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Commentary

Navigating the Madness of Academic Publishing

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The academic publishing industry, while essential for disseminating scientific knowledge, is riddled with ironies and challenges that often leave researchers in disbelief. Here I explore the convoluted journey of scientific research from conception to publication, highlighting the immense effort scientists invest in their work only to face a complex and often costly publishing process. Despite the critical role of peer review, performed without financial compensation, many researchers must pay substantial article processing charges (APCs) to make their findings accessible. Alternatively, they encounter subscription-based journals that profit from paywalls, leaving researchers without royalties. While no-fee open access journals offer a glimmer of hope, they often lack the impact factors crucial for academic career progression. This paper delves into these issues, examines the disparity in APC affordability between the Global North and South, and discusses potential solutions. I advocate for a more equitable and collaborative scientific community, emphasizing the importance of venues controlled by scientific societies and the promise of preprints in the era of Artificial Intelligence. I hope this brief contribution will provoke thought, renew discussions and, hopefully, lead to changes in the academic publishing landscape.

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Some time ago, while chatting with a relative at a family gathering, I was congratulated on a recent paper I had published. During our conversation, this relative asked how much money I would make from the publication. Although it might sound like a naïve question to anyone in academia, it is actually a pretty logical thought for non-scientists—after all, book authors usually receive royalties for their work. But that simple question left me momentarily speechless. I laughed and explained—to my relative's surprise—how the process of publishing a scientific paper actually works.

If you are new to academia, such as an undergraduate or a graduate student in the early stages of a master's program, and haven't had the chance to publish a research paper yet, brace yourself for some madness in the scientific publishing industry. As I told my relative, the process goes something like this:

You spend months—or perhaps years—conducting your research alongside your research team, which generally involves: (*i*) identifying a question or problem you want to investigate; (*ii*) delving into the current literature to better understand the issue; (*iii*) defining the study design, including what variables will be collected and which analyses will be used; (*iv*) collecting data, either through experiments or from existing literature; (*v*) analysing the data using qualitative or quantitative methods; (*vi*) writing down the results and making sense of the outcomes; (*vii*) crafting the manuscript, including introduction, methods, results, and discussion sections. Some of the madness in academic publishing already begins at this stage, as publishers have long embedded themselves in the research workflow. Through surveillance publishing, they often know what we are working on even before we share our manuscripts with co-authors. I won't delve into this issue here, but for those interested, see[1][2].

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After all the effort mentioned above, you finally have the first draft of your manuscript, a 'child' to which you have grown somewhat attached. Then, you circulate your child among your co-authors (such as your supervisor and other collaborators), who will point out its ugly features and provide useful feedback to help improve your work. After a few rounds of revisions and everyone being reasonably satisfied with the final outcome, another step awaits: submitting your manuscript to a scientific journal. These journals serve as platforms for scientists to share their discoveries with the scientific community through a—hopefully—rigorous peer review process[3]. At this stage, your work will initially be appraised by an academic editor, who can either reject your manuscript—forcing you to resubmit it elsewhere—or send it to reviewers (typically 1-3 anonymous researchers in your field, although some journals operate under open peer review[4]). These reviewers can recommend that the manuscript be rejected or accepted, though usually, if not rejected, it goes through rounds of revisions based on the reviewers' feedback until it's finally published.

It is at this step that the true madness of academic publishing begins, the part that made my relative's eyes widen in disbelief. Why is that? First, you need to understand that all scientific journals rely heavily on the contributions of scientists. The peer review process, critical for maintaining the quality and integrity of scientific literature, is performed by scientists who review papers without any financial compensation. Second, numerous scientific journals today charge researchers to publish their findings through what they call article processing charges (APCs) to make research open access (OA)—i.e., freely available to anyone. I think you can already see the irony here, right? Other journals do not charge researchers upfront but have subscription fees (paywalls), so individuals or institutions must pay to access the published paper. Subscription fees have historically been, on average, more expensive than APCs[5] and, in this scenario, journals still profit from researchers who, unlike book authors, do not receive any royalties from their research. Naturally, most researchers are compensated for their work through salaries or scholarships. They publish to communicate with their community, and peer review is an expected part of their role. However, this system is being exploited by many corporations, as discussed in more detail below.

