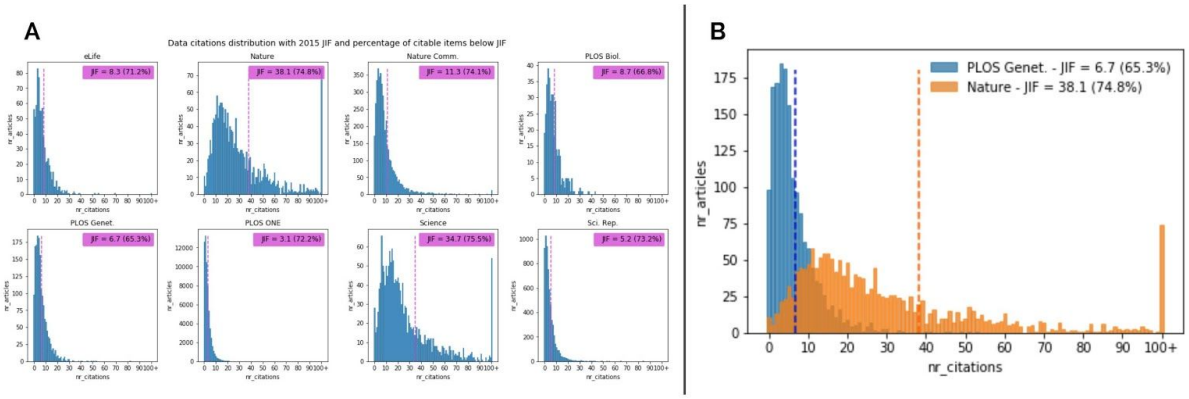


Figure 3: A. Data citations distribution for eight selected journals. Each plot reports the 2015 JIF and the percentage of citable items below the JIF (between parenthesis). Data from https://www.biorxiv.org/content/10.1101/062109v2 B. Detail of citations distributions for two selected journals: Plos Genetics and Nature. It is evident how a few highly cited articles push the 2015 JIF of Nature to 38.1.

Already about ten years ago, national and international research funding institutions have pointed out that numerical indicators such as the JIF should not be referred to as a measure of quality[4]. In fact, the JIF is a highly-manipulated metric (Falagas and Alexiou 2008; Tort, Targino, and Amaral 2012; Fong and Wilhite 2017), and the justification for its continued widespread use beyond its original narrow purpose seems due to its simplicity (easily calculable and comparable number), rather than any actual relationship to research quality (Adler, Ewing, and Taylor 2008; Brembs 2018; Lariviere and Gingras 2009).

Empirical evidence shows that the misuse of the JIF – and journal ranking metrics in general – has a number of negative consequences for the scholarly communication system. These include confusion between outreach of a journal and the quality of individual papers and insufficient coverage of social sciences and humanities as well as research outputs from across Latin America, Africa, and South-East Asia (Brembs, Button, and Munafò 2013). Additional drawbacks include the marginalization of research in vernacular languages and on locally relevant topics, inducement to unethical authorship and citation practices as well as more generally fostering of a reputation economy in academia based on publishers' prestige rather than actual research qualities such as rigorous methods, replicability and social impact. Using journal prestige and the JIF to cultivate a competition regime in academia has been shown to have deleterious effects on research quality (Vessuri, Guédon, and Cetto 2014).

Despite its inappropriateness, JIFs are still regularly used to evaluate research in many countries (Guédon 2008; Alperin et al. 2018) which creates a two-tier scoring system that automatically assigns a higher score (e.g. type A) to papers published in JIF or internationally indexed journals and a lower score (e.g. type B) to those published locally. Most recently, the organisation that formally calculates the JIF released a report outlining its questionable use[5]. In spite of this, a number of outstanding issues remain around the opacity of the metric and the fact that it is often negotiated by publishers (Rossner, Epps, and Hill 2007). However, these integrity problems appear to have done little to curb its widespread mis-use.

A number of regional focal points and initiatives are now providing and suggesting alternative research assessment systems, including key documents such as the Leiden Manifesto[6] and the

[4] "Quality not Quantity" – DFG Adopts Rules to Counter the Flood of Publications in Research. DFG Press Release No. 7 (2010)
[5] Profiles not metrics, Clarivate Analytics, January 2019.
[6] The Leiden Manifesto for Research Metrics, 2015.

San Francisco Declaration on Research Assessment (DORA)[7]. Recent developments around 'Plan S' call on a broader adoption and implementation of such initiatives alongside fundamental changes in the scholarly communication system[8]. Thus, there is little basis for the myth connecting JIFs with any measure of quality, and the ongoing inappropriate association of the two will continue to have deleterious effects. As appropriate measures of quality for authors and research, concepts of research excellence should be remodelled around transparent workflows and accessible research results (Moore et al. 2017; Owen, Macnaghten, and Stilgoe 2012; Hicks et al. 2015).

Myth 3: Approval by peer review proves that you can trust a research paper, its data and the reported conclusions

Researchers have peer reviewed manuscripts prior to publishing them in a variety of ways since the 18th century (Csiszar 2016; Moxham and Fyfe 2017). The main goal of this practice is to improve the relevance and accuracy of scientific discussions. Even though experts often criticize peer review for a number of reasons, the process is still often considered the "gold standard" of science (Moore 2006; Kumar 2009). Occasionally however, peer review approves studies that are later found to be wrong and rarely deceptive or fraudulent results are discovered prior to publication (Ferguson, Marcus, and Oransky 2014; Budd, Sievert, and Schultz 1998a). Thus, there seems to be an element of discord between the ideology behind and the practice of peer review. By failing to effectively communicate that peer review is imperfect, the message conveyed to the wider public is that studies published in peer-reviewed journals are "true" and that peer review protects the literature from flawed science. A number of well-established criticisms exist of many elements of peer review (Smith 2006; Ross-Hellauer 2017; Tennant et al. 2017). In the following we describe cases of the wider impact inappropriate peer review can have on public understanding of scientific literature.

Multiple examples across several areas of science find that scientists elevated the importance of peer review for research that was questionable or corrupted. For example, climate change skeptics have published studies in the *Energy and Environment* journal, attempting to undermine the body of research that shows how human activity impacts the Earth's climate. Politicians in the United States downplaying the science of climate change have then cited this journal on several occasions in speeches and reports[9].

At times, peer review has been exposed as a process that was orchestrated for a preconceived outcome. *The New York Times* gained access to confidential peer review documents for studies sponsored by the *National Football Leagues* (NFL) that were cited as scientific evidence that brain injuries do not cause long-term harm to its players[10]. During the peer review process, the

[7] San Francisco Declaration on Research Assessment (DORA) 2012.
[8] Plan S implementation guidelines, February 2019.
[9] Skeptics get a journal, Paul Thacker, 2005.
[10] N.F.L.'s Flawed Concussion Research and Ties to Tobacco Industry.

authors of the study stated that all NFL players were part of a study, a claim that the reporters found to be false by examining the database used for the research. Furthermore, *The Times* noted that the NFL sought to legitimize the studies' methods and conclusion by citing a "rigorous, confidential peer-review process" despite evidence that some peer reviewers seemed "desperate" to stop their publication. Recent research has also demonstrated that widespread industry funding for published medical research often goes undeclared and that such conflicts of interest are not appropriately addressed by peer review (Wong, Avalos, and Callaham 2019; Weiss and Davis 2019).

Another problem that peer review fails to catch is ghostwriting, a process by which companies draft articles for academics who then publish them in journals, sometimes with little or no changes (Flaherty 2013). These studies can then be used for political, regulatory and marketing purposes. In 2010, the US Senate Finance Committee released a report that found this practice was widespread, that it corrupted the scientific literature and increased prescription rates[11]. Ghostwritten articles have appeared in dozens of journals, involving professors at several universities[12]. Recent court documents have found that Monsanto ghost-wrote articles to counter government assessment of the carcinogenicity of the pesticide glyphosate and to attack the International Agency for Research on Cancer[13].

Just as experts in a particular field have a better understanding of the value of papers published in their area, scientists have a better grasp of the value of published papers than the general public. They understand that peer review is a human process, with human failings, and that "despite its limitations, we need it. It is all we have, and it is hard to imagine how we would get along without it" (Relman 1990). But these subtleties are lost on the general public, who often only hear the myth that published in a journal with peer review is the "gold standard" and can erroneously equate published research with the truth. Thus, more care must be taken over how peer review, and the results of peer reviewed research, are communicated to non-specialist audiences; particularly during a time in which a range of technical changes and a deeper appreciation of the complexities of peer review are emerging (Bravo et al. 2019; Tennant 2018; Squazzoni, Grimaldo, and Marušić 2017; Allen et al. 2018). This will be needed as the scholarly publishing system has to confront wider issues such as retractions (Budd, Sievert, and Schultz 1998b; Fang and Casadevall 2011; Moylan and Kowalczuk 2016) and replication or reproducibility 'crisis' (Collaboration 2015; Munafò et al. 2017a; Fanelli 2018).

Myth 4: Without journal-imposed peer review, the quality of science and the scientific literature suffers

Peer review, without a doubt, is integral to scientific discourse in one form or another. It's gatekeeping role is necessary to maintain the quality of the scientific literature (Goodman 1994;

[11] Ghostwriting in medical literature.
[12] Frequently asked questions about medical ghostwriting.
[13] Expert report of Dr. Charles Benbrook.

Pierson 2018). Without the filter provided by peer review, the literature is at risk of becoming a dumping ground for unreliable results, researchers won't be able to separate signal from noise, and scientific progress will slow (Caputo 2018; Siler, Lee, and Bero 2015). Or so the myth goes.

There is now a pressing need to restore peer review to its proper place in the scholarly pursuit. A possible reaction to this is to think that shortcomings of peer review can be overcome with even stronger filtering and more gatekeeping. A common argument in favor of such initiatives is the belief that this filter is needed to maintain the integrity of the scientific literature (Resnik and Elmore 2016; Bornmann 2011).

Calls for more oversight have at least two implications that are counterintuitive of what we know to be true scholarship.

1. The belief that scholars are incapable of evaluating the quality of work on their own, that they are in need of a gatekeeper to inform them of what is good and what is not.
2. The belief that scholars need a 'guardian' to make sure they are doing good work.

If anyone has a vested interest in the quality of a particular piece of work, it surely are the authors. Only the authors could have, as Feynman (1974)[14] puts it, the "extra type of integrity that is beyond not lying, but bending over backwards to show how you're maybe wrong, that you ought to have when acting as a scientist." If anything, the current peer review process and academic system penalizes, or at least fails to incentivize, such integrity.

