

A Response to Plan-S from Academic Researchers: Unethical, Too Risky!

Abstract

Open access (OA) publishing in general has many advantages over traditional subscription, or toll access (TA), publishing: it not only makes science accessible to a larger public, but also expands the reach of individual researchers and the potential impact of their research. Plan S is a noble effort to move OA forward. However, Plan S targets one audience – TA publishers – without fully considering another – researchers themselves. Providing OA to publications is already possible and becoming common practice among researchers. Existing high-quality hybrid (OA + TA) professional (society) journals provide ample opportunities for OA publishing, while providing excellent quality-control systems based on best practice and long-term experience. Institutional repositories (sponsored by universities or professional societies) support Green OA, which provides researchers the opportunity to make even their exclusively TA publications OA. Yet, in the eyes of certain policy makers and funding bodies, the current system is apparently ‘wrong’ for several unclear reasons. Politicians, research councils, and funding bodies in 11 European countries (cOAlition S) have embraced a policy that favors a particular version of Gold OA and recently decided to accelerate the OA transition by signing on to Plan S. Within 2-3 years, researchers supported by the research councils and funding bodies signing on to Plan S will be required to publish in either purely Gold OA journals – hybrid OA journal publication will be prohibited – or vaguely defined “compliant” OA platforms. Is this really a good idea? Forbidding researchers to publish in existing subscription journals has many unwanted side effects, putting knowledge production & society at severe risk. Forced gold OA publishing could lead to higher costs for many high quality journals and an overload of papers of low quality or limited novelty in lower quality journals. Furthermore, in the likely event that the rest of the world will not join in, Plan S will severely hamper internationalization of PhD students and postdocs, and discourage collaborations between the cOAlition S countries and the rest of the world. Finally, insofar as it mandates a limited set of publication venues, Plan S violates researchers’ academic freedom. So is Plan S objectively an advancement? We think not. Please read our standpoint detailed below, and see if you come to the same conclusion. We also provide alternatives that are less radical, and likely less costly, than Plan S.

The problems with Plan S

On the 4th of September 2018, a coalition of European and national research funders announced “Plan S” and “cOAlition S”, a combined bold step towards making all European research Open Access (OA) by

2020¹. Under the framework of this plan, researchers funded by these research councils and funding bodies would be obliged to make all their research immediately OA in pure Gold OA journals or “compliant” OA platforms, with hybrid (subscription based, or Toll Access – TA – plus Gold OA) publication only allowed as part of a transition period. The goals of this plan are ambitious and noble: it is impossible to argue with the premise that publicly funded research should be freely accessible to the public. Clearly, greater openness, access, and transparency will greatly benefit both knowledge production and society as a whole. However, while this plan has been welcomed by many, it has also been met with concern. Some of this concern has (unsurprisingly) come from publishers². For instance, Springer Nature argues that this policy “potentially undermines the whole research publishing system”³, and the American Association for the Advancement of Science (AAAS), the publisher of *Science*, argues that “implementing such a plan, in our view, would disrupt scholarly communications, be a disservice to researchers and impinge academic freedom”⁴. Both researchers and funding agencies have raised other concerns⁵. As academic researchers, with most of us based in Europe, we are extremely worried that Plan S will put the science, culture and economies of the cOAlition S countries at severe risk. In fact, Plan S may very well create a complete dichotomy of the global scientific society, separating 11 European countries and the EU from the rest of the world. Below, we provide a detailed account of the associated problems and issues we find associated with Plan S.

The problem of affordability

Our first concern is the fact that Plan S pushes researchers toward pure Gold OA as the desired model for publishing. This is problematic on several levels. While there are severe problems with the TA, subscription, model of publishing, all researchers have (in principle) the freedom to disseminate their research in any venue they choose, and it is the quality of their research, and not the size of their wallet, that determines whether they can publish in a given venue. While the TA model creates some inequality of access for readers (the so-called ‘paywall’), it creates a baseline equality of opportunity for researchers: if they have performed sufficiently good research, they will have the possibility to

¹ Full text of Plan S and related documents can be found here: <https://www.scienceeurope.org/coalition-s/>. See also ‘Plan S’ and ‘cOAlition S’ - Accelerating the transition to full and immediate Open Access to scientific publications. European Commission Statement, 4th September 2018. Retrieved 8th September 2018.

https://ec.europa.eu/commission/commissioners/2014-2019/moedas/announcements/plan-s-and-coalition-s-accelerating-transition-full-and-immediate-open-access-scientific_en

² Open Future. An explosion of openness is about to hit scientific publishing. *The Economist*, 7th September 2018. Retrieved 8th September 2018.

