The Impact of Open Access and Organizational Incentives on Academic Integrity in Publishing

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignment

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Introduction

The knowledge that we build on today is grounded in published research from academic conferences, prestigious journals, and papers from world-renowned professors. These types of research then ultimately help form the basis of any new claims and advancements that are created in a general literature review by new researchers. However, this foundational knowledge is becoming increasingly at risk, and the information necessary to partake in an ethical search for information is being corrupted. And with the recent rise of large-language models like ChatGPT and Claude, this issue is seen as one that will only become more widespread and complex (Meyer et al., 2023).

Also seeing as there has been a direct rise in the number of retractions and general fraudulence in academia as well (Else, 2023), it is important to understand how we have gotten to this point as the problem expands. Much of this issue can be traced back to systemic flaws in the publishing landscape, where open access models and institutional incentives have reshaped the dynamics of academic integrity. And while there are many individual bad actors in play contributing to this landscape, much of the blame comes from the workings and interactions between large organizations. Some of these groups and stakeholders within this environment involve researchers, publishers, universities, libraries, and funding agencies, all of whom play key roles in this publishing ecosystem.

While the term “open access” suggests research should be free and accessible to all, in reality, it often just shifts the cost from readers to authors and institutions. Initially intended to promote equitable knowledge sharing, open access models have become highly commercialized, with large publishers profiting from Article Processing Charges and Transformative Agreements (TAs) that shift costs from readers to researchers and institutions. These financial pressures have

created perverse incentives for both publishers and academics, leading to an increase in predatory journals, retracted papers, and weakened peer review processes (Else, 2023). Examining these systemic shifts is essential to understanding how economic structures shape research integrity and what reforms may be necessary to realign incentives with academic values.

Background & Context: Open Access and Institutional Incentives

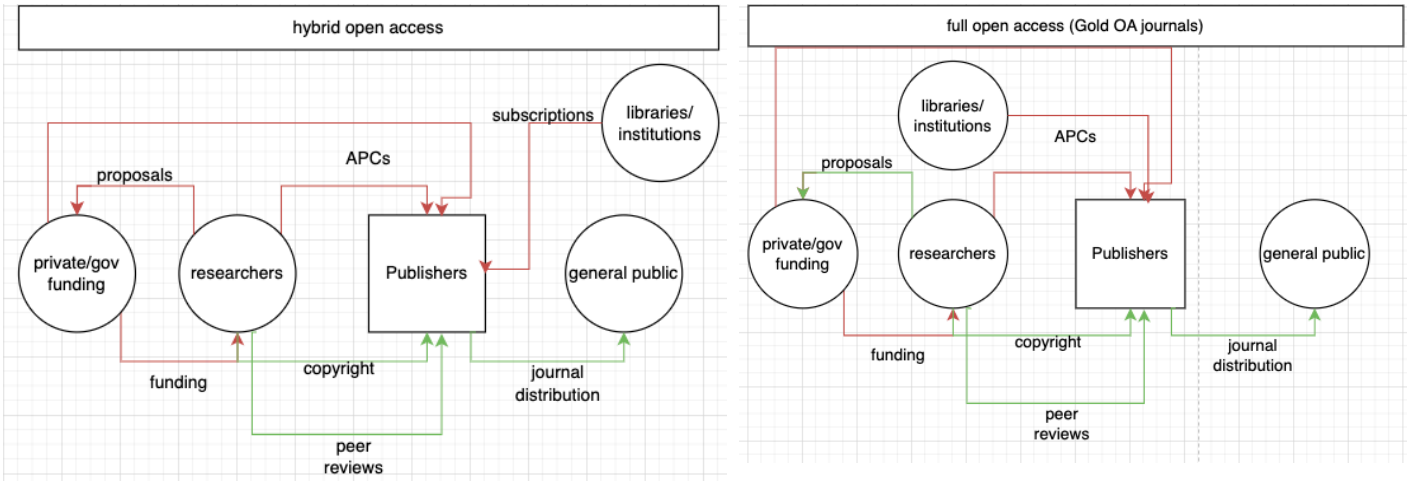
Article Processing Charges trace their history back to the page-charge pricing system that was popular during the early 20th century as a method of funding scholarly publishing. In general, the cost of publishing an academic article has to be covered somehow: either by readers (through subscriptions), by institutions, or by authors themselves. The American Institute of Physics (AIP) was the pioneer to implement author fees in the 1930s as a funding source for publishing physics journals, based on Scheiding (2009). Initially, such fees were being paid by researchers and not by individual scientists, and typically defended as a willing payment to facilitate the sharing of scientific knowledge. The model then expanded, subsequently, particularly during the post-World War II period, as government agencies such as the Atomic Energy Commission (AEC) started subsidizing these APCs in order to facilitate open sharing of publicly funded research. APCs were, by the 1960s and 1970s, a significant source of funding for scholarly journals but raised concerns over their equity and expense to result in controversy surrounding their role in scholarly publishing. These early page charges established the precedent for the modern APC model, which spread extensively during the 2000s with the advent of commercial open access publishing (Scheiding, 2009).