Instead, the credibility conferred by the "peer-reviewed" label diminishes what Feynman calls the *culture of doubt* necessary for science to operate a self-correcting, truth-seeking process (Richard Feynman 1974). The troubling effects of this can be seen in the ongoing replication crisis, hoaxes, and widespread outrage over the inefficacy of the current system (Smith 2006; Csiszar 2016). It's common to think that more oversight is the answer, as peer reviewers are not at all lacking in skepticism. But the issue is not the skepticism shared by the select few who determine whether an article passes through the filter. It is the validation, and accompanying lack of skepticism, that comes afterwards[15]. Here again more oversight only adds to the impression that peer review ensures quality, thereby further diminishing the culture of doubt and counteracting the spirit of scientific inquiry[16].

Quality research - even some of our most fundamental scientific discoveries - dates back centuries, long before peer review took its current form (Csiszar 2016; Fyfe et al. 2017; Moxham and Fyfe 2017). Whatever peer review existed centuries ago, it took a different form than it does now, without the influence of large, commercial publishing companies or a pervasive culture of publish-or-perish (Fyfe et al. 2017). Though in its initial conception it was often a laborious and

[14] Cargo cult science, Richard Feynman.
[15] Peer Review: The Worst Way to Judge Research, Except for All the Others, Aaron E. Carroll, New York Times.
[16] Bucking the Big Bang, Eric Lerner, New Scientist.

time-consuming task, researchers took peer review on nonetheless, not out of obligation but out of duty to uphold the integrity of their own scholarship. They managed to do so, for the most part, without the aid of centralised journals, editors, or any formalised or institutionalised process whatsoever. Modern technology, which makes it possible to communicate instantaneously with scholars around the globe, only makes such scholarly exchanges easier, and presents an opportunity to restore peer review to its purer scholarly form, as a discourse in which researchers engage with one another to better clarify, understand, and communicate their insights (Tennant 2018; Priem and Hemminger 2012).

A number of measures can be taken towards this objective, including posting results to preprint servers, preregistration of studies, open peer review, and other open science practices (Munafò et al. 2017b; Bowman and Keene 2018; McKiernan et al. 2016). In all these initiatives, however, the role of gatekeeping remains prominent, as if a necessary feature of all scholarly communication. The discussion in this section suggests otherwise, but such a "myth" cannot be fully disproven without a proper, real-world implementation to test it. All of the new and ongoing developments around peer review (Tennant et al. 2017) demonstrate researchers' desire for more that traditional journals can offer. They also show that researchers can be entrusted to perform their own quality control independent of journal-coupled review. After all, the outcry over the inefficiencies of traditional journals centers on their inability to provide rigorous enough scrutiny, and the outsourcing of critical thinking to a concealed and poorly-understood process. Thus, the myth that journals and peer review are required to protect scientific integrity seems to undermine the very foundations of scholarly inquiry.

To test the hypothesis that filtering is indeed unnecessary to quality control, many of the traditional publication practices must be redesigned, editorial boards must be repurposed if not disbanded, and authors must be granted control over the peer review of their own work. Putting authors in charge of their own peer review serves a dual purpose. On one hand, it removes the conferral of quality within the traditional system, thus eliminating the prestige associated with the simple act of publishing. Perhaps paradoxically, the removal of this barrier might actually result in an increase of the quality of published work, as it eliminates the cachet of publishing for its own sake. On the other hand, readers know that there is no filter so they must interpret anything they read with a healthy dose of skepticism, thereby naturally restoring the culture of doubt to scientific practice (Crane and Martin 2018a; Brembs 2019; Stern and O'Shea 2019).

In addition to concerns about the quality of work produced by well-meaning researchers, there are concerns that a truly open system would allow the literature to be populated with junk and propaganda by those with a vested interest in certain issues. Though a full analysis of this issue is beyond the scope of this section, we once again emphasize how the conventional model of peer review diminishes the healthy skepticism that is a hallmark of scientific inquiry, and thus confers credibility upon subversive attempts to infiltrate the literature. As we have argued elsewhere, there is reason to believe that allowing such "junk" to be published makes individual articles less reliable but renders the overall literature more robust by fostering a "culture of doubt" (Crane and Martin 2018a).

Few initiatives at present have taken the steps necessary to dispel and properly test the myth highlighted in this section; one among them is *Researchers.One*, a non-profit peer review publication platform featuring a novel author-driven peer review process (Crane and Martin 2018b). Other similar examples include the Self-Journal of Science, PRElights, and The Winnower, which do not yet seem to have greatly disrupted the traditional peer review workflow. While it may be too early in our test to conclude that the myth in this section's title is busted, both the logic and the empirical evidence point in that direction. An important take-away message here, and the key to peer review reform moving forward, is one of optimism; researchers are more than responsible and competent enough to ensure their own quality control; they just need the means and the authority to do so.

Myth 5: Open Access has created predatory publishers, and is universally lower quality with lower standards of peer review

Predatory publishing does not refer to a homogenous category of practices. The name itself coined by American librarian Jeffrey Beall who created a list of “deceptive and fraudulent” Open Access (OA) publishers which was used as reference until withdrawn in 2017. The term has been reused since for a new for-profit database by Cabell’s International (Silver 2017). On the one hand, Beall’s list as well as Cabell’s International database do include truly fraudulent and deceptive OA publishers, that pretend to provide services (in particular quality peer review) which they do not implement, show fictive editorial boards and/or ISSN numbers, use dubious marketing and spamming techniques or even hijacking known titles (Djuric 2015). On the other hand, they also list journals with subpar standards of peer review and linguistic correction (Strinzel et al. 2019). The number of predatory journals thus defined has grown exponentially since 2010, (Shen and Björk 2015; Perlin, Imasato, and Borenstein 2018). The demonstration of existing unethical practices in the OA publishing industry also attracted considerable media attention (Bohannon 2013).

Nevertheless, papers published by predatory publishers still represent only a small proportion of all published papers in OA journals. Most OA publishers ensure their quality by registering their titles in the DOAJ (Directory of Open Access Journals) and comply to a standardised set of conditions[17]. A recent study has shown that Beall’s criteria of “predatory” publishing were in no way limited to OA publishers and that, applying them to both OA and non-OA journals in the field of Library and Information Science, even top tier non-OA journals could be qualified as predatory (Olivarez et al. 2018; see also Shamseer et al. 2017 on difficulties of demarcating predatory and non-predatory journals in Biomedicine). If a causative connection is to be made in this regard, it is thus not between predatory practices and OA. Instead it is between predatory publishing and the unethical use of one of the many OA business models adopted by a *minority* of DOAJ registered journals. This is the author-facing article-processing charge (APC) business

[17] An Introduction to DOAJ and Publishing Best Practice.

model in which authors are charged to publish rather than to read (Eve 2015) (see also Section 7). Such a model may indeed provide conflicting incentives to publish quantity rather than quality, in particular once combined with the often unlimited text space available online. APCs have gained increasing popularity in the last two decades as a business model for OA due to the guaranteed revenue streams they offer, as well as a lack of competitive pricing within the OA market which allows vendors full control over how much they choose to charge (Björk and Solomon 2014). However, in subscription-based systems there can be an incentive to publish more papers and use this as a justification for raising subscription prices - as is demonstrated by Elsevier's statement on 'double-dipping'[18]. Ultimately, quality control is not related to the number of papers published, but to editorial policies and standards and their enforcement. In this regard, it is also important to note the emergence of journals and platforms that select purely on (peer-reviewed) methodological quality, often enabled by the APC-model and the lack of space restrictions in online publishing. In this way, OA also allows more high-quality papers to be published.

The majority of predatory OA publishers and authors publishing in these appear to be based in Asia and Africa, as well as Europe and the Americas (Oermann et al. 2016, 2018; Moher et al. 2017). It has been argued that authors who publish in predatory journals may do so unwittingly without actual unethical perspective, due to concerns that North American and European journals might be prejudiced against scholars from non-western countries, high publication pressure or lack of research proficiency (Kurt 2018; Frandsen 2019). Hence predatory publishing also questions the geopolitical and commercial context of scholarly knowledge production. Nigerian researchers, for example, publish in predatory journals due to the pressure to publish internationally while having little to no access to Western international journals, or due to the often higher APCs practiced by mainstream OA journals (Omobowale et al. 2014). More generally, the criteria adopted by high JIF journals, including the quality of the English language, the composition of the editorial board or the rigour of the peer review process itself tend to favour familiar content from the "centre" rather than the "periphery" (Bell 2017). It is thus important to distinguish between exploitative publishers and journals – whether OA or not – and legitimate OA initiatives with varying standards in digital publishing, but which may improve and disseminate epistemic contents (Nwagwu 2016; Nobes 2017). In Latin America a highly successful system of free of charge OA publishing has been in place for more than two decades, thanks to organisations such as SciELO and REDALYC[19].

Published and OA review reports are one of a few simple solutions to allow any reader or potential author to directly assess both quality and efficiency of the review system of any given journal, and the value for money of the requested APCs; thus whether or not a journal operates 'deceptive' or predatory practices (Ross-Hellauer 2017; Polka et al. 2018). Associating OA with predatory publishing is therefore deceptive. The real issue with predatory publishing lies a

[18] Pricing, Elsevier.
[19] Open Access in Latin America: Embraced as key to visibility of research outputs, SPARC.

particular business practice, and can largely be resolved with more transparency in the peer review and publication process.

Myth 6: Copyright transfer is required to publish and protect authors

Traditional methods of scholarly publishing require complete and exclusive copyright transfer from authors to the publisher, typically as a precondition for publication (Matushek 2017; Bachrach et al. 1998; Gadd, Oppenheim, and Probets 2003b; Willinsky 2002; Carroll 2011). This process transfers control and ownership over dissemination and reproduction from authors as creators to publishers as disseminators, with the latter then able to monetise the process (Fyfe et al. 2017). The transfer and ownership of copyright represents a delicate tension between protecting the rights of authors, and the interests – financial as well as reputational – of publishers and institutes (Fyfe, McDougall-Waters, and Moxham 2018). With OA publishing, typically authors retain copyright to their work, and articles and other outputs are granted a variety of licenses depending on the type.

The timing of the process of rights transfer is in itself problematic for several reasons. Firstly, copyright transfer usually being conditional for publication means that it is rarely freely transferred or acquired without pressure (Gadd, Oppenheim, and Probets 2003a). Secondly, it becomes very difficult for an author to not sign a copyright transfer agreement, due to the association of publication with career progression (publish or perish/publication pressure), and the time potentially wasted should the review and publication process have to be started afresh. There are power dynamics at play that do not benefit authors, and instead often compromise certain academic freedoms (Davies 2015). This might in part explain why authors in scientific research, in contrast to all other industries where original creators get honoraria or royalties, typically do not receive any payments from publishers at all. It also explains why many authors seem to continue to sign away their rights while simultaneously disagreeing with the rationale behind doing so (Dodds 2018).