But of course, not everything is doom and gloom. There are also many journals that do not charge researchers and make papers freely available to anyone (i.e., no-fee OA journals, also called OA diamond journals). As of June 2024, the Directory of Open Access Journals (DOAJ) listed more than 20,000 periodicals, of which 66% (13,521) did not have APCs[6]. However, it is not all roses either. Since OA diamond journals operate without APCs or subscription fees, they depend on scholarly community support, institutional funding, or volunteer labour to sustain their operations. However, maintaining this model over the long term can be challenging, and many OA diamond journals face persistent difficulties in securing the necessary resources to continue publishing[7]. Additionally, more than 80% of journals in DOAJ are not listed in the Journal Citation Reports (JCR) or Scopus database[8], meaning that most of them lack an impact factor (IF), which is often used to research evaluation and as researchers' criteria when selecting journals to publish their findings[9].

IFs have been heavily criticised for several reasons[10]. For example, the use of the arithmetic mean to calculate a journal's IF is problematic due to the skewed distribution of citations, making it an inappropriate statistic for assessing individual papers or authors[11]. As a result, the misuse of IFs leads to negative consequences, such as conflating journal outreach with the quality of individual papers, insufficient coverage of certain fields, and the marginalization of research from specific regions[12]. Furthermore, among periodicals with IFs, there is a positive correlation between impact and price (JCR low-impact journals charge an average of US$1,231, while high-impact ones charge an average of US$2,133;[8]). Additionally, evidence suggests that the methodological quality of scientific papers does not improve with higher journal rankings[13][14]. Also, a growing body of research indicates that in many fields, methodological rigor—and consequently, the reliability of published studies—may actually decline as journal rank increases[14]. Despite these problems, the IF remains important for career progression in academia, especially for young scientists[15][16]. Consequently, researchers often feel compelled to publish in high-IF journals at all costs, as their careers and future funding opportunities depend on it.

After explaining this to my relative, they asked in disbelief if there was anything we could do to change this madness. I'd like to think we are trying, but as the saying goes, "old habits die hard." We have been entrenched in this insanity for far too long, making change a slow process. Addressing the flaws in academic publishing will certainly require a shift away from the fixation on IFs. Initiatives like the San

Francisco Declaration on Research Assessment (DORA) provide a roadmap for change, but meaningful progress will only occur when researchers, institutions, and funding bodies collectively move away from evaluating researchers based on journal prestige rather than the quality and impact of their work. Additionally, we must not underestimate the adaptability of huge commercial publishers. The largest publishing houses—Elsevier, Wiley, Taylor & Francis, Springer Nature, and SAGE—have embraced the OA movement[17] to charge huge APCs, especially for journals with higher citation scores[18][19], while justifying these fees as necessary to cover publication costs. However, publishing costs should be relatively low in the digital era[20] and the top publishers conveniently omit that estimated revenues from APCs exceed billions of dollars annually[21][22][23], reflecting the significant growth of open access publishing, with an average annual increase of 18% in the number of journals and 30% in the number of articles since 2000[24]. Overall, publisher type represents a major factor in determining whether the journal charges an APC as well as how expensive is the charge[18]; for example, the average APC for an article was US$2,652 among the top publishers[25].

I also believe that many researchers do not really think much about this madness, especially those in institutions from North America and Europe (the Global North), where financial resources—including for paying high APCs—are plentiful. Furthermore, many research funding agencies demand elevated productivity from their researchers, who, hostage to the vicious circle of 'publish or perish'[26], end up neglecting this problem, especially if they are from regions where investment in science is high. Consequently, a more fundamental problem arises: the financial burden that exorbitant APCs places on researchers from the Global South (i.e., usually low- and middle-income countries), where prohibitive prices can hinder publications as institutions often do not cover these costs[27]. It can also affect career progression given that most no-fee OA journals lack impact factors[8], while APC-OA journals have on average higher citation counts[28][29] and also tend to garner more social media attention[30][31]. Looking at more than 37,000 articles from Elsevier's "Mirror journal" system, Smith and colleagues[32] showed that most APC-OA articles were written by authors in high-income countries, with no articles published in "Gold OA" journals by authors in low-income countries, highlighting that APCs are indeed a significant barrier to OA publication for scientists from the Global South[32].