The open access movement originally emerged to eliminate paywalls and make publicly funded research freely accessible to all, with the goal of democratizing knowledge across

institutions. However, in practice, the most common implementations today are hybrid and full open access models, two frameworks that have introduced new challenges, as shown in Figure 1:

Figure 1

Transitions to Hybrid and Full Open Acesss



Note. This figure demonstrates the interactions between different groups in the hybrid and full open access publishing models. The hybrid model relies on both APCs and subscription fees, while the full open access model eliminates subscriptions, relying solely on APCs for funding.

And while other forms of open access exist, these hybrid models are the most prevalent today across Universities and institutions. This complex network of benefits and costs among researchers, institutions, publishers, and funding agencies shapes the landscape of modern scholarly publishing.

Transformative Agreements (TAs), first gaining prominence in Europe during the early 2010s, have emerged as institutional strategies aiming to transition subscription-based journals

towards open access publishing (Borrego et al., 2021). Typically structured as contracts between universities or consortia and publishers, TAs reallocate subscription funds to cover both access for readers and APCs for authors from participating institutions. While designed to accelerate the shift towards widespread open access without additional costs for authors, TAs have inadvertently complicated the scholarly publishing landscape. Financially robust institutions negotiate favorable terms, gaining privileged access and publication opportunities, whereas smaller universities may struggle with the financial demands of these agreements. Consequently, TAs can inadvertently perpetuate inequalities in academic publishing, intensifying existing disparities rather than addressing them (Demeter & Istratii, 2020). The inequality here lies primarily in the ability to publish: researchers at wealthier institutions benefit from institutional APC coverage, while those at smaller or underfunded universities may have to cover fees out-of-pocket or avoid publishing in these journals altogether. For example, a well-funded researcher at Harvard might publish multiple articles under a TA with no personal cost, while a faculty member at a small liberal arts college could face thousands in APCs for the same opportunity. This dichotomy ultimately creates unequal visibility, access to career advancement, and participation in academic discourse.

In the modern publishing landscape, the created financial incentives from TAs and therefore many underlying APCs have led to pressures on researchers and publishers that have led to many unintended consequences. Generally, the transition from paywalled subscription journals to free open access was meant to remove financial barriers and democratize knowledge. However, the specific introduction of APCs has incentivized publishers to prioritize volume over quality (Butler et al., 2023). Since APCs generate revenue on a per-article basis, the more articles a publisher accepts, the more money they make, especially under large-scale agreements like

TAs, which guarantee bulk payments tied to publishing volume. As a result, some publishers accept subpar research to maximize revenue, while researchers, under institutional pressure to publish, may engage in questionable research practices to meet career demands.

Literature on Open Access and Academic Fraud

The commercialization of open access publishing has been widely analyzed, with research showing that publishers profit from APCs while libraries and institutions shoulder increasing financial burdens (Huang et al., 2020). As previously mentioned, retraction rates have increased significantly over the past two decades, with a notable rise in biomedical sciences, where the pressure to publish in high-impact journals and the prevalence of APC-funded open access models may contribute to this trend (Cokol et al., 2008). The financial motivations of publishers, combined with institutional demands for high research output, create an ecosystem where fraudulent practices such as data manipulation and ghostwriting thrive.

Another unintended consequence of the APC-driven model is the rise of predatory journals. These are illegitimate or low-quality outlets that exist primarily to collect APCs from authors, with little to no peer review or editorial standards. They "publish almost anything for a fee," exploiting the imperative for scholars to publish their work (Moher et al., 2017). And in fact, the problem of predatory publishing is global and growing. A notorious 2013 sting by John Bohannon revealed how dozens of journals (even some listed in reputable directories) accepted a bogus, fatally flawed paper, so long as the fee was paid (Kritikos, 2024). Recent estimates suggest there are over 15,000 active predatory journals as of 2023, a number that has increased significantly since the mid-2010s. The rise of these venues poses a direct integrity risk to academia: research published in predatory journals often evades rigorous scrutiny, which can

lead to the dissemination of invalid or even fabricated findings. Their proliferation has been facilitated by academic incentive structures – a worldwide emphasis on bibliometric indicators (number of publications, citation counts, etc.) creates pressure on researchers to publish prolifically (Camargo et al., 2023). Less experienced or under-resourced scholars, faced with "publish or perish" pressure and limited funds, may see predatory journals as a quick or only viable route to meet institutional publication requirements. In short, the combination of publish-or-perish culture and an APC-based pay-to-publish system provides an empty landscape for predatory publishers to thrive, thereby threatening the quality and credibility of scholarly literature.

