
MASTODON OVER MAMMON

Towards publicly owned scholarly knowledge

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With the turmoil surrounding Elon Musk’s handling of his Twitter take-over, the problems associated with a public good in private hands have again become a focus of public attention. For scientists, the situation is not unlike that of 2009, when a social media platform widely used by scholars, FriendFeed, was bought by Facebook and subsequently shut down. This instance was only one of several where the dangers of private, profit-oriented organizations owning platforms used for scholarly discourse became palpable for everyone involved and were widely discussed. One of the outcomes of these discussions over the last 15 years is a set of open standards for social technologies that mimic the open standards underlying the wider internet and web, the World Wide Web Consortium’s ActivityPub [1]. In 2009, scholars started to leave FriendFeed and migrate to Twitter, founding what has grown to a community about half a million researchers and is often referred to as #ScienceTwitter [2]. Now, much of #ScienceTwitter is migrating to Mastodon [3], an application based on ActivityPub in what is called the “Fediverse” [1]. Analogous to web or email servers, Mastodon runs on so-called instances (servers) and while anybody can implement such instances, nobody can control all of them, just like nobody controls all email or web servers. We identify parallels between private ownership of #ScienceTwitter and private ownership of scholarly journals, prompting a proposal to safeguard the entire scholarly record from corporate vagaries.

A golden opportunity

As in the early internet days, some scholarly organizations are leading the way towards the Fediverse: organizations such as the international Neuromatch (neuromatch.social), the European Laboratory for Learning and Intelligent Systems (ellis.social), the Dutch Centre for Science and Technology Studies (social.cwts.nl), the Irish Dublin Institute for Advanced Studies (mastodon.dias.ie) or the German Helmholtz Centers (helmholtz.social), Max Planck society (social.mpg.de) or Society for Digital Humanities (fedihum.org) have already implemented their own Mastodon instances. Even single individuals are stepping up and providing instances for their communities (Giorgio Gilestro: drosophila.social). We call on more scholarly organizations to host their own Mastodon instances (see also [4–6]). We believe there are several good reasons why scholarly societies, in addition to institutions such as universities and research institutes, are particularly well-placed to take advantage of this golden opportunity.

Striking parallels

Twitter is not the only case where scholars are struggling with a public good in private hands. In scholarly publishing, scientists and the wider public are similarly exposed to the whims of a few, large corporations. It is worth remembering that a key rationale of the Open Access movement was to reclaim the public commons and to allow scholars themselves to be in charge of the governance

of knowledge production and circulation. The open repository movement was very much built on the idea of what one now calls the Fediverse. It has taken another twenty years for the preprint movement to take hold beyond some mathematics/physics fields, and for repository developers to create tools and services that serve scholarship better than journals. For instance, from these developments arose CORE as the world's largest aggregator of open access research papers from repositories and journals.

Given the speed at which digital technology evolves, why have these academic developments taken decades to materialize? There are several answers to this question, but different actions of learned societies during these decades deserve to be highlighted.

Professionalization of some scholarly societies

Scholarly societies have been the bedrock of organized scholarship for centuries. Then, as now, scholars were rarely motivated by fortune or fame, but commonly by curiosity and a fundamental idealism to further humanity and knowledge. For the privileged men founding the first society in 1660, “Their first purpose was no more, then onely the satisfaction of breathing a freer air, and of conversing in quiet one with another, without being ingag'd in the passions, and madness of that dismal Age” [7]. Later, societies provided circulation and support for an expensive, difficult and sometimes risky passion.

Today, societies organize meetings of tens of thousands of professional researchers, publish journals, award prizes, promote early career researchers, lobby politicians, initiate and maintain public outreach efforts and provide expertise as a public service. Such large organizations require funding and professional staff. From their public records, we learn that, for instance, the top ten staff of the American Psychological Association (APA) receive more than US\$ 4 million in compensation annually. Very similar figures were reported by the Massachusetts Medical Society (MMS), the publisher of the *New England Journal of Medicine*. “Management and governance” are the largest expense also for the American Anthropological Association (AAA) with 29% of their uses of their annual revenue. The American Association for the Advancement of Science (AAAS), the society that publishes *Science Magazine*, also pays their executives more than US\$ 4 million every year.