<https://www.economist.com/open-future/2018/09/07/an-explosion-of-openness-is-about-to-hit-scientific-publishing>

³ Holly Else. Radical open-access plan could spell end to journal subscriptions. *Nature*, 4th September 2018. Retrieved 8th September 2018.

https://www.nature.com/articles/d41586-018-06178-7?amp;utm_medium=feed&utm_campaign=Feed%3A+nature%2Frs%2Fcurrent+%28Nature+-+Issue%29

⁴ Martin Enserink. European funders seek to end reign of paywalled journals. *Science*, 7th September 2018. Retrieved 8th September 2018. <http://science.sciencemag.org/content/361/6406/957>

⁵ Éanna Kelly. Hope - and a welter of concerns - greets Europe’s radical open access plan. *Science | Business*, 6th September 2018. Retrieved 8th September 2018.

<https://sciencebusiness.net/news/hope-and-welter-concerns-greets-europes-radical-open-access-plan>

disseminate it in venues with high esteem and high visibility within the community of researchers. This concern is particularly critical for early career researchers, for retired researchers, for citizen scientists, for researchers from Inclusiveness Target Countries, and, in fact, for any researcher who for any reason is on a limited research budget, since forced-but-unfunded pure Gold OA effectively prevents them from disseminating their research in many reputable venues. While subscription TA journals work with a reading paywall, pure Gold OA journals create a paywall for the researchers. We are aware that the current Plan S suggests putting a cap on article processing costs (APCs). However, it is unclear what this cap would be and whether policy makers will succeed in reducing APCs at all. As researchers, we have witnessed APCs constantly increasing. Even ignoring the ever-growing number of predatory journals that seek to exploit OA mandates in publishing, selective OA journals such as *eLife*, *PLoS Biology* and *Nature Communications* charge APCs of \$2500⁶, \$3000⁷, and \$5200⁸, respectively. These sums are astronomical for the majority of researchers. As written, Plan S could create a “pay-to-play” system, where only the best-funded researchers and institutions will be able to publish in the mandated journals, thus creating automatic inequality in publishing opportunities based on one’s geographic location and the size of one’s research budget. Alarming, these astronomical numbers are not static, and are constantly increasing⁹. It has been argued that the true cost of a single paper in a selective journal such as *eLife* is \$14,000¹⁰ (although *eLife* themselves suggest a substantially lower cost of £3,147¹¹), and, were *Nature* to flip to a fully open access model, the cost of papers in *Nature* would be expected to be substantially higher. It should be very simple to see that most researchers, institutions, and even funding bodies, could not afford a large volume of research published in a pure OA framework. At some point it will be the cost of publishing rather than the quality of research or dissemination venue that will decide where research gets published, opening up a huge market for predatory publishers to exploit.

The problem of quality and sustainability

The obvious counter-argument to this cost-of-publishing problem is that one does not necessarily have to publish in selective OA journals such as *eLife*, *PLoS Biology* and *Nature Communications* (to name three journals selected due to their visibility), and that there are other venues out there that do not charge quite so much to publish. However, Plan S, as written, will prevent researchers from publishing in 85% of

⁶ Mark Patterson. Setting a free for publication. *eLife*, 29th September 2016. Retrieved 8th September 2018. <https://elifesciences.org/inside-elifesciences/b6365b76/setting-a-fee-for-publication>

⁷ PLoS Publication Fees. Retrieved 8th September 2018. <https://www.plos.org/publication-fees>

⁸ Article Processing Charges. *Nature Communications*. Retrieved 8th September 2018. <https://www.nature.com/ncomms/about/article-processing-charges>

⁹ Björn Brembs. How Gold Open Access may make things worse. Björn Brembs Blog, 7th April 2016 (with updates). Retrieved 8th September 2018.

<http://bjoern.brembs.net/2016/04/how-gold-open-access-may-make-things-worse/>

¹⁰ Kent. Anderson. How much does it cost *eLife* to publish an article? The Scholarly Kitchen, 18th August 2014. Retrieved 8th September 2018.

<https://scholarlykitchen.sspnet.org/2014/08/18/how-much-does-it-cost-elifesciences-to-publish-an-article/>

¹¹ Mark Patterson. What it costs to publish. *eLife*, 11th August 2016. Retrieved 8th September 2018. <https://elifesciences.org/inside-elifesciences/a058ec77/what-it-costs-to-publish>

currently existing journals, and there are simply not enough quality OA journals to fill the void¹². Here, it is important to stress what we mean by quality: To many, a “high quality journal” immediately conjures up an image of a “high impact” journal. While quality journals may also have high impact factors, a high impact factor does not necessarily denote quality, nor does a low impact factor (for example in specialist fields with much smaller circulation), denote lack of quality. A high quality journal, to us, is one with rigorous peer review and editorial oversight, where the publications provide a comprehensive study (as opposed to salami slicing), that makes a significant contribution to our knowledge of the field and checks for true novelty. Despite its many problems, in a world where the number of scientific publications published per year is over 2.5 million (extrapolating from a 2015 report¹³) and the total global scientific output doubles every 9 years or so¹⁴, peer review remains the most effective guard we have against bad science.¹⁵ Insofar as it preserves some space for expertise and prevents both absolute relativism and a sort of scholarly oligarchy, peer review is also an important means for navigating the relationship between research and society¹⁶.