With many APCs falling under Transformative Agreements (TAs), I will further contextualize this issue by examining the University of California's library agreements as a case study. The UC's entrance into Transformative Agreements (TAs) with leading publishers seeks to promote the visibility of the research outputs, support the movement towards open access by paying Article Processing Charges (APCs) on behalf of its scholars, and enhance the reputation of the institution through more citations (University of California Office of Scholarly Communication, n.d.). However, this strategy also further aggravates the systemic problems of academic publishing. The use of TAs encourages publishers to pursue the number of articles published rather than the quality of articles, leading to the commercialization of editorial boards. This situation is beneficial to early adopter institutions that are richer while smaller ones that are poor are strained financially, creating a cycle of inequalities. Journals, for example, like Design Studies and Critical Public Health witnessed resignations of editorial boards recently due to their grievance with these practices (Bell et al., 2021), which requires a re-examination of the TAs. It is necessary for the UC system to analyze if indeed these TAs promote open access or rather

support the publishing company's control, as well as identify more affordable and just models for academic publishing.

From an Actor-Network Theory (ANT) perspective, the dynamics surrounding Transformative Agreements (TAs) and Article Processing Charges (APCs) at the UC system illustrate the ongoing process of assembling a network of actors—researchers, publishers, institutions, and financial agreements—who are constantly negotiating and reshaping academic publishing practices. Rather than simply existing as static roles, these actors actively influence and are influenced by one another. For instance, publishers use financial incentives and policy adjustments, such as the introduction of APCs, to persuade institutions to adopt TAs, presenting these agreements as a solution to open access demands. Institutions, in turn, balance competing pressures to maintain prestige, ensure accessibility, and manage budgets, which often leads to their endorsement of TAs to meet both internal and external demands. Researchers navigate these agreements by aligning their work with institutional funding and publication requirements, while also advocating for recognition and access opportunity. By the creation of this system in which actors and stakeholders continually influence and respond to one another, society and culture within academic publishing emerge as dynamic outcomes of these interactions.

Rising APC Costs and Open Access Affordability

The evidence I collected at this stage will come from two sources: evidence from primary sources my capstone team and I found and secondary literature. The former consisted of both quantitative and qualitative data we found from primary sources online as well as some informal interviews. The latter consisted of articles, reports, and other documents from academic journals and government sources. Both of the information sources from my capstone project and

secondary literature were deliberately selected to provide a holistic view of the problem and show various perspectives on the issues. Much of the calculated and found quantitative data substantiate claims on trends in APC pricing and institutional expenditures, whereas the qualitative data provides context.

Article Processing Charges have risen significantly over the past decade, far exceeding normal inflation rates for which a rise in price would be explanatory. One analysis found that APC prices have been increasing at roughly three times the rate of inflation (Khoo, 2019). In the University of Virginia's case, the budgeted allocation for "E-Journals and Databases" has increased 16.1% from 2019 to 2024. And furthermore, the global average APC is estimated around $1,600 per article (Morrison et al., 2021), but many journals charge much more, even over $10,000 for prestigious titles, like Nature. This rapid increase in average price for all journal publications has raised many concerns of unsustainable budgetary constraints on University libraries, as well as the general profiteering of publishers to the expense of researchers and institutions. During a meeting with a University of Virginia Library staff member, my capstone team and I learned that publishing costs for journals have increased by 6-15% annually, since 2019. This rising expense has significantly impacted the library's budget, leading to staff reductions and other financial cuts. And while it is important for students and staff of a university to have access to these materials that APC covers, many times it is the librarians and other resources that the University offers that are more of direct benefit to students.

Also very crucially, higher prices have not deterred authors from submitting. The volume of articles published under the APC model has exploded even as fees rise. According to one analysis, when journals introduced or raised APCs, there was no drop in article submissions or publications as would be expected if authors were price-sensitive (Khoo, 2019) .In fact, among a

sample of 319 journals from leading open access publishers, journals with higher APCs tended to attract more submissions, suggesting that authors equate those journals with higher status and are willing to pay for the opportunity to publish in them (Khoo, 2019). This lack of price sensitivity means market forces are weak in curbing APC inflation; researchers (or their institutions) often pay what it takes to get into certain journals. As a result, publishers have a relatively free hand to keep raising APCs, knowing that the demand, driven by academic career incentives, will remain. And even when articles and papers are rejected, much of the time they are "cascaded" to another subsidiary or related journal within the publisher's portfolio. This cascading practice allows publishers to retain manuscripts (and their potential revenue) by redirecting authors toward journals with lower acceptance standards or prestige, rather than losing submissions entirely (Wood, 2018).

