Scholarly Publishing Developments to Watch

Tim Cross

> "It is not the strongest or the most intelligent who will survive but those who can best manage change."
>
> —Charles Darwin

For those of us involved in the endeavor of scientific editing and publishing, it's not overstating the case to say we are experiencing monumental changes on every level of scholarly communication at a pace we've never seen before. At times we struggle to make sense of what's happening around us. At other times, we are the authors of these changes ourselves, as we innovate and move in new directions.

Experience has proven it's dangerous to make predictions about the most important or meaningful trends evolving in our industry. Instead, what follows is a brief review of some interesting developments for science editors to watch over the coming year. Where they will lead remains to be seen.

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Improving Institutional Access to Content

One of the enigmas of problem solving is how setting out to solve one problem can unearth another. This is the case with Sci-Hub, a well-known pirate site that has used educational institutional proxies it obtained to bypass publisher paywalls and make more than 60,000,000 scientific articles freely available to the world. It's probably not a surprise that some advocates have cheered it on as a champion for disadvantaged researchers while publishers condemn it as a criminal enterprise. But it was a surprise to find researchers at universities in the United States with legal access to content at their home institutions downloading articles from Sci-Hub because of its faster and simpler user experience. As libraries and publishers face the challenges of fighting piracy, another problem has come to light that may lie closer to home. The scholarly publishing community has come to realize serious attention needs to be paid to streamlining authorization to access content at the institutions where researchers work, in a way that also protects user privacy and defends against security breaches of institutional data.

A big step forward in addressing this reality is the launch of RA21: Resource Access in the 21st Century, a joint initiative of the International Association of Scientific, Technical, and Medical Publishers and the National Information Standards Organization "aimed at optimizing protocols across key stakeholder groups, with a goal of facilitating a seamless user experience for consumers of scientific communication."[1] Recognizing the use of Internet protocol addresses to authorize content access is no longer a functional mechanism, it seeks to "align and simplify pathways to subscribed content across participating scientific platforms"[2] and remove the barriers that prevent a move to a more functional system based on Security Assertion Markup Language federated authentication technology. In this effort, the scope of RA21 is focused on determining best practices, not the design of specific tools or practices. The initiative is currently in the pilot phase, which is expected to be completed by late 2017 or early 2018.

Continuing Efforts to Battle Predatory Publishing

One of the unfortunate unintended consequences of the continually evolving open-access journal has been the appearance of an unwanted player on the scene: the predatory publisher. We can argue whether this is a temporary side effect that can be mitigated at some point, a serious flaw that's baked into the equation, a socioeconomic problem, or the inevitable outcome of the enormous pressure on researchers to publish—but the most practical course seems to be to accept the presence of predators in our midst and find proactive solutions to identify and combat them. Ultimately, editors, researchers, and legitimate publishers will all be better off if we can design safeguards and educate authors.

One effort to address the problem was the "Beall List of Predatory Journals and Publishers," which took the blacklist approach to identifying possible and probable predatory publishers. This approach was not immune to controversy, of course, and the list generated fair numbers of both supporters and detractors. Looking at this problem from a different angle, Cabells International has taken the approach of launching "The Journal Whitelist." Rather

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than a blacklist that attempts to identify bad actors, "The Journal Whitelist" is an invitation-only, curated list of more than 11,000 academic journals that bases inclusion on a set of criteria and annual audits, covering the areas of audience, relevance, sponsorship, quality, peer review, fees, policies, publication practices, and integrity.[3] The Cabells list joins an expanding array of resources for author and editors, which includes Think. Check. Submit., a campaign designed "to help researchers identify trusted journals for their research," and a plethora of educational efforts by universities and libraries: for example, the "Guide to Scholarly Writing, Publishing, and Research Impact" posted by the Newton Gresham Library at Sam Houston State University.[4]

Artificial Intelligence in the Editorial Workflow

The Chan Zuckerberg Initiative acquisition of Meta[5] earlier this year and the emergence of products such as Yewno Discover and Yewno Earth[6] have ramped up interest in the scholarly community as to how the technology of artificial intelligence (AI) might be used to support publishing and editing processes. Although this may convey scary images of a robot replacing a journal's entire editorial staff, publishing is not like automobile manufacturing. Machine learning, smart software, computational linguistics, and other forms of human-assisted AI that work at a scale or speed that humans cannot will simply provide efficiencies that many editors will find quite beneficial.

In the big picture, there is excitement about the ability of AI to drive search and discovery, uncover patterns and relationships in large collections of scientific data, automate metadata creation, and even predict citations. In the realm of science editing, AI is a powerful tool already being used in very practical ways to detect plagiarism and image manipulation, interrogate data for the identification of potential peer reviewers, and detect data alteration or fabrication. As the saying goes, the possibilities from here are limited only by our imaginations.

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Changing the Publishing Dynamic with Preprints

Much has been written about the explosion of preprint server launches over the past couple of years. Building on the successful arXiv model, which concentrated on physics and later expanded into fields such as mathematics and astronomy, we are now seeing preprint repositories supporting a range of communities from biological and medical sciences, chemistry, and biology (PeerJ PrePrints, ChemRxiv, and BioRxiv, respectively) to psychology (PsyArXiv) and agriculture (AgriXiv) and many others. Arising from dissatisfaction with lengthy publication cycles and perceived obstacles to the dissemination of research, preprints have evolved as a sort of grass-roots movement, functioning in parallel with public access and open science trends. Scientist-driven groups such as Accelerating Science and Publication in Biology aim to embrace journals, funders, societies, and junior and senior scientists as equal partners in the "initiative to promote the productive use of preprints in the life sciences."[7] The effects on these stakeholders are already beginning to be felt.[8] As preprints inevitably begin to be widely integrated into publisher and editorial workflows, how will peer review, manuscript submission, article citations, and funder data be affected, and how will they evolve?

Charles Darwin claimed that survival depends on the ability to manage change. The adoption of federated authentication for content access, efforts to battle predatory publishing practices, the use of artificial intelligence, and the effect of preprints will be interesting developments to watch as they alter the scholarly publishing landscape in the coming years.

Links

1. http://www.stm-assoc.org/standards-technology/ra21-resource-access-21st-century/
2. https://ra21.org/index.php/what-is-ra21/
3. http://www.cabells.com/selection-policy2
4. http://www.shsulibraryguides.org/publish/predatory
5. https://meta.com/
6. https://about.yewno.com/
7. http://asapbio.org/
8. https://scholarlykitchen.sspnet.org/2017/04/18/stars-aligning-preprints/