While the divide between the Global North and Global South is often used to illustrate disparities in research funding and access to publishing, this binary framing oversimplifies a far more complex reality. Research funding exists on a gradient, and financial resources vary not only between countries but also within them—across institutions, research teams, individual researchers, and disciplines[33][34][35]. Even in high-income countries, many researchers lack access to large grants or institutional support for APCs, while some institutions in lower-income countries may have relatively strong funding. This nuance is often overlooked by large commercial publishers, who justify their APC models by offering fee waivers to a narrow selection of the world's poorest countries while ignoring the financial struggles of researchers in middle-income and even high-income nations. Despite claims that the publishing system has become more open and accessible, inequities are deepening—those with substantial funding continue to thrive, while many others, regardless of geographic location, face increasing marginalization.

As you can see, it is a complex and ironic problem. Scientists spend months conducting their research, then often pay to publish their findings—likely driven by a 'publish or perish' culture[26]—while reviewing papers for journals without compensation, expect for some recognition of being a reviewer[36]. One potential solution for this dilemma may lie in encouraging researchers to publish primarily in venues controlled by scientists themselves, such as platforms and journals backed by robust scientific societies[37]. Many of these have no APCs or much more affordable prices compared to corporate publishers[8]. An important aspect to consider in the landscape of journals controlled by scientific societies is their financial viability and how they compete with major commercial publishers[7], which have intensified their influence over scholarly publishing in the digital era[38][39]. Movements and boycotts have emerged in response to the business practices of major publishers, exemplified by initiatives like The Cost of Knowledge campaign, alongside actions taken by universities and researchers, including the cancellation of subscriptions, resignation from editorial boards, and refusal to review manuscripts for these publishers[40][41][42][43]. Despite these efforts, researchers continue to rely on prestigious journals—often associated with major publishers—for academic recognition, funding opportunities, and career

advancement[38]. This highlights another crucial point: changing the system cannot fall solely on individual researchers. Research institutions, funders, and policymakers—which actively sustain the current publishing model—must also take action[44][45]. They hold the power to drive large-scale change by reshaping how research is funded and evaluated. Other institutional solutions could also help distribute costs more equitably and support researchers in lower- and middle-income countries, as demonstrated by long-standing models in Latin America, such as SciELO, Redalyc, and AmeliCA.

One crucial point to highlight in APCs is the disparity in currency values across countries. What might be a manageable fee for researchers in wealthier countries can be insurmountable for those in less developed regions. For instance, while the average minimum wage in the United States is significantly higher than in Brazil, APCs are not adjusted accordingly. A fairer model would standardise prices based on, for example, minimum wages or research and development expenditure (see World Bank data), thus ensuring more equitable access to publication opportunities. Interestingly, on February 11th, 2025, I received an email from Wiley announcing that all authors affiliated with Brazilian institutions would receive a 55% discount on APCs when publishing in their fully OA journals. This initiative is part of a new Open Access Pricing Power Parity Pilot, which applies country-specific discounts based on purchasing power. A more equitable APC model could also follow a 'progressive' approach, where journals could implement a system in which APCs are partially refunded to authors if their articles reach a certain threshold of downloads or citations, thereby incentivizing high-impact research while improving accessibility. However, such a model must account for potential manipulations, such as artificially inflating download counts by repeatedly accessing the article or increasing citation counts through excessive self-citations. To mitigate these risks, journals could implement safeguards like tracking unique downloads over a defined period or basing refunds primarily on citation counts, excluding self-citations. A currently available option is for authors to request waivers from APC-OA journals. In this case, authors can cite political and financial instabilities in their home countries to justify the waiver request. For instance, the paper I published, which sparked the conversation with my relative, was in a journal that charges APCs for OA. However, we requested and received a full waiver, without which we could not have afforded to publish there. Additionally, initiatives such as Research4Life (https://www.research4life.org/) offer discounts and waivers on APCs for authors from developing countries and provide institutions in lower income countries with online access to academic and professional peer-reviewed content. While these efforts provide some relief, they fall short of addressing the broader structural inequities in academic publishing and offer only partial solutions to the accessibility and affordability challenges researchers face.