Tying in with this, there is a serious quality control problem with moving from a subscription-based to an author-pays (Gold) OA model. In a subscription-based model, the onus is on the journal to publish material that will acquire subscribers willing to pay for access to that material, creating at least a minimal push for quality. A fully Gold OA framework can operate in two ways. One is to generate revenue for the journal by publishing as many papers as possible. The consequences of this can be drastic. For example, the full editorial board of the journal *Nutrients* (published by MDPI), has recently resigned after allegedly being pushed to publish mediocre papers¹⁷, presumably to hit journal publishing – and, in an author-pays arrangement, financial – targets. A similar problem occurred when *Frontiers* sacked 31 editors of the journals *Frontiers in Medicine* and *Frontiers in Cardiovascular medicine*, due to the editors raising concerns about publishing practices, which were described as being “designed to

¹² Michael Jubb (Chair). Andrew Plume, Stephanie Oeben and Lydia Brammer (Elsevier). Rob Johnson and Cihan Bütün (Research Consulting). Stephen Pinfield (University of Sheffield). Monitoring the transition to Open Access. Universities UK, December 2017. Retrieved 8th September 2018. <https://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2017/monitoring-transition-open-access-2017.pdf>

¹³ Mark Ware and Michael Mabe. The STM report: An overview of scientific and scholarly publishing. International Association of Scientific, Technical and Medical Publishers, 2015. Retrieved 8th September 2018. https://www.stm-assoc.org/2015_02_20_STM_Report_2015.pdf

¹⁴ Richard van Noorden. Global scientific output doubles every nine years. Nature news blog, 7th May 2014. Retrieved 8th September 2018. <http://blogs.nature.com/news/2014/05/global-scientific-output-doubles-every-nine-years.html>

¹⁵ The Conversation. The peer review system has flaws. But it's still a barrier to bad science. 20th September 2017. Retrieved 10th September 2018. <https://theconversation.com/the-peer-review-system-has-flaws-but-its-still-a-barrier-to-bad-science-84223>

¹⁶ Holbrook, J. Britt. "Peer review, interdisciplinarity, and serendipity." In *The Oxford Handbook of Interdisciplinarity*, 2nd edition. Robert Frodeman, Julie Thompson Klein, Roberto C. S. Pacheco, eds. Oxford: Oxford University Press, 2017, pp. 485-97.

¹⁷ Jop de Vrieze. Open-access journal editors resign after alleged pressure to publish mediocre papers. Science, 4th September 2018. Retrieved 8th September 2018. <http://www.sciencemag.org/news/2018/09/open-access-editors-resign-after-alleged-pressure-publish-mediocre-papers>

maximize the company's profits, not the quality of the papers, and that this could harm patients"¹⁸. The other approach is to be selective, and create a desirable venue that the researchers strive to publish their best research in. At this point, the publisher can effectively set the price to publish there, which can either be the much higher costs associated with selective publishing in general, or even higher costs as a "quality premium" for being able to publish in a selective journal. This then creates the cost trap that severely restricts publishing options to researchers, based on the size of their research budget or the size of their institution or funders' publishing budget. OA publishers can be just as predatory and problematic as TA publishers, and simply moving to Gold OA and investing substantial public money into APCs will not resolve this problem. Since only the rich can afford to publish under such an arrangement, Plan S risks creating a scholarly oligarchy. One would expect, at a minimum, that any publishing mandates based on the use of public funds for publishing costs would also discourage and disincentivize commercial platforms in favour of not-for-profit and academic society publishers, which invest the resources back into the academic community¹⁹.

Following from this, it is a basic requirement of research having value that journals should provide sustainability, such that research is preserved for the next 10, 20, 50, or 100 years, and beyond. *The Philosophical Transactions of the Royal Society* was published for the first time on the 6th of March 1665, and can currently still be accessed for free online²⁰. There are several established publishers, both from academic societies and commercial enterprises, that have demonstrated this scale of sustainability. However, in an exploding landscape of publishing, it is not clear that all the dissemination venues can maintain the same high sustainability standards (for an example of a journal suddenly 'imploding', see e.g. here²¹), and to cut researchers off from well-established and respected publishing venues without a clear and viable alternative that can support the tremendous amount of research being published today is clearly problematic.