It remains unclear if such copyright transfer is generally permissible. Research funders or institutes, public museums or art galleries might have over-ruling policies that state that copyright over research, content, intellectual property, employs or funds is not allowed to be transferred to third parties, commercial or otherwise. Usually a single author is signing on behalf of all authors, perhaps without their awareness or permission (Gadd, Oppenheim, and Probets 2003a). The full understanding of copyright transfer agreements requires a firm grasp of ‘legal speak’ and copyright law, in an increasingly complex licensing and copyright landscape[20],[21], and for which a steep learning curve for librarians and researchers exists (Morrison and Secker 2015; Dawson and Yang 2016). Thus, in many cases, authors might not even have the legal

[20] Seven Things Every Scholarly Publisher Should Know about Researchers, Alice Meadows and Karin Wulf, The Scholarly Kitchen. (2016)
[21] Guest Post — Academics and Copyright Ownership: Ignorant, Confused or Misled?, Elizabeth Gadd, The Scholarly Kitchen. (2017)

rights to transfer full rights to publishers, or agreements have been amended to make full texts available on repositories or archives, regardless of the subsequent publishing contract (Suber 2007).

This amounts to a fundamental discord between the purpose of copyright (i.e., to grant full choice to an author/creator over dissemination of works) and the application of it, because authors lose these rights during copyright transfer. Such fundamental conceptual violations are emphasised by the popular use of sites such as ResearchGate and Sci-Hub for illicit file sharing by academics and the wider public (Björk 2017a; Chawla 2017; Jamali 2017; Lawson 2017; Laakso and Polonioli 2018). Factually, widespread, unrestricted sharing helps to advance science faster than paywalled articles, thus it can be argued that copyright transfer does a fundamental disservice to the entire research enterprise (Biasi and Moser 2018). It is also highly counter-intuitive when learned societies such as the American Psychological Association actively monitor and remove copyrighted content they publish on behalf of authors[22], as this is clearly not in the best interests of either authors or the reusability of published research. The fact that authors sharing their own work becomes copyright infringement and the possible threat of legal action show how counterproductive the system of copyright transfer has become (i.e., original creators lose all control over, and rights to, their own works).

Some commercial publishers, such as Elsevier, engage in 'nominal copyright' where they require full and exclusive rights transfer from authors to the publisher for OA articles, while the copyright in name stays with the authors (Morrison 2017). The assumption that this practice is a condition for publication is misleading, since even works that are in the public domain can be repurposed, printed, and disseminated by publishers. Authors can instead grant a simple non-exclusive license to publish that fulfils the same criteria. However, according to a survey from Taylor and Francis in 2013, almost half of researchers surveyed answered that they would still be content with copyright transfer for OA articles (Frass, Cross, and Gardner 2013).

Therefore, not only does it appear that in scientific research, copyright is largely ineffective in its proposed use, but also wrongfully acquired in many cases, and goes practically against its fundamental intended purpose of helping to protect authors and further scientific research. Plan S requires that authors and their respective institutes retain copyright to articles without transferring them to publishers; something also supported by OA2020[23]. Thus, we are unaware of a single reason that supports the myth that copyright transfer is required for publication, or indeed a single case where a publisher has exercised copyright in the best interest of the authors. While one argument of publishers in favor of copyright transfer might be that it enables them to defend authors against any copyright infringements[24], publishers can take on this responsibility even when copyright stays with the author, as is the policy of the Royal Society[25].

[22] Monitoring of Unauthorized Internet Posting of Journal Articles, American Psychological Association.
[23] Final conference statement, Berlin 14th Open Access conference.
[24] Elsevier, Copyright: Protecting author rights.
[25] Royal Society License to Publish.

Myth 7: Gold Open Access has to cost a lot of money for authors and is synonymous with the APC business model

Too often OA gets conflated with just one route to achieving it: the author-facing APC business model , whereby authors (or institutions or research funders, on their behalf) pay an APC to cover publishing costs s (Tickell 2018). Yet, there are a number of routes to OA. These are usually identified by ‘gold’, ‘bronze’, ‘green’, or ‘diamond’; the latter two explicitly having no APCs. Green OA refers to author self-archiving of a near-final version of their work (usually the accepted manuscript or ‘postprint’) on a personal website or general-purpose repository.he latter is preferable due to better long-term preservation. Diamond OA refers to availability on the journal website without payment of any APCs, while Gold OA often requires payment of additional APCs for immediate access upon publication (i.e., all APC-based OA is gold OA, but not all Gold OA is APC-based). Bronze OA refers to articles made free-to-read on the publisher website, but without any explicit open license (Piwowar et al. 2018).

Data from the DOAJ indicates that, of the approximately 11,000 journals it indexes, 71% do not have an APC[26] (i.e., are diamond OA), which means they are funded from a range of other sources, such as institutional grants. Accessing the DOAJ metadata[27] on the 10th of March 2019, yields to a bit more than 74% of journals indexed in the DOAJ having no APCs (total journals indexed 12,770; **Figure 4**). While many of these journals are smaller and more local-regional in scale, and their ‘free to publish’ aspects can be conditional on institutional affiliation[28], these data show that the APC model is far from hegemonic in the way it is often taken to be. For example, most APC-free journals in Latin America are funded by higher education institutions and are not conditional on institutional affiliation for publication.

[26] DOAJ APC information as of Jan 31, 2018, Heather Morrison.
[27] https://doaj.org/faq#metadata
[28] A Reality Check on Author Access to Open Access Publishing, Hilda Bastian.

has APCs	pctg journals	nr journals
No	73.29%	9359
Yes	26.26%	3353
No Information	0.45%	58

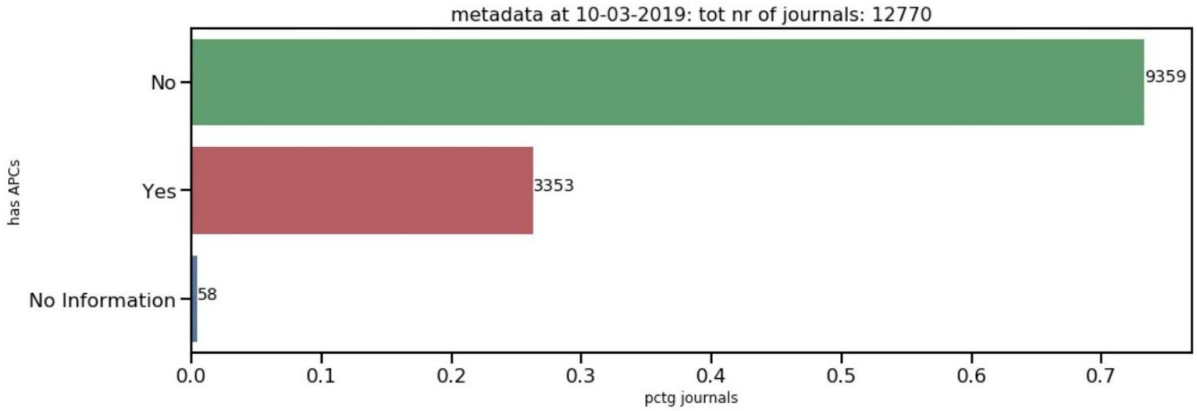
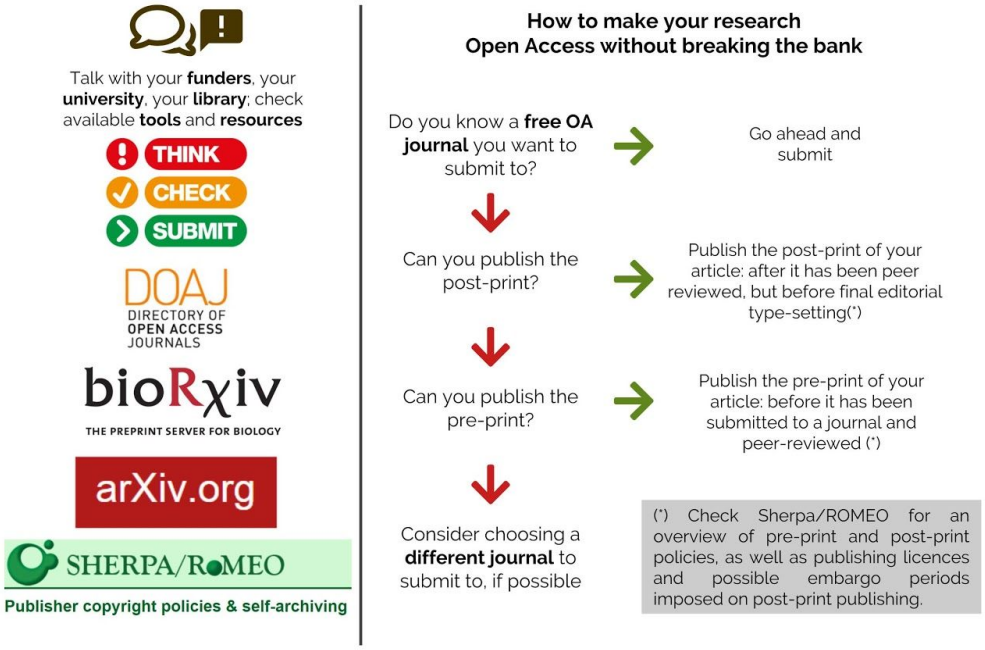


Figure 4: Proportion of journals indexed in the DOAJ that charge or do not charge APCs. For a small portion, the information is not available.

However, many of the larger publishers do leverage very high APCs for OA (e.g., *Nature Communications* published by Springer Nature costs USD $5,200 per article before VAT[29]). As such, there is a further potential issue that the high and unsustainable growth in the cost of subscription prices will be translated into ever increasing APCs (Björk 2017b; Pinfield, Salter, and Bath 2015). This would ultimately result into a new set of obstacles to authors, which already systematically discriminate against those with lesser financial privilege, irrespective of what proposed countermeasures are in place (Green 2019). Therefore, the current implementation of APC-driven OA is distinct from the original intentions of OA, creating a new barrier for authors, and leading to an OA system where 'the rich get richer'. What remains unclear is how these APCs reflect the true cost of publication and are related to the value added by the publisher. It has been argued that publishers to some extent take the quality – as indicated by citation rates per paper – into account when pricing APCs (Björk and Solomon 2015), but the available evidence also suggests that some publishers scale their APCs based on a number of external factors such as the JIF or certain research disciplines (Lawson 2014; Björk and Solomon 2014; Schönfelder 2018). It is known that 'hybrid OA' (where specific articles in subscription journals are made OA for a fee) generally costs more than 'gold OA' and can offer a lower quality of service[30].

[29] Article processing charges, Nature Communications.
[30] Wellcome Trust and COAF Open Access Spend, 2014-15.