Preprints, or preliminary versions of research papers shared publicly before formal peer review, also offer an alternative to these issues, as they can potentially reduce researchers' dependency on traditional publication venues[46][47][48]. The prevalence of pre-printing is greater in the fields of physics, astronomy, mathematics, and computer science compared to other research domains[49], but there is a rapid increase in the acceptance of preprints among other disciplines as well[50]. Preprints can be particularly advantageous for early-career researchers as they enable the swift dissemination of academic findings, provide open access without APCs, allow for broader feedback concurrently with or prior to the peer review process, and promote collaborative opportunities[51]. However, some drawbacks include information overload, which makes it more time-consuming to find relevant literature; insufficient quality control since there is no formal peer review before posting, raising concerns about the dissemination of unverified information; citation dilution; inflated results and potential misrepresentation of impact, among other issues[52]. Additionally, preprint servers are not without costs; for instance, *bioRxiv* relies on financial support from Cold Spring Harbor Laboratory (CSHL) and the Chan Zuckerberg Initiative (CZI). Preprints are also reliant on researchers' engagement in terms of reading and providing constructive feedbacks on submitted studies, a service they already perform for free for many periodicals.

A key barrier frequently identified for preprint acceptance is a need for more institutional recognition, such as for hiring and promotion. This lack of recognition limits the potential of preprints as standalone research outputs and their wider uptake. The various stakeholders in academia, such as funding agencies and research institutions, can take a range of actions to increase recognition and adoption of preprints, including accepting preprints in fellowship and grant applications, have transparent public policies on preprint use, clear guidelines on how to cite and report preprints, incorporate preprints into researcher

and grant assessment[53]. Also, preprint servers do not have an impact factor, making them less attractive within a system that prioritizes journal rankings. Therefore, initiatives that shift the focus away from IFs —such as those promoting alternative valuation metrics could help mitigate this barrier and encourage wider adoption of preprints.

AI-assisted tools could help to invigorate the preprint landscape. For example, *Qeios* (https://www.qeios.com/), where this manuscript has been initially published as a preprint, is a multidisciplinary Open Science platform that "employ custom-built AI to identify and invite the most appropriate peer reviewers, while spontaneous reviewers can also join. [...] The process is fully transparent, with reviewers signing their feedback—posted alongside the article—and disclosing any potential conflicts of interest. Reviews include numerical scores that determine approval and provide readers with a deeper understanding of the paper's value." This model can foster a more collaborative scientific community where authors can update their preprints as reviews accumulate, incorporating feedback and improving their work. Essentially, publications would not rely solely on the assessment of a few editors and reviewers, but on the broader scientific community. Take the current manuscript as an example: first published on *Qeios* on January 23rd, 2025, it has been viewed by over 300 people, downloaded 74 times, and received eight peer reviews as of February 19th, 2025.

In conclusion, the academic publishing industry is fraught with complexities and ironies that leave many, both within and outside academia, baffled. Scientists dedicate immense time and effort to conduct research, only to face a convoluted and often costly publishing process. They engage in peer review without compensation, only to potentially pay hefty APCs to make their work accessible. The open access movement, though well-intentioned, has been co-opted by major publishers who impose significant financial burdens on researchers, especially those from less affluent regions.

Despite these challenges, hope is not lost. There are no-fee open access journals and platforms controlled by scientific societies that offers more affordable and equitable publishing options. These publishing venues still uphold the spirit of making knowledge freely available without significant financial barriers. However, the lack of or low impact factors for many of them presents a challenge for career advancement in a system that still heavily relies on these metrics. Addressing this fundamental flaw in academic publishing requires a collective shift by researchers, institutions, and funding bodies away from the fixation on impact factors. Moreover, the rise of preprints presents an interesting solution, fostering a more collaborative and transparent publication process. By embracing preprints, researchers can share their findings more freely and receive broad-based feedback, thus reducing reliance on traditional, often exploitative, publishing models. Additionally, technological advancements, particularly artificial intelligence, could help streamline various aspects of scholarly publishing and reduce operational costs. AI-assisted tools, like those used by *Qeios* for selecting reviewers, could be further developed to handle tasks such as plagiarism checks, manuscript formatting, and even preliminary editorial assessments. While these technologies are not without challenges, they hold promise in making scholarly publishing more efficient and accessible.

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