

"Plan S" falls short for society publishers—and for the researchers they serve

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Over the course of my long scientific career, I have had experience with academic publishing from several perspectives: as an author, as an associate editor of both academic and for-profit journals, as chair of a society's journals board, as editor-in-chief of a major society journal (*Science*), and now as the chief executive of a membership organization (the National Academy of Sciences) that publishes a highly regarded society journal (*PNAS*). While for-profit publishers do bring value to the overall enterprise, ultimately I decided to direct my own research output (whenever it was my choice to make), time, and talent to nonprofit

scientific society publishing. I see merit in redirecting publishing profits to enhance the welfare of the research community through the variety of society programs that support students, underrepresented minorities, community engagement, and other worthy causes—rather than having those monies benefit for-profit shareholders.

In recent decades, society publishers have responded to a number of changes in the publishing landscape. In all cases, these responses have been guided by the wisdom of leading researchers serving on oversight boards charged with ensuring the overall



The proposal known as Plan S has the admirable aim of achieving full OA across a wide swath of journal publications. But the path currently suggested has serious drawbacks that could jeopardize nonprofit science societies. Image credit: Dave Cutler (artist).

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health of the research enterprise. This charge is, of course, broader than simply the broadest dissemination of the research or necessarily the lowest-cost publication model. I continue to monitor that landscape, knowing that further changes are inevitable and part of scholarly publishing's evolution as it aspires to serve science and society.

Hence, I, like many in scientific society leadership and publishing, have been following with great interest the ambitious plan ("Plan S") put forward in September by a group of European funding agencies. But although well-intentioned, several aspects are troubling and problematic for society publishers and the scientific community at large. These aspects require serious discussion and, in some cases, a rethink.

The aim of the plan is to guarantee that all scientific reports funded by participating agencies—a group that currently includes 13 European research funding organizations and three charitable foundations from a total of 13 countries—are published in compliant open access (OA) journals or on compliant OA platforms (1). Plan S funders are actively encouraging other governments and funders to join them. Aside from the 16 official participants, other entities, including China's largest government research funder and two national science libraries (2), have publicly supported the measure although they have yet to sign on officially. The plan, set for an aggressive launch date of January 2020, has sparked controversy and great confusion among science publishers, for-profit and nonprofit alike, as well as among the researchers they represent (3).

I have long been an OA advocate. As editor-in-chief of the *Science* family of journals, I launched *Science Advances*, a fully OA journal. And PNAS is a hybrid journal that has offered an OA option since 2004; 36% of the journal's articles are now OA. All content is free within 6 months and immediately free in more than 120 developing countries. I have personally never encountered an editor or researcher who was not in favor of removing paywalls and reducing embargoes as long as journals can remain viable operations and are accessible to their author communities.

The architects of Plan S have laid out a proposal in hopes of achieving their goal of full OA. And yet, I am apprehensive about the path they suggest, even after my in-depth discussion with one of the leaders of Plan S. This is a crucial time because the coalition's initial comment period for Plan S closes on February 1, 2019 (4). Below are some of my concerns, which I hope can be addressed as additional plans for implementation are devised.

Demanding Requirements

The Plan S coalition's aims are lofty, and their requirements for compliance manifold. Although implementation guidance was released in November, many details are still unclear. It's difficult to discern which journals and platforms will be considered compliant. (Conversely, some details of the plan seem mired in minutiae that could cost publishers considerable time and money—for example, the plan specifies that a

compliant repository must have automated manuscript ingest, must store full-text XML in JATS standard or equivalent, and must have a helpdesk.)

What does seem clear, at least in their implementation guidelines, is that Plan S will not permit publication in hybrid journals (a dominant model for society publishers) unless they meet one of two conditions: (i) The accepted manuscript is made available in a compliant repository at the time of publication without embargo with a Creative Commons Attribution license (CC BY) or equivalent (which permits both commercial and derivative reuse) (5). (ii) The article is published OA with a CC BY license in a subscription journal that has "transformative agreements," which achieve compliance through agreements such as "Read and Publish" (6) during the no-more-than-3-year period before the journal must "flip" to full OA. With such restrictions, publishing in most hybrid society journals will likely be prohibited for authors with Plan S funders, even if their coauthors have other funding. As for PNAS, the journal allows authors to deposit in PubMed Central on publication with no embargo but only if the authors have paid the regular article charge

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and the OA CC BY surcharge, a funding arrangement that would not be allowed under Plan S. The uncertainty of how this change will affect authors and the journal are indeed part of the problem.

Plan S funders have further committed to funding "reasonable" article processing charges (APCs) for compliant journals and platforms, but those caps—yet to be announced—are likely to be higher than those currently charged by fully OA journals. This would allow them to increase their rates to generate more profits. Yet the capped APCs are likely to be less than those needed currently by hybrid journals, many of which have society publishers. (For Plan S's full implementation guidance, see https://www.coalition-s.org/wp-content/uploads/271118_cOAlitionS_Guidance.pdf.)