The current average expenditure via subscriptions for a single research article is estimated to be around USD $3,500–$4,000 (based on total amount spent divided by total number published), but production costs are highly variable by publisher (Schimmer, Geschuhn, and Vogler 2015). Some journals, such as the *Journal of Machine Learning Research* which costs between $6.50–$10 per article[31], demonstrate that the cost of publication can be highly more efficient than what is often spent. Usually, the costs of publishing and the factors contributing to APCs are completely concealed. The publishers *eLife* and *Ubiquity Press* are transparent about their direct and indirect costs; the latter levies an APC of $500[32]. Depending on the funding available to authors, however, which is also contingent on factors such as institute, discipline, or country, even APCs on the lower end of the spectrum could still be unaffordable. This is why 'green' and 'diamond' OA help to level the playing field, and encourage more equitable forms of OA publishing, as we highlight in schematic of **Figure 5**. These more balanced, achievable and equitable forms of OA are becoming more and more relevant, especially when synchronised to changes in the incentive and reward system that challenge the current journal-based 'prestige economy' (Blackmore and Kandiko 2011). Not only is there already more than enough money 'within the system' to enable a full and immediate transition to OA (Schimmer, Geschuhn, and Vogler 2015), but there is an enormous potential to do so in a cost-effective manner that promotes more equitable participation in publication.



[31] An efficient journal, Stuart Shieber.
[32] Publishing with Ubiquity Press.

Figure 5: Some steps allowing free Open Access publishing for authors. Inspired by https://figshare.com/collections/How_to_make_your_work_100_Open_Access_for_free_and_legally_multi-lingual_/3943972.

Myth 8: Embargo periods on 'green' OA are needed to sustain publishers

As mentioned in the previous section, the 'green' route to OA refers to author self-archiving, in which a version of the article (often the peer-reviewed version before editorial typesetting, called 'postprint'') is posted online to an institutional and/or subject repository. This route is often dependent on journal or publisher policies[33], which can be more restrictive and complicated than respective 'gold' policies regarding deposit location, license, and embargo requirements. Some publishers require an embargo period before deposition in public repositories (Gadd and Troll Covey 2019), arguing that immediate self-archiving risks loss of subscription income.

Currently used embargo times (often 6-12 months in STEM and > 12 months in social sciences and humanities), however, do not seem to be based on empirical evidence on the effect of embargoes on journal subscriptions. In 2013 the UK House of Commons Select Committee on Business, Innovation and Skills already concluded that "there is no available evidence base to indicate that short or even zero embargoes cause cancellation of subscriptions"[34].
There are some data available[35] on the median 'usage half life' (the median time it takes for scholarly articles to reach half of their total downloads) and the difference therein across disciplines, but this in itself does not prove that embargo length will affect subscriptions[36].

The argument that immediate self-archiving risks subscription revenue does reveal an implicit irony especially where archiving of postprints is concerned. If the value publishers add to the publication process beyond peer review (e.g. in typesetting, dissemination and archiving) were worth the price asked, people would still be willing to pay for the journal even if the unformatted postprint is available elsewhere. An embargo is a statement that in fact the prices levied for individual articles through subscriptions, are not commensurate to the value added to a publication beyond organizing the peer review process.

Publishers have, in the past, lifted embargo periods for specific research topics in times of humanitarian crises, or have been asked to do so (e.g. outbreaks of Zika and Ebola[37]). While commendable in itself, this also serves as an implicit acknowledgement that embargoes stifle the progress of science and the potential application of scientific research; particularly when it comes to life-threatening pandemics. While arguably, not all research is potentially critical for

[33] SHERPA/RoMEO database.
[34] Open Access, Fifth Report of Session 2013–14, House of Commons Business, Innovation and Skills Committee, September 2013.
[35] Journal Usage Half-Life, Phil Davis, 2013.
[36] Half-life is half the story, Danny Kingsley, 2015.
[37] Global scientific community commits to sharing data on Zika, Wellcome Trust.

saving lives, it is hard to imagine a discipline where fellow researchers and societal partners would not benefit from un-embargoed access to research findings.

Evidence suggests that traditional journals can peacefully coexist with zero-embargo self-archiving policies (Berners-Lee et al. 2005; Swan and Brown 2005; Henneken et al. 2006; Houghton and Oppenheim 2010; Bernius et al. 2013), and the relative benefits to both publishers and authors via increased dissemination and citations outweigh any putative negative impacts. For publishers, the fact that that most preprint repositories encourage authors to link to or upload the published version of record (VOR) is effectively free marketing for the respective journal and publisher.

'Plan S' has zero-length embargoes on self-archiving as one of its key principles. Where publishers have already implemented such policies, such as the *Royal Society*, *Sage*, and *Emerald*[38], there has been no documented impact on their finances so far. In a reaction to Plan S, *Highwire* suggested that three of their society publishers make all author manuscripts freely available upon submission and state that they do not believe this practice has contributed to subscription decline[39]. Therefore there is little evidence or justification supporting the myth of the need for embargo periods.

Myth 9: Web of Science and Scopus are global databases of knowledge

Clarivate Analytics' *Web of Science* (WoS) and Elsevier's *Scopus* databases are synonymous with data on international research, and considered as the two most trusted or authoritative sources of bibliometric data for peer-reviewed global research knowledge across disciplines (Mongeon and Paul-Hus 2016; Archambault et al. 2009; Falagas et al. 2008; Alonso et al. 2009; Harzing and Alakangas 2016; Ràfols et al. 2016; Chadegani et al. 2013). They are both also used widely for the purposes of researcher evaluation and promotion, institutional impact (for example the role of WoS in the UK Research Excellence Framework 2021[40]), and international league tables (Bibliographic data from Scopus represents more than 36% of assessment criteria in the THE rankings[41]). But while these databases are generally agreed to contain rigorously-assessed, high quality research, they do not represent the sum of current global research knowledge.

It is often mentioned in popular science articles that the research outputs of researchers in South America, Asia, and Africa is disappointingly low. Sub-Saharan Africa is often singled out and chastised for having "13.5% of the global population but less than 1% of global research

[38] Zero embargo publishers, database maintained by Stuart Taylor.
[39] Plan S: The options publishers are considering, Highwire Press.
[40] Clarivate Analytics will provide citation data during REF2021.
[41] World University Rankings 2019: Methodology, Times Higher Education.

output"[42]. This oft-quoted factoid is based on data from a World Bank/Elsevier report from 2012 which relies on data from Scopus[43]. Research outputs in this context refers to papers specifically published in peer-reviewed journals that are indexed in Scopus. Similarly, many others have analysed 'global' or international collaborations and mobility using the even more selective WoS database (Ribeiro et al. 2018; Chinchilla-Rodríguez et al. 2018; Boshoff and Akanmu 2017). Research outputs in this context refers to papers specifically published in peer-reviewed journals that are indexed either in Scopus or WoS.

Both WoS and Scopus are highly selective. Both are commercial enterprises, whose standards and assessment criteria are mostly controlled by panels of gatekeepers in North America and Western Europe. The same is true for more comprehensive databases such as Ulrich's Web which lists as many as 70,000 journals (Wang, Hu, and Liu 2017), while Scopus has fewer than 50% of these, and WoS has fewer than 25% (Mongeon and Paul-Hus 2016). While Scopus is larger and geographically broader than WoS, it still only covers a fraction of journal publishing outside North America and Europe. For example, it reports a coverage of over 2,000 journals in Asia ("230% more than the nearest competitor")[44], which may seem impressive until you consider that in Indonesia alone there are more than 7,000 journals listed on the government's Garuda portal[45] (of which more than 1,300 are currently listed on DOAJ)[46]; whilst at least 2,500 Japanese journals listed on the J-Stage platform[47]. Similarly, Scopus claims to have about 700 journals listed from Latin America, in comparison with SciELO's 1,285 active journal count[48]; but that's just the tip of the iceberg judging by the 1,300+ DOAJ-listed journals in Brazil alone[49]. Furthermore, the editorial boards of the journals contained in Wos and Scopus databases are integrated by researchers from western Europe and North America. For example, in the journal *Human Geography*, 41% of editorial board members are from the United States, and 37.8% from the UK (Gutiérrez and López-Nieva 2001). Similarly, Wooliscroft and Rosenstreich (2006) studied ten leading marketing journals in WoS and Scopus databases, and concluded that 85.3% of their editorial board members are based in the United States. It comes as no surprise that the research that gets published in these journals is the one that fits the editorial boards' world view (Wooliscroft and Rosenstreich 2006).

Comparison with subject-specific indexes has further revealed the geographical and 'topic bias – for example Ciarli, Rafols, and Llopis 2014 found that by comparing the coverage of rice research in CAB Abstracts (an agriculture and global health database) with WoS and Scopus, the latter "may strongly under-represent the scientific production by developing countries, and over-represent that by industrialised countries", and this is likely to apply to other fields of

[42] Africa produces just 1.1% of global scientific knowledge - but change is coming.
[43] A decade of development in sub-Saharan African science, technology, engineering, and Mathematics research.
[44] Scopus content coverage guide, 2017.
[45] Garuda portal.
[46] DOAJ journals from Indonesia.
[47] J-STAGE portal.
[48] SciELO portal.
[49] DOAJ journals from Brazil.

agriculture. This under-representation of applied research in Africa, Asia, and South America may have an additional negative effect on framing research strategies and policy development in these countries (Rafols, Ciarli, and Chavarro 2015). The overpromotion of these databases diminishes the important role of 'local' and 'regional' journals for researchers who want to publish and read locally-relevant content. Some researchers deliberately bypass 'high impact' journals when they want to publish locally useful or important research in favour of outlets that will reach their key audience quicker, and in other cases to be able to publish in their native language (Chavarro, Tang, and Rafols 2014; Ssentongo and Draru 2017; Alperin et al. 2017).

Furthermore, the odds are stacked against researchers for whom English is a foreign language. 95% of WoS journals are English (Paasi 2015). Tietze and Dick (2013) consider the use of English language a hegemonic and unreflective linguistic practice. The consequences include that non-native speakers spend part of their budget on translation and correction and invest a significant amount of time and effort on subsequent corrections, making publishing in English a burden (Aalbers 2004; Hwang 2005). A far-reaching consequence of the use of English as the *lingua franca* of science is in knowledge production, because its use benefits "worldviews, social, cultural, and political interests of the English-speaking center" (Tietze and Dick 2013 p. 123).

