

Plan S, self-publishing, and addressing unreasonable risks of society publishing

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Key points

- Societies face increasing pressure to contain costs and retain revenues, which are threatened by open access mandates.
- Funders and other science publishing campaigns need to recognize the value of learned societies and work with them to sustain the production of quality knowledge.
- Self-publishing via preprint servers may threaten the quality of academic research.
- Societies can reinforce their value proposition through a model of academic entrepreneurship, including research activities, media engagement, and consultancy.

INTRODUCTION

A year after being announced, Plan S implementation has been delayed until 2021 (Else, 2019). It is not surprising that the roadmap proved to be rather ambitious for researchers and publishers to adopt. The postponing of Plan S, and its quite demanding goals, raises the question of publishing models and the financing of research activities.

Scientific research is tricky: it is not meant to be lucrative, but it is undeniably costly (Vuong, 2018). Relying solely on philanthropy and public funding has never been an option; academic entrepreneurship is thus not a new concept. Entrepreneurship in academic activities has, in fact, long been discussed in both the scientific literature and science policies across the globe. However, most of these formal discussions only touch on very 'classic' aspects such as commercialization of research through product development. In fact, when a university produces an invention or an innovation, the process of patenting is already complicated and riddled with bureaucratic traps, let alone approaching the market (Sampat, 2006). Even when intellectual rights have been secured, fundraising to realize any commercial potential is a challenging task, particularly for researchers who may not be the appropriate people to handle business matters in general. Integrating knowledge produced by academic institutions into the value chain is no easier when such knowledge is provided in the form of services rather than material products.

Sustaining research relies both on the production and the dissemination of scientific knowledge – which is academic publishing. This article analyses the current threats to the viability of publishing managed by learned/scholarly societies and then proposes a solution through a business model inspired by academic entrepreneurship that has been successfully developed over the past 3 years. The model consists of three major products and services: research activities, media engagement, and consultancy, which leverage each other to achieve a higher competitive advantage, as well as serendipity as a strategic advantage.

CAN SOCIETY PUBLISHING SURVIVE IN THE MARKET?

Society publishing pertains to publishing activities of professional and academic associations. This kind of model has existed for a long time, with many variants. For example:

- *Nature* (<https://www.nature.com/>) was linked to the Royal Society, but it should be noted that *Nature* has never been financed by the Royal Society itself (Newmark, 2015). As such, since the beginning, *Nature* has been based on subscription, taking money from society by 'selling' the value of scientific knowledge (popular knowledge, expert technicalities, suggestions, and evaluations of important scientific matters).

- The Institute of Electrical and Electronics Engineers or IEEE (<https://www.ieee.org/>) is one of the largest associations and serves as a provider of thousands of academic journals that are highly technical – namely, scientific journals in the fields of electrical and electronic engineering, as evidenced in the name. However, IEEE also hosts a series of hundreds of publications from international conferences on electronic technologies, many of which are highly reputable. The association and its conference publications are required to be up to date with the development of the field, which requires a certain trade-off between writing quality and speed, and thus softens the process of peer review, making output from conferences less rigid and taxing compared to that of the usual scientific journal.

Not every association has the potential to publish at a scale large enough to become profitable, and some are unable to achieve stable financial self-subsistence from their publications. The majority of associations will only have a few publications and aim to, first and foremost, disseminate scientific knowledge and professional opportunities for their members. For example, the European Association of Science Editors publishes its journal *European Science Editing* for no financial return.

For smaller associations, self-publishing requires costs that may not be recouped, for example:

- management and infrastructure maintenance, such as managing an online platform and printing a journal, and so on,
- editing (well-edited journals require expert editors, whose time can be expensive) and publishing staff costs,
- meeting the technical standards of scientific journals (e.g. producing industry-standard article XML and exporting metadata to organizations such as Directory of Open Access Journals (<https://doaj.org>) can be quite costly).

Of course, these difficulties have always existed, but recently, they have been amplified by changes in the digital era. For example, new databases are being created rapidly, which requires increasing ability to cross-link publications. Technical requirements and standards must also be met. Cybersecurity is also an issue – for example, the *Journal of Extension Education* published by the *Extension Education Society (EES)* was hacked in 2017. These add to the existing costs.