While the societies above were chosen arbitrarily, their sources of revenue are fairly similar in that membership dues only make up between 2-28%, while publishing income ranges from 28-88% of their annual budget. It is easy to find other societies with analogous numbers (Table 1).

Table 1. *Rounded figures for arbitrarily selected scholarly societies from publicly available financial reports from one of the last five years.*

	Revenue	Publishing		Membership	
	US\$M	US\$M	% of rev.	US\$M	% of rev.
American Anthropological Association	5.3	1.5	28	1.5	28
American Association for the Advancement of Science	114	62	54	9	8
American Chemical Society	670	558	83	18	3
American Economic Association	11	5.1	46	0.6	6
American Geophysical Union	42	18	43	2	5
American Psychological Association	130	115	88	3.6	3
Biochemical Society	5.8	5.3	91	0.27	5
European Society for Evolutionary Biology	0.35	0.3	86	0.01	3
Federation of American Societies for Experimental Biology	7.2	2.9	40	0.9	13
Massachusetts Medical Society	131	103	78	2.4	2
Royal Society of Chemistry	75	64	85	4.8	6
Society for Neuroscience	26	7	27	4	14

The growth and professionalization of scholarly societies comes not only with advantages, but also with challenges and unintended consequences. For instance, the dependence on publishing revenue to fund professional staff comes with conflicts of interest for these employees in that their livelihoods depend on this revenue. Also for leading members and decision-makers of such a society, scholarship may drop in priority when the many programs and benefits that members have become used to, also become dependent largely on a dominant source of income. With many societies outsourcing their publication business to one of the aforementioned large corporations, they risk becoming trapped in the middle between corporate and scholarly interests. The last 25 years provide ample documentation of how some societies have embraced an increasingly digitized scholarly community, while others have had a harder time adapting.

Some societies lead by example...

The landscape of scholarly societies is highly heterogeneous, both within and between fields. Thus, it is not difficult to find examples where learned societies embrace new technologies to empower their members and further their mission and purpose.

In the Global North, perhaps the most recognized effort of scholarly societies in social media is the Humanities Commons (HC). The network enables scholars, researchers, practitioners, teachers, and students to create a professional profile, discuss common interests, develop new

publications, and share their work. It is free to use and funded by grants and voluntary contributions. Modeling on the Fediverse, the HC is built upon a cooperation of scholarly societies, investing in a shared infrastructure. It was started by the Modern Language Association (MLA) which launched MLA Commons in 2013. The close temporal proximity to the development of other social media is not coincidental: HC grew out of the research of humanities scholars studying communication networks in the early 2000s [8].

In the Global South, cooperation between societies for shared digital infrastructure has a long history. Cooperative publishing organization SciELO was founded in 1997 and is now supporting 16 countries and provides open access to their scholarly publications. Another prominent cooperative endeavor between scholarly societies of the Global South is Redalyc/AmeliCa. This is a cooperative infrastructure for scientific communication controlled by an inter-institutional academy on a broad scale, with funding from diverse sources [9]. Similar scholar-led and non-profit atmosphere in academic journal operation has been operating for decades in Indonesia, as another example [10]. Global South scholars and their societies provide pro bono work and expertise to realize the largest open access network on the planet, despite encroachment by increasing performance assessment based on journal prestige.

These examples demonstrate that a community that realizes the value of a communal resource is willing to find creative ways to curate such shared commons. Quality control, constructive discourse, error-correction and constant improvements are inherently weaved into the fabric of scholarship. These initiatives remind us that funders should be more creative with their support. HC, SciELO and AmeliCA, based on social technologies and cooperation, provide a huge and growing value for their communities, at a fraction of the cost of the antiquated and often dysfunctional privately owned journals - and without charging authors or readers anything. Like, e.g., Wikipedia more generally, the examples from the Global South demonstrate that high-quality, high-value scholarship in the digital age does not require huge funds and massive inequities, only dedicated communities and shared digital infrastructure.

...while others are more hesitant

Not all societies chose cooperative infrastructures over corporate platforms. For many large scientific societies, over-reliance on publication funds for their programs have prevented them from implementing other options that better serve their members and their missions.

