
### Description

*The following is a summary of Toward Science-Led Publishing by Damian Pattinson and George Currie.*

The way we communicate and evaluate research today is largely dependent on a heavily-commercialized publishing industry. An industry with profit margins up to 50%, just five publishers control over 60% of the market. Whether funded by APCs or subscriptions, journals are built to compete, grow, and maximize profit. Regardless of stated mission or purpose, most scholarly publishing operates and must compete within this same system.

## What is Science-Led Publishing?

Science-led publishing prioritizes the needs of science in research communication and evaluation. Necessarily, it prioritizes speed, fairness, transparency, and continuous improvement. Despite huge advances in communications technology, the core practice of research publishing—submission, review, publication—operates just as it did in print. Science-led publishing instead embraces digital infrastructure that allows open, iterative sharing, review, and revision.

In contrast, today's system, "publishing-led science", tends to be shaped by commercial pressures and prestige metrics, rewarding what is profitable or advantageous, not necessarily rigorous or useful science.

This drives behaviors like publication bias, inflated claims, and sheer volume over quality. Because careers, funding, and reputations are tied to publications, researchers must often prioritize journal requirements and expectations over scientific integrity.

### Key Issues in Publishing-led Science

- Publication bias toward positive results in higher likelihood of: (1) publication, (2) greater number of publications, and (3) publication in journals with high impact factors
- Interesting results are favored over reliable results and may face less scrutiny by reviewers and editors
- Journal revenue is dependent on article volume in APC-model publishing creating a conflict of interest for journals as gatekeepers of the scholarly record

- Journal cascades are an admission that supposedly lesser-quality research isn't filtered out, it is redirected to other journals within a portfolio to avoid lost revenue
- The increasing volume of publications is increasing demands on researchers as authors, editors, and reviewers
- APC-pricing appears to increase as citation impact increases, yet when other measures are accounted for there is little correlation between cost and eventual impact

But these issues are not contained within the publication end of research. These pressures filter backwards through to research decisions.

Pressure to publish distorts how science is conducted and presented, whether or not all results are included, how it is analyzed, and even what questions are investigated in the first place. These pressures also create demand for papermill research, where authorship is bought and sold. Because publication is of great importance to research and researcher assessment, research funding, and research careers, it impacts the very livelihoods of researchers. This, unfortunately, is a strong incentive for researchers to work towards goals that facilitate publication, not necessarily those that align with good science.

Publishers, through influence over editorial infrastructure and journal gatekeeping, have gained significant control over what science is valued and how. Disputes between editors and publishers highlight a growing tension, especially with regard to pressures to accept more papers due to APC revenue, with mass resignations increasingly common.

Our current system is also slow. Peer review takes a long time–especially if we expect it to be done well by the right experts–with little evidence. However, when research is rejected after this process, the time, as well as the contributions of peer reviewers are often wasted entirely. As a result, the current system has a negative impact on the research endeavor: distorting it, dictating it, and slowing it down.

## Accelerating Progress

Science-led publishing prioritizes fast, open communication of research. It embraces preprints as the industry standard, reducing publication delays and enabling free, immediate access for authors and readers.

### Does Peer Review Improve Research?

Though peer-reviewed articles are often seen as more reliable and peer review can help improve papers, studies show that the majority of preprints are later published with only minor changes. This suggests preprints are comparable to journal articles in terms of quality and trustworthiness.

Preprints that don't eventually get published in journals may not indicate lesser quality but a difference in socio-economic conditions. Research from low-income countries is less likely to make it from preprint to journal and there are many systemic barriers that may be behind this trend. Journal publication may not be a filter for quality, but a filter for privilege.

So, are preprints any less valuable than journal articles? Healthy skepticism should be the default position when reading any research claim but the delays don't appear to be worth the supposedchange in quality.

### Does Peer Review Validate Research?

Critics of preprinting might argue that improving ideas is only one function of peer review; that peer review also serves to validate research, and by extension filter out research that shouldn't be validated.

In practice, peer review functions more to serve journals as brands than as collected voices of a research community. Journal cascades are the industry's admission that filtering out isn't the point. Instead peer review stratifies research based on perceived novelty, impact, or conformity to norms; brand values, or euphemistically, "Journal fit".

Under the APC model, journals revenues are tied to publications rather than exclusivity, the growth of retractions highlights the damage of this conflict of interest.

As publishing shifts from exclusivity to volume-based profit models, peer review's role as a gatekeeper is under pressure. The true value of peer review lies not in filtering publications, but in contributing to an open and constructive dialogue that helps improve our scholarly record and is a visible part of it.

## Collaboration not Competition

Science-led publishing redefines the relationship between authors, editors, and reviewers into the one of collaboration rather than control.

### Validation and/or feedback

In traditional peer review, reviewers are asked to both improve and judge a paper. This creates pressure: authors may feel obliged to implement suggestions they don't agree with to secure acceptance. Given how much depends on publication this dynamic can further distort the process.

Removing the threat of rejection and giving authors more control enables peer review to focus on contributions to science rather than protecting journal brand status. Reviewers are free to give thoughtful feedback, authors are free to select which parts they are willing and able to act on, and editors support the process.

Decoupling review from acceptance creates a more transparent, fair, and constructive system. Authors gain security and control and peer review becomes part of an article's visible history, rather than an invisible part of the publication process.

## Openness and Equity

Science-led publishing prioritizes transparency by making research freely available, encouraging open sharing of data to aid reproducibility and transparent peer reviews to foster dialogue, and preserve valuable scholarly contributions.

### Open Access, greater sharing and transparency

Despite growth in open-access publishing, around half of research is still paywalled. If the goal is to accelerate and advance knowledge discovery, the ability to access relevant research should be a basic expectation rather than a question, especially not a question of means.

APC-funded Open Access has helped increase access for readers but it has created new inequities in who can share their research and where. While APC waivers help address this, it is not equitable. Greater recognition of preprints as worthy research outputs in their own right would help address these inequities as preprints are free for authors to publish and for readers to access.

As access and transparency grow, fostering a research culture more open to scrutiny, debate, and full visibility of research outputs is both necessary and desirable.

### Transparent Peer Review

While peer review is not shared publicly, much of the benefit it could bring is wasted. Not only when the process ends in rejection but the value it could have in informing future debate. The labor cost of peer review is estimated to be in the multi-billion dollars. At best we are not realizing its full potential, and at worst we are completely squandering valuable scientific discourse.

Making reviews part of the scholarly record and inextricably linking them to articles would reduce the cost caused by repetition of peer review and share the value of that work with readers, editors and future reviewers. Transparency also embeds accountability into what is currently an opaque system.

## It’s Within Our Reach

While publishers take the role of gatekeepers, validators, and amplifiers of research, and control the flow of academia’s prime commodity: the publication, the relationship between science and publishing is one with significant conflicts of interest.

We have the tools and infrastructure to reform scholarly communication to better serve science by using existing technologies, repurposing current practices, and making participation more accessible and equitable.

It is a choice, and it is within our reach!

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**Category**

1. Thought Leadership

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