Readers also have greater choice in selecting sources of knowledge due to the easy availability of ‘grey literature’ – non-peer reviewed academic literature such as can be found on pre-print servers OSF, arXiv, SocArXiv, SSRN, IDEAS/RePEc, and so on. Grey literature may mean potential customers of journals will start to dwindle, potentially on a grand scale.

Increasing pressure also comes from powerful institutions such as cOAlitionS (Plan S), Bill and Melinda Gates Foundation, Wellcome Trust, and so on. They are the world’s major science funders and grant philanthropic sums of many billions of dollars to researchers. These funders are now aiming for open access (OA), for example, both Gates and Wellcome have their own

publishing platforms using F1000Research workflow and infrastructure. Plan S requires all researchers who use grants from member funds to put their articles up for OA right after peer review. The plan excludes OA publishing in hybrid journals, which currently attempt to balance a subscription model with an OA choice, and are used extensively by society journals. The OA priorities of external funders are making severe demands on society publishers. This pressure adds to the problems of society or association publications that are already struggling to survive through self-financing. Relying on the goodwill of members is not a solution because of equality issues, a rather fixed ability to contribute financially, and very low possibility to raise fees.

These points show that only daydreamers can naively believe that society publishing will be able to remain standing using the earnings generated from the sale of publications alone as the publishing market keeps changing rapidly and becomes more fiercely competitive, requiring more OA.

Still, many society publishers are finding ways to change and adapt to these factors. The less financially endowed associations may be able to flip to OA if they have highly regarded, prestigious publications, especially if they have been published for a long time. Their standing and longevity may help these organizations curb costs related to publishing. The most telling examples are that of *Medicina*, which started in 1920, and *Scientia Pharmaceutica* of the Austrian Pharmaceutical Society (Österreichische Pharmazeutische Gesellschaft, ÖPhG) switching to Multidisciplinary Digital Publishing Institute’s OA platform in 2018.

In other cases, associations turn to government funding in order to move their publications away from reputable publishers with higher costs. For example, *Osong Public Health and Research Perspectives* terminated their partnership with Elsevier and moved to Korea Centers for Disease Control & Prevention in 2017.

Other societies try to maintain themselves with less costly technology solutions, such as using operating programmes by PKP Open Journal Systems (OJS), as in the case of *Memoranda* (published by the *Societas pro Flora et Fauna Fennica* since 1843), one of the first scholarly Finnish journals to move to the OJS platform (Hedlund & Rabow, 2009). This can only mitigate direct publishing costs, while the burden of system administration and maintenance fees remains, as evidenced by the multiple security breaches faced by OJS journals in 2017.

Therefore, we can see that survival in the market has become the central challenge. Associations/societies are obliged to spend more time and resources to figure out a sustainable solution. At a global level, the fact is that the revenue from society publications cannot sustain research activities, let alone maintain the quality and scale of their publications.

THE EXISTENTIAL CRISIS OF SOCIETY PUBLISHING

It is clear that the concept of sustainability is linked to financial viability or economic feasibility. First, let us examine why we

should maintain society publishing. It is important to acknowledge that the initial growth of academic journals is in many ways the direct result of efforts by the learned societies that own them (Peters *et al.*, 2016). According to Johnson and Fosci (2015), society members can gain access to advanced knowledge in their respective fields by receiving the free subscription of their society's journals. Another often overlooked benefit of publishing for learned societies is that the net income tends to be invested in public goods such as supporting the subject community, promoting public education, and so on. Moreover, in certain cases, the discussion and reflection of experts in learned societies effectively decides the future of the disciplines that, in turn, might decide the future of humanity. For example, Koch (2016) gave an account of the positive role the Gesellschaft Deutscher Chemiker (the German Chemical Society) played in shaping the establishment and enforcement of the code of conduct to ensure good scientific practice in Germany. Can the voices, views, and perspectives and even the less grounded 'speculation' of these experts be replaced by the opinions of publishing systems that operate purely for profit and based on the demands of shareholders? Were society publishing to become extinct, the ecosystem of knowledge production and dissemination would surely be compromised. Even if the voices that society publishing helps amplify are not everything, they still offer a counterweight that helps keep the checks and balances alive in academia – a mechanism against totalitarianism in terms of scientific authority so to speak.