The problem of exclusion

There is also the issue of the fact that research operates in a global environment, and we are a global community of researchers. Collaboration is key to progress, and researchers need to be able to exchange ideas and move between countries freely, and to share resources, samples, and equipment²².

¹⁸ Martin Enserink. Open-access publisher sacks 31 editors amid fierce row over independence. *Science*, 20th May 2015. Retrieved 8th September 2018.

<http://www.sciencemag.org/news/2015/05/open-access-publisher-sacks-31-editors-amid-fierce-row-over-independence>

¹⁹ Plan S does also allow for publication in "compliant" OA platforms in addition to Gold OA journals, but this presents its own problems, which we discuss, below.

²⁰ Harry Oldenburg. Epistle dedicatory. *Philosophical Transactions* 1 (1665), DOI: 10.1098/rstl.1665.0001.

²¹ Colleen Flaherty. A journal implodes. *Inside Higher Ed.*, 15th June 2018. Retrieved 8th September 2018.

<https://www.insidehighered.com/news/2018/06/15/promising-open-access-anthropology-journal-moves-modified-subscription-service-amid>

²² Sugimoto, Cassidy R., Nicolas Robinson-Garcia, and Rodrigo Costas. "Towards a global scientific brain: Indicators of researcher mobility using co-affiliation data." *arXiv preprint arXiv:1609.06499* (2016).

<https://arxiv.org/ftp/arxiv/papers/1609/1609.06499.pdf>

Collaborators need to be able to publish jointly, and not only within Europe or only among non-European countries. This will become very difficult once we start working with two separate publication systems, forcing certain countries to publish only Gold OA while the rest of the world remains using subscription journals. Forcing scientists into full Gold OA publishing may sound sympathetic in the ears of certain policy makers, science funders or taxpayers, but in the very likely case that the rest of the world is reluctant to join, these plans will actually create many more problems than they solve. Plan S/coAlition S puts forward a brave new plan for an open European research environment. However, what will happen if the rest of the world does not join us? North America and Asia, for example, continue to be substantial producers of high quality research. This will severely complicate any EU-non-EU collaboration, and also lead to problems with the internationalisation of the EU. The cOAlition S countries will become utterly unattractive for PhD students and postdocs from abroad with academic ambitions, because they won't be able to publish in existing journals of high standing. This is not only disastrous for their careers, but also devastating for the international position of the cOAlition S countries. The plans may also cause reluctance among scientists on both sides to perform service activities for 'the other system' on the basis of reciprocity. Quite obviously, in a system in which the research world is divided into exclusive coalitions, the international standing, rankings and respect for scientists living in the cOAlition S countries will fall.

There is tremendous danger in preventing researchers from publishing in 85% of journals (including the best journals for many fields), without having provided viable alternatives. In addition, should these journals continue to maintain the status quo, accepting submissions from North America and Asia and other parts of the world rather than flipping their business models, the cost to Europe could be tremendous. Either we would have to anyhow double pay, both to publish in fully open access venues and to read subscription journals, at tremendous financial cost, or we would cancel our subscriptions to those journals, and then be cut off from the global research community. Going this alone without a concerted global push is incredibly risky, and could put European researchers out in the cold.

The problem of violating academic freedom

Finally, while one could argue that funding agencies have the right to dictate how their funds are spent, Plan S clearly violates one of the basic tenets of academic freedom – the freedom to publish research results in venues of the researcher's choosing. Plan S does not just mandate open access, but also mandates the *form* of open access, strongly favouring Gold as the desired model, and banning hybrid publications (even in society journals!). Although Plan S does allow that cOAlition-S-funded research may be published "on compliant Open Access Platforms," there are no clear criteria of what that category includes and excludes. Instead, Plan S merely promises that, "The [cOAlition-S] Funders will ensure jointly the establishment of robust criteria and requirements for the services that compliant high quality Open Access journals and Open Access platforms must provide." Further, Plan S suggests that all research must be published under an open license, with a preference for the CC-BY license, and that, "In all cases, the license applied should fulfil the requirements defined by the Berlin Declaration." This requirement severely limits the scope of what Peter Suber has called *libre* OA²³, which is a broad swath

²³ Peter Suber. Gratis and libre open access. SPARC Open Access Newsletter, issue #124

of open options. Neither the CC-BY license nor the Berlin Declaration allow researchers to restrict access to non-commercial uses, for instance. Several authors of this article, for moral reasons, are strong proponents of CC-BY-NC rather than CC-BY licenses on their work, in order to restrict for-profit commercial exploitation of publicly funded research. Mandated open access, with heavy restrictions on the form this open access can take, combined with mandates on the form of licensing, severely impinge on researchers' freedom to disseminate their research and to limit how their research will be used and by whom^{24, 25}.