The small proportion of research from South East Asia, Africa, and Latin America which makes it into WoS and Scopus journals is not attributable to a lack of effort or quality of research; but due to hidden and invisible epistemic and structural barriers (Chan 2019[50]). These are a reflection of "deeper historical and structural power that had positioned former colonial masters as the centers of knowledge production, while relegating former colonies to peripheral roles" (Chan 2018[51]). Many North American and European journals demonstrate conscious and unconscious bias against researchers from other parts of the world[52]. Many of these journals call themselves 'international' but represent interests, authors, and even references only in their own languages[53] (Rivera-López 2016). Therefore, researchers in non-European or North American countries commonly get rejected because their research is said to be 'not internationally significant' or only of 'local interest' (the wrong 'local'). This reflects the current concept of 'international' as limited to a Euro/Anglophone-centric way of knowledge production (Lillis and Curry 2013; Paasi 2015). In other words, "the ongoing internationalisation has not meant academic interaction and exchange of knowledge, but the dominance of the leading Anglophone journals in which international debates occurs and gains recognition" (Minca 2013, p. 8).

[50] Leslie Chan, Twitter.
[51] Open Access, the Global South and the Politics of Knowledge Production and Circulation, Leslie Chan interview with Open Library of Humanities.
[52] Richard Smith: Strong evidence of bias against research from low income countries.
[53] The Local and the Global: Puncturing the myth of the "international" journal, Cameron Neylon.

Clarivate Analytics have made some positive steps to broaden the scope of WoS, integrating the SciELO citation index – a move not without criticism[54] – and through the creation of the Emerging Sources Index (ESI), which has allowed database access to many more international titles. However, there is still a lot of work to be done to recognise and amplify the growing body of research literature generated by those outside North America and Europe. The Royal Society have previously identified that "traditional metrics do not fully capture the dynamics of the emerging global science landscape", and that we need to develop more sophisticated data and impact measures to provide a richer understanding of the global scientific knowledge that is available to us (Royal Society 2011).

We have not yet built digital infrastructures which are equal, comprehensive, multi-lingual and allows fair participation in knowledge creation (Okune et al. 2018). One way to bridge this gap is with discipline- and region-specific preprint repositories such as AfricArXiv and InarXiv. We need to remain critical of those 'global' research databases that have been built in Europe or Northern America and be wary of those who sell the myth that these products act as a representation of the global sum of human scholarly knowledge. Finally, let us also be aware of the geopolitical impact that such systematic discrimination has on knowledge production, and the inclusion and representation of marginalised research demographics within the global research landscape.

Myth 10: Publishers add no value to the scholarly communication process

There is increasing frustration amongst OA advocates, with what is perceived as resistance to change on the part of many of the established scholarly publishers. Publishers are often accused of capturing and monetising publicly-funded research, using free academic labour for peer review, and then selling the resulting publications back to academia at inflated profits (Beverungen, Böhm, and Land 2012). Such frustrations sometimes spill over into hyperbole, of which 'publishers add no value' is one of the most common examples.

However, scholarly publishing is not a simple process, and publishers do add value to scholarly communication as it is currently designed (Luzón 2007). Kent Anderson maintains a list of things that journal publishers do which currently contains 102 items and has yet to be formally contested from anyone who challenges the value of publishers[55]. Many items on the list could be argued to be of value primarily to the publishers themselves, e.g. "Make money and remain a constant in the system of scholarly output". However, others provide direct value to researchers and research in steering the academic literature. This includes arbitrating disputes (e.g. over ethics, authorship), stewarding the scholarly record, copy-editing, proofreading, type-setting, styling of materials, linking the articles to open and accessible datasets, and (perhaps most importantly) arranging and managing scholarly peer review. The latter is a task which should not

[54] SciELO, Open Infrastructure and Independence, Leslie Chan.
[55] Focusing on Value — 102 Things Journal Publishers Do (2018 Update), Kent Anderson, Scholarly Kitchen.

be underestimated as it effectively entails coercing busy people into giving their time to improve someone else's work and maintain the quality of the literature. Not to mention the standard management processes for large enterprises, including infrastructure, people, security, and marketing. All of these factors contribute in one way or another to maintaining the scholarly record.

It could be questioned though, whether these functions are actually necessary to the core aim of scholarly communication, namely, dissemination of research to researchers and other stakeholders such as policy makers, economic, biomedical and industrial practitioners as well as the general public. Above, for example, we question the necessity of the current infrastructure for peer review, and if a scholar-led crowdsourced alternative may be preferable. In addition, one of the biggest tensions in this space is associated with the question if for-profit companies (or the private sector) should be allowed to be in charge of the management and dissemination of academic output and execute their powers while serving, for the most part, their own interests. This is often considered alongside the value added by such companies, and therefore the two are closely linked as part of broader questions on appropriate expenditure of public funds, the role of commercial entities in the public sector, and issues around the privatisation of scholarly knowledge.

Publishing could certainly be done at a lower cost than common at present. There are significant researcher-facing inefficiencies in the system including the common scenario of multiple rounds of rejection and resubmission to various venues as well as the fact that some publishers profit beyond reasonable scale (Van Noorden 2013). What is missing most from the current publishing market, is transparency about the nature and the quality of the services publishers offer. This would allow authors to make informed choices, rather than decisions based on indicators that are unrelated to research quality, such as the JIF. All the above questions are being investigated and alternatives could be considered and explored. Yet, in the current system, publishers still play a role in managing processes of quality assurance, interlinking and findability of research. As the role of scholarly publishers within the knowledge communication industry continues to evolve, it will remain paramount that they can justify their operation based on the intrinsic value that they add (Inchcoombe 2017; de Camargo 2014), and combat the myth that they add no value to the process.

Conclusions

We selected and addressed ten commonly debated issues surrounding open scholarly publishing that researchers appear to be uncertain about. This article is meant as a reference point for combating misinformation put forward in public relations pieces and elsewhere, as well as for journalists wishing to fact-check statements from all stakeholder groups when reporting on these topics in the future. We also hope that should these issues arise in matters of policy, at any level, then this article will provide useful evidence to guide discussions. Overall, our intention is to provide a stable foundation towards a more constructive and informed debate in the ongoing evolution of open scholarly communication.

References

Aalbers, Manuel B. 2004. “Creative Destruction through the Anglo-American Hegemony: A Non-Anglo-American View on Publications, Referees and Language.” *Area* 36 (3): 319–22.

Adler, Robert, John Ewing, and Peter Taylor. 2008. “Citation Statistics.” *A Report from the Joint*.

Allen, Heidi, Emma Boxer, Alexandra Cury, Thomas Gaston, Chris Graf, Ben Hogan, Stephanie Loh, Hannah Wakley, and Michael Willis. 2018. “What Does Better Peer Review Look like? Definitions, Essential Areas, and Recommendations for Better Practice.” *Open Science Framework*, April. https://doi.org/10.17605/OSF.IO/4MFK2.

Alonso, S., F. J. Cabrerizo, E. Herrera-Viedma, and F. Herrera. 2009. “H-Index: A Review Focused in Its Variants, Computation and Standardization for Different Scientific Fields.” *Journal of Informetrics* 3 (4): 273–89. https://doi.org/10.1016/j.joi.2009.04.001.

Alperin, Juan Pablo, and Gustavo Fischman. 2015. *Hecho En Latinoamérica. Acceso Abierto, Revistas Académicas e Innovaciones Regionales*. http://www.clacso.org.ar/libreria-latinoamericana/buscar_libro_detalle.php?id_libro=988&campo=&texto=.

Alperin, Juan Pablo, Carol Muñoz Nieves, Lesley Schimanski, Gustavo E. Fischman, Meredith T. Niles, and Erin C. McKiernan. 2018. “How Significant Are the Public Dimensions of Faculty Work in Review, Promotion, and Tenure Documents?,” October. https://hcommons.org/deposits/item/hc:21015/.

Alperin, Juan Pablo, Cecilia Rozemblum, Juan Pablo Alperin, and Cecilia Rozemblum. 2017. “The Reinterpretation of the Visibility and Quality of New Policies to Assess Scientific Publications.” *Revista Interamericana de Bibliotecología* 40 (3): 231–41. https://doi.org/10.17533/udea.rib.v40n3a04.

Andy Nobes. 2017. “Critical Thinking in a Post-Beall Vacuum,” March. https://doi.org/10.5281/zenodo.2549833.

Archambault, Éric, David Campbell, Yves Gingras, and Vincent Larivière. 2009. “Comparing Bibliometric Statistics Obtained from the Web of Science and Scopus.” *Journal of the American Society for Information Science and Technology* 60 (7): 1320–26. https://doi.org/10.1002/asi.21062.

Bachrach, Steven, R. Stephen Berry, Martin Blume, Thomas von Foerster, Alexander Fowler, Paul Ginsparg, Stephen Heller, et al. 1998. “Who Should Own Scientific Papers?” *Science* 281 (5382): 1459–60. https://doi.org/10.1126/science.281.5382.1459.

Balaji, B. Preedip, and M. Dhanamjaya. 2019. “Preprints in Scholarly Communication: Re-Imagining Metrics and Infrastructures.” *Publications* 7 (1): 6. https://doi.org/10.3390/publications7010006.

Bell, Kirsten. 2017. “‘Predatory’ Open Access Journals as Parody: Exposing the Limitations of ‘Legitimate’ Academic Publishing.” *TripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society* 15 (2): 651–62. https://doi.org/10.31269/triplec.v15i2.870.

Berners-Lee, Tim, Dave De Roure, Stevan Harnad, and Nigel Shadbolt. 2005. “Journal Publishing and Author Self-Archiving: Peaceful Co-Existence and Fruitful Collaboration.” Other. 2005. https://eprints.soton.ac.uk/261160/.

Bernius, Steffen, Matthias Hanauske, Berndt Dugall, and Wolfgang König. 2013. “Exploring the

Effects of a Transition to Open Access: Insights from a Simulation Study." *Journal of the American Society for Information Science and Technology* 64 (4): 701–26. https://doi.org/10.1002/asi.22772.

Beverungen, Armin, Steffen Böhm, and Christopher Land. 2012. "The Poverty of Journal Publishing." *Organization* 19 (6): 929–38. https://doi.org/10.1177/1350508412448858.

Biasi, Barbara, and Petra Moser. 2018. "Effects of Copyrights on Science - Evidence from the US Book Republication Program." Working Paper 24255. National Bureau of Economic Research. https://doi.org/10.3386/w24255.

Björk, Bo-Christer. 2017a. "Gold, Green, and Black Open Access." *Learned Publishing* 30 (2): 173–75. https://doi.org/10.1002/leap.1096.

———. 2017b. "Growth of Hybrid Open Access, 2009–2016." *PeerJ* 5 (September): e3878. https://doi.org/10.7717/peerj.3878.

Björk, Bo-Christer, and David Solomon. 2014. "Developing an Effective Market for Open Access Article Processing Charges." *URL: Http://Www. Wellcome. Ac. Uk/Stellent/Groups/Corporatesite/@ Policy _ Communications/Documents/Web_document/Wtp055910. Pdf (as of: 06/13/2014)*.