Even in the case where the shift from society to commercial publishing goes swimmingly, what would happen if that very commercial model crumbles? Many events point out the existential challenges that, say, Elsevier is facing: Germany ceasing to renew publishing contracts (Kwon, 2017), professors pulling out of editorial boards (Chawla, 2019), and the University of California system refusing to sign the purchasing contract (Kell, 2019). Springer Nature signed an agreement with Projekt DEAL (a consortium of research institutions in Germany), completely changing the publisher's *modus operandi* in terms of publishing and cost management (Vogel, 2019). Clearly, notions and concepts related to publishing are changing, but this chaotic period does not necessarily have to translate to the unreasonable existential risks faced by society publishing. In reality, efforts to increase the diversity of the society publishing system deserve more thorough investments from financially powerful actors rather than mere *débrouillement* on the part of associations. National and international systems also benefit from the scientific values, prestige, reputation, and influence of academic societies; it is only reasonable to expect them to chip in when the time comes for a business model shift. And yet, they are not doing so. This is unreasonable, a contradiction that has yet to be resolved.

IS SELF-PUBLISHING HELPFUL?

The self-publishing system (i.e. via preprints) is, in fact, a reflection of technological progress, primarily in the lowering of costs and increasing the speed of product completion. This model has many

strong points that could be explained by ideas such as the Moore law (higher technological level associated with quickly lowering costs). Traditionally, the cost of publishing remains high due to the substantial effort put into copyediting, editing, designing, formatting, preparing printed journals, and so on. However, under an online self-publishing system, many of these costs can be saved, especially when free platforms for publishing (such as OJS, <https://pkp.sfu.ca/ojs/>) or peer review (Peerage of Science, www.peerageofscience.org/) are available. However, self-publishing (defined here as authors publishing their own works on preprint servers separate from the journal publishing ecosystem) also has its caveats:

- Self-publishing could lead to the illusion of productivity and quality.
- It is difficult to attain the same intensity of readership and the consumption of public knowledge solely based on the author's gauging of quality and propriety of their academic product. Even with the existence of peer review, it is becoming harder to subdue shoddy or untrustworthy science, which has become more intricate and harmful. So, by removing the very last barriers against 'bad science' – which is, essentially, external peer review as the most notable part of the current publishing process – how could one hope to improve the prospects of academia? The contradiction is staggering.
- The most valuable aspect of science is the systematization of (1) quality control thorough cross-checking and (2) self-correction. These mechanisms cannot simply take place on their own; they need organized structures such as that of the current publishing model, including the peer review system. Despite all of its problems, the system as it is right now is still functioning and doing its job.

Besides, self-publishing at its best could only respond to the demands of two parties: authors and funders. That being said, these two are not the only stakeholders in the game. The general public and the government – representative of the society – also have a say in the matter; they are, after all, those who would consume the knowledge produced and communicated to them by the academic system and its communication channels. The academic community still needs the general public.

Yet, as it is right now, we are seeing dents in the trust that society publishers lend to academia – this trust is undermined by phenomenon such as fake news and pseudo-science conspiracy theories (such as climate change denials or flat earth movements, anti-vaccination protests, etc). Replacing a peer review-based system with a new model, lacking in self-correction, would not improve the situation.

In reality, with the rise of preprints systems, such as OSF (Lin, 2018), it is almost impossible to ensure that shoddy scientific results will never be published. There is real possibility that sloppy science will be published as preprint and then attract media attention (Sheldon, 2018). Thus, it is hard to imagine that controlling the quality of science by preventing bad results from being published will ever be possible in the future.

LEARNED SOCIETIES ARE MORE THAN A PUBLISHING OUTLET

For publishing societies to achieve a more sustainable operation in the digital age, I believe the spirit of academic entrepreneurship should be applied. As scientific research is undeniably costly (Vuong, 2018), relying solely on philanthropy and public funding has never been an option; academic entrepreneurship is thus not a new concept. Glassman *et al.* (2003) defined the concept as the creation and pursuit of opportunities in an academic setting, regardless of available resources. Hence, the ability to scrounge for or scavenge scarce resources becomes an essential skill. Thinking along this line, I would like to propose several activities of publishing societies that might be capitalized on by academic entrepreneurs. These activities have been diverse and are geared towards serving the expert community; however, the digital era breeds new demands.