In his preamble to Plan S, Marc Schiltz, President of Science Europe, seems to ignore the fact that today's OA ecosystem provides researchers many options to disseminate publications and data in ways that respect our academic freedom. He writes:

“We recognise that researchers need to be given a maximum of freedom to choose the proper venue for publishing their results and that in some jurisdictions this freedom may be covered by a legal or constitutional protection. However, our collective duty of care is for the science system as a whole, and researchers must realise that they are doing a gross disservice to the institution of science if they continue to report their outcomes in publications that will be locked behind paywalls²⁶.”

Here, Schiltz ignores the important difference between *gratis* and *libre* OA²⁷. Recognizing this distinction, where *gratis* OA removes the paywall and *libre* OA removes some (but not necessarily all) restrictions on re-use, is vital to respecting academic freedom. The choice Schiltz gives researchers – publish without paywalls or violate your “collective duty of care” to the institution of “science as a whole” – is a false dilemma, especially as instantiated by Plan S. For instance, under the existing ecosystem, a researcher could publish an article in a TA journal, yet deposit a version of the article in an institutional repository without a paywall (Green OA). This would effectively remove the paywall, yet would violate the terms of Plan S. Alternatively, under the existing ecosystem, a researcher could publish in a professional society journal that publishes articles OA, without imposing any APCs on the author (Platinum or Diamond OA).

August 2, 2008.

https://dash.harvard.edu/bitstream/handle/1/4322580/suber_oagratis.html?sequence=1&isAllowed=y, accessed 9 September 2018.

²⁴ Rick Andersson. Open access and academic freedom. Inside Higher Ed, 15th December 2015. Retrieved 8th September 2018.

<https://www.insidehighered.com/views/2015/12/15/mandatory-open-access-publishing-can-impair-academic-freedom-essay>. As Andersson also points out, mandating that authors retain copyrights to their work, but then also mandating that the work be disseminated under a CC-BY license, which removes all control the author has over how the work will be used, are inconsistent.

²⁵ David Crotty. Licensing controversy - Balancing author rights with societal good. The Scholarly Kitchen, 12th February 2013. Retrieved 8th September 2018.

<https://scholarlykitchen.sspnet.org/2013/02/12/licensing-controversy-balancing-author-rights-with-societal-good/>

²⁶ Marc Schiltz. Science Without Publication Paywalls a Preamble to: cOAlition S for the Realisation of Full and Immediate Open Access, 4 September 2018.

https://www.scienceeurope.org/wp-content/uploads/2018/09/cOAlitionS_Preamble.pdf

²⁷ Suber 2008, op. cit.

This, too, would violate the terms of Plan S. Alternatively, a researcher could make use of an institutional repository to provide *gratis* OA to a publication, yet apply a variety of *libre* OA licenses²⁸. Unless the license the researcher chooses is CC-BY, it is unclear how this would be permitted under the terms of Plan S. Finally, as researchers, we feel several obligations that include, but are not limited to, the duty to care for the institution of science as a whole. We feel obligations to various researchers, both individuals and groups, which are mere parts of science-as-a-whole. We feel obligations to society, including not only society as a whole, but also to various groups and individual that make up society as a whole. We also feel obligations to our students, both as individuals and as a group. Many of us also feel obligations to ourselves, to our families, and to our professors to publish the best work we can in the highest quality venues we can manage. Making our research freely available (*gratis* OA) is compatible with all of these obligations, but violates Plan S. We are also open to removing some restrictions to the re-use of our data and research (*libre* OA). But Plan S both restricts the venues in which we may publish and mandates the restrictions we may place on the re-use of our research. Plan S thus clearly – and needlessly – violates our academic freedom.

Ideas for solutions

(1) One possible solution would be to convince all subscription (TA) journals to make all papers fully OA after an embargo period of 6-12 months, without APCs. In this environment, libraries would still buy subscriptions to allow scientists to catch up with the most recent developments, and the broader public would have access to all research without a paywall (but with a slight delay). While this plan does not provide immediate access to everyone, it is a safe and easy solution that would be beneficial for most stakeholders. Under this model, most publications would be read by scientists in the first 6-12 months after publication, and after the embargo period is over, no further costs should be accrued to access a scientific paper. In a modification of Plan S, rather than an indiscriminate blanket ban on *all* non-pure Gold OA journals, it would then be possible to exclude any (non-society) journals that won't accept this policy from the list of 'allowed' journals. This will likely still result in some journals being excluded as possible publication venues, but is a smaller infringement on academic freedom, and could become an acceptable situation for most researchers and a model to which any journal can easily adapt without compromising on quality. We note that according to Robert-Jan Smits, the European Commission's Open Access Envoy, even an embargo period of 6-12 months is "unacceptable",²⁹ but he does not explain why exactly that should be the case. Very recently, Belgium accepted a new law following this exact 6-12 month embargo model. This embargo period is intended to "give authors the chance to publish their papers in renowned journals, and prevents that publishers are damaged by a loss in income from subscriptions', as is the opinion of Peeters' cabinet."³⁰

