

Between fast science and fake news: Preprint servers are political

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Preprints servers have become a vital medium for the rapid sharing of scientific findings. This has been made clear by the speed with which researchers have developed new knowledge about the Covid-19 pandemic. However, this speed and openness has also contributed to the ability of low quality preprints to derail public debate and feed conspiracy theories.



Maximilian Heimstädt argues that as preprints begin to play a more central role in the communication of research, it is up to policy makers, journalists and civil society to better understand the knowledge they offer.

Over the last month, the German virologist [Christian Drosten](#) has presented the latest scientific findings on the corona virus in a highly popular daily podcast ("[Coronavirus-Update](#)"). Drosten is praised by his audience for his judicious and thoughtful approach to science communication. Instead of presenting undeniable facts, he tries to explain the dynamics and incompleteness of existing research on Covid-19. Frequently, he speaks about his daily visits to "preprint servers" as being indispensable for his role as scientific advisor to policy-makers, such as Angela Merkel.

Fast science: Preprint servers save lives

In the early 1990s, physicists began to store their scientific articles on the [online repository arXiv.org](#) to make them accessible to other scientists immediately after completion. Today, specialised preprint servers exist for almost all scientific disciplines. For some disciplines, there are even several such servers competing for un-refereed manuscripts. The oldest preprint server for social sciences and humanities is [SSRN](#). After SSRN was acquired by Elsevier in 2016, a group of scholars around the sociologist Philip Cohen founded [SocArXiv](#) as an independent alternative to SSRN. Unlike articles in scientific journals, preprints have not yet been subjected to a scientific peer review process. Many articles that were originally published as preprints appear months or years later as – sometimes heavily revised – peer reviewed versions in journals.

Over the course of the last weeks and months, however, the unintended side effects of the current interest in preprints have become unavoidable

Preprint servers promise that important scientific findings are made available promptly and are freely accessible to researchers, politicians and other stakeholders. In his podcast, Drosten explains that he searches the preprint server [bioRxiv](#) for new publications on Covid-19 on a daily basis. As an expert in his field of research, Drosten argues that he is able to assess the quality and significance of new preprints without the need for a formal review process. Regarding his role as a high-level political advisor on the corona pandemic, one might hence argue: preprint servers save lives.

Fake news: Preprint servers favour clickbait science

Over the course of the last weeks and months, however, the unintended side effects of the current interest in preprints have become unavoidable. Preprint servers favour an attention-grabbing presentation of research results, which aims at dissemination via social networks. Such clickbait science quickly turns into disinformation, as recently described in much detail by journalists of [the Swiss online magazine Republik](#).

On January 31, a new study by researchers from Delhi appeared on bioRxiv. The study claims to have found strong similarities between Covid-19 and HIV. Fuelled by the ambiguous title of the study ("uncanny similarity") conspiracy theories and fake news feeding off the preprint spread rapidly on Twitter. Many present the study as evidence that Covid-19 is the result of an accidental laboratory experiment or even a deliberately created "bioweapon".



At the same time, a lively discussion unfolded in the comment section of the preprint server. The involved scientists collected and discussed the (mostly unanimous) arguments for the invalidity of the study. At the same time as this discussion took place on bioRxiv, individual scientists entered the Twitter discourse and tried to refute the conspiracy theories spread there. On February 1, the day after the study was published, bioRxiv felt compelled to place a warning label above each coronavirus preprint:

“bioRxiv is receiving many new papers on coronavirus 2019-nCoV. A reminder: these are preliminary reports that have not been peer-reviewed. They should not be regarded as conclusive, guide clinical practice/health-related behavior, or be reported in news media as established information.”

On February 2, the authors withdrew the Covid-19/HIV study. Despite this formal withdrawal of the study, it remains available on bioRxiv.

Preprint servers are political

In the debate about Covid-19 and fake news, preprint servers are a little-noticed, but highly influential arena of competing knowledge claims. The underlying dynamic of these contestations, is perhaps best described in a 1972 essay by feminist author Jo Freeman as the “tyranny of structurelessness”. Freed from the seemingly inhibiting structure of scientific review processes, preprint servers not only lead to the rapid availability of scientific knowledge, but also serve as a breeding ground for premature publications, clickbait titles and ultimately disinformation. Some commentators have already begun to speak about “preprint wars” – battles over scientific validity and values, the results of which can have a strong influence on public discourse. Preprint servers are political.

If preprint servers are subject to the tyranny of structurelessness, it raises the question, who will be able to claim public expertise out of this disorder?

The politics of preprint servers, however, are not limited to biomedical research. In 2013 an un-refereed but politically very influential study by US economists Carmen Reinhart and Kenneth Rogoff turned out to be flawed in its methods and its implications for economic policy. In the coming months, as the Covid-19 pandemic forces governments to make significant policy interventions across many aspects of society, we can expect non-peer reviewed preprints from many disciplines will play a significant role in policy development. We might hope that in the shadow of the Reinhart-Rogoff case, preprints that do not provide full access to the underlying data will not form the basis for high stakes decision making.

If preprint servers are subject to the tyranny of structurelessness, it raises the question, who will be able to claim public expertise out of this disorder? Historically, the role of the public expert was performed by academics, who had privileged access to new studies. The

rise of open access has shifted power away from academic experts, as peer reviewed studies became easily accessible to civil society, journalists, think tanks, charities etc. Preprints change the rules of the expertise game again, potentially placing more authority in experts, such as Drosten, who are able to draw on years of experience and formal credentials, to credibly explain why they are able to judge the quality of preprints without peer review. Alternatively, preprints could lead to a further democratisation of expert authority, encouraging forms of 'lay expertise'. Inevitably, this runs the risk of fake news and bad faith actors. Crucially, it is up to journalists and policy-makers to familiarise themselves with the most important preprint servers and their specific moderation techniques (e.g. sanity checks of uploaded preprints by a small editorial team). Only when understanding the governance of such new and more open scientific practices will they be able to leverage the benefits of fast science while avoiding the threat of disinformation.

Note: This article gives the views of the author, and not the position of the LSE Impact Blog, nor of the London School of Economics. Please review our [comments policy](#) if you have any concerns on posting a comment below.

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