———. 2015. "Article Processing Charges in OA Journals: Relationship between Price and Quality." *Scientometrics* 103 (2): 373–85. https://doi.org/10.1007/s11192-015-1556-z.

Blackmore, Paul, and Camille B. Kandiko. 2011. "Motivation in Academic Life: A Prestige Economy." *Research in Post-Compulsory Education* 16 (4): 399–411. https://doi.org/10.1080/13596748.2011.626971.

Bornmann, Lutz. 2011. "Scientific Peer Review." *Annual Review of Information Science and Technology* 45 (1): 197–245. https://doi.org/10.1002/aris.2011.1440450112.

Boshoff, Nelius, and Moses A. Akanmu. 2017. "Scopus or Web of Science for a Bibliometric Profile of Pharmacy Research at a Nigerian University?" *South African Journal of Libraries and Information Science* 83 (2). https://doi.org/10.7553/83-2-1682.

Bowman, Nicholas David, and Justin Robert Keene. 2018. "A Layered Framework for Considering Open Science Practices." *Communication Research Reports* 35 (4): 363–72. https://doi.org/10.1080/08824096.2018.1513273.

Bravo, Giangiacomo, Francisco Grimaldo, Emilia López-Iñesta, Bahar Mehmani, and Flaminio Squazzoni. 2019. "The Effect of Publishing Peer Review Reports on Referee Behavior in Five Scholarly Journals." *Nature Communications* 10 (1): 322. https://doi.org/10.1038/s41467-018-08250-2.

Brembs, Björn. 2018. "Prestigious Science Journals Struggle to Reach Even Average Reliability." *Frontiers in Human Neuroscience* 12: 37.

———. 2019. "Reliable Novelty: New Should Not Trump True." *PLOS Biology* 17 (2): e3000117. https://doi.org/10.1371/journal.pbio.3000117.

Budd, John M., MaryEllen Sievert, and Tom R. Schultz. 1998a. "Phenomena of Retraction: Reasons for Retraction and Citations to the Publications." *JAMA* 280 (3): 296–97. https://doi.org/10.1001/jama.280.3.296.

———. 1998b. "Phenomena of Retraction: Reasons for Retraction and Citations to the Publications." *JAMA* 280 (3): 296–97. https://doi.org/10.1001/jama.280.3.296.

Carroll, Michael W. 2011. "Why Full Open Access Matters." *PLOS Biology* 9 (11): e1001210. https://doi.org/10.1371/journal.pbio.1001210.

Chadegani, Arezoo Aghaei, Hadi Salehi, Melor Md Yunus, Hadi Farhadi, Masood Fooladi, Maryam Farhadi, and Nader Ale Ebrahim. 2013. "A Comparison between Two Main Academic Literature Collections: Web of Science and Scopus Databases." *Asian Social Science* 9 (5): p18. https://doi.org/10.5539/ass.v9n5p18.

Chavarro, Diego, Puay Tang, and Ismael Rafols. 2014. “Interdisciplinarity and Research on Local Issues: Evidence from a Developing Country.” *Research Evaluation* 23 (3): 195–209. https://doi.org/10.1093/reseval/rvu012.

Chawla, Dalmeet Singh. 2017. “Publishers Take ResearchGate to Court, Alleging Massive Copyright Infringement.” *Science*. https://doi.org/10.1126/science.aaq1560.

Chinchilla-Rodríguez, Zaida, Lili Miao, Dakota Murray, Nicolás Robinson-García, Rodrigo Costas, and Cassidy R. Sugimoto. 2018. “A Global Comparison of Scientific Mobility and Collaboration According to National Scientific Capacities.” *Frontiers in Research Metrics and Analytics* 3. https://doi.org/10.3389/frma.2018.00017.

Collaboration, Open Science. 2015. “Estimating the Reproducibility of Psychological Science.” *Science* 349 (6251): aac4716. https://doi.org/10.1126/science.aac4716.

Crane, Harry, and Ryan Martin. 2018a. “In Peer Review We (Don’t) Trust: How Peer Review’s Filtering Poses a Systemic Risk to Science.” *Researchers One*. https://www.researchers.one/article/2018-09-17.

———. 2018b. “The RESEARCHERS.ONE Mission.” https://www.researchers.one/article/2018-07-1.

Crick, Tom, Benjamin Hall, and Samin Ishtiaq. 2017. “Reproducibility in Research: Systems, Infrastructure, Culture.” *Journal of Open Research Software* 5 (1): 32. https://doi.org/10.5334/jors.73.

Csiszar, Alex. 2016. “Peer Review: Troubled from the Start.” *Nature News* 532 (7599): 306. https://doi.org/10.1038/532306a.

Curry, Stephen. 2018. “Let’s Move beyond the Rhetoric: It’s Time to Change How We Judge Research.” *Nature* 554 (February): 147. https://doi.org/10.1038/d41586-018-01642-w.

Davies, Mark. 2015. “Academic Freedom: A Lawyer’s Perspective.” *Higher Education* 70 (6): 987–1002. https://doi.org/10.1007/s10734-015-9884-8.

Dawson, Patricia H., and Sharon Q. Yang. 2016. “Institutional Repositories, Open Access and Copyright: What Are the Practices and Implications?” *Science & Technology Libraries* 35 (4): 279–94. https://doi.org/10.1080/0194262X.2016.1224994.

Djuric, Dragan. 2015. “Penetrating the Omerta of Predatory Publishing: The Romanian Connection.” *Science and Engineering Ethics* 21 (1): 183–202. https://doi.org/10.1007/s11948-014-9521-4.

Dodds, Francis. 2018. “The Changing Copyright Landscape in Academic Publishing.” *Learned Publishing* 31 (3): 270–75. https://doi.org/10.1002/leap.1157.

Eve, Martin. 2015. “Co-Operating for Gold Open Access without APCs.” *Insights* 28 (1): 73–77. https://doi.org/10.1629/uksg.166.

Falagas, Matthew E., and Vangelis G. Alexiou. 2008. “The Top-Ten in Journal Impact Factor Manipulation.” *Archivum Immunologiae Et Therapiae Experimentalis* 56 (4): 223–26. https://doi.org/10.1007/s00005-008-0024-5.

Falagas, Matthew E., Eleni I. Pitsouni, George A. Malietzis, and Georgios Pappas. 2008. “Comparison of PubMed, Scopus, Web of Science, and Google Scholar: Strengths and Weaknesses.” *FASEB Journal: Official Publication of the Federation of American Societies for Experimental Biology* 22 (2): 338–42. https://doi.org/10.1096/fj.07-9492LSF.

Fanelli, Daniele. 2018. “Opinion: Is Science Really Facing a Reproducibility Crisis, and Do We Need It To?” *Proceedings of the National Academy of Sciences*, March, 201708272. https://doi.org/10.1073/pnas.1708272114.

Fang, Ferric C., and Arturo Casadevall. 2011. “Retracted Science and the Retraction Index.” *Infection and Immunity* 79 (10): 3855–59. https://doi.org/10.1128/IAI.05661-11.

Ferguson, Cat, Adam Marcus, and Ivan Oransky. 2014. “Publishing: The Peer-Review Scam.” *Nature News* 515 (7528): 480. https://doi.org/10.1038/515480a.

Flaherty, Dennis K. 2013. “Ghost- and Guest-Authored Pharmaceutical Industry–Sponsored Studies: Abuse of Academic Integrity, the Peer Review System, and Public Trust.” *Annals of Pharmacotherapy* 47 (7–8): 1081–83. https://doi.org/10.1345/aph.1R691.

Fong, Eric A., and Allen W. Wilhite. 2017. “Authorship and Citation Manipulation in Academic Research.” *PLOS ONE* 12 (12): e0187394. https://doi.org/10.1371/journal.pone.0187394.

Frandsen, Tove Faber. 2019. “Why Do Researchers Decide to Publish in Questionable Journals? A Review of the Literature.” *Learned Publishing* 32 (1): 57–62. https://doi.org/10.1002/leap.1214.

Frass, W, J Cross, and V Gardner. 2013. “Open Access Survey: Exploring the Views of Taylor & Francis and Routledge Authors,” 47.

Fyfe, Aileen, Kelly Coate, Stephen Curry, Stuart Lawson, Noah Moxham, and Camilla Mørk Røstvik. 2017. “Untangling Academic Publishing. A History of the Relationship between Commercial Interests, Academic Prestige and the Circulation of Research.,” 26.

Fyfe, Aileen, Julie McDougall-Waters, and Noah Moxham. 2018. “Credit, Copyright, and the Circulation of Scientific Knowledge : The Royal Society in the Long Nineteenth Century,” December. https://doi.org/10.1353/vpr.2018.0045.

Gadd, Elizabeth, Charles Oppenheim, and Steve Probets. 2003a. “RoMEO Studies 1: The Impact of Copyright Ownership on Academic Author Self-archiving.” *Journal of Documentation* 59 (3): 243–77. https://doi.org/10.1108/00220410310698239.

———. 2003b. “RoMEO Studies 4: An Analysis of Journal Publishers’ Copyright Agreements.” *Learned Publishing* 16 (4): 293–308. https://doi.org/10.1087/095315103322422053.

Gadd, Elizabeth, and Denise Troll Covey. 2019. “What Does ‘Green’ Open Access Mean? Tracking Twelve Years of Changes to Journal Publisher Self-Archiving Policies.” *Journal of Librarianship and Information Science* 51 (1): 106–22. https://doi.org/10.1177/0961000616657406.

Ginsparg, Paul. 2016. “Preprint Déjà Vu.” *The EMBO Journal*, October, e201695531. https://doi.org/10.15252/embj.201695531.

Green, Toby. 2019. “Is Open Access Affordable? Why Current Models Do Not Work and Why We Need Internet-Era Transformation of Scholarly Communications.” *Learned Publishing* 32 (1): 13–25. https://doi.org/10.1002/leap.1219.

Guédon, Jean-Claude. 2008. “Open Access and the Divide between ‘Mainstream’ and “peripheral.” *Como Gerir e Qualificar Revistas Científicas*, 1–25.

Gutiérrez, Javier, and Pedro López-Nieva. 2001. “Are International Journals of Human Geography Really International?” *Progress in Human Geography* 25 (1): 53–69. https://doi.org/10.1191/030913201666823316.

Harzing, Anne-Wil, and Satu Alakangas. 2016. “Google Scholar, Scopus and the Web of Science: A Longitudinal and Cross-Disciplinary Comparison.” *Scientometrics* 106 (2): 787–804. https://doi.org/10.1007/s11192-015-1798-9.

Henneken, Edwin A., Michael J. Kurtz, Guenther Eichhorn, Alberto Accomazzi, Carolyn Grant, Donna Thompson, and Stephen S. Murray. 2006. “Effect of E-Printing on Citation Rates in Astronomy and Physics.” *ArXiv:Cs/0604061*, April. http://arxiv.org/abs/cs/0604061.