²⁸ For an example of an institutional repository that allows researchers many options for the license applied to each individual deposit, see Humanities Commons, which is supported by the Modern Language Association (MLA): <https://hcommons.org/>.

²⁹ Frans van Heest in Science Guide. Robert-Jan Smits bespeurt veel hypocrisie bij open access. 23th July 2018. Retrieved 9th September 2018. <https://www.scienceguide.nl/2018/07/robert-jan-smits-bespeurt-veel-hypocrisie-bij-open-access/>

³⁰ Lotte Alsteens in dS De Standaard. Ook nieuwe Belgische wet forceert 'open' wetenschap. 5th September 2018. Retrieved 9th September 2018. http://www.standaard.be/cnt/dmf20180905_03703636

(2) Another model, which can be implemented in conjunction with point (1), is a mandate on depositing preprints in appropriate online repositories (Green OA), similar to the Open Access requirements of the US National Institutes of Health³¹. This is the model frequently employed by scientists to meet funders' Open Access requirements. These are then easily searchable using a range of search tools, including (but not limited to), most easily, Google Scholar. This is a solution with great benefits to the reader and limited risks to the author, as it allows for rapid early-stage dissemination of research, the provision of real time feedback to the authors, while opening up research to the scientific community and general public much faster than waiting for the very long publication time scales inherent to some journals. The one thing that does need to be taken into account with preprint servers is that they do redirect citations from the final published versions of articles³². While we would prefer that bibliometrics *not* be used as a tool for assessing individual researchers and research-active entities, in any system that does use bibliometrics, this redirection of citations should be taken into account and both citations to the preprint and to the actual paper considered. Overall, this, once again, seems to be a solution the Belgian government is in favour of.³³ One could even consider working with a legal international repository from which all available scientific papers could be downloaded after a certain embargo period.

(3) We note here also that more and more reputable publishers are now adding high quality open access publications to their repertoire of journals. In particular, we encourage fully open access journals published by scientific societies. A brief (but by no means exclusive) list of examples of such journals include ACS Central Science³⁴, ACS Omega³⁵, Chemical Science³⁶, RSC Advances³⁷, the Royal Society journals Open Biology³⁸ and Open Science³⁹, IUCrJ⁴⁰ and eLife⁴¹, among others. A move to a fully open access landscape is clearly going to become much easier when there are more journals that can guarantee the same level of quality control and sustainability as current reputable subscription journals, as venues to disseminate one's work. It may be a slower transition, but making this transition in an ecosystem that supports it does not infringe on academic freedom as Plan S does. Clearly, the overall march towards Open Knowledge Practices seems inevitable, as well as desirable, as researcher consciousness about the means of research dissemination, the possibilities, and the important ethical

³¹ NIH public access policy details. Retrieved 10th September 2018.

<https://publicaccess.nih.gov/policy.htm>

³² Phil David. Journals lose citations to preprint servers. 21st May 2018. Retrieved 10th September 2018.

<https://scholarlykitchen.sspnet.org/2018/05/21/journals-lose-citations-preprint-servers-repositories/>

³³ Belgisch Staatsblad/Moniteur Belge, N. 209, 188e Jaargang. Art. 29, page 686691. 9th September 2018. Retrieved 10th September 2018.

http://www.ejustice.just.fgov.be/cgi/article.pl?urlimage=%2Fmopdf%2F2018%2F09%2F05_1.pdf%23Page81&caller=summary&language=fr&pub_date=2018-09-05&numac=2018031589

³⁴ ACS Central Science. Retrieved 10th September 2018. <https://pubs.acs.org/journal/acscii>

³⁵ ACS Omega. Retrieved 10th September 2018. <https://pubs.acs.org/journal/acsodf>

³⁶ Chemical Science. Retrieved 10th September 2018.

<https://pubs.rsc.org/en/journals/journalissues/sc#!recentarticles&adv>

³⁷ RSC Advances. Retrieved 10th September 2018.