Careful Consultation

I am also concerned that the architects of Plan S have not consulted broadly with researchers, editors, and leaders of scientific societies to obtain their views of how devastating this plan might be for the very organizations that support researchers and their disciplines. The financial implications could be quite serious. For example, to convert a hybrid journal into a fully OA journal is an expensive proposition for a scientific society because journal subscriptions are suddenly canceled at year's end. OA revenue starts to build over the

following year, but salaries and other web-hosting and archival fees need to be paid continually. In personal conversations with a commercial publisher, I have been quoted estimates in the range of \$1 million per journal for those that have made the transition to full OA. A report prepared for PNAS by an outside firm, prior to the release of the Plan S proposal, estimated the need for \$450,000 in transition costs, \$6.3 million in “bridge” funds, and \$4 million in ongoing cash reserves to make the transition to full OA, including an APC around \$6,000 depending on article length and waivers. (PNAS is expected to only cover its costs, not to make a profit or contribute revenue to the NAS.)

It would be useful for other scientific societies to share their figures as well to compare numbers. I do not know of many scientific societies, including the NAS, that have financial reserves of that magnitude to transition their journals to full OA. What has already been a difficult, competitive landscape between for-profit and nonprofit publishers will become even worse for the nonprofits because they lack the deep pockets to manage and weather the transition.

A related concern is a logistical one. The timeline puts society journals, even those that might wish to comply, in a precarious position as they look at potential disruption to their financial plans for the coming years. Complicating matters, many of the details of Plan S and the precise avenues toward compliance remain unclear. In some cases, journal publishers aren't sure what they should actually prepare for. Adjustments to the proposal and its timeline would help. One welcome change would be to ask that Plan S organizers request execution of the “transformative agreements” only after publishers better understand the intended and unintended consequences of the plan—that is, the impact not just on society journals but also on the societies that publish them. This would mitigate concerns about societies' future viability.

In short, Plan S backers, who control a small percentage of funding, are dictating terms that affect the long-term viability of society publishing on a timeline that doesn't offer societies sufficient insight into that publishing future—or sufficient say in what that future will look like.

A Diverse Ecosystem

I also worry that a less diverse ecosystem of publishing models will be detrimental for researchers. Some journals are more selective than others and thus have higher publication fees because they process and review many papers compared with the number for which they collect fees. Authors willing to pay a higher fee if their papers are accepted by a more selective journal have that choice.

And yet, the architects of Plan S insist that journals must cap their APCs. This would likely lead to a homogenization of the publishing landscape and mean fewer choices for authors. All journals will peg their fees at the cap (why wouldn't they?). The current variety of journals also allows researchers to select a

menu of services: some journals offer in-depth editing by professional editors and help with drafting illustrations whereas others merely copyedit the final accepted paper. Some perform substantial promotion of the published work to news outlets and online media whereas others simply post the paper. The only diversity left will be in the target audience for the journal—not in services, not in selectivity.

At least one major funder appears to have recognized the drawbacks of an APC cap. The Wellcome Trust, even as it endorsed components of Plan S, chose not to cap APCs. I urge Plan S organizers to reconsider the APC cap portion of their proposal and thereby help preserve a diverse publishing ecosystem.

My final concern builds on the previous one. Will the caps leave revenue for scientific societies to support their communities? This remains to be seen. However, given that many of these societies have counted on publishing margins for more than 100 years, it is not clear that there is another source of revenue that can take its place. Some scientific societies, seeing declining revenues from publishing, have looked to their meetings program to shore up society finances. However, the current pressure on societies, often from their members, is to provide more meeting content online, free, in real time to those researchers unable to travel—pressures not unlike those experienced in the publishing programs.

And it's important to tread carefully. Some societies have turned to industry sponsorship of activities, with varying success depending on the field and the level of acceptance from their membership. For example, one prominent geoscience society faced strong pushback from its membership over accepting program support from the fossil fuel industry at a time when numerous state Attorneys General were bringing legal action against those same entities for burying their own researchers' evidence linking climate change to burning fossil fuels.

Undergirding all of the concerns outlined here is a more fundamental one: It remains unclear as to exactly what problem Plan S is designed to solve. Is it to cap the reported high profit margins directed to shareholders of the commercial publishers? Is it to hasten the transition to a fully OA publishing system? If the former is the objective, then scientific society publishers are for the most part unfortunate collateral damage. If the latter is the objective, there are less disruptive plans that could be devised in consultation with a broader group of stakeholders.

Authors are also readers. In both roles, they appreciate wide, immediate dissemination of current research in a diverse publishing ecosystem. There should be a way to move from the current system to an ideal publishing future that is both diverse and accessible. But the current Plan S proposal threatens to do more harm than good, especially to the scores of scientific societies that publish journals. I fear for the overall health of the scientific enterprise if the views of society publishers are marginalized, ignored, or trivialized.