Furthermore, in a recent report to the U.S. Congress on financing mechanisms for open access, they found that 83% of research libraries now have some form of TA in place, spending on average $684,000 per institution in 2021 (ranging from $16,000 to $2.1 million) on these agreements (OSTP, 2023). These deals bundle subscription access with coverage of APCs for authors, aiming to make open access publishing seamless for researchers. Yet, these models that many institutions and universities subscribe to are also pricing out many of the library budgets as well. In interviews my capstone team conducted with staff at the University of Virginia Library, we were told that escalating costs from publisher contracts have already forced cutbacks in staffing and other student-facing resources, directly tied to the financial burden of maintaining TAs.

Discussion and Analysis

In 2023 alone, more than 10,000 research papers were retracted, the highest yearly total on record (Van Noorden, 2023). This worrying trend is a symptom of deeper issues in academic culture and publishing. As much of the previous results indicate, the scholarly publishing system is caught between two competing forces: the drive for open access, which aims to accessibly democratize knowledge, and the pull of organizational incentives that often reward quantity of research, prestige, and profit in ways that are misaligned with research integrity.

One major insight from this research is that systemic incentives in academia are misaligned with the ideals of quality and integrity. A common phrase among the interviews with various subject matter experts we heard was the rise of the "publish or perish" culture that has remained pervasive in universities. In these systems, the primary measurement for advancement is an individual's publication count and the impact factor of the journals that they publish in. Hiring, tenure, and funding decisions often hinge on bibliographic metrics that value productivity and quantity at the expense of completing more rigorous research. The recent rise in retractions demonstrates this point: more researchers, professors, and scientists are operating in a climate that incentivizes getting results out quickly. In a system where, "your value as a researcher depends on your ability to crank out publications", it is not surprising that some will cut corners (Rahman, 2024). These pressures directly intersect with the same economic incentives that are created by APC and TA driven open access models. Specifically, economic incentives encourage publishers to accept more submissions to generate higher revenues, reinforcing the pressure on researchers to produce large volumes of publications rapidly. From an Actor-Network Theory perspective, this illustrates how researchers, institutions, publishers, and financial mechanisms are interconnected actors whose behaviors and incentives continually shape and redefine the academic publishing landscape.

Unfortunately, the evaluation metrics themselves are flawed and easily gameable. One of the most commonly used metrics for professors, the h-index, was initially created by a theoretical physicist to count both the productivity and citation impact of researchers' published work, measuring the number of publications (h) that have each received at least h citations (Hirsch, 2005). Yet, as its popularity quickly expanded across both subjects and schools, many began to dilute their work into multiple low-impact papers, (splitting what could be a single, more substantial study into several smaller publications) add co-authors strategically to share credit and boost collective citation counts, and engage in practices like excessive self-citation or reciprocal citation agreements, all to artificially raise their h-index (Yeo-Teh & Tang, 2022). This general misalignment distorts researcher behavior as shown and can also easily degrade the quality of the scientific record. Commercial publishers, as highlighted by Trueblood et al. (2025), have capitalized on these incentive structures; they profit from both the authors' need to publish and the readers' need to access by introducing steep paywalls and fees that academic institutions feel compelled to pay. Interestingly, one of our unnamed interviewees, an executive closely involved with monitoring issues of research integrity, noted that, "the best metric is no metric at all." While this may sound extreme, it reflects growing frustration with how easily current evaluation systems are exploited. And while it is difficult to imagine a scholarly environment completely devoid of evaluative metrics, the sentiment highlights the urgent need to critically assess and reform the way scholarly contributions are valued.

Conclusion

Through analyzing the various actors and their intricate interactions within the academic publishing landscape, it becomes evident that current challenges stem significantly from economic pressures and institutional evaluation metrics that misalign with the core values of

scholarly integrity. While open access models were originally envisioned as a pathway to open up knowledge and foster equity, commercialization through Article Processing Charges (APCs) and Transformative Agreements (TAs) has ironically intensified financial disparities and compromised the integrity of scholarly research.

Moving forward, the part of this research aligned with my capstone project will be continuing in the fall with a newly formed group of Systems Engineers. They should look to further research the economic implications of APCs and TAs on university budgets as this research did, understand how those implications will shape policy, and continue to directly engage with subject matter experts in informal interviews to fully understand the complex incentives and constraints faced by stakeholders in academic publishing. Furthermore, the team should look to continue to investigate possible metrics that could be used to possibly evaluate research quality.

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