<http://www.rsc.org/journals-books-databases/about-journals/rsc-advances/>

³⁸ Open Biology. Retrieved 10th September 2018. <http://rsob.royalsocietypublishing.org>

³⁹ Royal Society Open Science. Retrieved 10th September 2018. <http://rsos.royalsocietypublishing.org>

⁴⁰ IUCrJ. Retrieved 10th September 2018. <https://journals.iucr.org/m/>

⁴¹ eLife. Retrieved 10th September 2018. <https://elifesciences.org/>

issues surrounding closed science increases. We must be careful to encourage this march in a way that does not replace one problem with another.

(4) Finally, the debate about Open Access, and APC, ignores the Diamond (also known as Platinum) model of OA publication. Diamond publication is a fully sponsored mode of publication, in which neither author nor publisher pays, but rather, the journals are funded by a third party sponsor. An example of Diamond OA is provided by the Beilstein Journals, all publications for which are covered by the non-profit Beilstein Institute in Germany⁴². Similarly, there is no fee for publication in *ACS Central Science*, and all publication costs are covered by the American Chemical Society⁴³. It is important to ensure the moral and ethical integrity of that sponsor. But, when performed in an ethically uncompromised framework, this would be an ideal model for publications by scientific societies, whose journals could then either be sponsored by funders and other donors. In such a framework, rather than simply transferring costs from readers to authors, while allowing questionable journals to flourish and exploit APC, quality control can be ensured by financially supporting high quality not-for-profit publications. Would this not be a much braver step for European and National funders to mandate, than a push for pure Gold OA?

Summary

In summary, all authors of this piece are strong proponents of Open Knowledge Practices and would like to see a push towards an open research ecosystem. However, moving toward an OA knowledge ecosystem should be balanced with challenging questions of academic freedom and academic equity in terms of access to resources and ability to publish, acknowledging also that not all Open Access publishers are equal in terms of rigour and publishing morality. Banning hybrid publications (even in society journals), the short shrift given to Green OA, the risk of creating a complete dichotomy of the global scientific society and the lack of respect for researchers' academic freedom in Europe constitute the most disturbing aspects of Plan S. Had the plan been a strong, yet fair, push towards an open ecosystem in a way that is economically sustainable and provides author choice in *how* the research is made openly accessible, we would have quickly joined the chorus of applause and supported this plan fully. However, the plan, as currently written, is simply a mechanism by which to shift the cost of publication from one pot of money to another, while significantly restricting author choice in publications in Europe and with many unwanted side effects that put the European academic research landscape at severe risk. It should therefore be clear why we (and countless colleagues with whom we have discussed this topic) are, to put it mildly, severely alarmed at the consequences this could have for the European research landscape, and Europe's future competitiveness as a global research and innovation heavyweight.

⁴² Beilstein Journal of Organic Chemistry. Platinum Open Access. Retrieved 10th September 2018.
<https://www.beilstein-journals.org/bjoc/openAccess>

⁴³ ACS Publications Open Access. Retrieved 10th September 2018.
<https://pubs.acs.org/page/4authors/openaccess/index.html#acsoci>

Biosketches

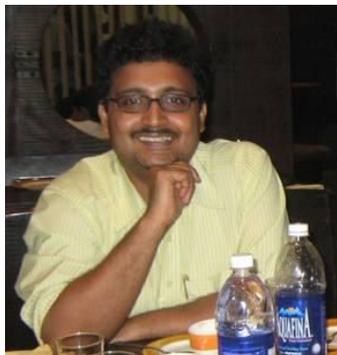


Lynn Kamerlin is a Professor of Biochemistry at Uppsala University, a Wallenberg Academy Fellow, and a Fellow of the Royal Society of Chemistry. She is also the former Chair of the Young Academy of Europe, and a former ERC grantee. She is an open science advocate, and has been involved in many activities to promote Open Science, including serving on working groups and expert groups at the European Commission, both as an invited speaker and as a participant of the group. She currently serves as a member of the EU Expert Group on Indicators for Researchers' Engagement with Open Science and its Impacts. She is also a co-author of the Bratislava Declaration for Young Researchers. Finally, she currently serves on the Editorial Board of the journal *Electronic Structure*, on the Editorial Advisory Boards of the journals *ACS Catalysis*, the *Journal of Physical Chemistry*, and *ACS Omega*, and is a member of the advisory board of F1000Research.