Hicks, Diana, Paul Wouters, Ludo Waltman, Sarah de Rijcke, and Ismael Rafols. 2015. “Bibliometrics: The Leiden Manifesto for Research Metrics.” *Nature News* 520 (7548): 429. https://doi.org/10.1038/520429a.

Houghton, John W., and Charles Oppenheim. 2010. “The Economic Implications of Alternative

Publishing Models." *Prometheus* 28 (1): 41–54. https://doi.org/10.1080/08109021003676359.
Hwang, Kumju. 2005. "The Inferior Science and the Dominant Use of English in Knowledge Production: A Case Study of Korean Science and Technology." *Science Communication* 26 (4): 390–427. https://doi.org/10.1177/1075547005275428.
Jamali, Hamid R. 2017. "Copyright Compliance and Infringement in ResearchGate Full-Text Journal Articles." *Scientometrics* 112 (1): 241–54. https://doi.org/10.1007/s11192-017-2291-4.
Johnson, Rob. 2019. "From Coalition to Commons: Plan S and the Future of Scholarly Communication." *Insights* 32 (1): 5. https://doi.org/10.1629/uksg.453.
Kumar, Malhar. 2009. "A Review of the Review Process: Manuscript Peer-Review in Biomedical Research." *Biology and Medicine* 1 (4): 16.
Kurt, Serhat. 2018. "Why Do Authors Publish in Predatory Journals?" *Learned Publishing* 31 (2): 141–47. https://doi.org/10.1002/leap.1150.
Laakso, Mikael, and Andrea Polonioli. 2018. "Open Access in Ethics Research: An Analysis of Open Access Availability and Author Self-Archiving Behaviour in Light of Journal Copyright Restrictions." *Scientometrics* 116 (1): 291–317. https://doi.org/10.1007/s11192-018-2751-5.
Lariviere, Vincent, and Yves Gingras. 2009. "The Impact Factor's Matthew Effect: A Natural Experiment in Bibliometrics." *ArXiv:0908.3177 [Physics]*, August. http://arxiv.org/abs/0908.3177.
Lariviere, Vincent, Veronique Kiermer, Catriona J. MacCallum, Marcia McNutt, Mark Patterson, Bernd Pulverer, Sowmya Swaminathan, Stuart Taylor, and Stephen Curry. 2016. "A Simple Proposal for the Publication of Journal Citation Distributions." *BioRxiv*, September, 062109. https://doi.org/10.1101/062109.
Lariviere, Vincent, and Cassidy R. Sugimoto. 2018. "The Journal Impact Factor: A Brief History, Critique, and Discussion of Adverse Effects." *ArXiv:1801.08992 [Physics]*, January. http://arxiv.org/abs/1801.08992.
Lawson, Stuart. 2014. "APC Pricing." https://doi.org/10.6084/m9.figshare.1056280.v3.
———. 2017. "Access, Ethics and Piracy." *Insights* 30 (1): 25–30. https://doi.org/10.1629/uksg.333.
Lovett, Julia, Andrée Rathemacher, Divana Boukari, and Corey Lang. 2017. "Institutional Repositories and Academic Social Networks: Competition or Complement? A Study of Open Access Policy Compliance vs. ResearchGate Participation." *Technical Services Department Faculty Publications*, August. https://doi.org/10.7710/2162-3309.2183.
Luzón, María José. 2007. "The Added Value Features of Online Scholarly Journals." *Journal of Technical Writing and Communication* 37 (1): 59–73. https://doi.org/10.2190/H702-6473-8569-2R3Q.
Matushek, Kurt J. 2017. "Take Another Look at the Instructions for Authors." *Journal of the American Veterinary Medical Association* 250 (3): 258–59. https://doi.org/10.2460/javma.250.3.258.
McKiernan, Erin C., Philip E. Bourne, C. Titus Brown, Stuart Buck, Amye Kenall, Jennifer Lin, Damon McDougall, et al. 2016. "Point of View: How Open Science Helps Researchers Succeed." *ELife* 5 (July): e16800. https://doi.org/10.7554/eLife.16800.
Minca, C. 2013. "(Im)Mobile Geographies." *Geographica Helvetica* 68 (1): 7–16. https://doi.org/10.5194/gh-68-7-2013.
Moher, David, Larissa Shamseer, Kelly D. Cobey, Manoj M. Lalu, James Galipeau, Marc T. Avey, Nadera Ahmadzai, et al. 2017. "Stop This Waste of People, Animals and Money."

Nature News 549 (7670): 23. https://doi.org/10.1038/549023a.
Mongeon, Philippe, and Adele Paul-Hus. 2016. “The Journal Coverage of Web of Science and Scopus: A Comparative Analysis.” *Scientometrics* 106 (1): 213–28. https://doi.org/10.1007/s11192-015-1765-5.
Moore, John. 2006. “Does Peer Review Mean the Same to the Public as It Does to Scientists?” *Nature*. https://doi.org/10.1038/nature05009.
Moore, Samuel, Cameron Neylon, Martin Paul Eve, Daniel Paul O’Donnell, and Damian Pattinson. 2017. “‘Excellence R Us’: University Research and the Fetishisation of Excellence.” *Palgrave Communications* 3 (January): 16105. https://doi.org/10.1057/palcomms.2016.105.
Morrison, Chris, and Jane Secker. 2015. “Copyright Literacy in the UK: A Survey of Librarians and Other Cultural Heritage Sector Professionals.” *Library and Information Research* 39: 75–97.
Moxham, Noah, and Aileen Fyfe. 2017. “THE ROYAL SOCIETY AND THE PREHISTORY OF PEER REVIEW, 1665–1965.” *The Historical Journal*, November, 1–27. https://doi.org/10.1017/S0018246X17000334.
Moylan, Elizabeth C., and Maria K. Kowalczuk. 2016. “Why Articles Are Retracted: A Retrospective Cross-Sectional Study of Retraction Notices at BioMed Central.” *BMJ Open* 6 (11): e012047. https://doi.org/10.1136/bmjopen-2016-012047.
Munafò, Marcus R., Brian A. Nosek, Dorothy V. M. Bishop, Katherine S. Button, Christopher D. Chambers, Nathalie Percie du Sert, Uri Simonsohn, Eric-Jan Wagenmakers, Jennifer J. Ware, and John P. A. Ioannidis. 2017a. “A Manifesto for Reproducible Science.” *Nature Human Behaviour* 1 (1): 0021. https://doi.org/10.1038/s41562-016-0021.
———. 2017b. “A Manifesto for Reproducible Science.” *Nature Human Behaviour* 1 (1): 0021. https://doi.org/10.1038/s41562-016-0021.
Neylon, Cameron, Damian Pattinson, Geoffrey Bilder, and Jennifer Lin. 2017. “On the Origin of Nonequivalent States: How We Can Talk about Preprints.” *F1000Research* 6 (May): 608. https://doi.org/10.12688/f1000research.11408.1.
Nwagwu, W. E. 2016. “Open Access in the Developing Regions: Situating the Altercations About Predatory Publishing / L’accès Libre Dans Les Régions En Voie de Développement : Situation de La Controverse Concernant Les Pratiques d’édition Déloyales.” *Canadian Journal of Information and Library Science* 40 (1): 58–80.
Oermann, Marilyn H., Jamie L. Conklin, Leslie H. Nicoll, Peggy L. Chinn, Kathleen S. Ashton, Alison H. Edie, Sathya Amarasekara, and Susan C. Budinger. 2016. “Study of Predatory Open Access Nursing Journals.” *Journal of Nursing Scholarship* 48 (6): 624–32. https://doi.org/10.1111/jnu.12248.
Oermann, Marilyn H., Leslie H. Nicoll, Peggy L. Chinn, Kathleen S. Ashton, Jamie L. Conklin, Alison H. Edie, Sathya Amarasekara, and Brittany L. Williams. 2018. “Quality of Articles Published in Predatory Nursing Journals.” *Nursing Outlook* 66 (1): 4–10. https://doi.org/10.1016/j.outlook.2017.05.005.
Okune, Angela, Rebecca Hillyer, Denisse Albornoz, Alejandro Posada, and Leslie Chan. 2018. “Whose Infrastructure? Towards Inclusive and Collaborative Knowledge Infrastructures in Open Science.” In *ELPUB 2018*, edited by Leslie Chan and Pierre Mounier. Toronto, Canada. https://doi.org/10.4000/proceedings.elpub.2018.31.
Olivarez, Joseph D., Stephen Bales, Laura Sare, and Wyoma vanDuinkerken. 2018. “Format Aside: Applying Beall’s Criteria to Assess the Predatory Nature of Both OA and Non-OA Library and Information Science Journals” 79 (1): 52–67. https://doi.org/10.5860/crl.79.1.52.

Omobowale, Ayokunle Olumuyiwa, Olayinka Akanle, Adebusuyi Isaac Adeniran, and Kamorudeen Adegboyega. 2014. “Peripheral Scholarship and the Context of Foreign Paid Publishing in Nigeria.” *Current Sociology* 62 (5): 666–84. https://doi.org/10.1177/0011392113508127.

Owen, Richard, Phil Macnaghten, and Jack Stilgoe. 2012. “Responsible Research and Innovation: From Science in Society to Science for Society, with Society.” *Science and Public Policy* 39 (6): 751–60. https://doi.org/10.1093/scipol/scs093.

Paasi, Anssi. 2015. “Academic Capitalism and the Geopolitics of Knowledge.” In *The Wiley Blackwell Companion to Political Geography*, 507–23. John Wiley & Sons, Ltd. https://doi.org/10.1002/9781118725771.ch37.

Perlin, Marcelo S., Takeyoshi Imasato, and Denis Borenstein. 2018. “Is Predatory Publishing a Real Threat? Evidence from a Large Database Study.” *Scientometrics* 116 (1): 255–73. https://doi.org/10.1007/s11192-018-2750-6.

Pinfield, Stephen, Jennifer Salter, and Peter A. Bath. 2015. “The ‘Total Cost of Publication’ in a Hybrid Open-Access Environment: Institutional Approaches to Funding Journal Article-Processing Charges in Combination with Subscriptions.” *Journal of the Association for Information Science and Technology* 67 (7): 1751–66. https://doi.org/10.1002/asi.23446.

Piwowar, Heather, Jason Priem, Vincent Larivière, Juan Pablo Alperin, Lisa Matthias, Bree Norlander, Ashley Farley, Jevin West, and Stefanie Haustein. 2018. “The State of OA: A Large-Scale Analysis of the Prevalence and Impact of Open Access Articles.” *PeerJ* 6 (February): e4375. https://doi.org/10.7717/peerj.4375.