For example, editing and language assistance were not previously available to members. Nowadays, however, with the skills, expertise, and connectedness of systems and members, it is. There exist countless English language editing services, all of which are dispersed and without any standard quality control. Society publishing could take this matter into their hands and provide this kind of service to ensure the quality of member publications, as well as lower costs. For instance, the European Association of Science Editors (EASE) has a dedicated guideline for translating and publishing scientific articles in English (EASE, 2018) and toolkits to help authors, peer reviewers, and editors. Moreover, The EASE Science Editors' Handbook is also a valuable publication for editors and those who work in academic publishing (Smart, Maisonneuve, & Polderman, 2013).

There are other expert tasks such as conferences, consultancy, or even direct contact to bring experts together in orienting research activities that society publishers might undertake. An example would be the EASE Vietnam Regional Chapter, which only started operation in mid-2019, yet the prospect of a 2020 EASE Vietnam Conference has already attracted the interest of hundreds of researchers from various institutes and universities. A large portion of these researchers were not even members of EASE (currently, there are 20 members of EASE Vietnam, and it is only planned for the first 100 members to be made public at the Conference in April 2020).

PROPOSAL

Here, I want to introduce a business model that we have successfully built and that could be applied to learned societies. We created a concept within the market itself, giving it attractive properties that a university needs in order to, for example, raise its ranking and improve its reputation. The model consists of three components, namely, (1) research: conducting research, collecting, managing, and mining data; (2) media engagement: science communication for the general public; and (3) consultancy

on best practices: consulting with academic institutions on scientific quality, with business enterprises based on scientific results, and with government agencies based on scientific results and organizing workshops and seminars on research skills. Indeed, many of these activities fall well within the traditional activities of learned societies (Hewitt, Dingwall, & Turkmendag, 2017; McCarthy & Rands, 2013). There are growing demands for these knowledge and skills to be transferred to the rest of the society. With the mindset of academic entrepreneurship, the key idea is to base every business activity on actual scientific projects to avoid losing the competitive advantage. It is especially important to let these three components leverage each other in order to be resource-efficient: research publications, when appropriate, can turn into a good opportunity for media engagement and consulting products; understanding the demands of government agencies and businesses can help identify promising areas of research; quality media engagement helps raise the profiles and credibility of our centre. Once the three components are in sync, it is surprising how often serendipity leads us to new areas of research and businesses; here, serendipity can be turned into a strategic advantage (Napier & Vuong, 2013). We then bring the whole thing to the negotiation table and obtain for ourselves the concessions necessary to utilize university resources and advocacy to do science and do it with lasting autonomy. We believe that our model could very well be extrapolated to society publishing – a well-established domain.

Learned society publishing is an important part of the ecosystem of knowledge production and dissemination. In recent years, learned societies, especially the smaller ones, have faced huge obstacles to make the transition to the modern digital world. Alongside the current OA movement – Plan S being the most ambitious – other developments in the academic community have intensified the existential risks for many societies. The situation is unreasonable given the historical role and the current contribution of society publishing, which has clearly advanced human knowledge and ethical concerns, as well as provided a diverse and accessible platform for critical voices in academia. To mitigate the risk facing them, I suggest learned societies apply some measure of academic entrepreneurship to achieve a greater level of sustainability. As researchers need a proactive attitude to publish (Vuong, 2019), society publishers also need a proactive attitude to meet the demands of the market. Moreover, Plan S and any other similar movements and government-backed science funders should start working with society publishing to find meaningful ways of sustaining quality knowledge production instead of threatening to erase the currently functioning outlets. This is particularly important given the fact that the fate of Plan S itself is still unknown. Improving access to scientific literature and the continuation of society publishing do not have to be mutually exclusive.

ACKNOWLEDGEMENT

This manuscript was funded by the Vietnam National Foundation for Science and Technology Development (NAFOSTED) under the National Research Grant No. 502.01-2018.19.

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