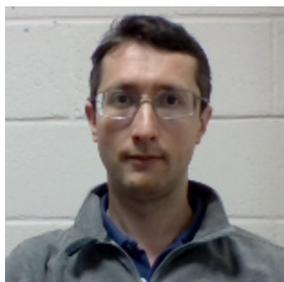
Pernilla Wittung-Stafshede is a Professor and Chair of Chemical Biology division at the Biology and Biological Engineering Department at Chalmers University of Technology. Her research centres around

protein biophysics, with current focus on mechanisms of copper transport proteins and cross-reactivity in amyloid formation. She spent 10 years as faculty at universities in USA before being recruited back to Sweden ten years ago. She is Wallenberg Scholar and a member of the Royal Swedish Academy of the Sciences. She is a member of the Biophysical Society Council and serves as an editor of Quaternary Reviews of Biophysics Discovery (QRB-D). At Chalmers, she is currently initiating a large 10-year gender equality program.



Dr. Abhishek Dey, PhD
Associate Professor, Chemistry
Indian Association for the Cultivation of Science (IACS)
[Research Website](#)

Associate Editor, ACS Catalysis
EAB Chemical Communications, Journal of Inorganic Biochemistry, Journal of Biological Inorganic Chemistry
EAB Inorganic Chemistry (2013-2016)



Stephen A. Wells is a postdoctoral researcher at the University of Bath with multidisciplinary interests in computational chemistry, mineral physics and protein structural biology. After studying Natural Sciences, followed by a PhD in Earth Sciences, at the University of Cambridge, he has worked at the Royal Institution, at Arizona State University, at Warwick University, and at Bath in the departments of Physics, Chemistry, and (currently) Chemical Engineering.



Maja Gruden is associate professor in Inorganic chemistry at the Faculty of Chemistry, University of Belgrade, Serbia. Her main research interest is accurate computing of ground and excited state properties of transition metal complexes by DFT and development and extension of multireference DFT techniques. She was Coordinator for International Collaboration at Faculty of Chemistry University of Belgrade, 2011-2013, and Vice dean for science and international cooperation at Faculty of Chemistry University of Belgrade, 2013-2015. She is a supporter of OA publishing.



Marc W. van der Kamp ([ORCID](#)) is a BBSRC David Phillips Research Fellow at the University of Bristol (School of Biochemistry). He is a supporter of open access publishing and open source code. He has over 40 publications in the area of biomolecular simulation and regularly reviews for high-impact journals. He has recently established an independent group (2 Post-docs, 2 full & two co-supervised PhD students) and currently holds 3 research grants as PI (£1.5M; aside from PhD studentships). He is a member of the [CCPBioSim](#) (Collaborative Computational Project for Biomolecular Simulation) and [HECBioSim](#) management groups, and is an advocate for equality, diversity and inclusion (member of the EDI departmental committee; contributed to University and departmental [Athena SWAN Award](#) applications).



Bas de Bruin ([ORCHID](#)) is professor in organometallic chemistry & homogeneous catalysis at the Van 't Hoff Institute for Molecular Sciences (HIMS) at the University of Amsterdam (UvA). His research interests are in organometallic chemistry & catalysis, with a current emphasis on development of new catalytic reactions through metalloradical catalysis. He is a laureate of ERC & NWO VIDI, VICI & TOP grants. He publishes in, and reviews for several (society) journals, such as the ACS and Wiley. He was on the editorial board of EurJIC & the editorial advisory board of Organometallics and is currently on the editorial advisory board of ACS Catalysis. He

is a strong supporter of OA publishing, and regularly tried to convince the chemistry society journals to adapt a suitable OA publication model.



J. Britt Holbrook ([ORCID](#)), Assistant Professor, Department of Humanities, New Jersey Institute of Technology, USA, earned his PhD in philosophy from Emory University in 2004. His postdoctoral research at the University of North Texas explored the use of broader societal impacts criteria in the peer review of grant proposals at both US and European funding agencies, philosophical and policy issues surrounding open access, and the development of quantitative metrics of broader impacts. Holbrook is currently serving as a member of the European Commission [Expert Group](#) on Indicators for Researchers' Engagement with Open Science and its Impacts. In addition to his work on science and technology policy, Holbrook conducts research on the ethics of science, engineering, and technology. He was Editor in Chief of *Ethics, Science, Technology, and Engineering: A Global Resource* (Macmillan Reference). As a member of the American Association for the Advancement of Science's Committee on Scientific Freedom and Responsibility (2012 – 2018), Holbrook was one of the co-authors of the AAAS Statement on Scientific Freedom and Responsibility.



Sam Hay ([ORCID](#)) is a Senior Lecturer in the Manchester Institute of Biotechnology and School of Chemistry at the University of Manchester (UK). His research interests are in biophysical chemistry, with a focus on enzyme catalysis and quantum biology. He is a former BBSRC David Phillips Research Fellow and a member of a number of societies including the RSC, ACS and Biochemical Society. He has active collaborations across Europe, North America, Asia and Australasia and regularly publishes in, and reviews for a number of society and non-society journals. He is an advocate of data sharing, open source software and pragmatic OA publishing.