One of the earliest initiatives to wrestle digital control over the means of scholarly discourse from publishing corporations was Harold Varmus' proposal for public access to the biomedical literature, dubbed eBioMed, in 1999. A large scholarly society, the Federation of American Associations for Experimental Biology (FASEB) and other societies openly opposed the plan [11], eBioMed was stripped down radically and is now known as PubMed Central [12]. Not much later,

the AAA axed their highly progressive publishing project “AnthroSource” [13] citing financial concerns, and signed with publishing corporation Wiley instead. Around the same time, the APA also started to publicly oppose taking advantage of digital means to spread scholarly knowledge further [14]. When the National Institute of Health sought to overcome this reluctance by mandating public access in 2008, the American Chemical Society (ACS) raised legal concerns [15]. The ACS was soon joined by the Association of Learned and Professional Society Publishers (ALPSP), the international trade association representing society publishers, in opposing access to scholarly literature. The ALPSP has been consistent in their opposition to scholarly knowledge being widely disseminated, voicing concerns not only to the NIH access mandate, but also to UK public access policies and plans by the Obama administration in the US in 2012 [16,17]. The ACS also sued shadow library Sci-Hub in an attempt to protect their revenue and traditional infrastructure. So concerned were some societies about their income that a mere modernization rumor triggered more than 100 of them to team up with commercial publishers in 2019 and write a pleading letter to then-US-president Trump, fearing “some scientific societies [may be] forced to close their doors” [18]. In 2022, after decades of resistance, the AAAS allowed their authors to freely share their publications [19].

These examples illustrate how some scholarly societies seem to have prioritized their own revenues over the interests of their members, scholarship at large and the public. While money is required to keep programs running and initial quality concerns may have been understandable at the time, today, it appears anachronistic to risk the mission of the society citing financial concerns: There are numerous societies which thrive and prosper despite, no, because they embrace the digital technologies when the opportunity arises.

Realizing the ‘social’, from Tweet to monograph

Historically, scholarly communication has always taken many forms: letters between individual scholars, meetings, journal articles or monographs. From the early days, the scholarly record is sketchy, later, only the journal and monograph portion is retained. Scholarly discourse on Twitter formed a scholarly community there, #ScienceTwitter [2], and some of its members, particularly those of the Global South lacking access to many expensive resources, are hesitant to leave, despite the mayhem. This separation between Tweets, articles, monographs, etc. is largely historical. Any organization where community building, discourse and knowledge dissemination was a top priority and that had ‘social’ in the root of their name would probably have put the implementation of social technology at the top of their agenda at the latest when FriendFeed was bought by Facebook, likely much earlier. Even for those for whom it may not have been obvious back then, it is probably more clear now that communities are built online, journals become less and less relevant and discourse does not wait until the annual meeting.

We propose reclaiming ownership over the scholarly commons (see [20–22] for more detail), to be able to maintain the scholarly record from Toot to monograph (and the code and data in-between). Analogous to other, non-digital areas of infrastructure, the infrastructure supporting the scholarly commons needs to come under the governance of the scholarly community. Internet and web standards show the way, with the Fediverse and Mastodon only being the latest instantiations of this concept. Scholarly societies are ideally placed not only to develop and implement all the necessary components, but also to ensure core scholarly values are reflected in this infrastructure and remain so over time. Scholarly societies ought to represent the scholarly community, rich and poor. As with earlier opportunities, the reactions of societies will likely differ: some will realize the opportunity because they are constantly seeking for new ways to contribute solutions and improvements, build communities around their fields and help support a public good, while others will be hesitant, wondering what is in it for them? Scholarly societies today face the choice of embracing the digital Mastodon or face the fate of the analog Mastodon.

Some scholarly societies may have missed earlier opportunities, but now they are presented with their second chance. Now would be the perfect time for scholarly societies to start making good on the ‘social’ in their names and amend mistakes of the past. Mastodon over Mammon: every scholarly society that values scholarship over revenue now has a golden opportunity to show their true colors - implement a Mastodon instance for anybody who identifies the topic of the society, scholar or layperson. Each instance contributes a share to a common infrastructure where the scholarly community determines the rules and not a profit-driven individual. If we, the scholarly community, manage to create a truly public square that cannot be taken over by private interests, it may become a blueprint for how to bring the remaining scholarly record (text, data and code) into the Fediverse as well. The technical potential of the Fediverse exceeds functionalities such as Mastodon and offers solutions to merge existing repository and peer review solutions with what we now call social technology: the difference between toots, journal articles and monographs is more quantitative than qualitative.

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