Rethinking scholarly communication

Publish or perish. To researchers, the importance of scholarly publishing has always been clear. Academic publications, and their associated metrics, are critical in determining who enters and who succeeds in research. Because of this, a publishing process that is equitable, fair, and inclusive to authors of diverse identities is essential to fostering a more diverse scientific community, ensuring that no innovations are lost and allowing the maximum range of scientific issues to be captured.

Earlier this year, we organized a US National Science Foundation-funded community workshop (award #2209643) to explore the intersection between scholarly publishing and diversity, equity, and inclusion (DEI). With expertise in publishing across science, technology, engineering, and mathematics (STEM) disciplines, 50 professionals shared strategies, challenges, and successes for making scholarly publishing more accessible and inclusive. During workshop presentations, a recurring theme was the challenge of moving to open access. The accompanying shift in business models has created a new dynamic, transferring the cost of publishing from readers (library subscriptions) to authors (article processing charges, or APCs). The cost of publishing is a substantial barrier to many, but especially to those researchers of systematically oppressed groups. Indeed, according to our survey last summer of the ecology and environmental community (with more than 850 respondents), and in a world where there are still options for publishing that do not involve high fees, one-fifth of respondents are already paying their publication charges with personal funds. This number is even more discouraging when considering that three-quarters of respondents did not publish their last article as open access because they did not have the necessary funds. Even more distressing: multiple studies show that the author-pays model of publishing has disproportionate negative impacts depending on an author's career stage, gender, geography, and race.

The White House Office of Science and Technology Policy (OSTP) memo released in August 2022 (https://tinyurl.com/js6bukdz) is the most recent guidance in a 20-year march toward open access. After decades of discussion – by very motivated groups! – there are still no great solutions for expanding open access while providing financially sustainable peer review and production services across STEM publishing, or for making it fair and equitable to authors. So far, we have merely devised a series of band-aids such as waivers or transformational "read and publish" agreements with countries or institutions. These well-intentioned solutions fail to address the underlying problem, which is a clash between the values of the old system and the current values and needs of our society.

Subsequent manuscripts will delve further into the specifics of conversations at the workshop, but our conclusion after two days of discussion is that there is a fundamental mismatch between the system in place and how we want science and science communication to function in the 21st century. The system of peer review was built to safeguard validity and credibility, but that same system of gatekeeping has bred exclusion. With the crises facing society, it is imperative to share valid and scientifically sound information publicly. And now the OSTP memo demands it. The questions are how do we do it, who will pay for it, and how do we ensure that the system does not become more inequitable than it already is?

So perhaps it is *how* we publish that needs to perish. We need to think more broadly and creatively about how we communicate science – what qualifies as a publication, how we assign value to different types of publications, and how our professional incentive and reward systems manipulate that value. Technology has given us many tools to communicate; publication formats such as preprints and data papers will be essential to modernizing how we share our science.

For change to occur, though, it is incumbent upon all of us in the research ecosystem to adjust our thinking. Higher education administrators need to revise their expectations in the tenure and promotion process. Funders need to provide adequate resources for grantees to share their data and findings. The ecological community must demand that open access models consider the true cost of publishing. And we *all* must work collectively to safeguard peer review and ensure high-quality science communication outlets. As we do so, we need to envision a more equitable future in which barriers to the publishing economy are not imposed upon so many, where access is not only limited to those who can pay. After all, it is those who are adaptable to change that survive.

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