Polka, Jessica K., Robert Kiley, Boyana Konforti, Bodo Stern, and Ronald D. Vale. 2018. “Publish Peer Reviews.” *Nature* 560 (7720): 545. https://doi.org/10.1038/d41586-018-06032-w.

Powell, Kendall. 2016. “Does It Take Too Long to Publish Research?” *Nature News* 530 (7589): 148. https://doi.org/10.1038/530148a.

Priem, Jason, and Bradley M. Hemminger. 2012. “Decoupling the Scholarly Journal.” *Frontiers in Computational Neuroscience* 6 (April). https://doi.org/10.3389/fncom.2012.00019.

Priem, Jason, D. Taraborelli, P. Groth, and C. Neylon. 2010. “Altmetrics: A Manifesto.” http://altmetrics.org/manifesto.

Rafols, Ismael, Tommaso Ciarli, and Diego Chavarro. 2015. “Under-Reporting Research Relevant to Local Needs in the Global South. Database Biases in the Representation of Knowledge on Rice.”

Ràfols, Ismael, Jordi Molas-Gallart, Diego Andrés Chavarro, and Nicolas Robinson-Garcia. 2016. “On the Dominance of Quantitative Evaluation in ‘Peripheral’ Countries: Auditing Research with Technologies of Distance.” SSRN Scholarly Paper ID 2818335. Rochester, NY: Social Science Research Network. https://papers.ssrn.com/abstract=2818335.

Relman, A. S. 1990. “Peer Review in Scientific Journals--What Good Is It?” *Western Journal of Medicine* 153 (5): 520–22.

Resnik, David B., and Susan A. Elmore. 2016. “Ensuring the Quality, Fairness, and Integrity of Journal Peer Review: A Possible Role of Editors.” *Science and Engineering Ethics* 22 (1): 169–88. https://doi.org/10.1007/s11948-015-9625-5.

Ribeiro, Leonardo Costa, Márcia Siqueira Rapini, Leandro Alves Silva, and Eduardo Motta Albuquerque. 2018. “Growth Patterns of the Network of International Collaboration in Science.” *Scientometrics* 114 (1): 159–79. https://doi.org/10.1007/s11192-017-2573-x.

Richard Feynman. 1974. “Cargo Cult Science.” 1974.

http://calteches.library.caltech.edu/51/2/CargoCult.htm.
Rivera-López, Bárbara Sofía. 2016. “Uneven Writing Spaces in Academic Publishing: A Case Study on Internationalisation in the Disciplines of Biochemistry and Molecular Biology.” https://doi.org/10.31237/osf.io/8cypr.
Ross-Hellauer, Tony. 2017. “What Is Open Peer Review? A Systematic Review.” *F1000Research* 6 (August): 588. https://doi.org/10.12688/f1000research.11369.2.
Ross-Hellauer, Tony, Birgit Schmidt, and Bianca Kramer. 2018. “Are Funder Open Access Platforms a Good Idea?” e26954v1. PeerJ Inc. https://doi.org/10.7287/peerj.preprints.26954v1.
Rossner, Mike, Heather Van Epps, and Emma Hill. 2007. “Show Me the Data.” *J Cell Biol* 179 (6): 1091–92. https://doi.org/10.1083/jcb.200711140.
Royal Society, ed. 2011. *Knowledge, Networks and Nations: Global Scientific Collaboration in the 21st Century*. Policy Document, 03/11. London: The Royal Society.
Sarabipour, Sarvenaz, Humberto J. Debat, Edward Emmott, Steven J. Burgess, Benjamin Schwessinger, and Zach Hensel. 2019a. “On the Value of Preprints: An Early Career Researcher Perspective.” *PLOS Biology* 17 (2): e3000151. https://doi.org/10.1371/journal.pbio.3000151.
———. 2019b. “On the Value of Preprints: An Early Career Researcher Perspective.” *PLOS Biology* 17 (2): e3000151. https://doi.org/10.1371/journal.pbio.3000151.
Schimmer, Ralf, Kai Karin Geschuhn, and Andreas Vogler. 2015. “Disrupting the Subscription Journals’ Business Model for the Necessary Large-Scale Transformation to Open Access,” April. https://doi.org/10.17617/1.3.
Schönfelder, Nina. 2018. “APCs—Mirroring the Impact Factor or Legacy of the Subscription-Based Model?” Working Paper. https://pub.uni-bielefeld.de/record/2931061.
Shamseer, Larissa, David Moher, Onyi Maduekwe, Lucy Turner, Virginia Barbour, Rebecca Burch, Jocalyn Clark, James Galipeau, Jason Roberts, and Beverley J. Shea. 2017. “Potential Predatory and Legitimate Biomedical Journals: Can You Tell the Difference? A Cross-Sectional Comparison.” *BMC Medicine* 15 (1): 28. https://doi.org/10.1186/s12916-017-0785-9.
Shen, Cenyu, and Bo-Christer Björk. 2015. “‘Predatory’ Open Access: A Longitudinal Study of Article Volumes and Market Characteristics.” *BMC Medicine* 13 (1): 230. https://doi.org/10.1186/s12916-015-0469-2.
Silver, Andrew. 2017. “Pay-to-View Blacklist of Predatory Journals Set to Launch.” *Nature News*. https://doi.org/10.1038/nature.2017.22090.
Smith, Richard. 2006. “Peer Review: A Flawed Process at the Heart of Science and Journals.” *Journal of the Royal Society of Medicine* 99 (4): 178–82.
Squazzoni, Flaminio, Francisco Grimaldo, and Ana Marušić. 2017. “Publishing: Journals Could Share Peer-Review Data.” Comments and Opinion. Nature. June 14, 2017. https://doi.org/10.1038/546352a.
Ssentongo, Jimmy Spire, and Mary Cecilia Draru. 2017. “Justice and the Dynamics of Research and Publication in Africa: Interrogating the Performance of ‘Publish or Perish.’” In . Uganda Martyrs University. http://ir.umu.ac.ug/xmlui/handle/20.500.12280/501.
Stern, Bodo M., and Erin K. O’Shea. 2019. “A Proposal for the Future of Scientific Publishing in the Life Sciences.” *PLOS Biology* 17 (2): e3000116. https://doi.org/10.1371/journal.pbio.3000116.
Strinzel, Michaela, Anna Severin, Katrin Milzow, and Matthias Egger. 2019. “‘Blacklists’ and ‘Whitelists’ to Tackle Predatory Publishing : A Cross-Sectional Comparison and

Thematic Analysis." e27532v1. PeerJ Inc. https://doi.org/10.7287/peerj.preprints.27532v1.

Swan, Alma, and Sheridan Brown. 2005. "Open Access Self-Archiving: An Author Study." Departmental Technical Report. UK FE and HE funding councils. http://cogprints.org/4385/.

Tennant, Jonathan P. 2018. "The State of the Art in Peer Review." *FEMS Microbiology Letters* 365 (19). https://doi.org/10.1093/femsle/fny204.

Tennant, Jonathan P., Serge Bauin, Sarah James, and Juliane Kant. 2018. "The Evolving Preprint Landscape: Introductory Report for the Knowledge Exchange Working Group on Preprints." *BITSS*, May. https://doi.org/10.17605/OSF.IO/796TU.

Tennant, Jonathan P., Jonathan M. Dugan, Daniel Graziotin, Damien C. Jacques, François Waldner, Daniel Mietchen, Yehia Elkhatib, et al. 2017. "A Multi-Disciplinary Perspective on Emergent and Future Innovations in Peer Review." *F1000Research* 6 (November): 1151. https://doi.org/10.12688/f1000research.12037.3.

Tickell, Professor Adam. 2018. "Open Access to Research Publications 2018," 68.

Tietze, Susanne, and Penny Dick. 2013. "The Victorious English Language: Hegemonic Practices in the Management Academy." *Journal of Management Inquiry* 22 (1): 122–34. https://doi.org/10.1177/1056492612444316.

Tommaso Ciarli, Ismael Rafols, and Oscar Llopis. 2014. "The Under-Representation of Developing Countries in the Main Bibliometric Databases: A Comparison of Rice Studies in the Web of Science, Scopus and CAB Abstracts." *Proceedings of the Science and Technology Indicators Conference 2014 Leiden: "Context Counts: Pathways to Master Big and Little Data,"* 97–106.

Tort, Adriano B. L., Zé H. Targino, and Olavo B. Amaral. 2012. "Rising Publication Delays Inflate Journal Impact Factors." *PLOS ONE* 7 (12): e53374. https://doi.org/10.1371/journal.pone.0053374.

Union, Publications Office of the European. 2019. "Future of Scholarly Publishing and Scholarly Communication : Report of the Expert Group to the European Commission." Website. January 30, 2019. https://publications.europa.eu/en/publication-detail/-/publication/464477b3-2559-11e9-8d04-01aa75ed71a1.

Van Noorden, Richard. 2013. "Open Access: The True Cost of Science Publishing." *Nature News* 495 (7442): 426. https://doi.org/10.1038/495426a.

Vessuri, Hebe, Jean-Claude Guédon, and Ana María Cetto. 2014. "Excellence or Quality? Impact of the Current Competition Regime on Science and Scientific Publishing in Latin America and Its Implications for Development." *Current Sociology* 62 (5): 647–65. https://doi.org/10.1177/0011392113512839.

Vincent-Lamarre, Philippe, Jade Boivin, Yassine Gargouri, Vincent Larivière, and Stevan Harnad. 2016. "Estimating Open Access Mandate Effectiveness: The MELIBEA Score." *Journal of the Association for Information Science and Technology* 67 (11): 2815–28. https://doi.org/10.1002/asi.23601.

Wang, Yuandi, Ruifeng Hu, and Meijun Liu. 2017. "The Geotemporal Demographics of Academic Journals from 1950 to 2013 According to Ulrich's Database." *Journal of Informetrics* 11 (3): 655–71. https://doi.org/10.1016/j.joi.2017.05.006.

Weiss, Glen J., and Roger B. Davis. 2019. "Discordant Financial Conflicts of Interest Disclosures between Clinical Trial Conference Abstract and Subsequent Publication." *PeerJ* 7 (February): e6423. https://doi.org/10.7717/peerj.6423.

Willinsky, John. 2002. "Copyright Contradictions in Scholarly Publishing." *First Monday* 7 (11).

https://doi.org/10.5210/fm.v7i11.1006.
Wong, Victoria S. S., Lauro Nathaniel Avalos, and Michael L. Callaham. 2019. “Industry Payments to Physician Journal Editors.” *PLOS ONE* 14 (2): e0211495. https://doi.org/10.1371/journal.pone.0211495.
Wooliscroft, Ben, and Daniela Rosenstreich. 2006. “How International Are the Top Academic Journals? The Case of Marketing.” *European Business Review* 18 (6): 422–36. https://doi.org/10.1108/09555340610711067.